

NATIONAL REPORT

Cartography in Switzerland 2015–2019



50th Anniversary of the Swiss Society of Cartography

NATIONAL REPORT

Cartography in Switzerland 2015 – 2019

Editor

Stefan Räber,
Swiss Society of Cartography



Front cover

Asahi-dake – The heart of the Daisetsuzan National Park. The tourist map was created in close collaboration with Orell Füssli Kartographie AG and Japanese specialists (→ Page 78).



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Introduction

About this Publication

This publication is both an anniversary commemorative volume as well as a National Report. In the first part Ernst Spiess, honorary president and founding member of the SSC, writes about the 50-year history of the society.

Within the National Report – Cartography in Switzerland 2015–2019, selected events and activities of the last four years are reviewed. A further chapter is devoted to vocational education and training and focuses above all on the four-year practical geomatics apprenticeship that is customary in Switzerland. Three university institutes are presented too.

Furthermore, some of the SSC members introduce themselves with their latest cartographic products. All the winners of the Swiss Cartography Prize Prix Carto as well as other important cartographic works which have been specially mentioned at exhibitions or in the media are also briefly presented in pictures and texts. The presentation of various cartographic companies along with their products presents only an overview and is only representative of the current Swiss cartography scene.

In the concluding section "Do you know?", the writer tries to show the reader that maps are often used subconsciously in everyday life, e.g. the Swiss population often carries a piece of cartography around with them in their wallets. But please read for yourself.

Acknowledgements

Many thanks to all authors and contributors of this publication. Special thanks to Mark Wigley for the meticulous proofreading and the spirited foreword. Ernst Spiess, for agreeing without hesitation to write the fascinating history of the SSC. Lorenz Hurni from the Institute of Cartography and Geoinformation and who always generously supported this publication, present and past as well as the SSC.

Stefan Räber

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Foreword

by Mark Wigley, President SSC

Dear Fellow Cartographers and Map Enthusiasts

The National Report should, according to the International Cartographic Association (ICA) include “the cartographic and GI science activities in the country during the previous four years”.

Well yet again our, newly appointed honorary member, Stefan Räber, has out done himself and compiled yet another wonderfully rich National Report for Switzerland for the years 2015 to 2019, which by far surpasses the ICA’s request.

The Table of Contents reveals the varied entries to be found within this edition and you will quickly see that apart from the usual insights into the cartographic activities of the Swiss Society of Cartography’s SSC members, this year’s report contains a number of outstanding articles.

One of my favourites is the wonderfully penned article “50 Years of the Swiss Society of Cartography” written by our Honorary President and founding member Ernst Spiess. This detailed recital of the founding of the ICA, together with highlights from the Swiss Society of Cartography’s past 50 years is informative, interesting and contains just a pinch of humour which makes this “must read” an enjoyable journey back in time.

Another favourite of mine is the coverage of the wonderful International Map Year (2015–2016). Of the more than twenty events which took place in Switzerland each has been honoured respectively. There is however one activity which I feel is worth a special mention. This is the tantalising map blog created by Markus Oehrli which has since been published, first in German, but now, I am very pleased to say, especially for this ICC, also in English as the Kaleidoscope of Swiss Cartography.

Mark Wigley

Having studied Geography and specialising in Cartography at Bedford University (Luton College), I then went on to work in England, Austria and Switzerland for various private cartographic companies. Eleven years ago, I moved over to the software side and have spent the last 8 years as the Chief Cartographic Officer with Esri Switzerland. This year I was voted in as president of the SSC.



Three further favourites of mine are the insights into the works and services of the nineteen Swiss cartographic companies along with the eight institutes and authorities. These range from the National Mapping Agency swisstopo to the one-man business Beilstein Cartographic Services and the impressive and inspiring artist Sandra Kühne. Another is the section Education, with the report of the highly successful “GEOSchool Day”. In 2014 around 120 young people attended and in 2018 a very impressive 450! Finally, the closing Map Cetera section which is full of the Fun and Fascinating, what better way to close.

So please don’t be put off by the very impressive 100 plus pages, but rather sit back and enjoy this very high-quality product at your pleasure and seek out those hidden gems which make this an excellent celebration of the last four years.

50 Years of the Swiss Society of Cartography

by Ernst Spiess

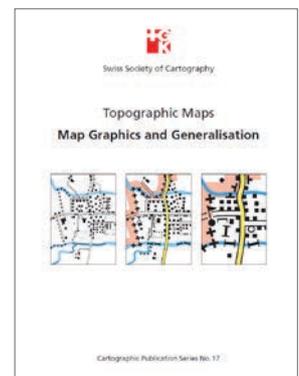
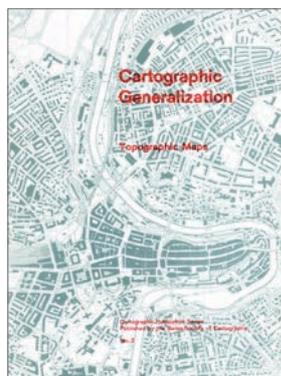
In the early fifties there was practically no mutual exchange of professional knowledge between cartographic institutions, either nationally or internationally. For information one had to rely on relevant literature on cartographic methods and techniques which were a rarity in those days.

To exchange experiences, in 1956 Esselte invited interested parties for a first contact meeting in Stockholm, another conference was organised 1957 by Rand McNally in Chicago. The participants, a small group of leading industry executives and university professors, decided to meet again in Mainz in 1958 during the Cartographic Days of the German Society to start laying down statutes for an International Association of Cartography. Switzerland took an active part in this group, partaking with Professor Eduard Imhof and Daniel Chervet. On the base of this preliminary work the Association was founded on 9th June 1959 in Bern, Switzerland.

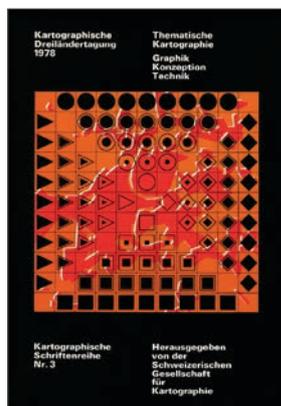
These ICA statutes define the national representation and membership as follows: "Each nation can only be represented by a single organisation, which should preferably be the national society or committee for cartography". Member nations must agree to participate financially in supporting the Association and in collaborating actively in its scientific and technical activities. To become a member of the new association the "Schweizerische Arbeitsgemeinschaft für Kartographie" has been established. The membership in this working group was conceded by invitation to persons, representing prominent groups of interest, who were willing to contribute to the annual fee for ICA. After ten years of active participation in ICA, it was felt that a national society open to all cartographers, firms and individuals interested in cartography in general was necessary. A draft for statutes was prepared and discussed at a preliminary meeting in November 1968. Already on 22nd March 1969 the Swiss Society of Cartography (SSC) was founded at a meeting in Bern. Ninety members were inscribed on that day. Today, 50 years later the Society counts 302 individual and



The Swiss Society of Cartography was founded during a meeting held at the restaurant Bürgerhaus in the Swiss capital, Bern on the 22nd of March 1969.



Guidelines for mapmakers: *Cartographic Generalization* (1987) and *Map Graphics and Generalisation* (2002) published by SSC.



Proceedings of the cartographic conferences for Germany, Austria and Switzerland in Bern (1978) and Interlaken (1996).

29 corporate members. The aim of the Society is the development of theoretical and practical cartography as well as the training and education of professional cartographers. It intends to disseminate knowledge in the fields of map production, map use and history of maps and exchange know-how with professionals both nationally and internationally.

The dominating theme of the first biannual SSC meetings was education and training in cartography. While cartographers were trained in those days on the job in an officially recognised four year apprenticeship, combined with theoretical courses one day per week, there was no education provided for higher ranks in this profession. This subject remained a permanent topic for the following decades. To investigate the needs for the different categories, questionnaires were distributed among cartographers and firms. These polls were partly combined with similar activities in the respective ICA Commission. The analysis of the survey resulted in such a low need for the levels of cartographic engineers and map editors, that a full time higher education became an illusion. On the other hand in the sixties there was an urgent request by the industry for learned cartographers. But ten years later there were doubts again, whether there were possibly too many apprenticeships offered, having in mind the rapidly developing digital techniques. However, to keep pace with the evolving new digital techniques, the society started a series of four-day courses on specific topics, as e.g. reproduction techniques, preprocessing, computer assisted cartography, rock drawing, relief shading, map interpretation, geography of settlements. Furthermore the SSC informed regularly about appropriate courses at the universities.

Besides official matters every biannual meeting was devoted also to technical issues, such as new developments in digital cartography, reproduction, map design, map generalisation and infographics or historical maps. A list of all the contributions to the one hundred meetings since 1969 gives an idea of the broad spectrum of subjects treated. There were also opportunities to study editing and technical production processes by visiting different firms or experimental work at universities on offer. Three times the society organised for the members a two-day trip abroad, in 1990 to Paris, in 1992 to Bad Godesberg and in 1993 to Milan, always combined with a visit of well-known local cartographic centers.



1986: Rock drawing course in the Swiss Alps.



2000: SSC celebrates 40 years of the Atlas of Switzerland and 75 years of the Institute of Cartography at ETH Zurich.



Walter and Viola Imhof (son and wife of Eduard) with institute director Lorenz Hurni (right) at the celebration.



2003: 23 times World champion in orienteering Simone Niggli-Luder (centre) explains orienteering to SSC members.

A respectable number of members of our Society participated in the ICA conferences, contributed with papers or posters where appropriate and reported back home on major developments and events. At all General Assemblies we participated with an official delegation. Over the years, three members of our Society served on the Executive Committee, Eduard Imhof as its first president, Sara Fabrikant as vice president and myself as auditor. Several of our members contributed to the organisation and chairing of paper sessions and the Society contributed regularly to the map exhibitions. We aimed at improving our national report step by step, along with the evolution of the publication techniques. One of our earlier reports was even praised by the Secretary General at the General Assembly and recommended as a model to imitate. At the time we had to provide one or two copies for the delegates of each country. This procedure however resulted in a series of complaints, because other participants had grabbed the copies from the then open mailboxes. Fortunately, nowadays everybody can read these reports on-line.

Another significant contribution of the members of our society to ICA consists without any doubt in the participation in commission work. We were able to nominate members in most of the commissions right from the beginning. During every period we had representatives in 6 to 11 commissions or working groups. The Society welcomed members who were willing to contribute by taking a part in commission meetings or registering as corresponding members. Unfortunately, the budget did not allow for helping with the traveling and accommodation costs or for the time invested in commission reports or publications. The engagement in ICA commissions requires quite an input of money and time, which was and still is not always easy to justify and to obtain from one's superiors. Therefore the Society is very much obliged to all members, universities, offices and firms who supported this activity. We were persuaded that the transfer of these activities would find great interest in our national society and stimulate discussions and work in our internal commissions. Especially if the intentions of a commission match with internal requirement, technical support or research activity, a collaboration with such a group of experts may be an ideal solution. Some members of the SSC have been elected chairman of an ICA commission. Together with a Canadian colleague I put forward in 1972 a motion for a Standing Commission on Map Production which I chaired thereafter for the first four-year period. The other chairs were held by



2004: SSC members visit the SwissArena in Lucerne.



2006: The first Prix Carto award ceremony and its winners.



ICHC 2007, 22nd International Conference on the History of Cartography in Bern. Organising Committee President Hans-Uli Feldmann rings a cowbell to sound the start of the sessions.



ICHC 2007: Group photo with volunteers.

Robert Weibel past chairman of the Working Group on Generalisation, Lorenz Hurni past chairman for the Commission on Mountain Cartography, Barbara Piatti past chairwoman for the Working Group on Art and Cartography, Sara Fabrikant past chairwoman for the Commission on Cognitive Visualisation, and René Sieber who is the current chairman of the Commission on Atlases.

The experiences that we draw from our collaboration in publication work for several commissions are somewhat mixed. On one side getting impulses from several countries was quite informative. But on the other side it became exhaustive when it came to elaborate a chapter in English, which had to take in account input from several commission members or had to be illustrated with tables, graphs, charts or maps. It was often more than the author could handle alone. Drafts had to go back and forward. Reaction was often much delayed or brought not the expected results. New ideas came up in intermediate meetings and might have caused even complete changes of the concept or text. The production of cartographic illustrations needed professional care to convince the readers. In some cases the graphic design and the layout were very poor or contents already obsolete. In view of the cost and the restricted editions, color was not provided or reduced to a minimum. The final print was often delayed and not entirely satisfying. With these comments I address the situation in the first three decades of ICA. Today we are confronted with a completely different technical situation. Practical editing tools, digital imagery, infographics and straightforward map reproduction allow for a technically more efficient production. Reports in digital form may be distributed by mail or published on the web. What remains however is a bottleneck in time the experts can devote to studies, tests and editing work besides their usual work or duties.

Over the years we hosted several ICA commissions or working group meetings in Switzerland. In 1979 a Joint ICA/ISP/FIG Commission held a conference in Zurich on Digital Technology in Topographic Mapping. The Commission on Marketing of Spatial Information met in Zurich in 1988, the Working Group for Digital Cartographic Database Exchange Standards at Rigi-Kaltbad in 1990. The Standing ICA Commission on Map Production discussed its publication on conventional and digital work flow processes 1992 in Zurich and Rapperswil. The Commission on Mountain Cartography met 2008 in Lenk combining commission work and field experiences on skis. Finally, in 2009 the ICA cel-



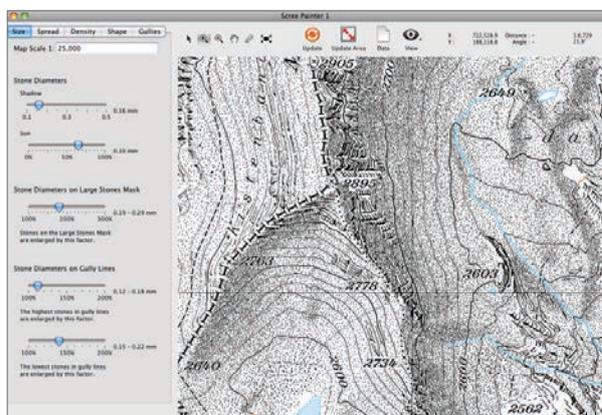
February 2008: ICA Commission Workshop on Mountain Cartography in Lenk, Switzerland.



Participants of the Mountain Cartography Workshop.



Workshop participants on a ski tour.



Scree Painter generates scree patterns for topographic maps. A typical Swiss cartographic map feature developed by Bernhard Jenny in 2010. The product is in use at swisstopo.

ebredated its 50th anniversary with retrospects and outlooks combined with a gala dinner in Bern.

The collaboration with the ICA has stimulated similar activities at a national level. Our working group on generalisation of topographic maps developed guide lines for cartographers and produced a publication. Generalisation is indispensable in order to retain as much as possible of the original information when a map has to be simplified or reduced in scale. Main emphasis was laid on the illustrations, explaining and presenting rules for good solutions and also compared to bad ones. Later on, this publication, restricted to topographic maps, was revised, enlarged to 120 pages and published 2002 as a paper version and as CD-ROM in German and English. In 1977 Prof. Arthur Dürst initiated, within the SSC a Working Group for the History of Maps, which attracted many enthusiasts and collectors for historical maps. In 1990 Hans-Uli Feldmann and a group of co-editors started a publication "Cartographica Helvetica". This publication concentrates on historical maps with interesting contributions and excellent illustrations. It is managed by the group independently from the SSC. It has become the leading publication on the history of maps in the German language. In 2000 the Society received for publication a compendium on Computer-assisted Cartography, which had been edited by Heinz Stoll and used in his classes for the apprentices. In addition, we should mention that the "Kartographische Nachrichten", the official journal of the German Society of Cartography also publishes the annual reports of our society and which is also distributed to our members.

Our connections to the German Society of Cartography are close, which is shown also by the interest the annual German Cartographic Day finds among our members. In a few cases this meeting was organised as a common conference for Germany, Austria and Switzerland. Our society has been responsible for two meetings so far, 1978 in Bern and 1996 in Interlaken. On this last occasion we produced two large volumes of proceedings. These conferences were quite demanding in terms of resources and personal during the three years of preparation. Our members certainly profited from the many experiences and stimulations gained at ICA conferences.

A continuing issue in the SSC over all the years is the design and the organisation of the education and training plans for the official certificate for professional cartographers. Originally it consisted of a



June 2009: Participants at the 50th anniversary of the ICA in front of the swisstopo building.



Eduard Imhof exhibition at the ICA festivities in 2009.



Gala dinner at the 50th anniversary of the ICA in Bern.



2009: Exhibition of Swiss cartography in Zurich. Toni Mair (left) explains his hand-made 3D terrain models.

mutual agreement between the Federal Office for Education and the industry which offered apprenticeships for cartographers. Together they decided on the programs for practical work and for the study courses. For the latter, teachers were recruited for specific topics among experienced professionals, which had only a restricted influence on the total program. The SSC set up a Working Group on Education chaired by Kurt Ficker. A request for participation of a delegation of the Society in the planning stage of new concepts was finally accepted. The matter was repeatedly discussed in our meetings. In 1989 new directives which allowed for a prominent step towards up-to-dated study plans and digital practical work. The cartographic technician, however, was referred to opt for a higher certificate in graphic industries in general. The directives were revised again in 2000. Six years later it came to a complete change, in so far as the small group of cartographers had to make common cause with the much larger number of surveying draftsmen and women under a new imaginative designation. The former cartographer gets now a certificate as "Geomatician with specialisation in cartography". This has had a considerable influence on the study programs. Basics in surveying and cartography are taught for both groups together.

In the last two decades the SSC has made marked progress in reaching its members. This is due primarily to the efforts of the secretary Stefan Räber in collecting and distributing information. Since 1978 news had been distributed at random according to needs. From 2000 on the "carto news" were published regularly, normally with six editions per year distributed together with the "Kartographische Nachrichten". They provide up-to-date internal information, news from ICA and its commissions and an agenda with all events in cartographic and neighboring sciences. They are illustrated with photos and maps. In 2007 with the Prix Carto a competition was started with the aim to put more emphasis on map quality. The prizes are awarded every second year. Special efforts all over the country were made to celebrate the International Map Year 2015/16 with more than 20 special events, (→ Page 26). The autumn meeting was conceived as National Map Day with a workshop on the newest maps and digital products and recent innovations. In each of the 70 weeks of the "Map Year" a map was selected and presented on the Web and announced as "Map of the Week". 58 of these maps were later published as "Kaleidoscope of Swiss Cartography" in "Cartographica Helvetica" (in German, 2017) and 70 maps



2009: Part of the Swiss delegation at the ICC in Santiago de Chile.



2011: SSC members visiting IGN during the ICC in Paris.



2012: ICA Workshop, Art on Cartography, at ETH Zurich.



2013: Part of the Swiss delegation at the ICC in Dresden.

in the SSC Cartographic publication series (in English, 2019). It provided an excellent summary of Swiss maps of all kinds, covering several centuries and produced in various techniques and styles.

We may say that in the last 50 years the Swiss Society of Cartography has played an active role nationally and internationally. The common efforts in the field of education made it possible that the apprenticeship was adapted step by step to keep up with the enormous technological evolution. As a small country we had no chance to be a big player in developing large digital cartographic systems. But official services and the cartographic industry was anxious to experiment with and apply the new techniques, what allowed and forced them to contribute to their progress. There was always a serious concern to retain the quality, Swiss products have been famous over many generations. In this respect we can see also the significant role, the history of maps played in the Society. Looking back should not close without an outlook to the future. The author is however more than happy to leave this to the active generation.



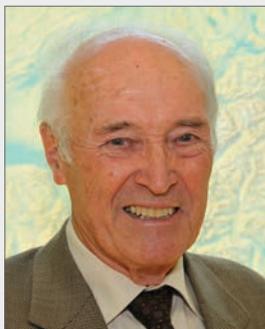
2015–16: More than 20 Map Year events.



2018: The ICA Executive Committee meets in Zurich. Host was Sara Fabrikant (2nd right), ICA Vice-president (2015–2019).

Ernst Spiess (the author)

Born in 1930, he is a founding member and Honorary President of the Swiss Society of Cartography. From 1956 to 1958, he followed an academic career and was the personal assistant to Professor Eduard Imhof. From 1958 to 1964, he worked as a Topography and Photogrammetry Engineer at the Federal Office of Topography swisstopo in Bern. From 1964 until his retirement in 1996, Ernst Spiess was Professor at the ETH Zurich. In 1974, he introduced to the Institute of Cartography one of the first digital cartographic computer systems. The system served as a basic tool for some of the most advanced scientific works on map production, thematic cartography and map projections. The adaptation and extension of Jacques Bertin's "Graphical Semiology" to modern Thematic Cartography is one of Ernst Spiess most important contributions to cartography. From 1978 until 1996 he was Editor-in-Chief of the "Atlas of Switzerland", 1979–2008 Editor-in-Chief of the "Swiss World Atlas". Ernst Spiess served as chairman and has membership in various domestic and international associations and commissions for photogrammetry and cartography. In 1994 Ernst Spiess received the degree of an Honorary Doctor from the University of Basel, Switzerland for his work in the fields of Thematic Cartography and Atlas Cartography. In 1995 Spiess was the recipient of an ICA Honorary Fellowship. In 2005 ICA awarded him with its highest distinction, the Carl Mannerfelt Gold Medal.



Anniversary logo



Goals and Tasks of the Society

The SSC is the official representative for Swiss Cartography at the ICA. In 2019 the society celebrates its 50th anniversary.

Goals of the Society

The SSC has set itself the goals of bringing together not only experts, but also all those interested in cartography, encouraging an active exchange amongst members and promoting young talent. In 2019, the society numbers more than 330 members, which include specialists from private, academic and government organisations, as well as many map enthusiasts. They all share a common love of maps. List of company members (→ Page 100).

Activities

The Swiss Society of Cartography:

- organises meetings for its members twice a year.
- organises workshops, continuing education, and excursions to cartographic enterprises and exhibitions.
- publishes textbooks and national reports on cartography.
- is the official representative for Swiss cartography at the International Cartographic Association (ICA) and in the Swiss Organisation for Geoinformation (SOGI).
- participates actively in commissions and working groups of the ICA.
- publishes and distributes a bi-monthly newsletter to its members.
- distributes the *KN – journal of Cartography and Geographic Information* to its members.



The SSC organises regular meetings biennially.

Swiss Representatives of the ICA

Executive Committee of the ICA

- Vice-president, Sara Fabrikant

Chairs and Vice-Chairs

- ICA Commission on Atlases:
Chair René Sieber
- ICA Commission on Art & Cartography:
Vice-chair Julia Mia Stirnemann
- ICA Commission on Cartography in Early Warning and Crisis Management:
Vice-chair Christophe Lienert
- ICA Commission on Generalisation and Multiple Representation: Vice-chair Pia Bereuter



Sara Fabrikant



René Sieber

Correspondents

- ICA Commission on Cartographic Heritage into the Digital: Angeliki Tsorlini
- ICA Commission on Cognitive Issues in Geographic Information Visualisation: Sara Fabrikant
- ICA Commission on Education and Training: Christian Häberling
- ICA Commission on Generalisation and Multiple Representation: Robert Weibel
- ICA Commission on Visual Analytics: Sara Fabrikant
- ICA Commission on Map Design: Bernhard Jenny
- ICA Commission on Mountain Cartography: Lorenz Hurni
- ICA Commission on the History of Cartography: Hans-Uli Feldmann

Executive committee 2015–2019

In 2019 Mark Wigley was elected as President of the Society. He succeeded Thomas Schulz who remains on the executive board.

New Committee Members

elected to the executive board at the general assemblies in spring:

- 2015: Susanne Bleisch, FHNW.
- 2018: Anita Bertiller (treasurer), Sigmaphan.
- 2018: Francis Baca (secretary), swisstopo.
- 2018: Mark Wigley, Esri Switzerland.
- 2019: Jost Schmid, Zentralbibliothek Zürich.

Resigning Committee Members

- 2015: Christian Häberling, who acted on the executive board for nine years.
- 2018: Philipp Marty, who acted as treasurer on the executive board for six years.
- 2018: Martin Urech, who acted on the executive board for nine years, in 2012 he was caretaker president.
- 2018: Stefan Räber, who acted as secretary on the executive board for eighteen years.
- 2019: Madlena Cavelti Hammer, who acted on the executive board for seven years.

New Honorary Member

Stefan Räber received the honorary membership of the SSC, acknowledged with a standing ovation from all those present at the 2018 general meeting on the 14th of April for his extraordinary commitment and great dedication to the society and Swiss cartography on whole. Stefan Räber has organised, amongst other things, the Prix Carto, numerous exhibitions and events, the SSC website and was as editor and designer for the SSC publications “carto news” and National Report.

SSC Working Groups

- In 2018, the SSC founded the “Prix Carto” Working group to implement and further develop its biennial cartography awards. Roland Schenkel chairs this new SSC Working group.
- Since 2000, the SSC Working group on Map History is chaired by Martin Rickenbacher. Members of this group are active as editors of the Journal “Cartographica Helvetica” (→ Page 29) and in the mutual German-speaking Working group on the history of cartography (D-A-CH). The report of Martin Rickenbacher’s SSC Working group is on → Page 21.



2019: Election of the new SSC president Mark Wigley.



Members of the SSC executive committee in May 2019, from left: Francis Baca, Anita Bertiller, Mark Wigley, Susanne Bleisch, Thomas Schulz and Jost Schmid.



Honorary members of the SSC, from left: Stefan Räber, Roland Kuster, Ernst Spiess, Hans-Uli Feldmann.



“Prix Carto” Working group members judging map products.

SSC Representatives and Assistances

- Martin Probst is SSC representative to the Swiss Organisation for Geographic Information (SOGI). SOGI unifies interested members with the aim to promote the utilization of Geoinformation and its interdisciplinary use.
- Alfred Gut is SSC representative to the Permanent Committee on Geographical Names.
- Martin Rickenbacher is the national representative to *Imago Mundi*, the International Journal for the History of Cartography.
- Thomas Maag, a cartographer at swisstopo, is the SSC's trusty photographer and many of his photographs enhance this publication. →



Cartographer and photographer Thomas Maag.

Eulogies

Between 2015 and 2019, unfortunately, some of our members passed away, including cartographers who were known well beyond Switzerland's borders.

- Toni Mair (1940–2015), teacher in geography and geology was an outstanding relief modeler. In many museums his works, which he created with a love for detail and scientific meticulousness, can be admired.
- Oliver Perrottet (1949–2018), cartographer, artist and a long-time member of the SSC. He was the founder and owner of Lima 2000, a city and street map publishing company in Peru. The impressive painted façade of Oliver Perrottet's company building Lima 2000 is depicted on → *Page 98*.
- Werner Altherr (1933–2018), cartographer, founding member and first secretary of the SSC. Friend of Bradford Washburn, known for bringing large map projects, such as the Mount Everest map (1988), to Switzerland. Werner worked for Swissair Photo+Survey Ltd. for many years.

We keep all the deceased in honourable memory.



Toni Mair (1940–2015).



Oliver Perrottet (1949–2018).



Toni Mair restores the Bietschhorn relief model at ETH Zurich in 2005.

SSC Symposia and General Assemblies

The Swiss Society of Cartography (SSC) organises meetings for its members twice a year.

General Assembly in Solothurn, 18.04.2015

The General Assembly took place in the historic “Old Hospital” in Solothurn. Among the normal proceedings, the General Assembly was marked by the election of new board members and by honours given to past board members (→ *Page 14*). After a reception offered by the SSC and a joint lunch, an interesting city tour through the historic old town was taken.



2015: The reception after the General Assembly in Solothurn.

SSC Symposium in Muttenz, 04.11.2015

More than 150 interested listeners met at the University of Applied Sciences Northwestern Switzerland in Muttenz for the exciting and modern conference topic of “3D Cartography”. The presentation of the “Prix Carto” cartography prizes and the book launch “Around Switzerland in 80 maps” were also an integral part of the event and certainly contributed to its overall attractiveness. Max Maisch paid tribute to the late SSC member Toni Mair, relief modeller, 1940–2015, in a memorable and comprehensive contribution. During the extended breaks and the reception, the attendees were able to visit a small exhibition of current map products.



2015: Exhibition at the “3D Cartography” event in Muttenz.

General Assembly in Moutier, 16.04.2016

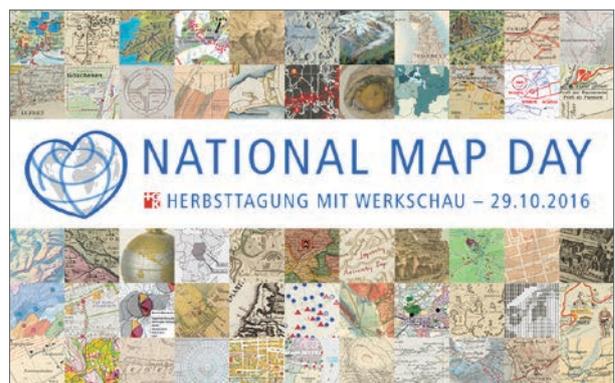
The 47th General Assembly took place in the historic Hôtel de la Gare in Moutier. Several amendments to the society’s statutes were adopted. The commendable SSC members Toni Mair and Walter Imhof (son of Eduard), who both passed away in 2015, were once more commemorated. A guided city tour in the afternoon rounded off the day’s programme.



2016: General assembly held at the Hôtel de la Gare, Moutier.

National Map Day in Bern, 29.10.2016

Following the call of the ICA, the “National Map Day” was announced in the spirit of the International Map Year in Switzerland. The full-day main event, organised by the SSC, took place at the Institute of Geography of the University of Bern. Cartographic enthusiasts met for 12 lectures and an exhibition of the latest products and innovations in Swiss cartography. SSC corporate members participated by exhibiting their services and products on various exhibition stands.



Teaser for the National Map Day on 29th October 2016.

General Assembly in Ecublens, 21.04.2017

On 21st of April, the 48th SSC General Assembly took place at the SwissTech Convention Center in Lausanne as part of the 100th anniversary of Ingénieurs-Géomètres Suisses (IGS). Thomas Schulz hosted a two-hour programme. In addition, the participants had the opportunity to attend the IGS symposium and exchange ideas with participants from a total of nine national associations from the geomatics industry.

"The Evening of Swiss Cartography", Zurich, 30.10.2017

Roland Kuster, SSC honorary member, skilfully and entertainingly hosted a varied programme throughout the evening at the Swiss National Museum in Zurich. The event was accompanied musically by soprano saxophonist Lorenz Hurni, professor of cartography and on piano Marianna Serebryakova, a Russian cartographer at ETH Zurich. The event comprised of, interesting lectures, the awards for the geomatics apprentices focusing on cartography and the presentation of the prize winners of the International Cartographic Exhibition at the ICC 2017 in Washington. The Prix Carto Awards (Swiss Cartography Prizes) and a small exhibition of the products presented during the lectures rounded off the programme. More than 130 people attended the Monday evening event.

General Assembly in St. Gallen, 18.04.2018

The 49th SSC General Assembly took place in the new St. Gallen Natural History Museum. After the normal business part, the SSC offered a lunch in the museum café. In the early afternoon, the participants were offered an attractive complementary programme: The relief builder Wolfgang Pusch (bergmodelle.de) spoke about landscape reliefs and in particular about the creation of the large relief of the cantons of St. Gallen and Appenzell, which is on display in the museum. The relief is with 37 m² one of the largest in Europe. Among other things, about 550 kg of gypsum were used. The construction period was two and a half years and consisted of about 5,500 working hours. Following a lecture, Museum Director Toni Bürgin guided the visitors through the exhibition. Focal point of the visit was the large landscape relief of St. Gallen and Appenzell at a scale of 1:10,000 (7.8 x 6.9 m).



2017: General assembly at the SwissTech Convention Center.



2017: Cartographic prize winner presentations.



Lorenz Hurni plays the Ernst-Spiess March.



2018: General assembly at the new Natural History Museum.



Landscape relief of the cantons of St. Gallen and Appenzell.

SSC Symposium in Olten, 29.10.2018

The topic "Cartography for the future" found special interest with the younger professionals who were motivated into attending.

Programme items at the FHNW in Olten included:

- Recognition of the most successful geomatics apprentices, focusing on cartography: Michel Reber, Marco Soland and Marika Roggli, all who completed their four-year apprenticeship at the Federal Office of Topography swisstopo.
- Presentations covering cartography Education and training opportunities.
- A World-Café on "Cartography for the Future"
- Collecting and discussing the results of the World-Café working groups

In the "World Café", questions on current and future cartographic topics were compiled and discussed in five moderated working groups. The participants changed groups after 15 minutes. At the end, the numerous and valuable findings were collected and presented to all participants.



"World Café" – Working groups discuss the current and future professional profile of cartographers



Successful geomatics apprentices focusing in cartography.

General Assembly in Wabern, 22.03.2019

Exactly 50 years, to the day, after the founding of the SSC, the 2019 General Assembly returns to Bern, where it is hosted at swisstopo. In addition to the business part, there was a Q&A round with former SSC Presidents which included the founding member Ernst Spiess. The Q&A round covered the topic: "50 years of SSC – an individual review" and resulted in interesting and amusing anecdotes from earlier SSC and ICA times. In conclusion, the SSC offered the numerous participants a much-enjoyed reception.

Anniversary Event in Bern, 25.10.2019

The SSC invites all to a celebration of "50 years SSC" on 25th October. The event will take place in an attractive setting in the founding city of Bern. The SSC members and the invited guests can look forward to, alongside the Prix Carto awards, various trips down memory lane and a little something special together with a Gala Dinner. Before the evening event it will also be possible to join the SSC on an interesting tour of the nearby wonderful Alpine Museum.



Q&A round with Stefan Arn (President from 2007–2012), Thomas Schulz (2013–2018), Ernst Spiess (1969–1972 and 1988–1997) and Hans-Uli Feldmann (1998–2006), from the left.



The Gala Dinner will take place at the Restaurant Schwellemätteli, located directly on the Aare in Bern.

Publications: carto news, Newsletter, KN Journal

The society informs and publishes through various channels.

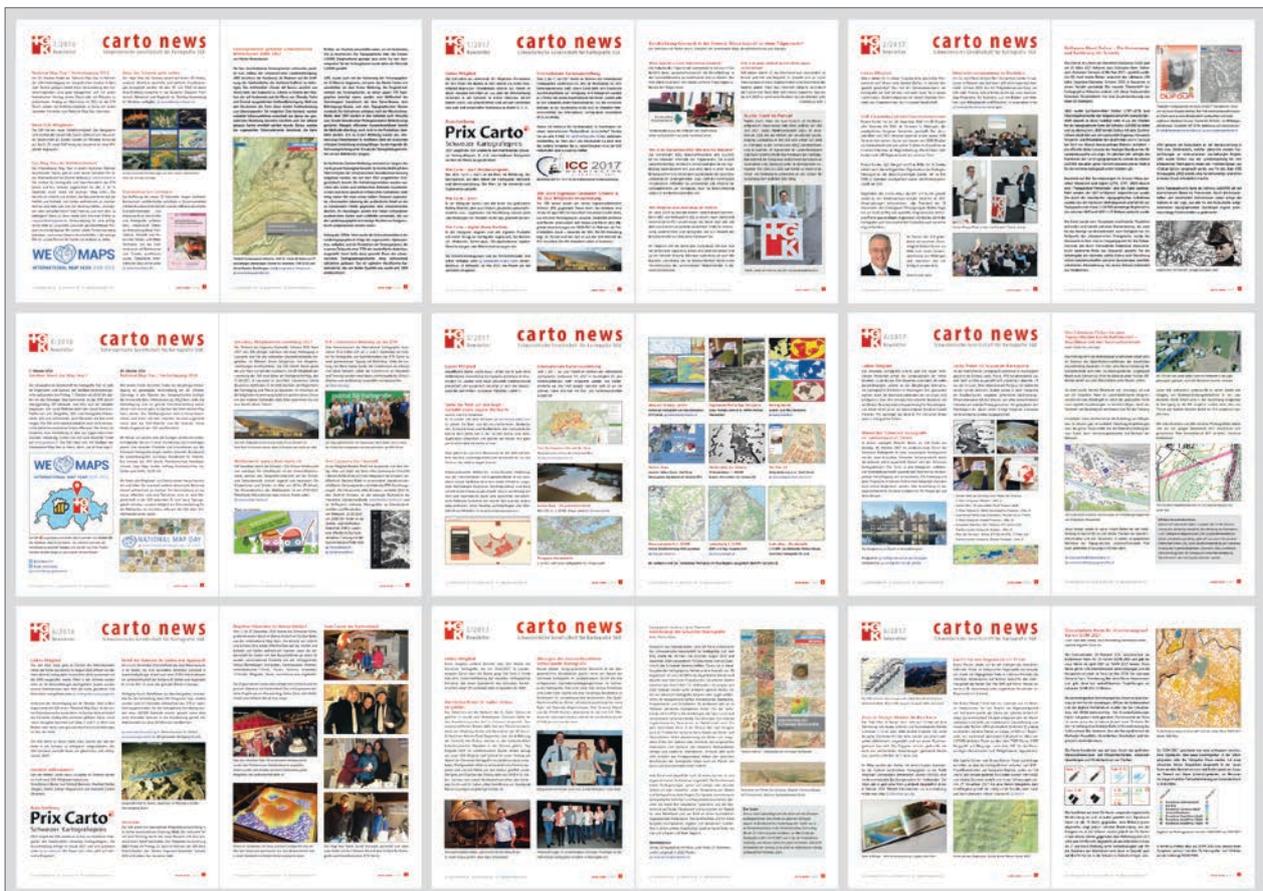
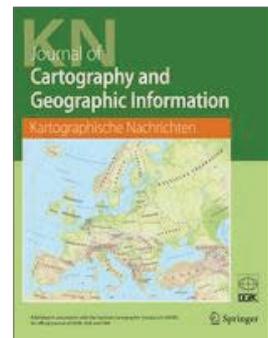
Cartographic News for Members

Up until 2018 Stefan Räber was responsible for the SSC bulletin “carto news”. This publication included short reports on the most important activities in our society and from the world of cartography, all presented to our readers on four A4 pages. This also included information on events, reports on products (e.g. new publications), companies and people with a cartographic connection. The “carto news” was published six times a year and was sent to our members per post together with the KN journal from our sister society in Germany as well as any current supplements.

As of autumn, 2018, the SSC Executive Board has opted for a new news and communication concept. News is now being sent to SSC members via the following channels:

- KN – Journal of Cartography and Geographic Information: Containing reports with long term importance as well as offering an overview of the societies work.
- SSC newsletter sent by e-mail: A fast moving overview of current as well as short-term announcements from the committee and normal members.

KN – Journal of Cartography and Geographic Information is the only cartographic journal covering the German language area. It is a joint periodical publication of the DGfK, ÖKK, and SSC. As of 2019 the KN journal is published by Springer. →



The “carto news” was mailed bimonthly to the society’s members with a run of 360 copies in German language each.

Website, Social Media

Indispensable information- and communication platforms also for our society.

Websites

The SSC currently owns the following domains, which contain the term cartography in German, French and English spelling. Most of the content does however appear in German:

- kartografie.ch
- kartographie.ch
- cartographie.ch
- cartography.ch
- prixcarto.ch

Social Media

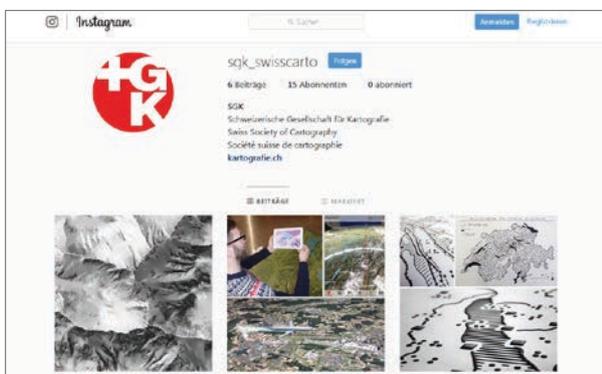
In addition to the SSC website, the SSC operates a Facebook (since 2012), a Twitter (since 2013) and an Instagram account (since 2019). These are also integrated or linked on the cartography.ch homepage and serve as additional information platforms. Information is not only provided in German, but also partly in English or French. Information on events, new map products, services, etc. can thus be announced promptly and linked with web links to our or external websites for more detailed information. In this way, the SSC ensures that it is also visible outside the relatively small Swiss cartography scene. The social media addresses are:



The SSC website with the new responsive design launched in 2016.



The SSC on Facebook: [Kartographie](https://www.facebook.com/kartographie).



The SSC on Instagram: [sgk_swisscarto](https://www.instagram.com/sgk_swisscarto).



The SSC on Twitter: [@sgk_swisscarto](https://twitter.com/sgk_swisscarto).

Working Group on the History of Cartography

by Martin Rickenbacher

The Swiss working group on the history of cartography is a section of the Swiss Society of Cartography (SSC) and co-founder of the mutual German-speaking working group on the history of cartography (D-A-CH). Members of the working group are active as editors of the journal for the history of cartography "Cartographica Helvetica", some of them since its first issue in 1990. Two members act as a web team that supports www.kartengeschichte.ch, an internet platform publishing detailed information on the history of cartography of the German-speaking countries, including all links to the retro-digitised online version of "Cartographica Helvetica". The working group was initiated by Prof. Arthur Dürst in 1977, and is chaired since 2000 by Martin Rickenbacher. Martin is also the national representative for Switzerland to Imago Mundi in London.

Activities 2015–2019

After several milestones of Switzerland's history of cartography which have been commemorated in the former report, the last years passed in a more "normal" state. Nevertheless, since summer 2015, eight meetings have been held or are scheduled, for details see www.kartengeschichte.ch/sgk/d-aktuell.html:

- Freiburg in der Sammlung Jean Dubas (Gutenberg-Museum Freiburg, 2015).
- Das Kartenmanuskript von J.E. Müller 1805 (Historisches Museum Obwalden Sarnen, 2015).
- Survey and Mapping in Basel around 1600 (→ Figures 1-2) (Universitätsbibliothek Basel und Museum Kleines Klingental, 2016).
- Freiburg à la carte (→ Figure 3) (Kantons- und Universitätsbibliothek Freiburg, 2017).
- Die Hochrheinregion auf historischen Karten (→ Figure 4) (Museum zum Schiff Laufenburg, 2017).
- Messtisch oder Phototheodolit? (swisstopo Wabern, 2018).
- Mapping – Retracing – Encountering. The Tibet Collections of Heinrich Harrer and Peter Aufschnaiter (→ Figures 5-6) (Ethnographic museum, University of Zurich, 2019).
- Kosmos in der Kammer (Schatzkammer der Zentralbibliothek Zürich, 2019).



Figure 1: "Survey and Mapping in Basel around 1600", exhibited in 2016.



Figure 2: Merian map – bird's-eye view from Basel, 1615. [www.merian.bs.ch](http://merian.bs.ch) (screenshot).



Figure 3: "Freiburg à la carte". Map Exhibition in 2017.

These meetings were usually attended by 20–40 individuals and consisted in general of guided visits through exhibitions, whereas during other meetings presentations/colloquia on themes related to the history of cartography and of maps were held.

Swiss map historians also regularly attended the “Kartographiehistorisches Colloquium D-A-CH” of the German speaking countries in Vienna (2016) and in Gotha (2018) and held several presentations. They also participated in the International Conferences on the History of Cartography (ICHC) in Antwerp (2015) and in Amsterdam (2019). At the International Cartographic Conference (ICC) in Washington DC (2017), a paper related to historical maps of Switzerland was presented, and as well at the symposia of the ICA Commission on the History of Cartography in Washington DC (2017) and in Utrecht (2019).

In 2017, the map collection of the Dr. Albert Knoepfli Foundation, containing approximately 8500 maps from 1176 to 2013, was donated to the official archives of the Canton Thurgau, and the metadata to this collection are accessible through <https://query-staatsarchiv.tg.ch/>.

On the occasion of the 100th anniversary of the professional association of the Swiss Engineer Geometers in April 2017, the Council of European Geodetic Surveyors honored General Guillaume-Henri Dufour, the founder of the Federal Topographical Office, as “Surveyor of the Year” (→ Figure 12).

The Swiss Federal Office of Culture decided to reduce as of 2019 the contribution of the Confederation for the Swiss Alpine Museum (alps) (→ Figure 14) by more than 75 percent. Fortunately, this decision was corrected in December 2018 by the Swiss Parliaments by approving the alps’ new function as a national network in alpine matters. This means that the financial ruin of the museum could luckily be prevented.

The number of old maps made available in digital form by Swiss archives and libraries through web-based map services has significantly increased since the last National Report of 2015. Four university libraries supply map data to the platform www.e-rara.ch, which currently (2nd June, 2019) has about 5140 maps online (plus 102%, www.e-rara.ch/maps/nav/classification/3273917). The Zentralbibliothek Zürich contributed 2064 maps (plus 116%), the ETH-Bibliothek 1356 (plus 129%), the Universitätsbibliothek Basel



Figure 4: Hienerwadel plan from 1780, exhibited in the “Museum zum Schiff” in Laufenburg (Photo: Richard Kaiser).

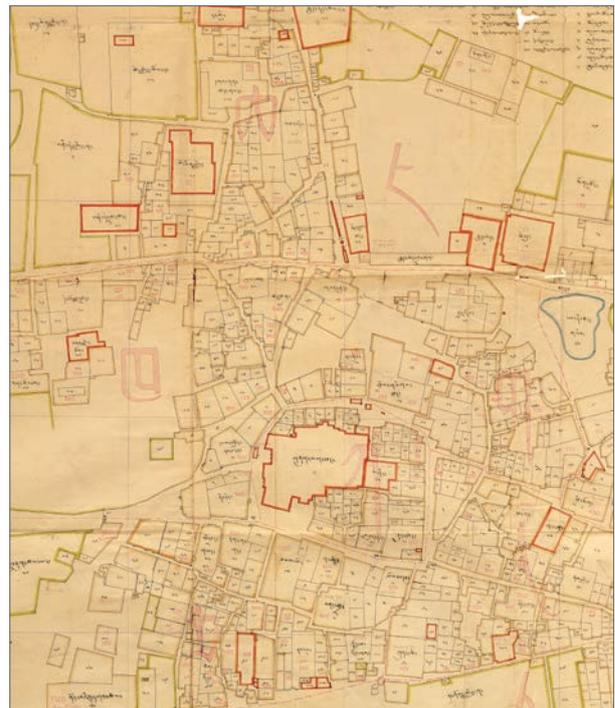


Figure 5: Inner City Map of Lhasa by Peter Aufschnaiter, scale 1:1,220. Ethnographic museum, University of Zurich.



Figure 6: Meeting of the working group on 23rd of May 2019 at the Ethnographic Museum Zurich, with its exhibition “Mapping – Retracing – Encountering. The Tibet Collections of Heinrich Harrer and Peter Aufschnaiter” were visited.

913 (plus 2%), and the Universitätsbibliothek Bern 803 (plus 792%). These numbers are still increasing. Under www.e-manuscripta.ch/maps/nav/classification/642361, approx. 1230 maps (plus 23%) are also online.

The assets of the Swiss map libraries has also increased in paper form: The Zentralbibliothek Zürich reported notable acquisitions such as a previously unknown aquarelle painting of the so-called St. Gallen Globe from the last quarter of the 16th century (2015) (→ *Figure 7*), and the so-called “Salamanca map of Switzerland” from 1555, the first north-oriented and in copper engraved map of Switzerland, from which only two other copies are known (→ *Figure 8*).

The central Swiss homepage for map libraries and archives www.kartenportal.ch refers at present to 350,000 current and old printed maps held by Swiss libraries. They can be retrieved by different attributes and a map-based geographical search facility as well.

The Swiss Federal Office of Topography swisstopo continued its programme on the preservation of historical imagery data. Whereas 275,000 aerial photographs are already online, about 55,000 terrestrial photographs have been integrated in the LUBIS-viewer, a web-based information system (<http://map.lubis.admin.ch>). They were used between 1915 and 1950 for the topographical flattening of the alpine regions in regard to the Swiss National Map 1:50,000 (→ *Figure 9*).

swisstopo also published a country-wide orthophoto mosaic from a ground resolution of 1 m, produced with about 4200 aerial photographs taken by the US Air Force in summer 1946 during the Casey Jones Project (<http://map.geo.admin.ch> → SWISSIMAGEHIST1946). This data set is a rich source for studies in landscape change (→ *Figure 10*). With this digital photomap, the ideas that motivated our former American colleagues to photograph the entire Switzerland became completed.

Figure 9: A stereo pair of terrestrial photographs from the station Unter Gabelhorn Süd towards the Matterhorn, surveyed on 16.7.1930 by a phototheodolite WILD with a focal distance of 237 mm on a glass plate format of 10x15 cm (swisstopo, image collection, Inv. Nr. 349776 (left) and 349752 (right)).

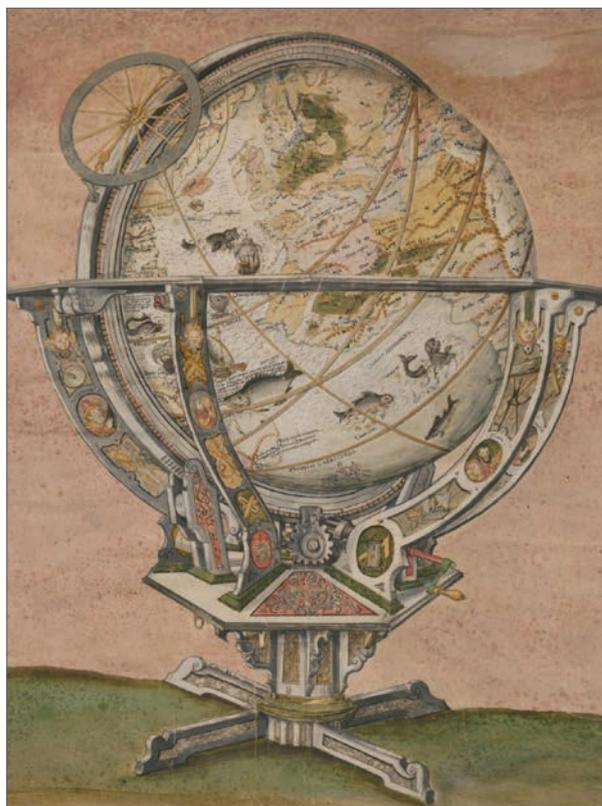


Figure 7: Aquarelle painting of the so-called St. Gallen Globe. www.e-manuscripta.ch/doi/10.7891/e-manuscripta-34116



Figure 8: Iodoco à Meggen Lucernati Praetorianorum Praefecto: Helvetios olim vir clariss. nunc Suiceros, Gallerorum gentem... – the “Salamanca map of Switzerland”, printed in Rome 1555, purchased in 2018 by the Zentralbibliothek Zürich. <https://doi.org/10.3931/e-rara-73286>



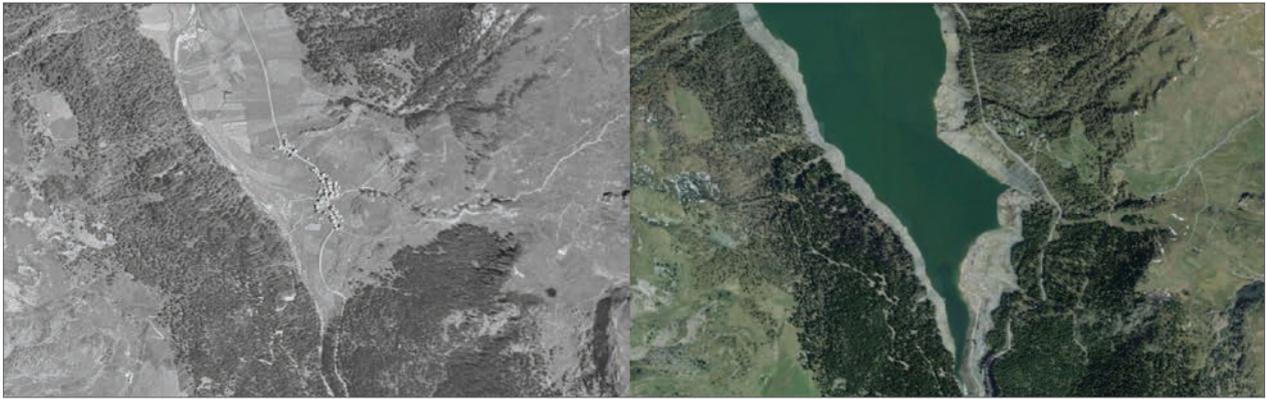


Figure 10: Comparison of landscape change in Marmorera (Grisons): SWISSIMAGE HIST 1946 (left) shows the old village. Two years later, the Communal Assembly licensed the Electric Power Producer of the city of Zurich to construct an earth dike. In 1954, the lake was filled and the old village disappeared. The current version of SWISSIMAGE shows the lake and the new built village (<https://s.geo.admin.ch/8249da5166>, © swisstopo).

Further activities of the working group and its members are:

- Madlena Cavelti's web-based "Kartenportal Zentralschweiz" (Map portal Central Switzerland) is available online (→ Page 48).
- The new concept of "Cartographica Helvetica", realised in 2015, was successful and up to the end of 2019, a total of 9 issues will have been released, each focussed on Swiss themes (→ Page 29).
- In the context of the International Map Year presented by the Zentralbibliothek Zürich and the Swiss Society of Cartography:
 - 70 map blog posts written by Markus Oehrli.
 - 5 presentations, e.g. Oliver Gygi's talk "Time travel through old maps and panoramas with smartphones and tablets" (→ Figure 11).
- The 14th Symposium of the International Coronelli Society for the Study of Globes will take place from 2nd October to 5th October 2019 in cooperation with the Swiss National Museum, the Abbey Library of St. Gallen and the Zentralbibliothek Zürich in the National Museum of Zürich.

Various books and articles on historic map topics have been published, for example:

- Bewes, Diccon: Around Switzerland in 80 maps. Baden: Hier und Jetzt, 2015 (published also in French and in German). → Figure 13
- Historisches Museum Basel HMB (Ed.): Basel aus der Vogelschau. Der Stadtplan von Matthäus Merian d. Ä. aus dem Jahr 1615/17. Basel: HMB Magazin Nr. 4, 2015.
- Hufschmid, Thomas; Pfäffli, Barbara (Ed.): Wiederentdeckt! Basilius Amerbach erforscht das Theater von Augusta Raurica. Basel: Schwabe, 2015.
- Ruch, Ralph A.: Kartographie und Konflikt im Spätmittelalter. Manuskriptkarten aus dem oberrheinischen und schweizerischen Raum. Zürich: Chronos, 2015.
- Schöller, Bettina: Wissen speichern, Wissen ordnen, Wissen übertragen. Schriftliche und bildliche Aufzeichnungen der Welt im Umfeld der Londoner Psalterkarte. Zürich: Chronos, 2015.

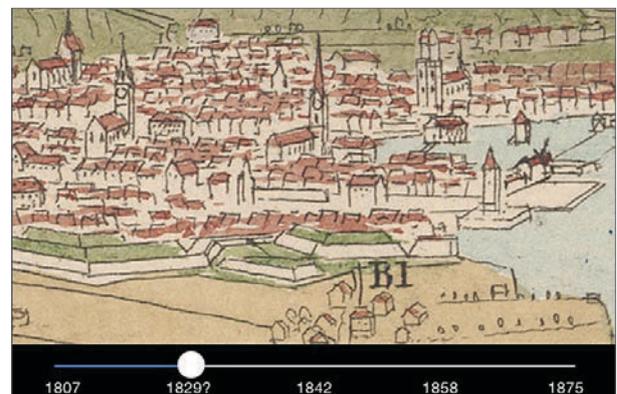


Figure 11: Screenshot of a Map App presented by Olivier Gygi at the Zentralbibliothek Zürich on 18th February 2016.

Figure 12: Special edition "European Surveyor of the Year 2017" – Guillaume-Henri Dufour".

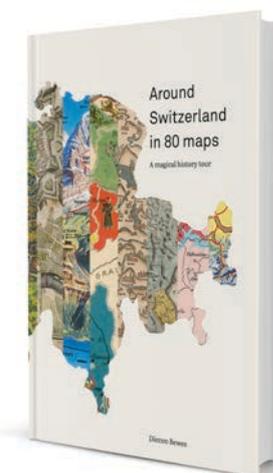
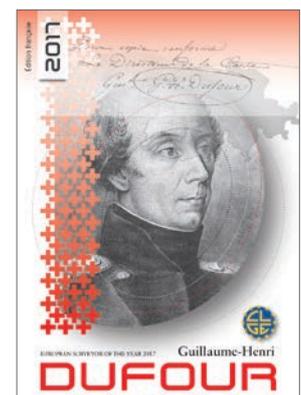


Figure 13: Book presentation "Around Switzerland in 80 maps" by the author Diccon Bewes at the SSC Symposium in Muttenz on 4th November 2015.

- Bürgi, Andreas (collaboration: Philipp Flury and Claudia Hermann): Eine touristische Bilderfabrik: Vergnügen und Belehrung am Luzerner Löwenplatz, 1850–1914. Zürich: Chronos, 2016.
- Mathieu, Jon (Ed.): Geschichte der Landschaft in der Schweiz. Zürich: Orell-Füssli, 2016.
- Arbellay, Caroline; Delley, Raymond; Jurot, Romain; Minder, Patrick (Ed.): Atlas de la ville de Fribourg de 1822 à nos jours. Atlas der Stadt Freiburg von 1822 bis heute. [Fribourg]: Bibliothèque cantonale et universitaire de Fribourg, [2017].
- Cholier, Alexandre: Les dimensions du monde. Élisée Reclus ou l'intuition cartographique. Genève: Bibliothèque de Genève, 2016.
- Gamper, Rudolf; Joachim Vadian, 1483/84–1551 – Humanist, Arzt, Reformator, Politiker. Zürich: Chronos, 2017.
- Garin, Marcel; Evard, Maurice: Maurice Borel (1860–1926), Cartographe. Le Locle: Nouvelle Revue neuchâteloise 134, 2017.
- Les amis de la fondation "Mémoire Albert Cohen" Corfou (Ed.) : Guillaume Henri Dufour – Les années à Corfou 1810–1814. Corfou, 2017. (Exhibition catalogue, special edition in limited edition for "Les Salons du Général Dufour").
- Schaller, Pascale; Schiesser, Alexandra: Die Vermessung der Sprache: zu Geschichte und Bedeutung des Sprachatlas der deutschen Schweiz. Bern: Schweizerische Akademie der Geistes- und Sozialwissenschaften, 2017. (Swiss Academies Reports vol. 12, No. 4, 2017).
- Tanner, Karl Martin: Emanuel Büchels Kanton Basel um 1750. Liestal: Verlag Basel-Landschaft, 2017. (bild-geschichten-bl 8).
- Via Storia – Stiftung für Verkehrsgeschichte (Ed.): Wege und Verkehr in der Literatur / Chemins et transports dans la littérature / Percorsi e trasporti nella letteratura. Wege und Geschichte 2017/1. Zürich: Chronos, 2017.
- Zumbühl, Heinz J.; Nussbaumer, Samuel U.; Holzhauser, Hanspeter; Wolf, Richard: Die Grindelwaldgletscher. Kunst und Wissenschaft. Bern: Haupt, 2016.
- Fuchs, Stefan: Herrschaftswissen und Raumerfassung im 16. Jahrhundert. Karten und Landesaufnahmen im Dienste des Nürnberger Stadtstaates. (Medienwandel, Medienwechsel, Medienwissen Band 35). Zürich: Chronos, 2018.
- Topkapi Palace Museum / Ptolemaios Forschungsstelle (Ed.): Handbuch der Geographie – Manual of Geography. (Facsimile-Edition of the Codex Seragliensis GI 57). Istanbul: Boyut, Basel: Schwabe, 2017.
- Bürgi, Andreas: Urwelten und Irrwege. Eine Geschichte des Luzerner Gletschergartens und der Gründerfamilie Amrein, 1873–2018. Zürich: Chronos, 2018.
- Several members of the working group made contributions to the international project The History of Cartography (Volume 4: Cartography in the European Enlightenment (in press since January 2018) and Volume 5: Cartography in the Nineteenth Century (forthcoming)).



Figure 14: Swiss Alpine Museum (alps) with the Bernese Oberland relief model, made by Simon Simon between 1886 and 1914 at the scale of 1:10,000. Dimensions 480x525 cm.

The above report proves, that in Switzerland, the history of cartography is cultivated on a rather high level. The meaning of the cartographic heritage has been clearly recognized by key institutions as libraries, archives and the national mapping agency.



Martin Rickenbacher

Since 1995, he chairs the very active SSC Working group on the history of cartography. Martin has written numerous publications on the history of Swiss cartography. He is the author of "Napoleon's maps of Switzerland" (2011). From 1989 until his retirement in 2019, he has worked as a research assistant at swisstopo in the field of topography, where he was responsible, among other things, for promoting the application of the historical holdings and dealing with special questions in the historical field.

International Map Year 2015–2016 in Switzerland

The International Cartographic Association (ICA), supported by the UN, proclaimed the 'International Map Year' for the years 2015 and 2016.

On the occasion of the "International Map Year", and to promote Swiss cartography and cartographic products, the Swiss Society of Cartography (SSC) together with their corporate members ETH Zurich, FHNW, Esri Switzerland, swisstopo, Zentralbibliothek Zürich, and others, organised more than 20 map events and released several publications between August 2015 and December 2016. Amongst others, the SSC published a special Map Year issue of the Journal "Géomatique Suisse". Various aspects of map production and their different fields of application in Switzerland were presented in the issue.

Cartography Prizes and National Map Day

The Society organised two symposiums at the beginning and the end of the International Map Year. At the first Map Year symposium, the SSC awarded the bi-annual cartographic prizes "Prix Carto". Due to the occasion of the Map Year a new prize category especially for students was established. The second Map Year symposium took place on 29th of October 2016 – and was promoted as "National Map Day". Cartographic enterprises and institutions presented their products and services in talks and in an exhibition. Both events were very well received.

70 Maps in 70 Weeks

A special Map Year blog, under the auspices of SSC and Zentralbibliothek Zürich, raised much attention from the public. 70 maps were presented, one for each week of the "International Map Year". They conveyed a cross-section of Swiss map production. The blog offers extensive background information about Swiss cartography and is spiced with a pinch of humour.

Map Runners

In addition the SSC organised a team – outfitted with Map Year T-shirts – for one of the biggest and most popular running events in Switzerland with around 14,000 participants: The "Map Year Runners", a team of 14 cartographers finished the 116km long race in and around Zurich. Sara Fabrikant, Vice-president of the ICA was also part of the team.



Map Year issue "Géomatique Suisse".



National Map Day on 29th October 2016: Map presentations.



Map Year Runners celebrating their successful run.

Map Year and GeoBeer

Another – and probably one of the most successful – events organised in the frame of the International Map Year was the GeoBeer #14 event with more than 150 attendees. The event was organised and hosted by ETH Zurich. René Sieber talked about a new interactive map on beer production in Switzerland, which is also featured in the “Atlas of Switzerland”. ↓



Map Year Wine

As a culinary complement to the Map Year and to celebrate our genuine love for maps, the SSC launched a special souvenir on the occasion of the Swiss National Map Day in October – a Map Year wine! The production of this fine red Swiss wine was strictly limited to 50 numbered bottles and it was enjoyed by both map and wine lovers alike. The very first bottle being presented to ICA Vice-president Sara Fabrikant. →



Christmas Market Stall

The Map Year festivities in Switzerland, which were altogether a huge success, came to an end with one last highlight, right in the very heart of Zurich: A special map stall at one of the biggest Christmas Markets nationwide. Over 80 different cartographic products were on display, for sale or even given away for free – under the Map Year motto “WE LOVE MAPS”. There couldn’t be a better place to meet literally thousands of people in a cosy atmosphere and to promote the cause of cartography!



Map Year Christmas Market stall, December 2016.



Cartographic products on display.

Map Year Impressions

National Map Day in Bern



Map Year GeoBeer in Zurich



Map Year Items

To better promote the International Map Year and its ideas amongst SSC members and the general public, the society also produced some promotional materials. One of the ideas was a special webstamp designed for the Map Year. It was used on correspondence from the society and was a pleasant surprise for the recipients when they looked at the envelope. A further item was a Map Year button produced for a give-away at various Map Year events.



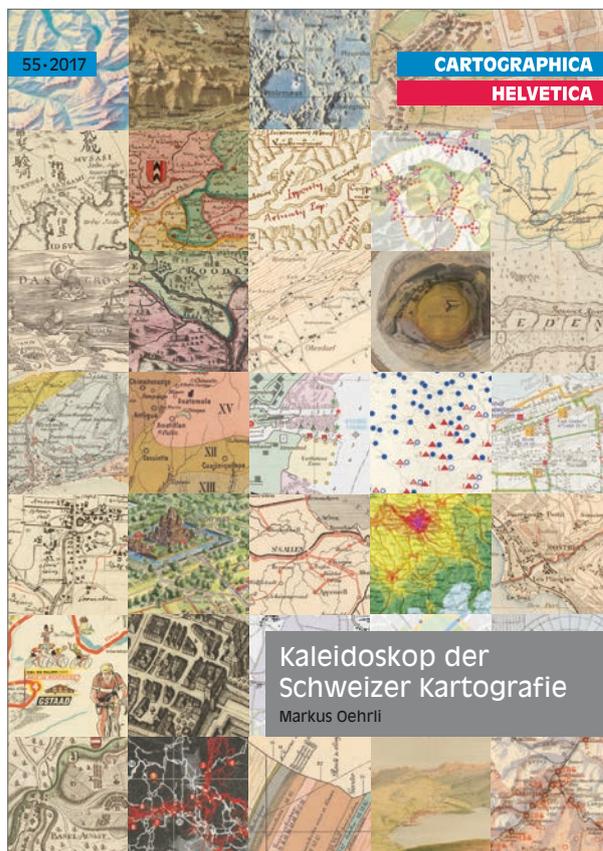
by Hans-Uli Feldmann

Kaleidoscope of Swiss Cartography

In 2017, Cartographica Helvetica, the leading German-language journal for map history, devoted a 64-page issue to a map blog, which was part of the International Map Year in Switzerland (→ Page 26). Under the title “Kaleidoskop der Schweizer Kartografie” (“Kaleidoscope of Swiss Cartography”), a selection of 58 documents from the blog were printed in the issue in a new way, both in terms of graphics and content. In addition, this issue of Cartographica Helvetica was published in digitised form on the Swiss journal repository e-periodica.ch.

New English Edition for the ICC 2019

In order to meet the great demand for the widely acclaimed map blog and the printed “Kaleidoskop der Schweizer Kartografie” issue, which sold very well, the SSC decided to publish the blog in English in 2019 to mark its 50th anniversary. This will make the content accessible to an even wider public. There is hardly a better occasion to announce and publish the English version of the blog than during a presentation to an international audience of experts at ICC 2019 in Tokyo.



Map of Japan, Johann Caspar Scheuchzer, 1727.

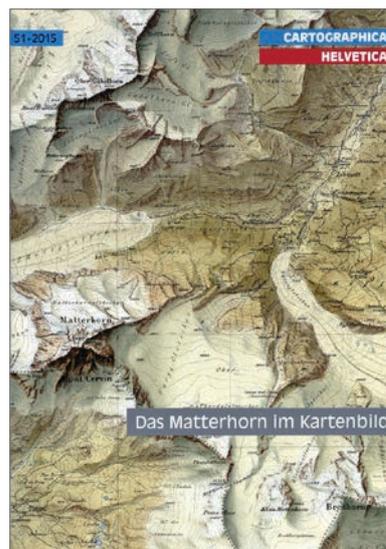
One of the featured map items, accessible at e-rara.ch: <https://doi.org/10.3931/e-rara-34724>.

Cartographica Helvetica, Issues 2015 – 2019

Since 1990, the Working group on the “History of Cartography” publishes the journal Cartographica Helvetica. It provides information on every aspect of early maps, their history as well as production methods. The journal is published bi-annually in German, with summaries in English and Résumés en Français. Sale by subscription or as single issues.

More information on www.kartengeschichte.ch

- Volume 51 (2015): The Matterhorn on maps.
- Volume 52 (2016): Fortification maps. Secret military maps in Switzerland 1888 – 1952.
- Volume 53 (2016): Travel maps in Switzerland. From the beginnings to the 20th century.
- Volume 54 (2017): Guillaume-Henri Dufour: Surveying and Mapping of Switzerland.
- Volume 55 (2017): Kaleidoscope of Swiss Cartography.
- Volume 56 (2018): Maps of the Canton of St. Gallen.
- Volume 57 (2018): Cartography of Central Switzerland.
- Volume 58 (2019): Missionary cartography.
- Volume 59 (2019): Aerophotography and -maps by the Swiss Federal Office of Topography.



Volume 51, 2015



Volume 52, 2016



Volume 53, 2016



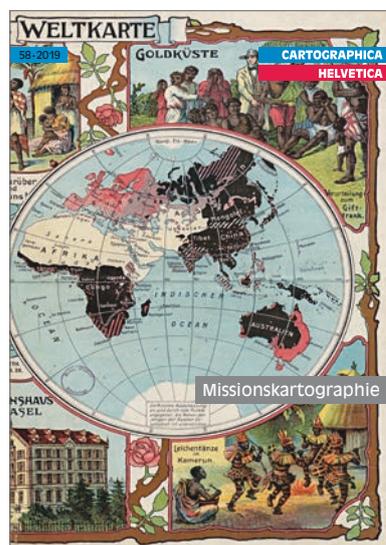
Volume 54, 2017



Volume 56, 2018



Volume 57, 2018



Volume 58, 2019

Training at swisstopo

by Stefan Arn

Training in Geomatics

The job description Geomatician has been in force for around ten years. The Federal Office of Topography swisstopo has consequently summarised the compulsory performance targets in training modules and presented them in a model course. This principle allows maximum flexibility, consistency, planning security and overview. In addition, modules can be constantly adapted to requirements of market or replaced by others, without affecting the entire structure. The modules are described in detail and are made available to the students in the wiki software Confluence. Proven modules are constantly updated with new ones, such as the programming language Python. In another module, the students purchase data from a geoportal, transform them in an open source GIS, derive a walking route along a cantonal border and create a hiking map.



A geomatics student from swisstopo during his internship at the Surveying Office of the City of Bern.



Apprentices with their trainer – assessing their own work is important for acquiring skills. (Photos: Béatrice Devènes).



Group picture during an excursion in Leuk. (Photo: Stefan Arn).

Four Year Training

The training lasts four years. swisstopo trains around twenty apprentices. Therefore, five Geomaticians complete the basic vocational training at swisstopo every year. The degree includes an individual practical work as well as theoretical exams.

Outlook

In the upcoming years, another reform of the job description is planned in Switzerland. It has to be checked whether the occupation should continue to be subdivided into the three areas of Cadastral surveying, Geoinformatics and Cartography, or whether other forms are also available. A flexibly interpretable and modular education plan, the use of synergies, partnerships, the strengthening of learning places as well as the creation of a basic school year can offer further approaches.



A geomatics student from swisstopo during her internship at the Surveying Office of the City of Bern.

(Photo: Béatrice Devènes).

Training at the Federal Statistical Office

by Joël Gasche

Cartography Training

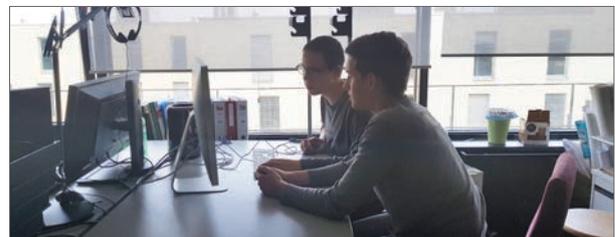
Since 2012, the Federal Statistical Office (FSO) has been training Geomaticians with a specialisation in cartography. The training programme was developed in close collaboration with swisstopo, which has a long tradition in the apprenticeship of cartographer. In 2016, after four years of apprenticeship, the first two cartographers successfully finished their training.

The cartography production unit of the FSO is composed of five cartographers, two of them in charge of training. Other services are also involved in the training and provide other skills (pre-press and layout, geodatabase management, and aerial photographic interpretation, etc.). Currently, the FSO is training two apprentices and we wish to pursue this vocational training in the future with one apprentice every two years.

The structure of the training programme is modular and covers all traditional topics and issues of “general” cartography. Among other things, we train our apprentices in topographic cartography (in close collaboration with swisstopo), cartographic generalisation, cartographic projection, graphic design and gestalt, and typography, etc. Of course, because of the activity of our office in official statistics, the focus of our training concentrates on data visualisation. Apprentices learn to analyse and process data in order to transform it into information that can be communicated. They learn the principles of visual communication of information and of the semiology of graphics, and the construction rules for thematic maps and charts.

They learn to use traditional graphic editors (e.g. Adobe Creative Suite), Geographic information systems such as ArcGIS, QGIS and MAPublisher, and other chart production applications.

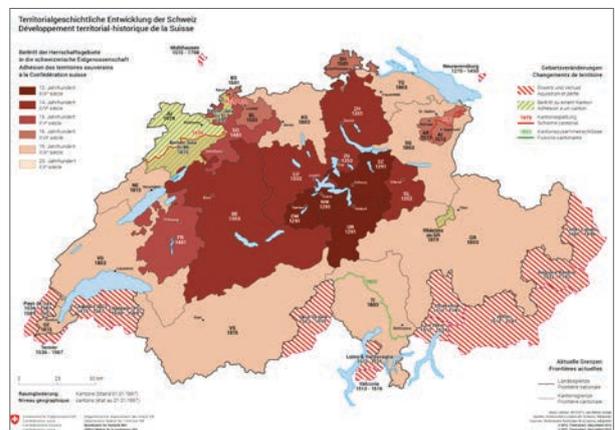
During the second year of apprenticeship, they are able to start contributing to the map production and deliver their first thematic maps.



Cartography apprentices at FSO meeting with their instructors.



FSO apprentices presenting their map results to children during the “National Future Day” in 2018.



Historical map of Switzerland (territorial evolution) produced by an apprentice during the third semester at FSO.

GEOSchool Day

by Christian Sailer

Promoting Geomatics

The GEOSchool Day is a special event, part of the GEO-Summit, the biennial congress and trade fair for geoinformation and geoinformation technologies. Over the two days, the GEOSchool Day connected professional experts and universities with the generation of tomorrow. A team of motivated people from universities, administrations, private companies and social media reporters were committed to promote the field of geoinformation. Young keynote speakers talk about their lives as game developers or development aid workers and showed the value of geoinformation in their work in a vivid and passionate way.

A huge workshop with event stations allowed both students and teachers to experience various topics and state-of-the-art technologies and applications. It promoted the analyse, experiment and discussion on site with professionals and gave them an insight into the importance of the professional sector for the functioning of everyday life. To conclude, the winning school class was chosen by way of a smartphone game. The atmosphere and the noise level peaked during this final and the winning class was honoured with applause, jubilation and received a special prize sponsored by the Swiss Society of Cartography.

The GEOSchool Day is enjoying ever increasing popularity. In 2018, more than 450 pupils and 60 teachers took part in this event in Bern.



@geoschoolday



@geoschoolday



Getting to know the profession of geomatics in a playful way.

www.geoschoolday.ch



ETH Zurich, Institute of Cartography and Geoinformation

by Lorenz Hurni and Stefan Rüber

Long Tradition in Academic Cartography

The Institute of Cartography and Geoinformation consists of two professorships with several research groups employs approximately 40 people.

The Institute of Cartography was founded in 1925 by Professor Eduard Imhof. It is the world's oldest university institute for cartography. Eduard Imhof is one of the founders of modern academic cartography.

Today, the Institute is striving to uphold its leading position in cartography by further developing its existing knowledge to incorporate new areas of application, particularly interactive cartographic applications. Geoinformation engineering deals with the analysis, representation, modelling and visualisation of spatiotemporal decision-making processes and integrates models like these into mobile geoinformation services and spatial information technologies.

Students are taught how to acquire, model and visualise geoinformation, as well as how to use it for general and domain-specific applications of spatial information systems.

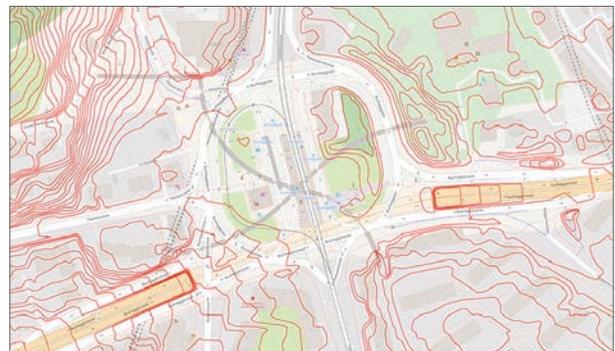
The courses in cartography are part of the Bachelor's in Geomatics and Planning or the Master's in Geomatics. The subjects can also be taken as a minor in the frame of geography studies at the Universities of Bern and Zurich.

New in Teaching: MOOC

"Introduction to Web Cartography" (Part 1 and 2) is the first cartographic MOOC at ETH Zurich. Through a series of high-quality video lectures and various types of exercises structured in 10 thematic blocks (5 in Part 1 and 5 in Part 2), they will provide the students with the theoretical background, knowledge and practical skills that are necessary in order to successfully design and create interactive cartographic products based on modern web technologies.

Research

The chair of Cartography conducts research in cartographic visualisation with a focus on cartographic production technologies, topographic cartography (relief representation), thematic cartography, atlas cartography (school atlases, national atlases) and interactive web cartography.



Project: Refined isolines for a multitude of different purposes.



Augmented Reality view of the population density map of Europe with pie charts. Interdisciplinary project work, 2018.

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FHNW Institute of Geomatics

by Susanne Bleisch

Teaching and Research

The Institute of Geomatics (IGEO) at FHNW University of Applied Sciences and Arts Northwestern Switzerland is active in four areas – academic education, applied research and development, further education and services. The institute offers two academic degrees, a Bachelor of Science in Geomatics and a Master of Science in Engineering with specialisation in Geomatics. A key strength of IGEO is, that it covers the whole Geomatics process chain from data capture, modelling, and analysis through to visualisation in both the degree offerings as well as in its diverse research and development projects. Two new professorships were established since 2014, one in Geovisualisation and Visual Analytics and one in Geographic Information and Computer Graphics. Professors in Applied Geographic Information Science, Geodesy and Navigation, Geodetic Metrology and Geosensors as well as Mathematics and Statistics were retired and replaced in the last four years. Research at the IGEO is application-oriented and generally co-financed by industry partners. This ensures translation and implementation of research results and scientific knowledge into products and services. These close collaborations with industry are also employed for teaching by offering student projects within research and development activities both at Bachelor and at Master level.



In 2018, the IGEO moved to the 10th floor of the new FHNW campus in Muttenz.

Selected Research Activities in Geovisualisation and Visual Analytics

“Alters-Atlas” (Atlas of the Ageing Society)

<http://altersatlas.ch>

The atlas of the ageing society (Alters-Atlas in German) is an interactive platform illustrating data and information related to age and the ageing society (→ Figure 1). To support diverse content and audiences the story network principle was developed. It embeds annotated visualisations into a network of information to allow data-based story-telling. Data sources for the atlas include statistical data, alters survey data as well as data and results from different projects concerned with the ageing society.

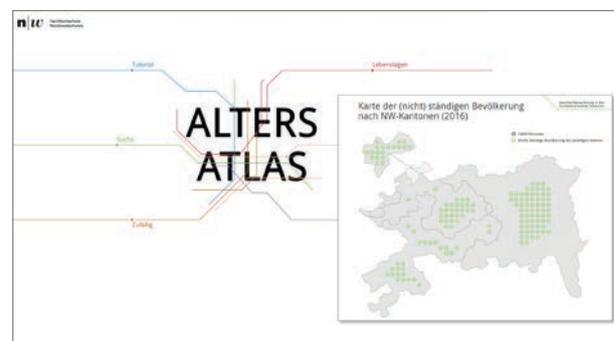


Figure 1: The atlas of the ageing society (Alters-Atlas) employs the story network principle to visually and textually portray selected information on cards that are linked together to tell stories.

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igeofhnw.blogspot.com

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Augmented Reality Applications

The IGEO has a reputation for innovative research in 3D geoinformation technologies. Recently, a number of research projects have explored and implemented different augmented reality apps (for examples → Figure 2 and 3), specifically also focusing on the suitable integration and display of 2D and 3D geographic information. Image-based indoor navigation and orientation; learning and gaming as well as integrating of real-time information are some of the challenges tackled.

Visual Analytics and Interactive Visualisation

Another primary field of research is the tighter integration of data analysis and visualisation, visual analytics. A project evaluated the walkability of a Swiss town from the perspective of elderly women. Analysed walkability indices were interactively integrated with qualitative statements of the interview participants and, for example, represented in glyph displays (→ Figure 4). Other projects employ statistical methods and machine learning approaches to analyse, for example, areal- or thermal imagery of buildings and to integrate them with visual methods for further exploration.

Figure 4: Screenshot of an interactive glyph display of the walkability parameters greenery and public transport accessibility combined with gridded information from qualitative interview statements in relation to the same or similar dimensions of walkability in the background. ↓

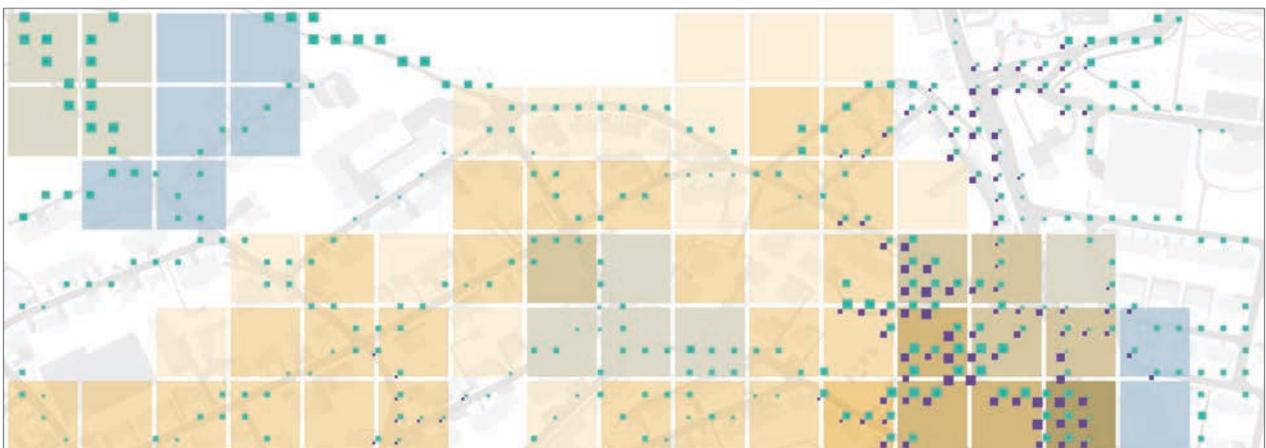


Figure 2: A combined view of the results of a student project developing an Augmented Reality Prototype for exploring statistical information in the region of Baselland. The data can be spatially queried with the App by using the smartphone camera and a printout map of the area. That results in the map being augmented with statistical data for exploration, comparison or answering quiz questions.



Figure 3: Augmented Reality: Overlaying Geodata and references to Spelterinis areal imagery on a 6.25 x 4 m Orthophoto in the Swiss National Library.

HSR University of Applied Sciences Rapperswil

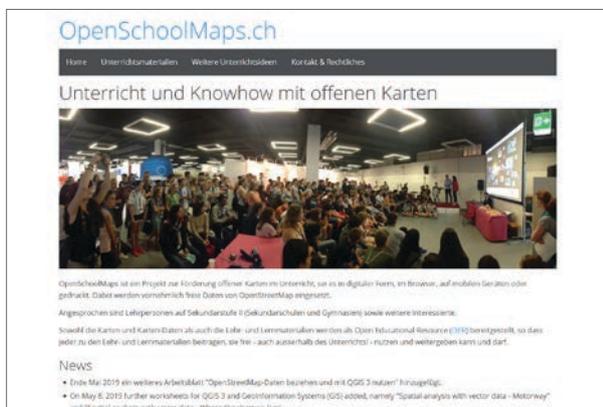
by Stefan F. Keller

Teaching in Spatial Development and Landscape Architecture

The HSR University of Applied Sciences Rapperswil is a university in the eastern part of Switzerland offering academic education, applied research and development, continuing education as well as services.

In recent years, teaching has been continuously improved, among other things with new forms of learning and teaching. Geographic Information Systems (GIS) are no longer simply tools for specialists but are being integrated into the teaching of spatial development and landscape architecture. In addition, a Center of Competence Geoinformation has been established to bundle forces in the university. For example, it operates the portal geodata2use, which allows students easy access to geodata and collaborative work. Innovative students are further motivated with the EDC GIS Award.

Then, a small project, OpenSchoolMaps.org, has been established for students, self-learners and instructors. The project mainly uses open data from OpenStreetMap which are processed by free map services and open source GIS. The maps and map data as well as the teaching and learning materials are provided as open educational resource.

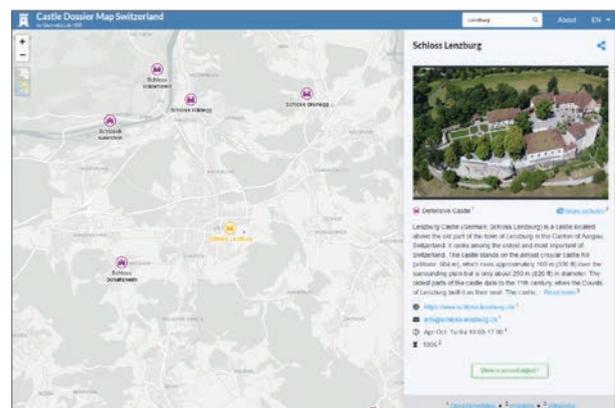


OpenSchoolMaps.org – Education and know-how with open maps, free spatial data and software.

Selected Applied Research Activities

The Geometa Lab – which is specialised in spatial data engineering and spatial data analytics – launched a “Castle Dossier Map” for Switzerland and neighboring countries based on a unique fusion of the crowd-sourcing projects OpenStreetMap, Wikipedia and Wikidata.

The Geometa Lab maintains the web tools GeoConverter and OSMaxx in order to make open geospatial data more accessible. It also released software to experiment with latest web mapping technologies, like for example a plugin for the open source software QGIS that reads vector tiles.



Castle Dossier Map Switzerland and neighboring countries based on a fusion of crowd-sourcing projects OpenStreetMap, Wikipedia and Wikidata.

HSR University of Applied Sciences

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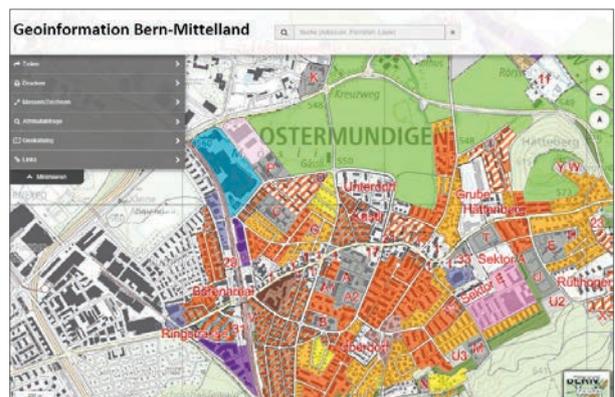
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by Martin Probst

The company bbp geomatik ag is one of the leading geomatics companies and has broad expertise in the fields of surveying and data acquisition, geoinformation and geodata management. Thus, the innovative company with its motivated team can offer all services around data capturing, data modelling, data analysis, conception of interfaces up to the development and maintenance of WebGIS solutions. In addition, there are direct contacts to the world's leading providers of satellite data such as Airbus and Digital Globe and road data providers like TomTom and HERE. Thanks to close contacts to providers of aircraft-based image and LiDAR recordings or drone surveys, bbp geomatik can also cover such types of services. With the help of the latest software and the corresponding know-how, all services in the field of surveying, land management and remote sensing can be offered.

Business Segments and Services

- Cadastral survey
- Engineering survey, Construction survey, Building Information capturing
- Geomonitoring
- Geographic Information Systems
- Geodata (Imagery, Road Networks, Traffic Data)
- Geodata Analysis, 3D Models
- Land Management
- Utility Network Information Systems



Spatial Planning example as displayed on the Geoportal www.geoinformation-bern-mittelland.ch, published by bbp geomatik ag.

bbp geomatik ag

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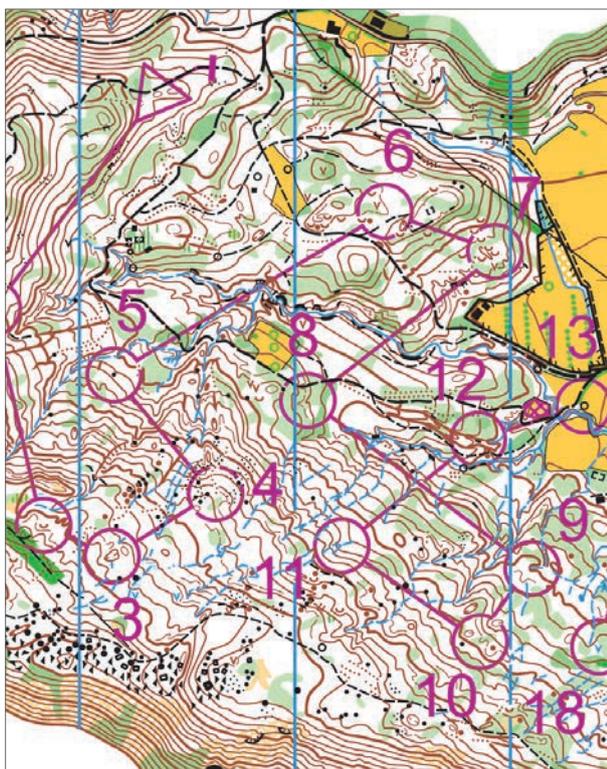
martin.probst@geozen.ch

Beat Imhof – kartografik.ch

by Beat Imhof

Orienteering Maps for the World Elite

From the 5th to the 13th of May 2017 the European Orienteering Championships took place in Southern Ticino, Switzerland. The host was the most successful nation, winning 11 medals. For a trouble-free execution of the sports event, up-to-date and precise orienteering maps were required, and were prepared in accordance with ISOM 2017 (Standard set by the World Orienteering Federation). SSC member, Beat Imhof was responsible for producing the orienteering map for the middle-distance event. At a scale of 1:10,000 (21x30 cm), the hilly and partly rocky terrain was depicted using 5m contours and showed only a few paths. The maps were created using the OCAD software.



Map Monte San Giorgio, Final middle-distance men, 09.05.2018 (detail). © EOC2018

Beat Imhof's Cartographic Career

- Since 1974: active orienteer.
- 1978: (16 years old) first printed orienteering map (terrain survey, hand drawn, self-published).
- 1981: First commissioned orienteering projects (for Ticino and Eastern Switzerland).
- Since 1991: Using the OCAD software.
- Since 1993: Drafting town plans, hiking, leisure and special maps using OCAD, Illustrator and Freehand (depending on the client's specifications) as well as orienteering maps.
- 2001–2003: Creation of a symbol set for school orienteering maps and the drafting of ca. 70 school areas for the orienteering school project sCOOL.
- Since 2013: Concentrating on the production of orienteering maps.

Beat Imhof said: "In the meantime, well over 500 orienteering maps have probably been created. I've never really counted them, but at the moment there are over 25 smaller and larger projects that are realised every year. Most of them are distributed throughout Switzerland, a few in neighbouring countries.



Beat Imhof

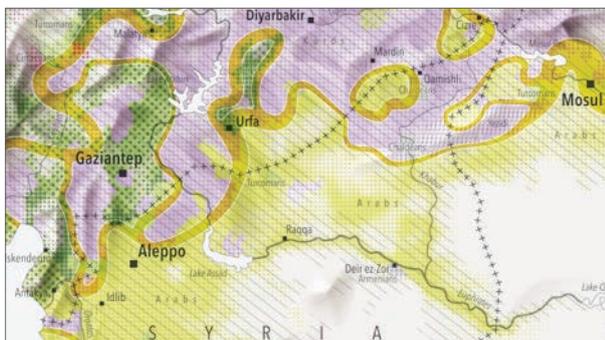
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Beilstein Cartographic Services

by Matthias Beilstein

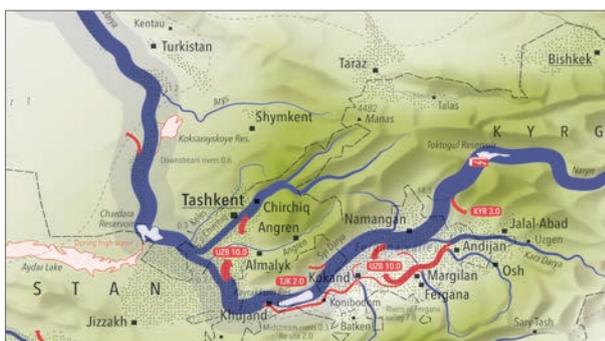
Founded in 2007 and specialising in thematic maps, especially on the topics of Environment, Development and Geopolitics. The presentation of correlations in an attractive and simplified form upon a map is proving an invaluable tool for a wide range of organisations. The focus is always on optimal information transfer in order to simplify decisions as well as improve understanding. Other cartographic products are also available to order or in cooperation with various partners.



The peoples and religions of the Middle East.



Water use of the Rimac in Peru.



Water use in the catchment area of the Aral Sea, section Ferghana Valley.

Philosophy

The constant flood of information and more and more data can easily cloud one's view. The phrase "can't see the wood for the trees" probably best describes this state of affairs. We help to maintain a clear overview in the "jungle" of the information age. Our view is the bird's-eye view, where details dissolve and superordinate structures become visible.

Cartographic Services

- Thematic maps of all kinds
- Atlas cartography
- Relief shading
- Data visualisation
- School maps
- Town plans
- GIS

Matthias Beilstein's Cartographic Career

- 1996–2000: Cartographic apprenticeship at swisstopo
- 2000–2003: Technical Assistant ("Topographer") at swisstopo
- 2003–2007: Cartographer at Hallwag Kümmerly + Frey AG
- 2007: Consultant bei UNEP / GRID-Arendal
- Since 2007: Self-employed (initially part-time, since 2012 100%)

Profession Related Excursions

- 2007 and 2018: Turkmenistan
- 2008: Tajikistan
- 2011, 2012 and 2018: Kyrgyzstan
- 2012: Jordan
- 2014: Tajikistan, Peru, Kenya
- 2016: Montenegro



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CAT Design

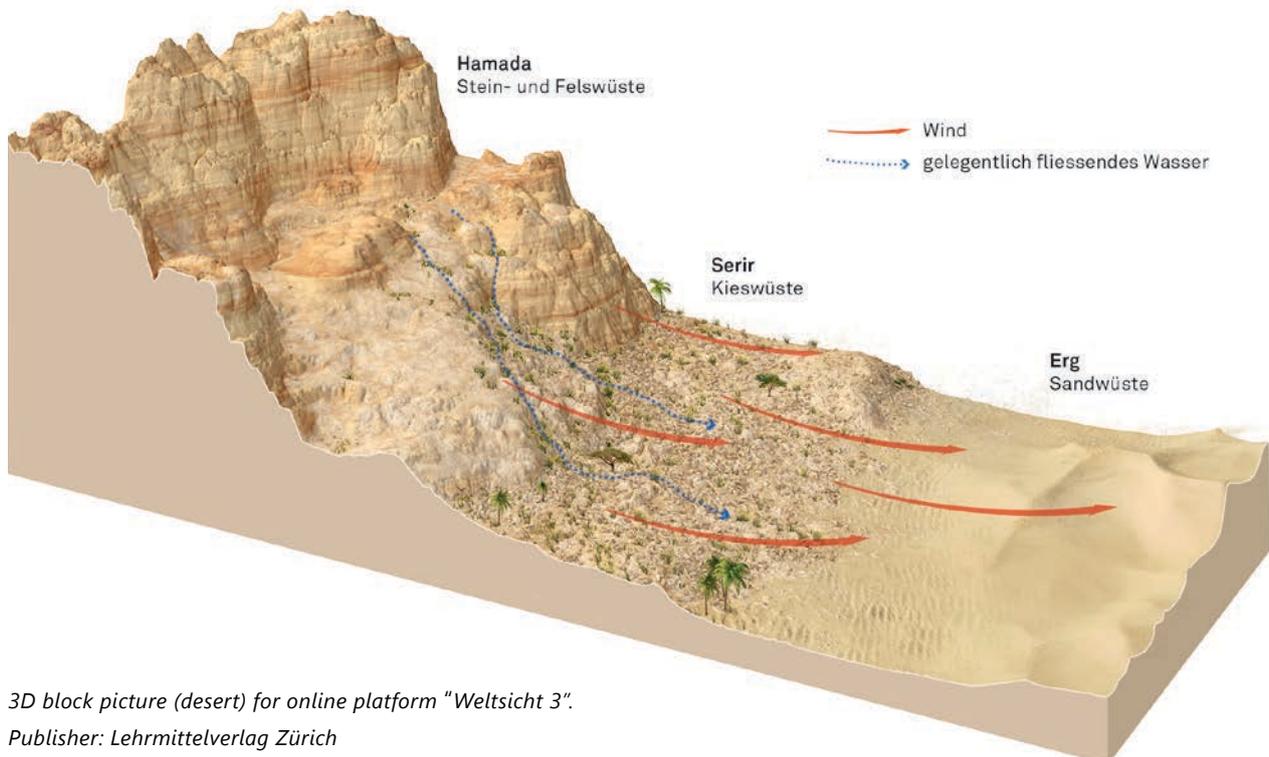
by Claudia A. Trochsler

CAT Design, is a cartographic and graphic agency, founded by Claudia A Trochsler in 1987 and is located in Baar, canton of Zug. As a full service agency, we provide specialised services in visual communication with core competences in cartography and graphic map services for schoolbooks and specialised books.

CAT Design has over 25 years of visual communication experience in several fields including, cartography, geography, medicine, biology, meteorology, infographics and industry. During all these years I have expanded my professional skills through various training courses.

Currently various block pictures and maps for the new geography schoolbook "Weltsicht" 1, 2 and 3 are created by CAT Design Claudia A. Trochsler. Published by the Lehrmittelverlag Zürich. Modern teaching aids are published on various platforms, meaning that our maps and block pictures have to meet these different requirements. These examples show a possible implementation of 3D visualisations based on models created by me. 3D models are a benefit to all as they can be used within interactive web-based publications as well as print media.

Additionally, I'm working as a part-time instructor, teaching Cinema 4D (scientific illustration and infographic) at EB Zurich.



3D block picture (desert) for online platform "Weltsicht 3".

Publisher: Lehrmittelverlag Zürich

Services

Specialised services in visual communication: 2D/3D cartography and infographics (educational books, advertising, scientific illustrations). I am also available as an onsite freelancer for organisations with data sensitive projects or that do not allow for outsourcing.

Cartography

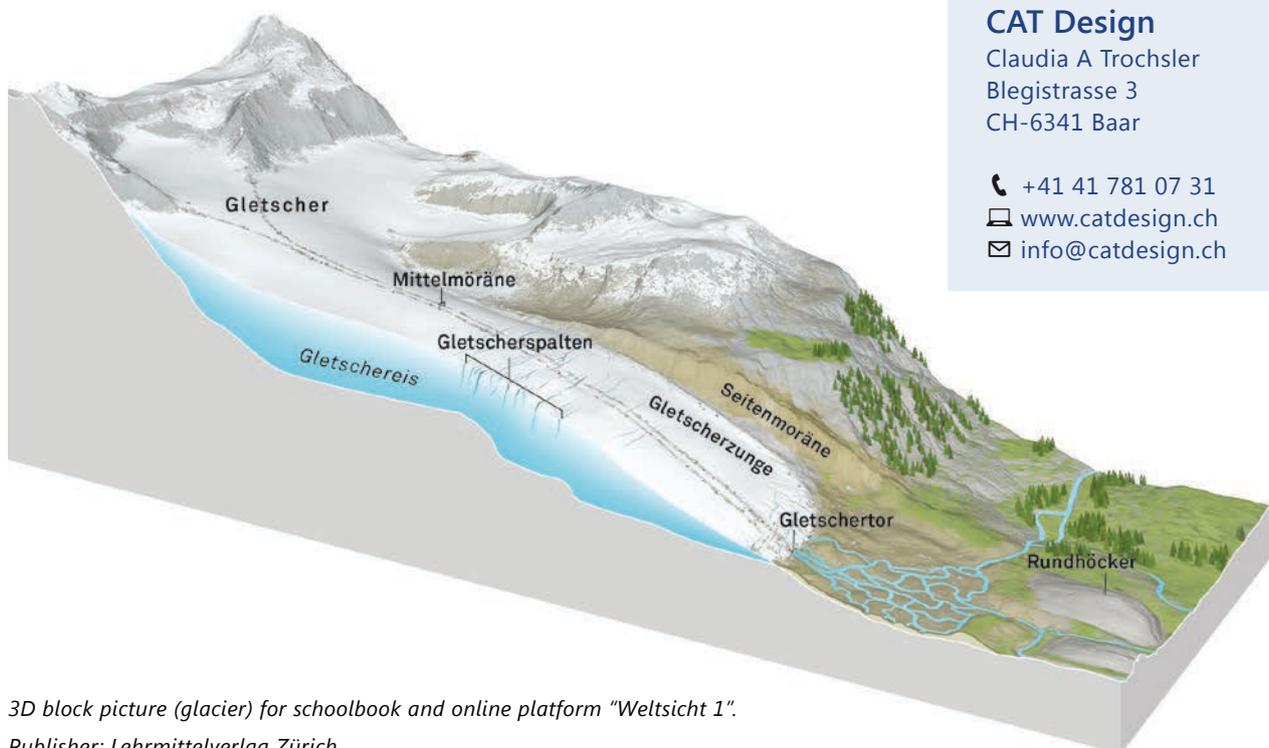
Converting spatially referenced specialised information into a cartographic representation: examples include topographical and thematic maps and their huge variety of special visualisation forms. Expertise in the creation of landscapes for block pictures, games, 3D models or high fields to be transferred to other applications.

3D Visualisation and Animation

3D visualisations meeting the customers' demands on quality and reliability. Images can be based upon sketches, photos, DEM's or data from CAD applications etc.

3D visualisations may be used for cartographical as well as scientific topics, schoolbooks, end user instructions (manuals), advertising, etc.

Renderings intended for print media, motion pictures or online apps completed with a special attention to the specific details and quality standards of these mediums.



CAT Design

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3D block picture (glacier) for schoolbook and online platform "Weltsicht 1".

Publisher: Lehrmittelverlag Zürich

by Sandra Greulich and Sacha Wettstein

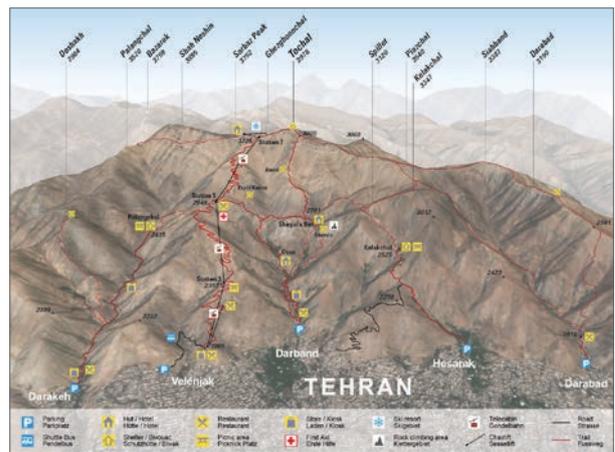
Vision

People who explore the world’s mountains via hiking, trekking or climbing often experience a lack of useful maps in many popular destinations. Major peaks worldwide are covered by many books and travel guides, but good topographical maps are still not available or do not satisfy the mountaineers’ needs. This situation inspired us to create thematic mountain maps of some of the most prominent peaks worldwide as part of the climbing-map project. The high-quality topographic maps with thematic content not only help with orientation and navigation but also provide geographic and mountaineering background information.

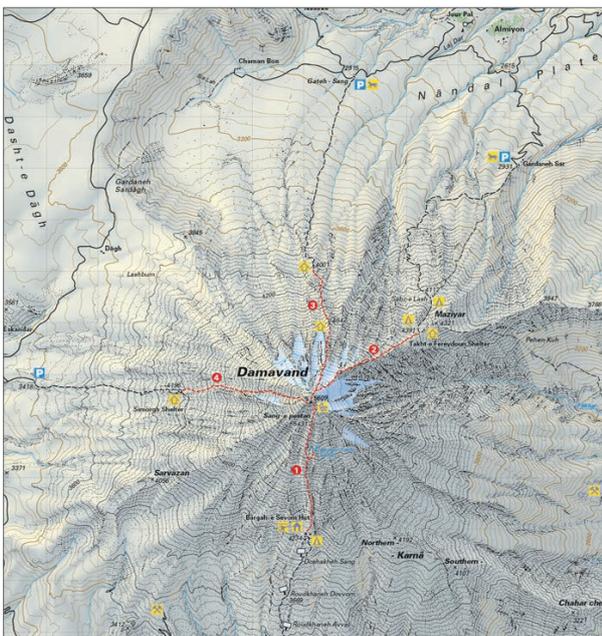
The climbing-map.com GmbH was founded in 2005 by Sandra Greulich and Sacha Wettstein. Based on our professional background as a mountain guide and in cartography we are very familiar with the specific requirements for maps used for navigating unfamiliar terrain. The topographic representation of the landscape is designed based on the best available information and a significant amount of field work.



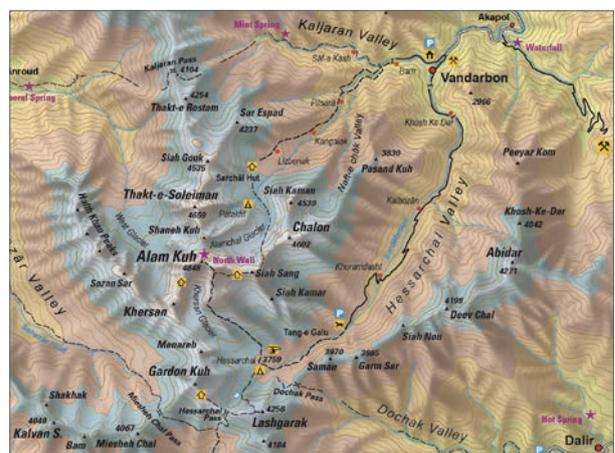
Drawing of the northern climbing routes of Damavand.



3D view of Mount Tochal.



1:50,000 Topographic Map of Damavand.



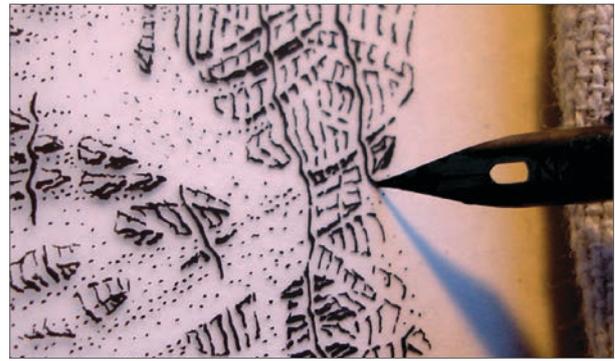
Overview map 1:100,000 of Alam Kuh.

Products and Services

Topographic and thematic climbing-maps with further useful information about the climbing routes, trekking profiles, climate, vegetation, history, city maps, overview maps and other illustrations. The maps are multi-lingual and easy to understand for everybody.

The maps at various map scales:

- 1 : 25,000 (Island Peak/Mera Peak)
- 1 : 40,000 (Aconcagua)
- 1 : 50,000 (Elbrus/Damavand/Cotopaxi/Pico Turquino)
- 1 : 80,000 (Kilimanjaro)



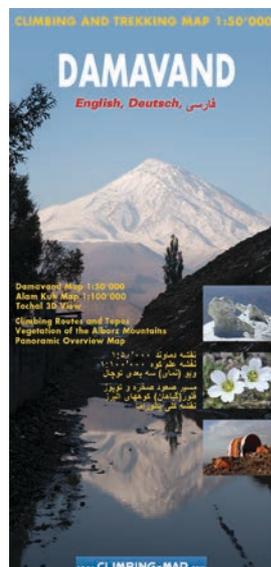
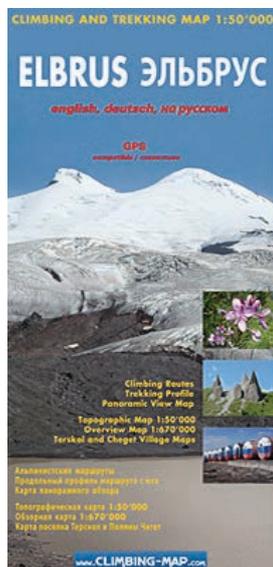
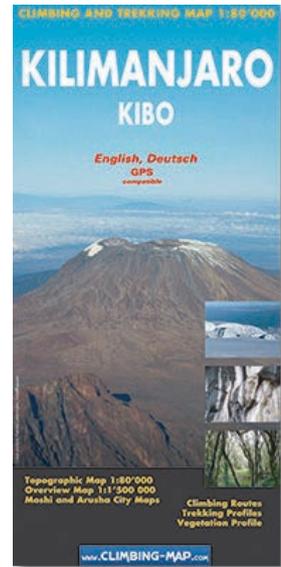
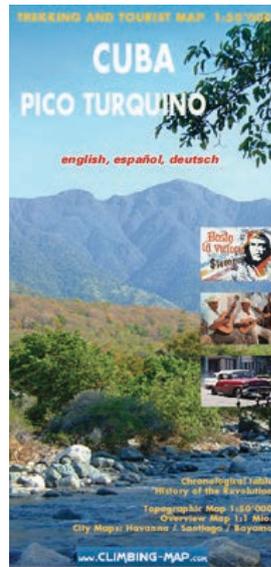
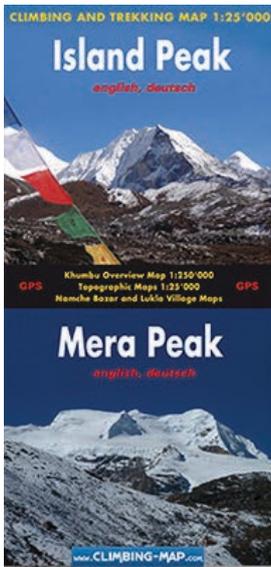
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CH-3004 Bern

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Map Series



by Jonas Fürstenberger and Ralph Straumann

Shaping the Future

EBP is a leading internationally active enterprise with a wide range of professional disciplines in planning, construction, consulting, IT, and communications business divisions. Founded in Switzerland in 1981, our company maintains operational bases in Switzerland, Germany, Brazil, Chile, USA and China with around 500 employees globally.

We focus on complex projects and services that require extensive experience and the application of specialist and interdisciplinary know-how. We bundle the expertise of our employees into specific business divisions. EBP's IT division employs around 35 dedicated and qualified employees in the fields of IT consulting, data science, software design, software development and system operations. Our areas of expertise are mobility, infrastructure and environmental management.

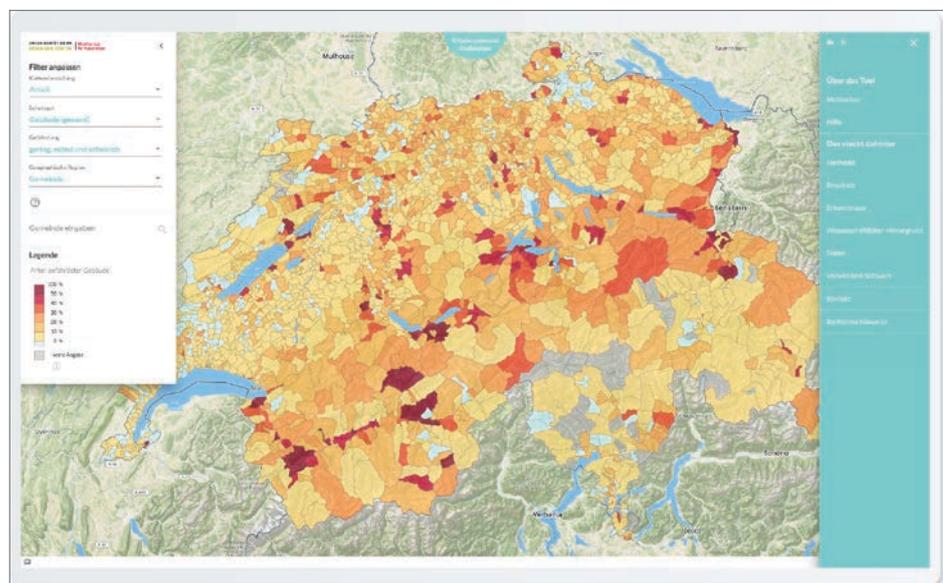
Many of our products involve spatial analyses and modelling as well as the production of insightful online and offline maps. Among others, we are members of the Swiss Society for Cartography (cartography.ch), the Swiss Providers of Earth Observation Services (erdbeobachtung.ch) and the Swiss OpenStreetMap Association (osm.ch).

Web Map: Flood Damage Potential in Switzerland

As an example project we would like to highlight our recent and ongoing collaboration with the Mobilier Lab for Natural Hazards of the University of Bern. Together, we have developed a landing page (www.hochwasserrisiko.ch/en) as well as a web application dedicated to the depiction not only of flood hazards but the incurred damage potential (schadenpotenzial.hochwasserrisiko.ch).

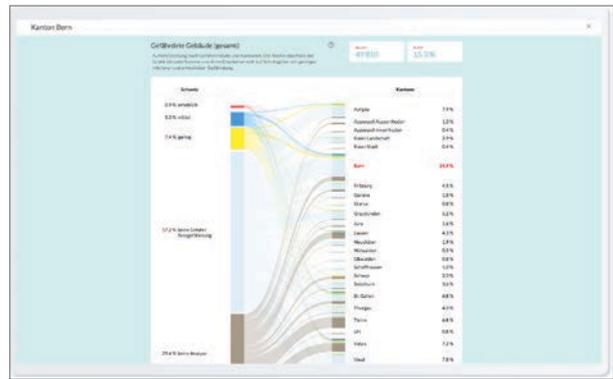
Over two-thirds of the damage in Switzerland caused by natural disasters is due to floods. The web application schadenpotenzial.hochwasserrisiko.ch is built around an interactive map that provides information on the number of buildings, individuals, work places, public facilities and more that are under threat from floods. Data is available at the neighbourhood, municipal and cantonal (state) level.

Choropleth map of the relative flood damage potential in Swiss municipalities. ↓





Detail view of a municipality shows buildings, resident population, workplaces, schools, hospitals, cultural sites that are in danger.



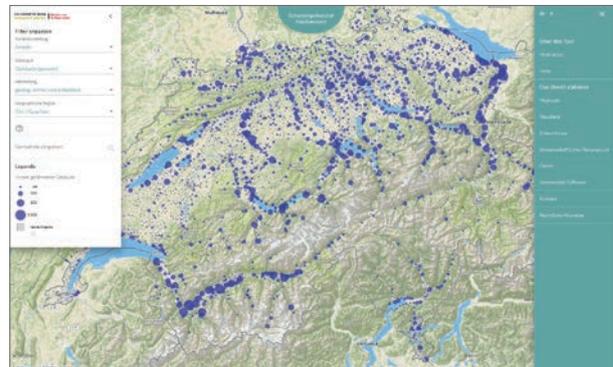
Sankey diagrams allow comparisons across cantons (states).

User-centered Design for Outreach and Insights

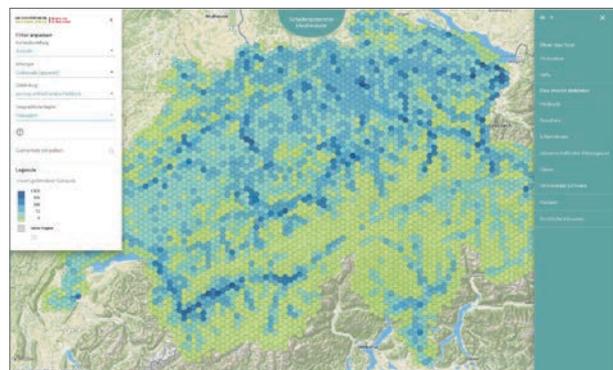
For the first time, the potential of damage can be identified across Switzerland – down to individual neighbourhoods – using this website. Users can see in detail where people or important objects requiring protection such as buildings or building assets that are vulnerable to floods.

This application shall be a central tool for independent and scientifically based information about flooding risk management in Switzerland. The web map has been conceptualised and developed based on the user-centered design methodology which enables a tight feedback loop between user interface and user experience designers and users of the final product.

The appearance is a target group-specific presentation of the content and enables an intuitive use. The map is enhanced with various interactive and non-interactive information visualisations that shows the users more information, on demand. A detailed view with appealing illustrations provides further information about the area of interest.



Scaled symbol map of the absolute flood damage potential.



A hexagonal tessellation offers a MAUP-free (modifiable areal unit problem) visualization.

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Edition Cavelti

by Madlena Cavelti Hammer

Portrait

Edition Cavelti is a publisher of historic facsimile maps and publications related to historical maps and the history of cartography. Edition Cavelti is the personal undertaking of Madlena Cavelti Hammer from Horw in the canton of Lucerne.

Publication

The latest publication is titled "Zentralschweiz im Kartenbild". This publication gives an overview of the cartography of Central Switzerland in a richly illustrated cartographic retrospective. It begins with a brief overview showing how Central Switzerland, the Rigi, and Lake Lucerne have been mapped since the 15th century. In the second part, the cartographic reproduction of the individual Cantons is shown in detail, not only as maps but also as panoramas and relief models. During the archival research, several previously unknown items were discovered. For example, about 1200 original manuscript maps and plans were discovered in the archive of Obwalden, dating from around 1900.

Map Catalogue

A total of over 16,000 items have been catalogued during ten years of research. This up-to-date inventory of the existing maps of the six cantons in Central Switzerland can be viewed at www.editioncavelti.ch/tool/karto/index.php.

Edition Cavelti currently provides 70 facsimiles of historic maps and six books related to the history of maps. The main focus of the publications is on Swiss national and regional maps.

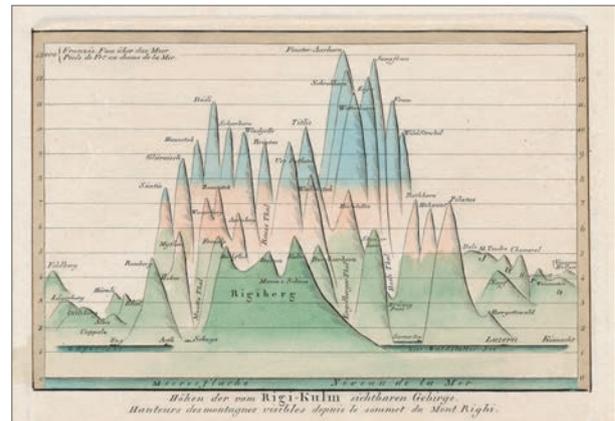
Edition Cavelti

Madlena Cavelti Hammer
Untermattstrasse 16
CH-6048 Horw/Luzern

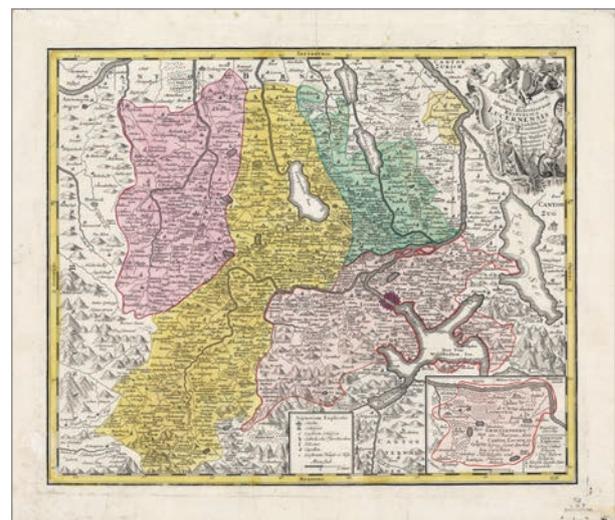
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Visualisation of mountain heights visible from Mount Rigi's main summit Kulm.



Map canton of Lucerne, Walser, 1763.



Inside of a box containing a 3D model of Mount Rigi, produced as a souvenir.

Esri Switzerland

by Mark Wigley

Company Portrait

Esri Switzerland is the local distributor of the American mother company, Esri (Environmental Systems Research Institute) which celebrates its 50th anniversary this year. To quote Andre Bourque of Entrepreneur.com "If Facebook is the who, and Google is the what then Esri is the where". Our aim is to build the most powerful mapping and spatial analytics products in the world.

Each Esri distributor builds up experience and special knowledge to help serve the needs of its local customer base. Switzerland has a long reputation of high-quality cartography, which is why Esri Switzerland has become an expert in this field within the GIS community and is known as the European cartographic competence centre for the Esri software platform.

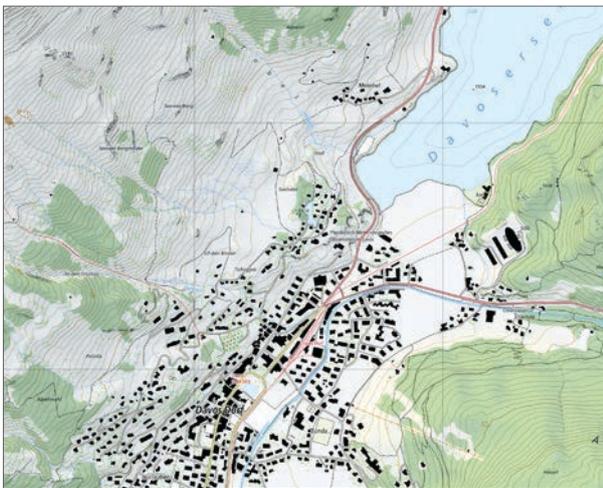


Figure 1: swisstopo map, 1:10,000.



Figure 2: Canton of Lucerne.

Services and Products

Over the course of the last 4 years, we have offered cartographic related trainings and consultations not only in Switzerland but also in Germany, Austria, Israel and England as well as hosting a number of European user meetings concentrating on various topics within advanced cartography with ArcGIS. ArcGIS is a platform for organisations to create, manage, share, and analyse spatial data.

We have also been involved in a number of successful national and international projects producing a whole range of cartographic products from the classical paper map to web maps and mobile maps.

But mapping and visualisation is not all that we do. The ArcGIS Platform also supports Spatial Analytics, Imagery & Remote Sensing, Real-Time Visualisation and Analytics, 3D GIS as well as Data Collection and Management software. Along with this we have a suite of Apps, our own data in the form of various base maps, data layers and developer tools as well as offering both online and classroom trainings.

Three of the successful projects which have recently been completed are, the swisstopo 1:10,000 new National Map series of Switzerland (→ Figure 1), a fully automatically produced web map covering the whole of Switzerland, the Base Map from the canton of Lucerne (→ Figure 2) and the multiple award-winning, rather special Tactile Atlas of Switzerland (→ Pages 93 and 95).

Esri Switzerland Ltd.

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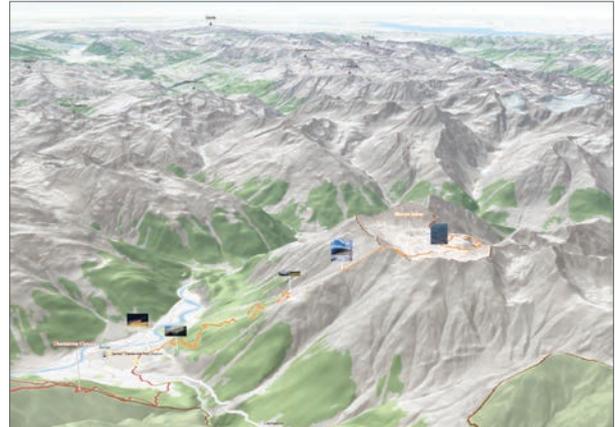
☎ +41 58 267 18 00
🌐 www.esri.ch
✉ info@esri.ch

Esri R&D Center Zurich

by Raluca Nicola

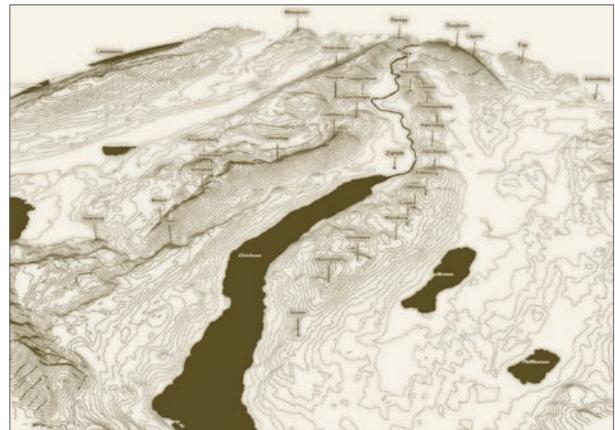
3D interactive web cartography is rapidly evolving, and as a result in the past few years, beautiful, interactive 3D maps with a great attention to detail have been created. We, at the Esri R&D Center Zurich, work on designing and implementing tools that allow cartographers to create such 3D maps.

We experiment with new visualisation methods and we believe that combining the cartographic knowledge with cutting edge technology is what will take this field a step further. As we work in Zurich, a majority of our demos focuses on areas in Switzerland. Here you can see a few examples of our work:



Hiking map of the Swiss National Park – a demonstration web application that we built to visualise mountain regions and hiking trails in 3D. (Figure →↑)

Zurich's Hills – here we played with a schematic, but artistic 3D map that conveys the essential information about the landforms around Zurich. (Figure →)



3D map of the city of Zurich – combining Esri's Modern Antique Basemap with Zurich's 3D model of the city, released as Open Data in spring 2019. (Figure ↓)



evoq communications

by Hannes Rellstab

Maps for the Public Transport

evoq communications AG is a privately owned agency for design and communication with offices in Zurich and Cologne. For the Swiss Federal Railways, we have established the Trafimage product family together with our IT-partner geOps in Freiburg, Germany. Trafimage products range from GIS based maps covering the whole public transportation network in Switzerland to interactive floorplans for all major stations throughout the country. Other clients, such as the Swiss Federal Institute of Technology in Zurich (ETH Zurich) or Swissmem profit from our expertise.

Services

Our services include development, design and production for both print and online applications, small to large scales: Consulting and concepts, technical developments, GIS data management, map design, network plans, floorplans and navigation systems, interactive applications, wayfinding systems, icons, website development.

Map showing the state of development of Swiss train stations in terms of disability (maps.trafimage.ch). ↓



Trafimage maps for on-board information systems of long-distance trains.



Trafimage maps on the Swiss Travel Guide app for international tourists.

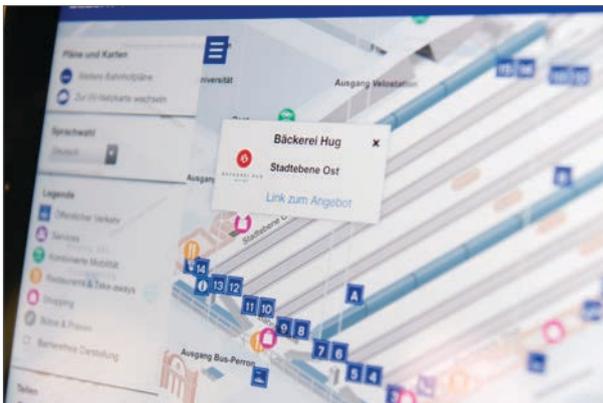




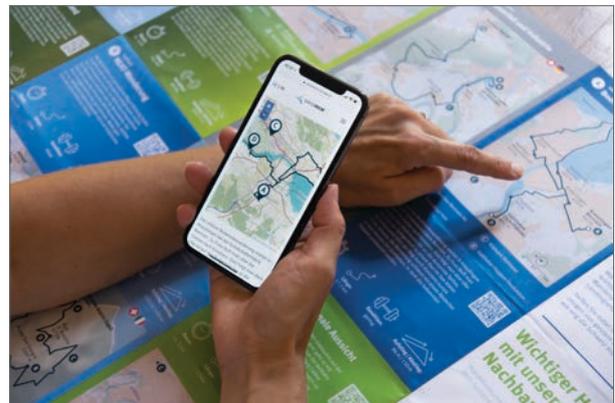
Graphic network map for regional transport in eastern Switzerland.



Interactive overview map of the Swiss public transport system (maps.trafimage.ch).



Graphic floorplans help customers navigate in and around stations (plans.trafimage.ch).



Interactive and fold-up hiking map for Swissmem.

evoq communications AG

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www.evoq.ch
map@evoq.ch

Gaja maps

by David Vogel

The Geo-Designer for Web & Print

As a full-service agency, we develop creative and valuable solutions for our customers in all areas of cartography. Our fields of expertise are cartographic services of various kinds such as the visualisation of geoinformation, conception and production of cartographic products as well as consulting and support for cartographic projects and questions.

Classic cartography, such as leisure maps and city maps, remains our main field, however we also visualise geographical and statistical data for digital or traditional use.



Map of Switzerland.



Political map of Europe.



Hiking map.

In addition to classic cartography, we offer our customers intelligent or dynamic maps, for example to route planners, link different statistical data or create interactive experiences. Here we combine our expertise in cartography, programming and databases to find the technically most efficient and visually most appealing solution.

We advise our customers in all cartographic questions and support you competently throughout your cartographic project.

Cartographic Services

- Thematic maps of all kinds
- Hiking maps and books
- Maps and city maps
- Relief shading and panoramic maps
- Webmaps and map applications

David Vogel's Cartographic Career

- 1999–2003: Cartographic apprenticeship at swisstopo.
- 2004–2009: Vocational cartographic trainer at swisstopo.
- Since 2005: Vocational Education and Training examiner in cartography.
- Since 2009: Company foundation and managing director Gaja maps GmbH.
- Since 2010: Subject teacher cartography, Baugewerbliche Berufsschule Zürich (BBZ).
- Since 2010: Lecturer at the Swiss Geomatics Training Centre (BIZ-Geo).

Gaja maps GmbH

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Hallwag Kümmerly+Frei

by Marianne Saner and Danielle Zingg

Publishing House for Tourism

The company Hallwag Kümmerly+Frei AG was founded in 2002 with its headquarters in Schönbühl, Canton Bern. This brought together 240 years of expertise (90 years at Hallwag and 150 years at Kümmerly+Frei). Hallwag Kümmerly+Frei has been part of the Mair-Dumont Group since 2016.

Hallwag Kümmerly+Frei is the leading publishing house in Switzerland for tourism and an official partner to Switzerland Tourism. Our international distribution network has ensured a worldwide presence and made our familiar red/yellow and blue maps famous everywhere. Swiss cartographic standards guarantee a very high level of accurate information.

Hallwag Kümmerly+Frei also has two special series, which are a perfect addition to your leisure time information:

- The hiking maps and guides from the Swiss Alpine Club (SAC).
- The excursion maps and leisure guides from the Kompass publishing house.

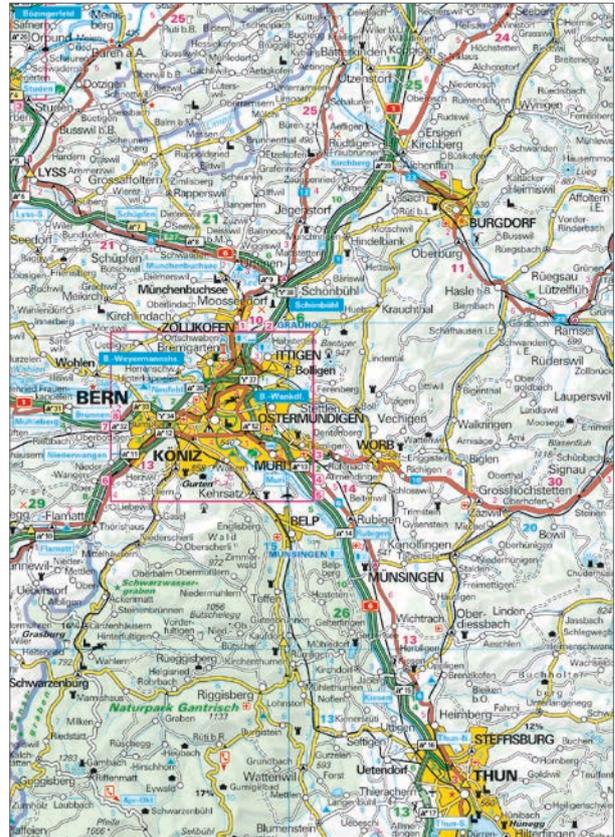
Product Range

Road and regional maps, city maps, guides and atlases, continent and world maps, panoramic maps, leisure books, hiking and cycling maps, hiking guides, hotel and travel guides. Cartographic products as promotional gifts for all sorts of businesses (customised products).

Hallwag Kümmerly+Frei AG

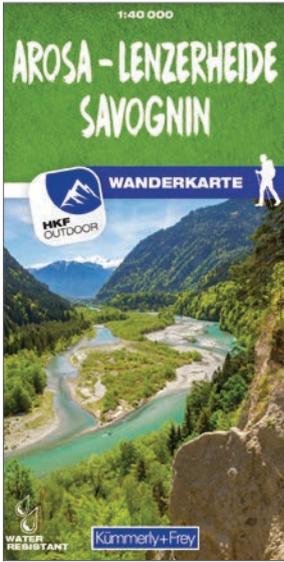
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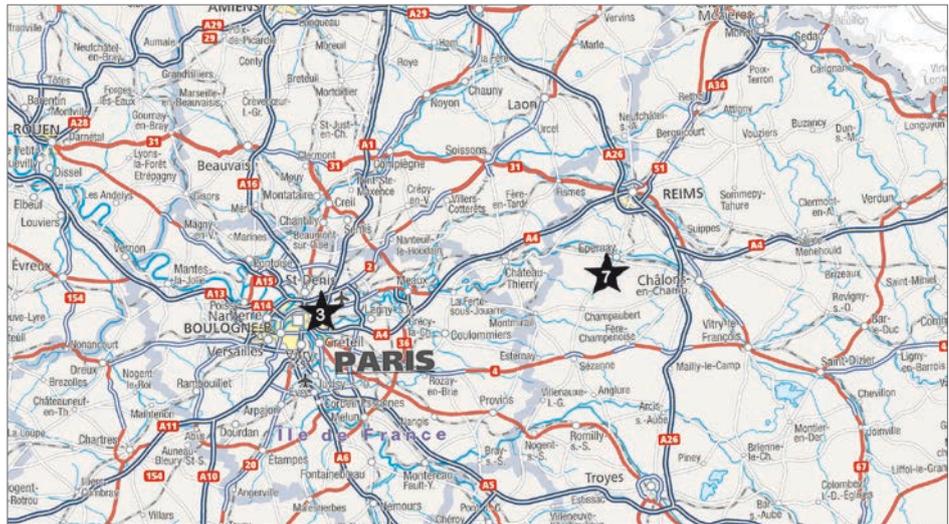


Road map Switzerland 1 : 303,000. Cover (below).





New 1 : 40,000 hiking maps.



Road Map GuideMe Travelmap, France 1:2 Mio. for young people.



The Grand Tour of Switzerland touring map with tourist highlights.

MapTiler – Klokan Technologies

by Petr Pridal

Street and Satellite Maps of the Entire World

MapTiler provides online digital maps for companies and institutions and tools for geodata processing. A small team located in Unterägeri and Brno is creating street and satellite maps of the entire world for clients such as SBB, Siemens, Swisstopo, NASA or IBM.

The maps are served from a reliable global infrastructure or bundled as data packages and software for use in a closed environment or offline. Each map can be easily customised to fit the company brand or enhanced by adding own's data.

MapTiler also provides software for data processing. Users can assign a location to a scanned map in a few mouse clicks and turn it into map tiles. For large scale usages like satellite or aerial imagery, MapTiler provides map processing software running on computer clusters.

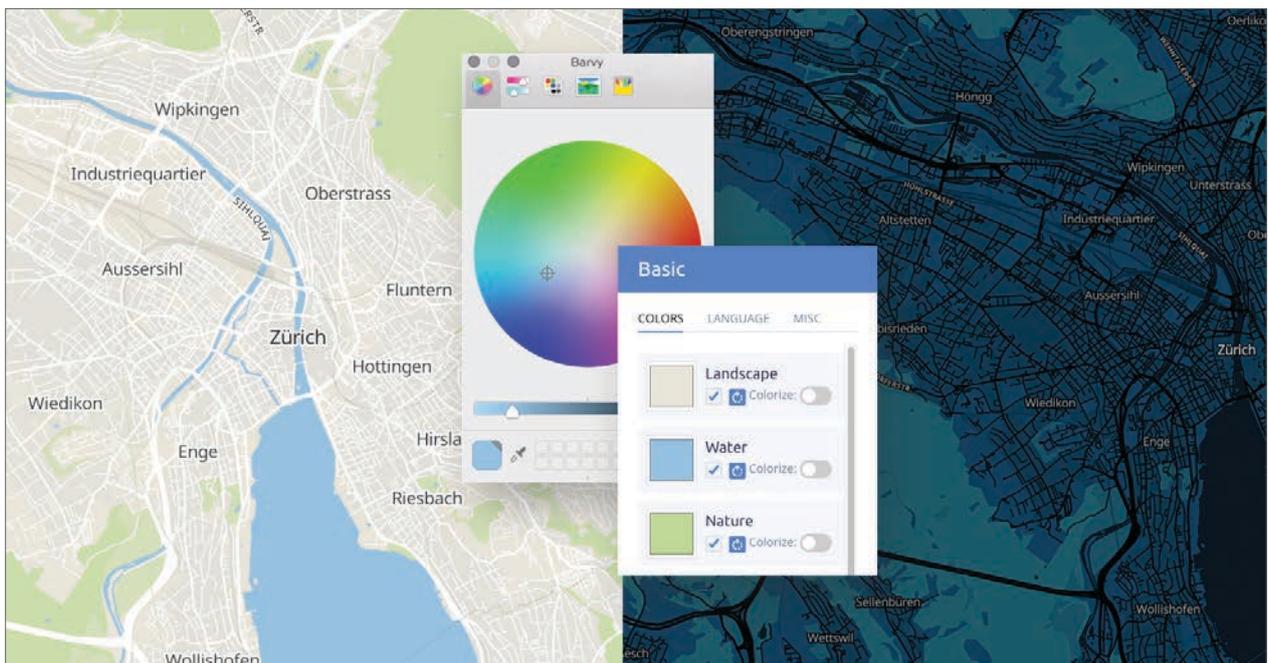
Any map can be easily customised to fit the company brand and use-case. ↓



Maps are provided in more than 60 languages including minority languages like Catalan, Breton or Romansh.

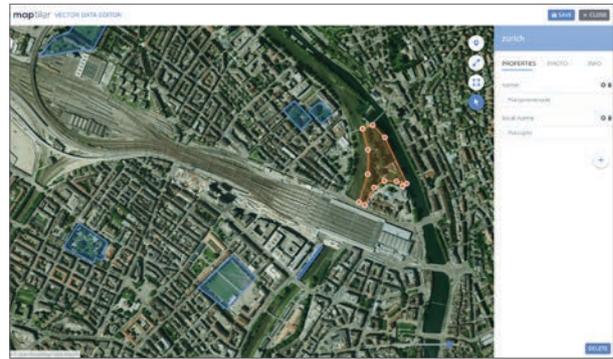


View a map or collect data on your mobile phone.



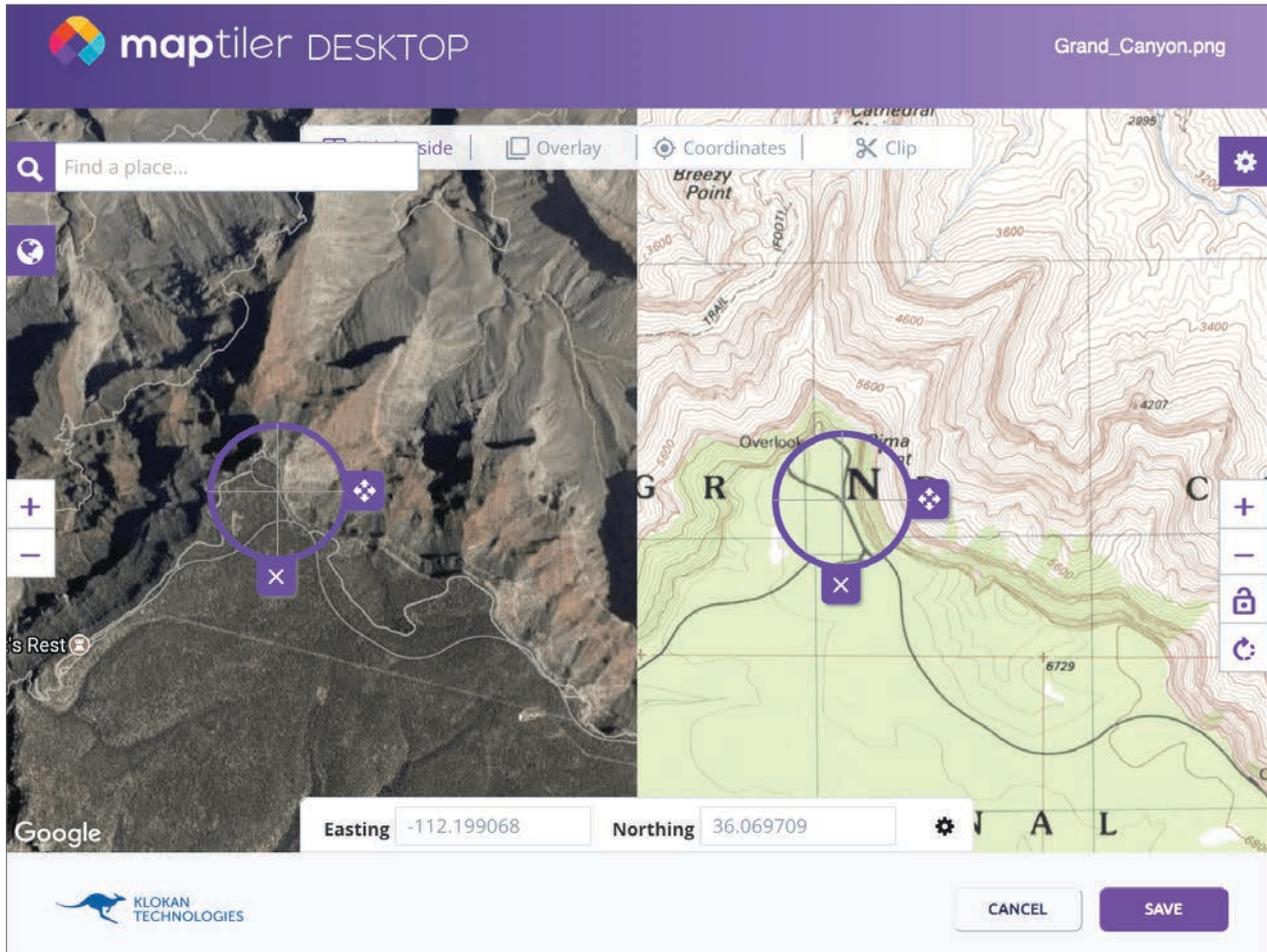
A Vector Tiles Revolution

To allow everyone to launch his/her OpenStreetMap installation, MapTiler team launched an open-source project called OpenMapTiles. Encouraged by the positive reception in the GIS community, we build a map hosting service based on this project. This brings us thousands of clients and our maps are viewed daily by more than 50 million users.



Assigning a location to a scanned map in few mouse clicks. ↓

Adding and editing own data is straightforward.



Aerial map of the whole city is processed in a few minutes of a cluster of computers.

Klokantech GmbH MapTiler

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naiila - cartographics

by Mario Spengler

Company Portrait

naiila-cartographics is an engineering office for cartography and was founded in 2014 by the cartographers Mario Spengler and Julian Strautz.

By merging cartography and graphic design, naiila-cartographics offers various solutions and possibilities for companies interested in individual cartographic products.

The company specialises in maps and cartographic infographics. From design to implementation, we accompany our customers all the way to the finished product, our methods being specially tailored to fit the customer requirements.

What we Produce

- Maps: Location maps, site plans, general maps, leisure and overview maps
- Graphics: Infographics, guidance systems, flyers & brochures.



naiila - cartographics
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OCAD

by Hubert Klausner

Cartographic Software

OCAD Inc. sells its cartographic software OCAD in various editions worldwide, adapting it continuously to customer requests. OCAD is the result of 30 years of software engineering. In that time OCAD developed from an orienteering map drawing software to a powerful Mapping Solution which covers the entire workflow of map production:

- Create base maps by using available spatial data sources.
- Enrich maps by analysing LiDAR data or capturing map features using GPS.
- Produce high quality maps by using the unique cartographic tools.
- Use Multi Representation to alter map features in different representations.
- Benefit from Thematic Mapper to visualise statistical data in a thematic map.
- Layout editor and various print and export interfaces.

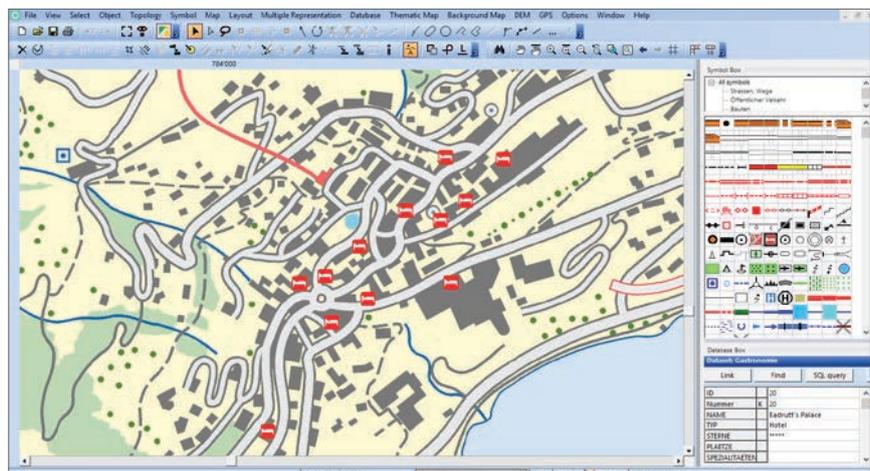
OCAD was one of the first players using LiDAR data for mapping. During the last decade each major OCAD release could present new tools in this field. The latest milestone is the smoothed contour line calculation using the topographic position index (TPI) and the LiDAR point cloud manager.

OCAD is available in 17 languages and is being used successfully in more than 65 countries in a wide variety of sectors: land survey offices, the military, national institutes of cartography, cities, communities, cartographic publishers, planning and engineering offices, schools, universities, sport and recreation clubs, etc.

Beside developing software for cartography, OCAD Inc. offers services for data migration and customising projects. The head office of OCAD Inc. is located in Baar, Switzerland.

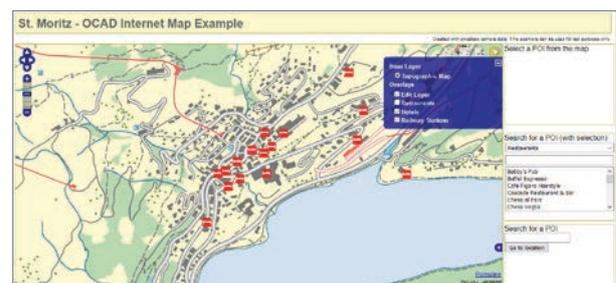


Custom contours (upper part) and TPI smoothed contours (lower part), both created with OCAD.



↑ OCAD GUI.

↓ OCAD internet map example, maps from St. Moritz.



OCAD Mapping Solution

The OCAD Mapping Solution combines all functions to create topographic and thematic maps in one program. With this edition the user can create and combine city maps, topographic maps and thematic maps.

Import Data or Connect to Spatial Data Sources

Create a new map that is georeferenced from the scratch or georeference old non-referenced maps using OCAD rubber sheeting functionality. Import spatial data such as shapefiles, DXF, KML and OSM or connect to Web Map Services (WMS) to load the images as background maps. Organise and edit the vector data attributes with the database tools.

Analyse LiDAR Data and Capture Map Features

OCAD offers a step-by-step wizard for LiDAR or DEM data to easily derive hill shadings, contour lines, vegetation height maps, slope gradient and feature extraction within a single run. The 64-bit version of OCAD allows to process big data volumes. Furthermore, GPS receivers or a laser range finder can be connected to OCAD to capture map features with a tablet in the field.

Unique Drawing Tools and a Sophisticated Symbol Editor

OCAD attaches great importance to precise and efficient drawing. "Bezier curve mode", line tracing and snapping mode are just some among many other specific map drawing tools. The user can create any map symbol he can imagine with the sophisticated symbol editor or alternatively use one of the predefined symbol sets. A huge number of editing functions like reshape, crop objects or virtual gap make updating maps most efficient. Generalisation tools will help to make your map most legible.

OCAD Inc.

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Layouting, Print and Export

Finalise the map with a layout consisting of an automatically generated map legend and coordinate grids, title of the map, scale bars or logos. OCAD enables the user to export the map in various (georeferenced) raster and vector formats, to print it in either spot colours or process colours (CMYK), as well as creating an interactive web map based on Open Layers with just a few clicks.

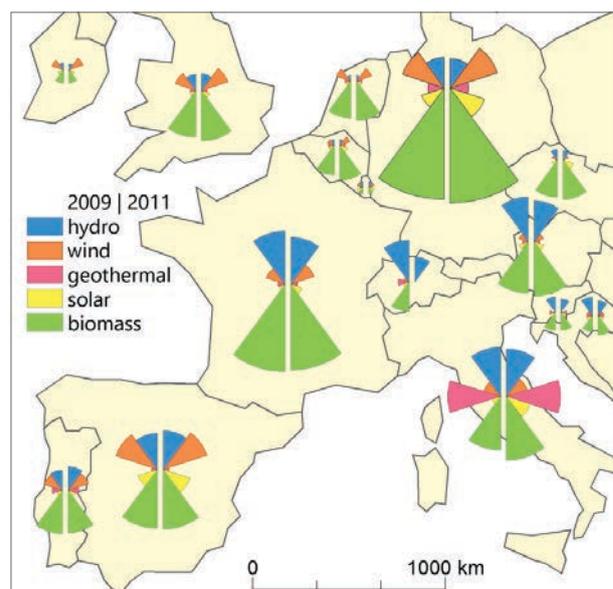
Multi Representation

The OCAD Mapping Solution has been extended with a Multi Representation module to handle different representations within one map. Changes to map features in a representation can be done without affecting the original map. Changes in the original map will be adopted to the different representations.

ThematicMapper

A step-by-step wizard guides the user through the process of creating thematic maps. A variety of different point, line, area and chart representations are supported. Map objects can be individually placed, displayed or hidden. XML scripts allow to automate the process easily.

The ThematicMapper module, a "Prix Carto" winner (→ Page 89), is an integral part of the OCAD Mapping Solution. This architecture allows to combine thematic maps seamlessly with topographic maps.



Divided wing charts visualisation of energy production, created with OCAD ThematicMapper.

Orell Füssli Kartographie

by Gottfried Borys

500 Years of Company History

Orell Füssli has been in the printing business for exactly 500 years. In 1519, the Zurich City Council commissioned Christoph Froschauer for printing jobs. This meant that the company became the national printing house. In 1576 the land surveyor Jos Murer printed in collaboration with Froschauer a city view of Zurich, called Murerplan (→ Figure 1). In the following three hundred years the ownership of the company frequently switched between three Zurich families, Orell, Gessner and Füssli, whereby the activities were now increasingly concentrated on publishing and printing.



Figure 1: Murerplan.

Orell Füssli began manufacturing maps in 1924 when it acquired the company Kartographia Winterthur based in Winterthur. From then on important map works such as the Schweizerische Mittelschulatlas (Swiss World Atlas for Grammar Schools), and later the follow-up work, Schweizer Weltatlas (Swiss World Atlas) were produced and printed in-house. In 1992 the Orell Füssli cartography division became largely independent through a management buyout. With the acquisition of the French-speaking company MPA GéoDistribution SA in 2007, the company positioned itself as a prominent publisher of map products in the fields of hiking (→ Figure 2), tourism, city plans and Geoservices in Switzerland and abroad.

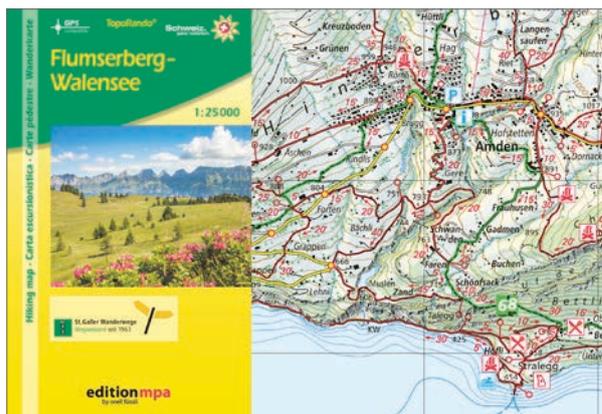


Figure 2: Hiking map, edition mpa by Orell Füssli.



Colour alignment at the offset printers.

Services and Products

Orell Füssli Kartographie AG offers planning, consultation and development of all cartographic products, from the concept stage, through to designing and editing of the basics, right up to the modelling of your data according to cartographic principles and corresponding graphics.

Especially in focus is the variety of cartographic products such as educational maps, atlases, (including "Swiss World Atlas"), geological maps, linguistic atlases, hiking maps, tourist maps, city maps, or special thematic city maps.

Own publications include different Orell Füssli products and the edition mpa range, like city maps and atlases, school maps, holiday maps, hiking maps or panoramic maps.

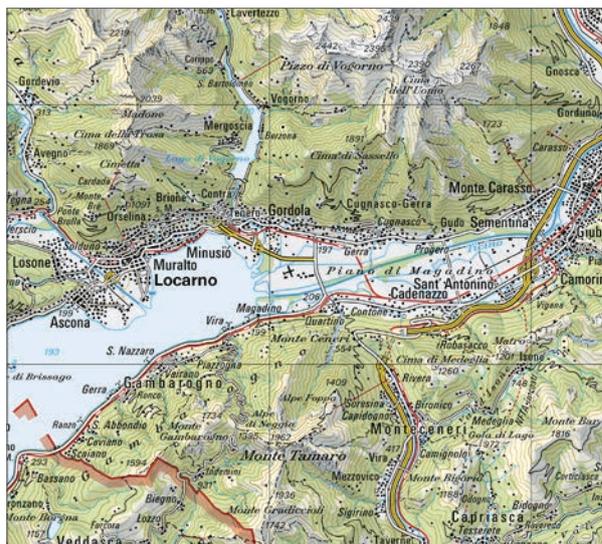
Orell Füssli Kartographie AG also offers special services in cartographic pre-press, check your map products using colour management system (CMS), create reliable authoritative digital proofs and generate your CtP print data.

As a general contractor Orell Füssli Kartographie AG also offers all printing services, including multicolour offset printing, digital printing, further processing, packing and forwarding. Our complete range of services is rounded off by our cooperation with efficient photogrammetry and geo-informatics companies.

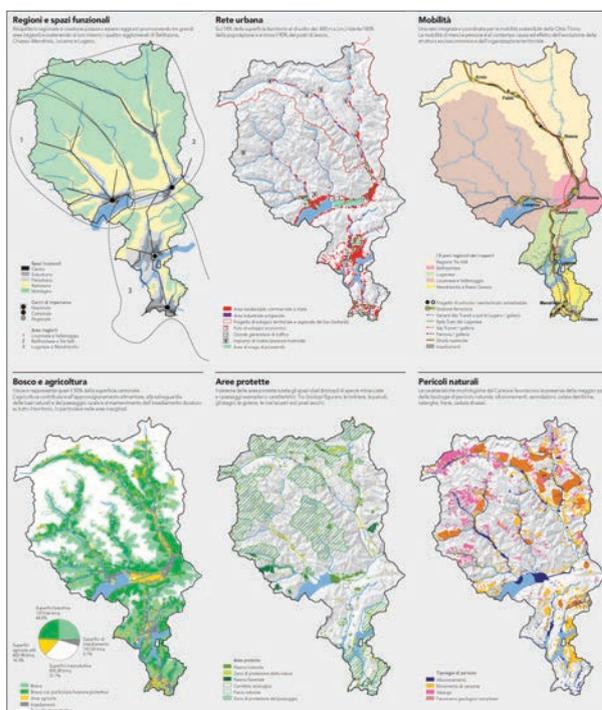
School Map Switzerland

The 1:500,000 official school map of Switzerland has been published regularly since the 1930s and the last revised edition has been on the market since 2018. The cartographic and editorial work is carried out by Orell Füssli Kartographie AG. The map is available in German, Italian and French and is printed using eight spot colours with a CMYK title page. →

The significant changes to the main map compared to previous editions are the additional inclusion of symbols for renewable energy sources such as wind and solar power plants. The reverse side of the map contains a wealth of important information about Switzerland, including thematic maps, statistics and aerial photographs. Five new maps have been included from the 2017 Swiss World Atlas (→ Page 81) and all statistics have been updated.



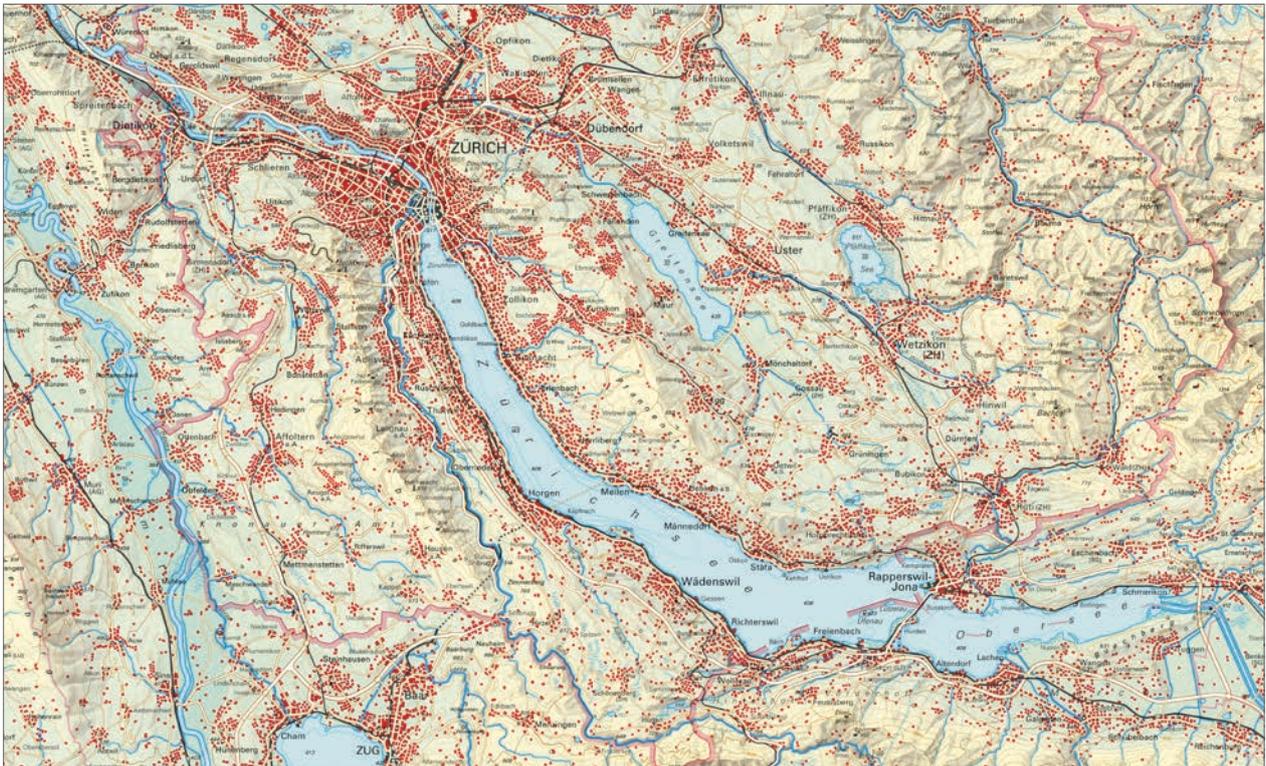
School map of the canton Ticino
(Carta Scolastica Cantone Ticino), scale 1:150,000 (extract).



Reverse side of the school map canton Ticino with thematic content (extract).



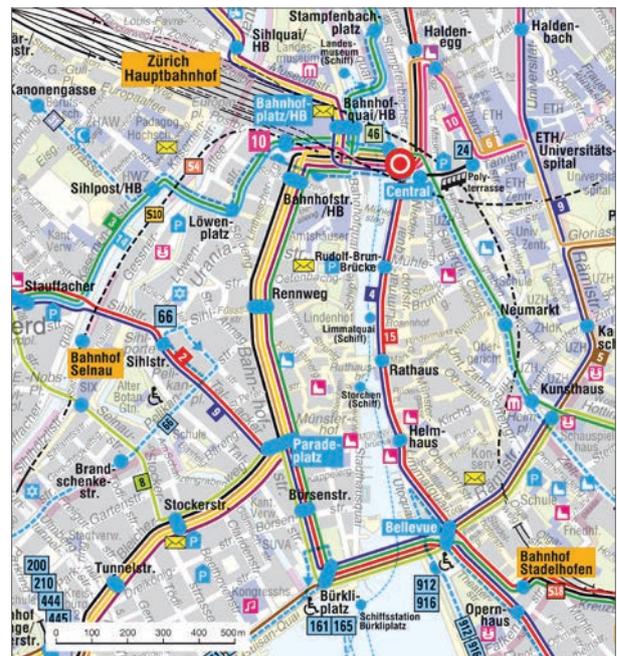
School map Switzerland 1:500,000 (extract).



Printed school map of the canton Zurich, scale 1:100,000.

Plans for the Public Transport in Zurich

For decades, the plans from Orell Füssli have been present at every public transport stop in Zurich and its agglomeration. The VBZ public transport network, with over 690 stops, has become an attractive sightseeing tour of the city and region thanks to Orell Füssli's plans for visitors. Since the traffic network is not schematically but topographically embedded in the plan, the user has reliable information on distances, attractions and, of course, the offered lines of trams, buses, commuter trains or shipping lines. The plans are provided in the formats A-3, A-2 or larger. →



Thurgau Hiking Map

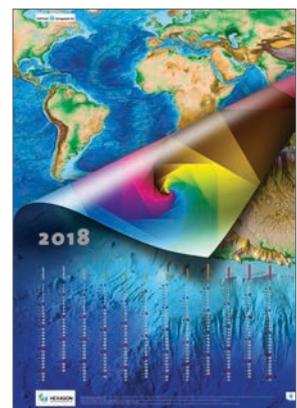
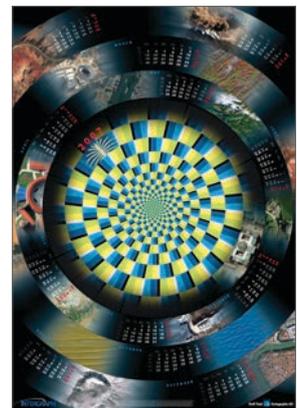
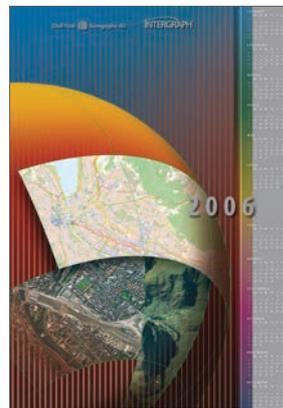
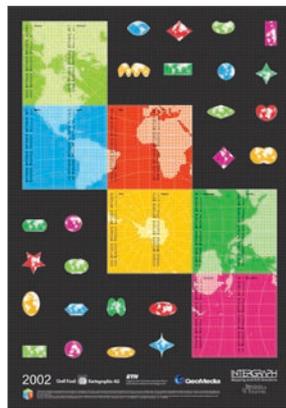
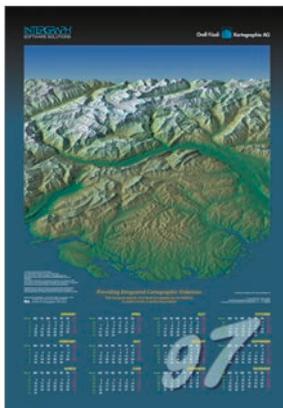
The revised Thurgau hiking map (Thurgauer Wanderkarte) opens up more than 1,000 kilometers of excellently maintained and well-developed hiking trails between the Hörnli Mountains and Lake Constance. It lists the railway, bus and shipping lines and points to the Hiking-in-Switzerland routes. You will find also tourist highlights and over 200 fireplaces. The Thurgau Hiking Map 1:50,000 use the base of the new modernised national map for Switzerland (swisstopo). The new changes in depiction methods have resulted in further improvements in terms of readability and modern cartographic presentation. →



1:50,000, Orell Füssli Kartographie AG, Publisher Huber.



Pre-press and printing services.



Calendar Posters

Geodata is a great way to experiment and create artistic compositions. In cooperation with INTERGRAPH and subsequently with HEXAGON Safety & Infrastructure, Orell Füssli has been creating for over 25 years graphically and technically sophisticated calendar posters for their international customers – a very popular present for the start of the new year. (Figures ↑).

Orell Füssli Kartographie AG

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Rohweder Map Design

by Arne Rohweder

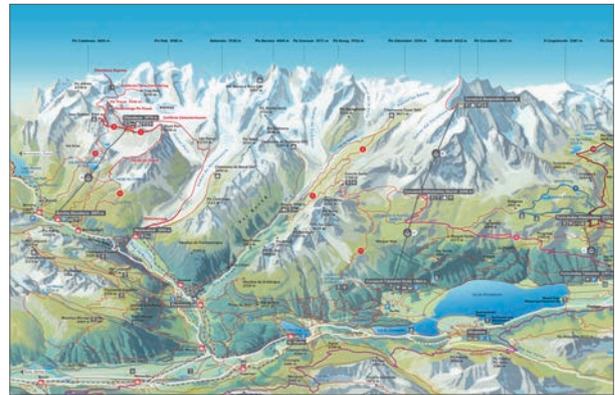
Panoramic Maps

Ever since 1992 Arne Rohweder has been creating panoramic maps and displaying tourist areas according to customer wishes. The land- or cityscape in the panorama map is presented in such a way that the observer has an optimal view of the area. This means, for example, that the observer can look into a valley which would otherwise remain hidden, or that key city sights are highlighted accordingly. Martina Rohweder is responsible for illustrations and graphic design.

Discovery Map Rhaetian Railway

On 7th of July 2018 it was exactly ten years ago that the “Rhaetian Railway in the Albula/Bernina Landscape” was added to the UNESCO World Heritage List. To celebrate this Arne Rohweder, together with his wife Martina, draw a map of discoveries for the Rhaetian Railway. Whilst Arne painted the mountain landscape, Martina illustrated the Rhaetian Railway discovery map with additional figures, very much in the painting style of the artist Alois Carigiet. The idea and concept for the map was developed by Süsskind SGD Graphic Design. The map also featured in the “Atlas of Design”, Volume 4, published by NACIS in 2018.

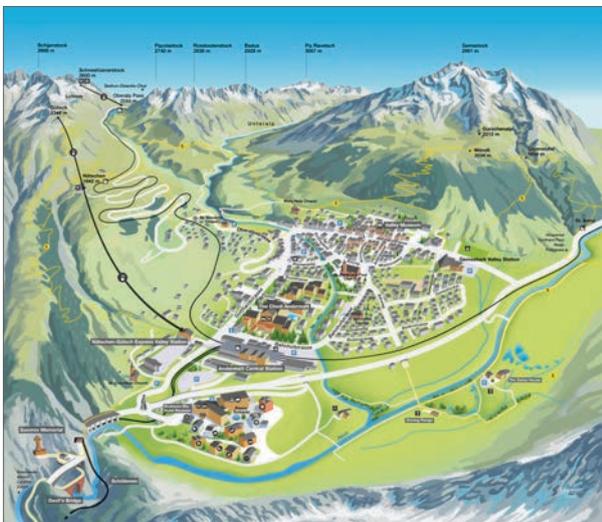
rohwerder-map-design.com



Hiking map Upper Engadin with the Bernina group in summer.



Discovery map of the Rhaetian Railway (detail).



Resort map of Andermatt in summer.



Ski map of Pontresina ski school and snowland.

Sandra Kühne – Artist

by Sandra Kühne

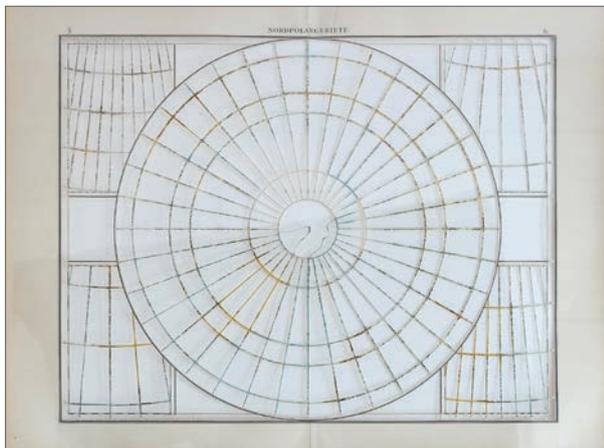
**I AM A CARTOGRAPHER.
I AM A SEISMOGRAPH.
I AM AN OCEANOGRAPHER.**

Sandra Kühne (born 1976 in Namibia, Windhoek) is a Zurich based visual artist who works primarily in drawing and installations using cut outs. She completed her Master in Fine Arts at Zurich University of the Arts (ZHdK). She has exhibited widely in Switzerland and Germany including group shows at the Museum Belvedere Zurich, Kunsthaus Baselland and the Museum Horst Janssen Oldenburg (Germany). She was awarded numerous artist residencies in places like Svalbard, New York or at KAUST University in Jeddah (KSA).

Paper, lines and cutting are central to Sandra Kühne's artistic practice. These lines can be sculptural and poetic, resonating further than the page or the exhibition space. Printed materials such as maps are frequently used as media. Sandra Kühne employs the variations of the line, its formal lyricism, but also challenges the absolute assertion of any printed map by making references to topography that is in continual flux. If a printed line on paper ever accords perfectly with a mark or a division on the surface of the globe, it is only for an instant.

www.sandrakuehne.ch

info@sandrakuehne.ch



3D Lütolf

by Gregor Lütolf

3D Printing Service Provider, Specialising in Geodata and Architectural Models

3D Lütolf provides the creation of digital and physical relief models for museums, exhibitions, architecture, urban and space planning, science projects, tourism, art, product design, model making: for use as gifts, and for private relief lovers. Geographic data can also be used to design lithophanes, keychains, chocolate molds or other products.

We use FDM 3D printing technology to produce the physical models out of digital terrain, landscape, or architectural data. Most of our physical reliefs are 3D and printed out of white filament. As a speciality, some of our works are augmented with digital information through a projector.

Such installations allow a visual overlay to convey dynamic processes such as the weather, or thematic map information such as population, rainfall, and other data of interest onto the physical models.

In 2017, we won 3rd place in the category “Other Cartographic Products” at the ICA conference in Washington, DC, for our flagship model, the “Canton Bern – 3D printed Terrain Model, 1:25,000”. This is our largest model so far, measuring 5x4.5m, consisting of 360 tiles, each 19x19cm of size. It took us 9 months to produce, was of a very high quality and had a layer height of 0.08 mm.

Our passion is to innovate by experimenting with the latest technologies. Most recently with full-colour FDM 3D printing.

List of Services and Products

- Data Migration
- Digital Terrain Models
- Landscape Models
- Architectural Models
- Geographic Information Products
- FDM 3D Print Service
- Multimedia Installations
- Consulting
- Training



Our workshop during the production of the Canton Bern relief in 2015. Showing 7 Ultimaker FDM 3D printers running in parallel.



Detail of the Canton Bern relief, showing “Mount Wetterhorn” from the west. Raw 3D printed tiles before clean-up.



Canton Bern – 3D printed Terrain Model, 1:25,000. Dimensions: 494 x 456 x 17 cm. 360 Tiles, each 19 x 19 cm.
 Overlay: map.geo.admin.ch showing the "Geological map of Switzerland 1:500,000" by swisstopo.



Pupils touch and admire a section of our relief of the Canton of Bern with a digital overlay at the Mini Maker Faire in Trieste 2016.



The architectural planning model for a new construction site at Krattigen village. Removable plot and variants of the new building.
 Dimensions: 90x60x20 cm. Scale: 1 : 200.

3D Lütolf

Gregor Lütolf
 Quellenweg 17
 CH-3704 Krattigen

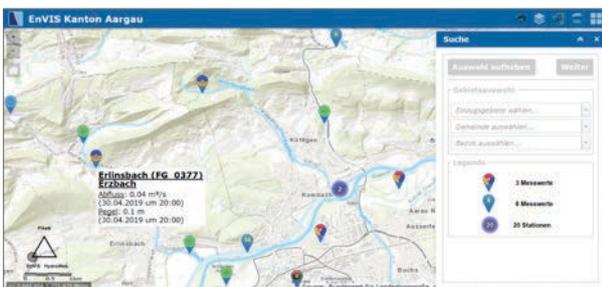
- ☎ +41 79 295 75 46
- 🌐 3dluetolf.com
- 🌐 3drucken.ch/reliefs
- ✉ gregor@3dluetolf.com

Canton of Aargau – Department of Construction, Traffic and Environment

by Christophe Lienert

Canton of Rivers and Streams

The canton of Aargau (sometimes Latinised as “Argovia”) is one of the more northerly cantons of Switzerland. It is situated on the lower course of the river Aare, which is why the canton is called Aar-gau (meaning Aare province). A special feature of the canton is the merging of the major Swiss rivers that drain into the North Sea via the Rhine. It is one of the most densely populated regions of Switzerland (Source: English Wikipedia).



The default EnVIS viewer (desktop view).



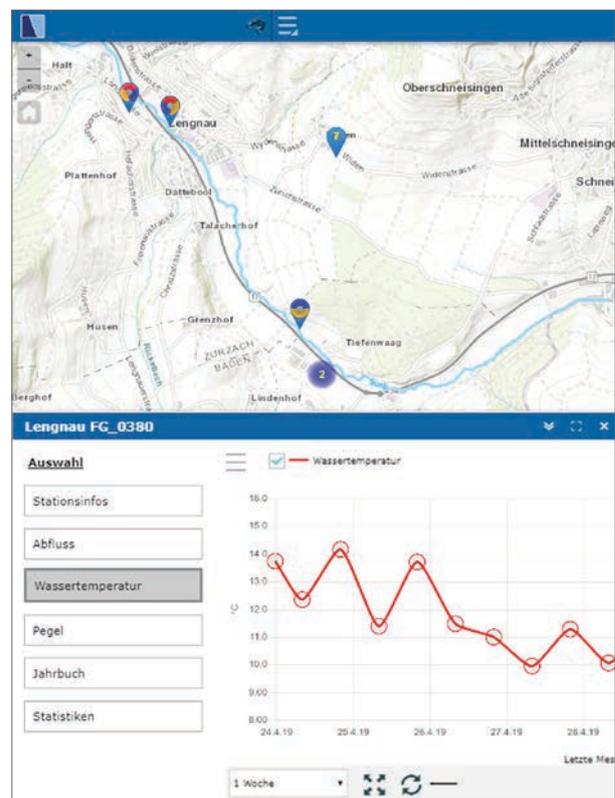
A precipitation radar raster image with ground gauge data (mobile view).



A river discharge gauge reaching warning thresholds (desktop view).

Products and Services

EnVIS (“Environmental Data Management and Visualisation”, www.envis.ch) is a web-based cartographic platform for the access, visualisation, and analysis of all environmental time series data measured in the Canton Aargau. EnVIS is based on various interfaces, a federated multimedia database, a spatial data infrastructure, and web-services that handle huge amounts of real-time measurement data from several cross-departmental environmental monitoring networks (e.g. air, soil, water). EnVIS is accessible through desktop and mobile devices, and is primarily intended for the public, but also for administration to better fulfil legal tasks. It is a versatile platform to publish customisable environmental data; to openly access data; to make long- and short-term environmental dynamics more visible, and to help raise awareness for environmental concerns.



Diurnal water temperature cycle (tablet view).

Federal Office of Meteorology and Climatology MeteoSwiss

by Mirjam Baumann

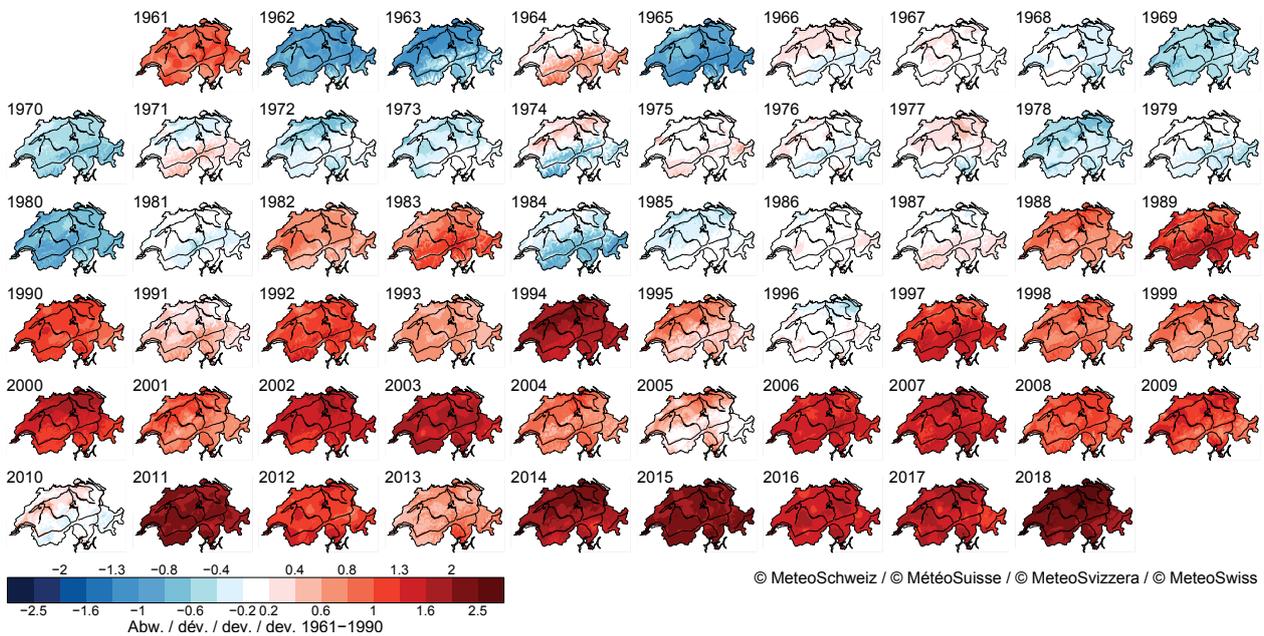
National Weather and Climate Service

For many years, MeteoSwiss, the Swiss national weather and climate service, has been playing an important role in Switzerland's safety and prosperity. The aim is to provide reliable weather and climate services for Switzerland and the international community.

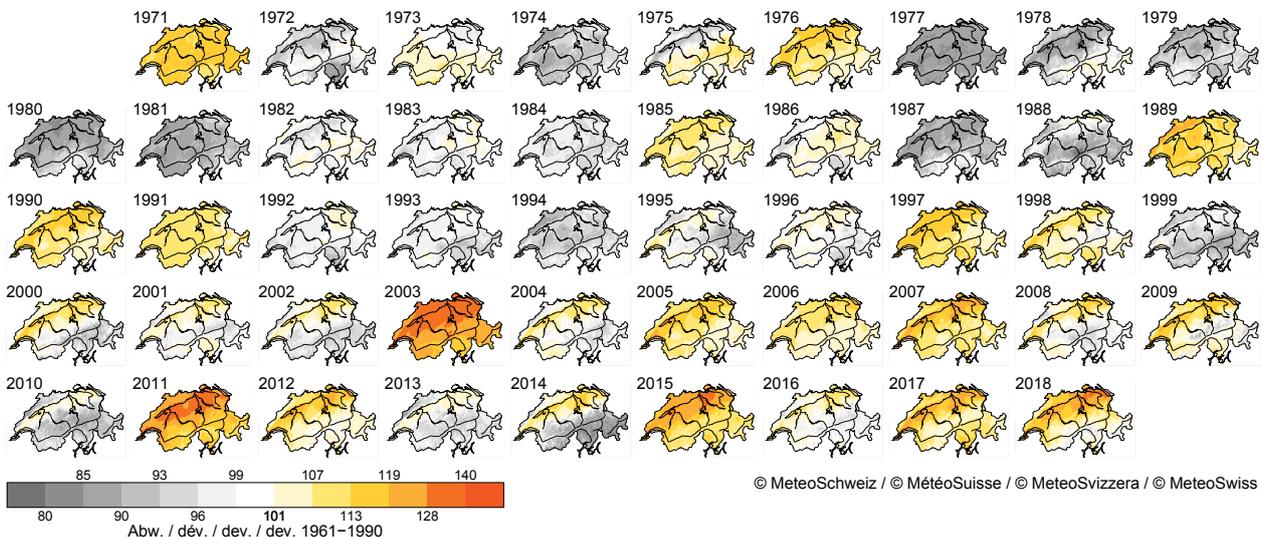
MeteoSchweiz

Operation Center 1
CH-8058 Zürich-Flughafen

www.meteoswiss.ch



Deviation from the mean temperature (1961–1990) between 1961–2018.



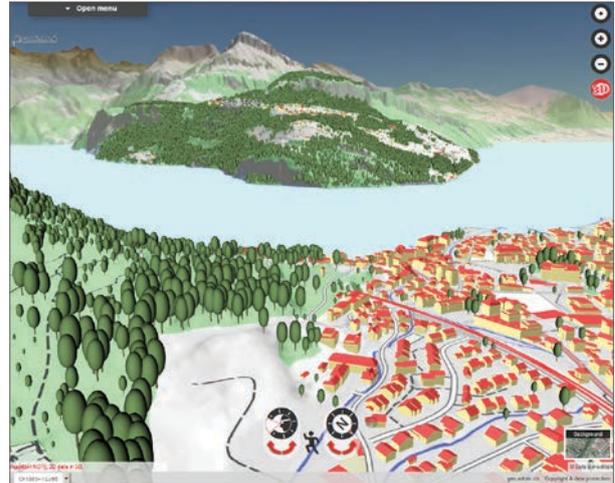
Deviation from the mean sunshine duration (1961–1990) between 1971–2018.

Federal Office of Topography swisstopo

by Urs Isenegger

What We Do

Geospatial information in the form of maps, images and data, above or below the surface of the Earth, are a key element in the infrastructure of any country. Transparent and sensible decisions, not only on political and social issues but also in our own private lives, are inconceivable without a sound awareness of our surroundings. The Federal Office of Topography swisstopo ensures that our landscape and what is beneath it are reliably and sustainably documented. It coordinates the provision of geoinformation at federal level and together with the cantons, over-see the official cadastral survey, runs the Institute for Military Geography and operates the federal geoportal with the map viewer map.geo.admin.ch (→ Page 85).



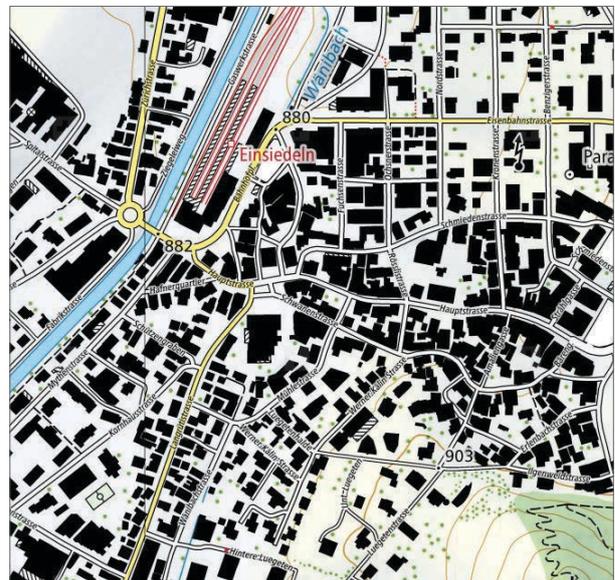
3D viewer, swisstopo.

New Map Products

National Map 1:10,000

Following the recompilation of the national maps it is now also possible to fully automatically produce a detailed 1:10,000 national map. The data comes from the topographic landscape model and is the same base data as used for all the other national maps. This advantage has now be utilised for the production of the first 1:10,000 national map, which at the same time will be the first Swiss national map to be produced fully automatically.

This new map represents a milestone in the history of Swiss cartography in that it combines the unique quality of conventional maps with innovative and advanced production processes. With this new development, swisstopo is responding to the growing importance of geodata for a society in transition.

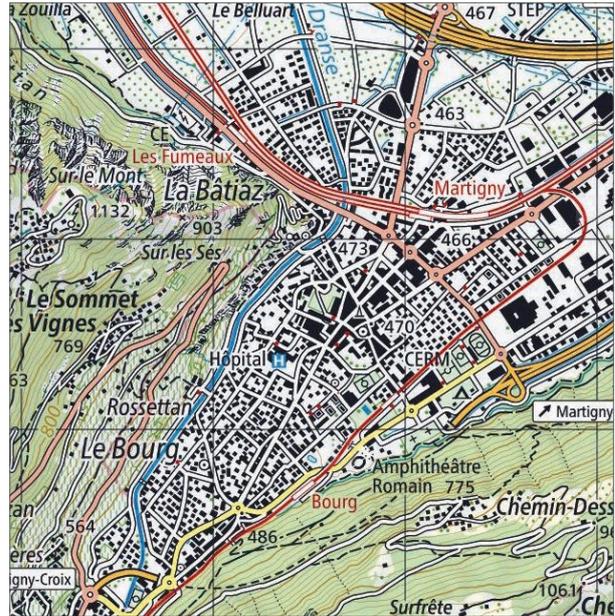


New National Map 1:10,000.

National Map 1:50,000

Just like the new 1:25,000 National Map, the 1:50,000 National Map is now also derived directly and to a large extent automatically from the topographical landscape model. The map graphics have been carefully renovated, with the colours being based on the larger scale National Maps.

The National Map 1:50,000 is not only the basic map for the Swiss military but also the basis for the hiking, snowshoeing and ski touring maps, each of which will also be converted to the modern design in the coming years. Swisstopo works closely with existing partners in regard to these products. The new database also allows the design to be further developed for various different requirements and media. The printed map is also only one of many conceivable and versatile products that could be produced in the future.



National Map 1:50,000.

Hiking Map

The new hiking maps are based on the new-generation 1:50,000 scale national map. The data is now available in vector form, opening new possibilities for data use and representation. The thematic content of the hiking maps is hence no longer just added to the basic map, but instead is integrated into the basic topographical information to create a more uniform map. Thanks to the new graphics, the maps are more legible as well as looking fresh and modern.

A public online survey was the impetus for the current form of graphics. The trail categories of 'hiking trail', 'mountain hiking trail' and 'alpine hiking trail' are now indicated in yellow, red and blue, matching the actual signage. SwitzerlandMobility's hiking routes have also been added. Labeled public transport stops and pictograms indicating points of interest, observation towers and castles, remote inns, refuge huts, parking places, caves and via ferrata provide further useful additional information.



Hiking Map 1:50,000.

Award-Winning Map

swisstopo's new hiking map received the following two awards at the 2018 Esri User Conference in San Diego, USA:

- "Cartography Special Interest Group Excellence"
- "Recognition of Excellence in Cartography" of the International Cartography Association ICA and the International Map Industry Association IMIA. →



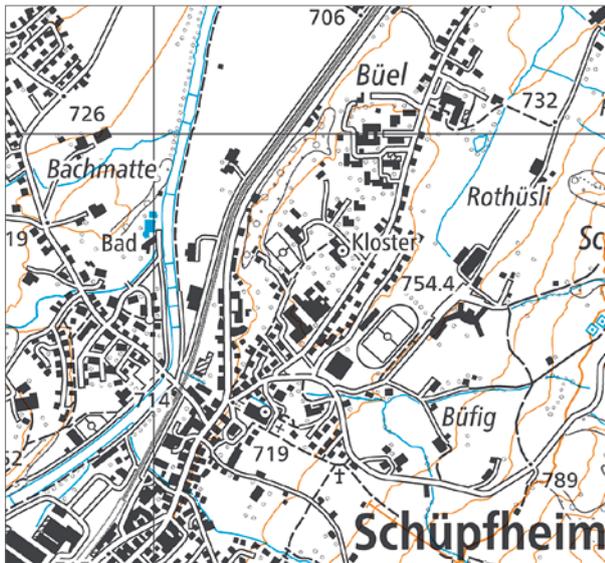


Figure 1: The base Map derived from the Swiss Map Vector.

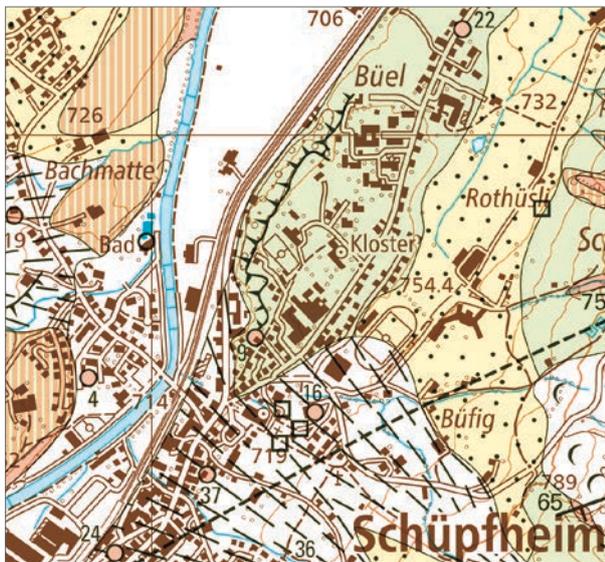
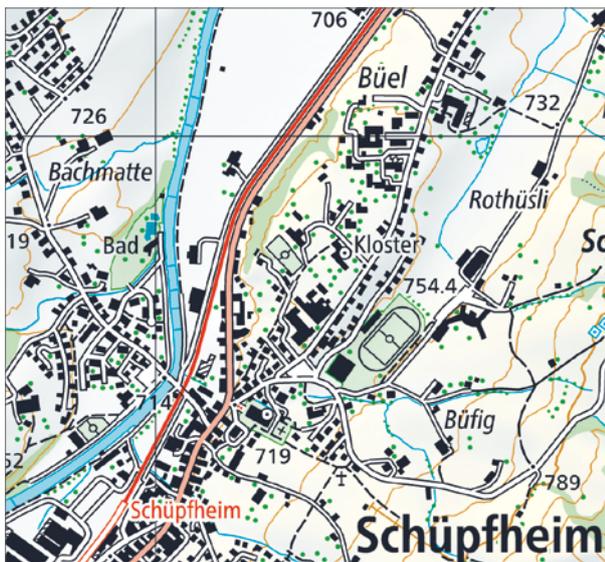


Figure 2: Final Geological Map 1:25,000.



National Map 1:25,000.

Swiss Map Vector and Geological Maps

Swiss Map Vector is the Swiss national map in vector format. Raster data for relief and rock features complement the vector data.

A tailor-made background map for the geological atlas was derived directly from Swiss Map Vector. Characteristic for the Geological Atlas is the extensive thematic imprint (→ Figure 2), nevertheless, it is very important that the base map (→ Figure 1) remains legible. This was achieved by reducing the number of colours and fine adjustments to the symbolisation. The resulting basic map proves easy to read even with the wide range of topics.

swisstopo

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Federal Statistical Office

by Olaf König

Competence Centre for Statistics

The Federal Statistical Office (FSO) is Switzerland's national competence centre for official statistics and constitutes the hub of the Swiss statistical system. It produces and publishes statistical information on the status and development of the population, economy, society, education, research, territory and the environment. This information is used for opinion building among the population and for the planning and management of key policy areas. It provides insight into society's development and its complexity and helps make it transparent for democratic debate.

Through innovative approaches, the FSO analyses, interprets and publishes statistical information. It edits around 150 publications annually for print and digital media, publishes more than 400 statistical data releases and has a widely used website portal with about 15 million page views every year.

As the largest national provider of regional statistics for more than 150 years, the FSO also has a long tradition in the field of data visualisation, especially in the use of thematic maps. Since 1989, the FSO has had its own cartographic service – ThemaKart – that offers a competent and fast cartographic information service for institutional customers and is the centralised production unit for all FSO's map and atlas products.

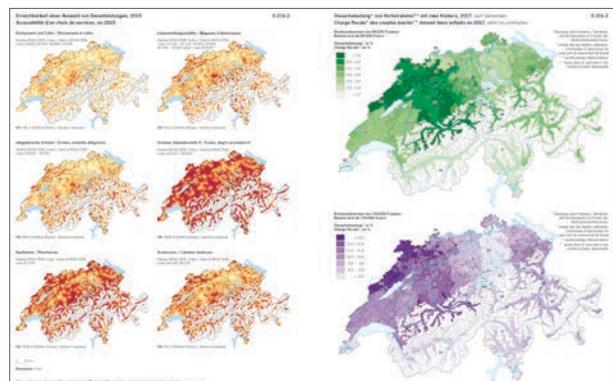


The statistics office of Switzerland is situated in Neuchâtel and attached to the Federal Department of Home Affairs.

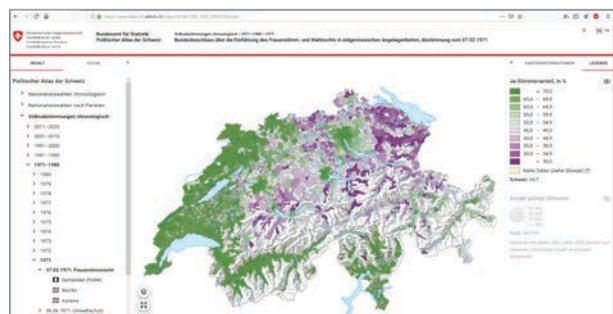
Interactive Atlases

Maps are a key element of the FSO's publications and are widely used to disseminate data in a visual form. The cartographic production covers the whole range of topics of socio-economic data that are collected in the Swiss statistical system. Whether in static form or in interactive form, our maps are always multilingual (up to five languages) and made accessible for all devices.

The main platform to publish new maps is the online statistical atlas interface that provides a full dissemination tool and is very popular with our customers. Users can explore atlas content, find thematic maps, download ready-to-print exports of these, extract the underlying data and find some additional information (various metadata). All our interactive atlases are freely available and are published in German and French.



Small multiple maps from the Statistical Yearbook of Switzerland (2019 edition).



The web interface of the Political Atlas of Switzerland: map of the accepted historic popular vote for "Women's suffrage" (1971).

Statistical Atlas of Switzerland

www.statatlas-switzerland.admin.ch

This standard reference work contains maps on almost every topic covered by the FSO's activity and for which regional data is available. Continuously updated during the year with new data, this atlas provides more than 5000 interactive maps at various geographical levels.

Political Atlas of Switzerland

www.statatlas-politique.admin.ch

This specialised atlas contains all current and historical Swiss election and voting results. On the days of national elections and referendums, the FSO offers live maps with continuously updated results.

Statistical Atlas of Swiss Cities

www.statatlas-cities.admin.ch

This specialised atlas covers statistical data that presents various aspects of the living conditions in eight Swiss cities.

Retro Print Atlases

In 2014 and in 2017, the FSO produced two printed atlases based on a retro-atlas concept. This concept consists of a full reproduction of an original atlas (respectively from 1914 and 1897) which is supplemented with new charts and maps with current data. These two atlases invite the reader on a beautiful and attractive journey through space and time. Both of these atlases are available through the FSO website. More about the award-winning atlas on → [Page 95](#).

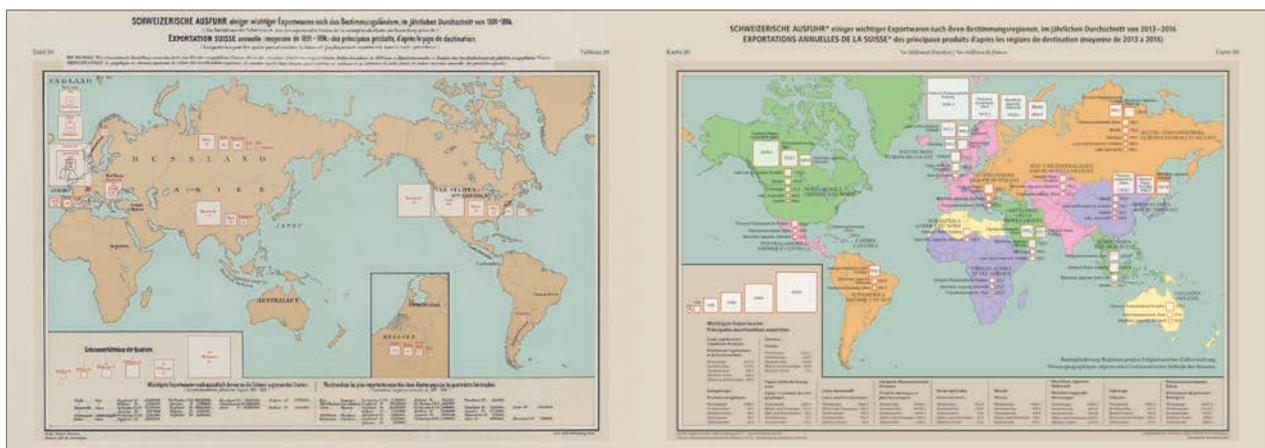
Federal Statistical Office

Espace de l'Europe 10
CH-2010 Neuchâtel

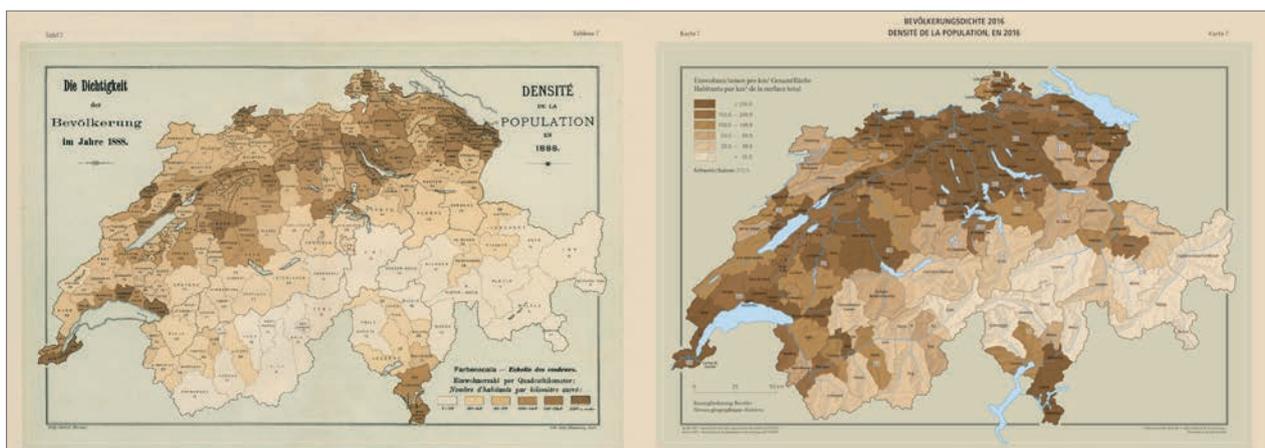
+41 58 463 60 11

www.statistik.admin.ch

info@bfs.admin.ch



Graphical-statistical Atlas of Switzerland 1897–2017: Swiss international exports: comparison of the periods 1891–1894 and 2013–2016.



Graphical-statistical Atlas of Switzerland 1897–2017: population density maps: comparison of 1888 with 2016.

Zentralbibliothek Zürich – Map Department

by Jost Schmid

The Library and its Map Collection

The Zentralbibliothek Zürich (ZB) is the cantonal, city and university library of Zurich. With over six million documents and more than half a million visitors every year, the ZB is one of the largest Swiss libraries. As a university library the Zentralbibliothek collects academic literature on all the subjects taught at the University of Zurich, with a special focus on the liberal arts and social sciences. The ZB's five Special Collections – Graphics, Manuscripts, Maps, Music and Old Prints – boast a wealth of historical and current archives, bequests, image and sound documents.

The map collection is impressive in both range and depth. The Zentralbibliothek Zürich pursues an active purchasing policy and holds material dating from the 16th century to the present day. We are very proud to possess an extensive national and international collection with indigenous material from all continents well represented within the same time scale.

Services

As the oldest cultural institution in Zurich, the Zentralbibliothek organises regular exhibitions to present its collections and the topics on which they focus to a broader public. It offers guided tours and training courses to teach key information skills to students at all Zurich universities, high school students and the wider public. As every department of the Special Collections, the map collection is more than just a top-class repository. Our highly trained staff are delighted to use their extensive expertise to aid you with your request.



Map Collection of the Zentralbibliothek Zürich, Reading Room.

ZB Zentralbibliothek Zürich

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✉ karten@zb.uzh.ch

International Symposium for the Study of Globes

The Zentralbibliothek Zürich organises in cooperation with the Swiss National Museum and the Abbey Library of St. Gallen (→ *Figure*) the 14th Symposium of the International Coronelli Society for the Study of Globes. The event takes place from 2nd to 5th October 2019. 🌐 www.coronelli.org



St. Gallen Globe

The 400-year-old St. Gallen globe in the focus of the media.

The origins of the St. Gallen Globe have been clarified.

The secret of the origin of the St. Gallen globe has now been revealed: The globe was made by Tilemann Stella, the globe maker for the Mecklenburg court in Schwerin. Geographer and map historian Jost Schmid, head of the Department of Maps and Panoramas at the Zentralbibliothek Zürich (Central Library Zurich), has provided the scientific proof of this fact. At the end of September 2017, the media reported on the discovery of the origins of the globe, which is one of the most important cultural-historical objects in Switzerland. The Globus belongs to the Central Library but has been on permanent loan since the National Museum was founded.

By the way, a duplicate of the Globe has been on display in St. Gallen since 2009, following a legal dispute between the cantons of Zurich and St. Gallen and mediated by the Swiss Minister of the Interior, Federal Councillor Pascal Couchepin.



Historical detective work: Jost Schmid has clarified the origin of the St. Gallen globe. (Photo: Fabio Schönholzer).



The St. Gallen Globe will be digitised

The globe, which is over 400 years old and is usually in the National Museum, had a visit to the photo studio in November 2018. The resulting pictures will be turned into a virtual version of the globe. This virtual copy is intended to give visitors and researchers a glimpse of the all the exciting details. The software for the 3D globe was developed at the ETH Institute for Photogrammetry and Geodesy. In the near future, a computer screen will stand next to the original globe on which the virtual globe can be rotated, but above it will have a zoom function so that one can zoom into every last detail. Incidentally, rotating the original was problematic because the sphere weighs around seventy kilograms and the meridian ring weighs a further thirty kilograms. The original supports were however far too light and soon collapsed, resulting in heavy globe then crushing the mechanics. Jost Schmid, Head of the Maps and Panoramas Department at the Zurich Central Library, says that this probably happened sometime during the 17th century.



The globe is carefully prepared in the photo studio. Detail views below (Photos: Nathalie Taiana/NZZ).



Asahi-dake Hiking Map

by Markus Hauser, Orell Füssli Kartographie

A Swiss-Japanese Co-Production

Japan attracts more and more foreign tourists. Travelers from all over the world not only visit famous cities such as Tokyo or Kyoto, but also the diverse natural and mountain landscapes. One focus of outdoor activities lies on Hokkaido, the northernmost Island of Japan, which has developed from an insider tip to a hotspot for trekking tours and snow sports in recent years. The core of the island is the Daisetsuzan Mountains with Asahi-Dake (2291m) as the highest peak. The largest national park in Japan (Daisetsuzan National Park) is located in this area and offers fantastic snow sports areas, numerous thermal baths and possibilities for trekking tours lasting several days.

For the first time there is now a topographical hiking map of this area in the tradition of Swiss Cartography available: "Asahi-dake – The heart of the Daisetsuzan National Park" in scale 1:25,000.

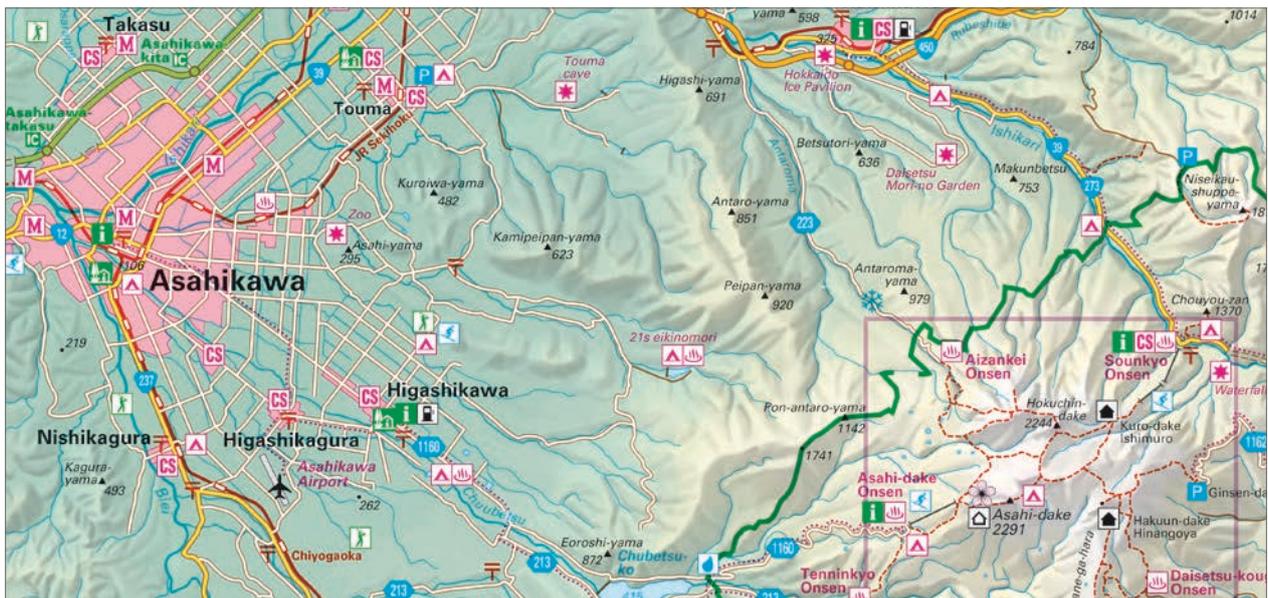
Markus Hauser, cartographer and Japan expert at Orell Füssli Kartographie AG in Zurich, together with Professor Teiji Watanabe from Hokkaido University in Sapporo, have created a product that opens several windows to Japan.



Volcano Mount Asahi-dake.



Detailed map of the Sounkyo Onsen at a scale of 1:12,500.



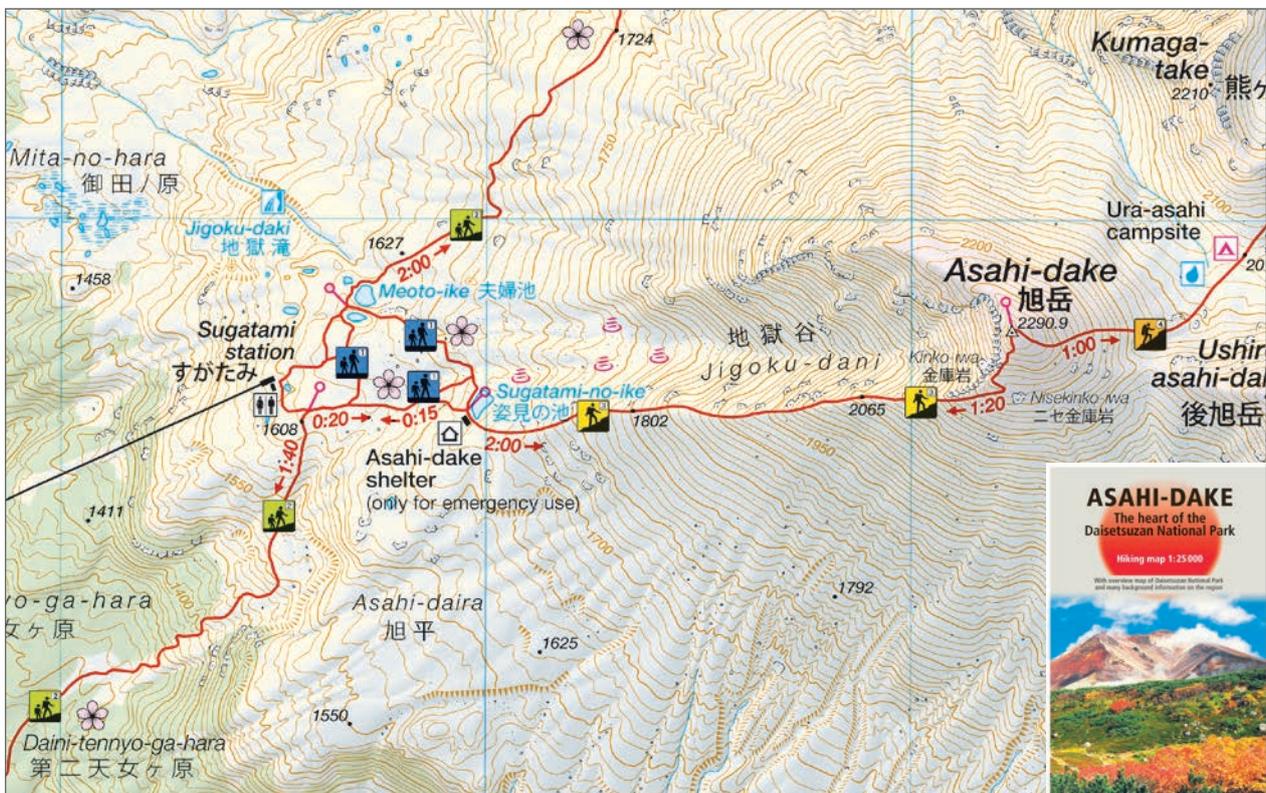
The reverse side of the map contains an overview map at a scale of 1:315,000 (extract).

While Japanese maps have so far hardly been translated or published in other languages and were hardly readable by non-Japanese people in terms of their information content, the Asahi-Dake map impresses with its precise representation of topography, vegetation and infrastructure. The lettering in Kanji and Latin characters (English) and choice of signatures and symbols are easy to understand, while the reverse side contains numerous additional information in English only, such as about landform, geology, fauna, flora, national-park regulation and tourism facilities. A new classification of Japanese hiking trails (the so-called "Daisetsuzan Grade") introduced by the Ministry of the Environment of Japan, which follows a completely different approach than in the Alps, was for the first time introduced. The grade system is different from

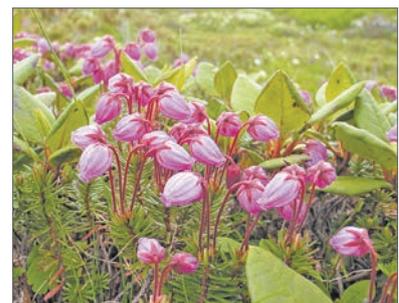
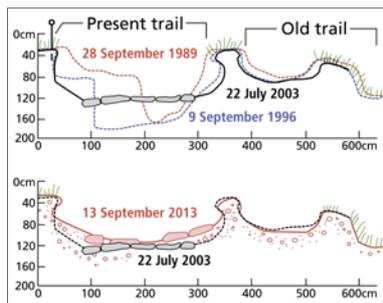
many of the similar systems in other countries because it uses not only the ease/difficulty of the trails but also the degree of vulnerability of the nature. This grade system, together with the suggested walking time and the place names both in English and Japanese, will give all international users suitable route plans to enjoy the trekking at its best.

In 2018 the map was chosen by the North American Cartographic Information Society to be included as one of 32 maps for the "Atlas of Design". This Atlas presents some of the most beautiful and fascinating cartographic designs in the world.

The Asahi-dake hiking map adorns the cover of this publication.



Asahi-dake hiking map at the scale of 1:25,000 (detail of the summit region).



The reverse side of the map provides text and image information about geography, geology, flora and fauna of the area.

Atlas of Switzerland

by René Sieber, Institute of Cartography and Geoinformation, ETH Zurich

The Atlas of Switzerland (AoS) is mandated by law by the Swiss Federation to visualise spatially distributed topics from different fields, such as Socio-Economy, Ecology, Traffic, and Energy, in an ongoing long-term project. Since its creation in 1961, the Swiss National Atlas has offered cartographically sound maps in combination with additional information to allow the general public to explore visible and hidden structures and processes.

The first printed version, with over 600 maps was produced and published until 1997. From 2000 until 2010, three interactive versions of the AoS were released on CD-ROM/DVD. The third version, contained about 2000 maps with additional time series in 2D maps and 3D mode (block diagrams, prism maps, and panoramic views). It offered a multitude of tools and map functions, including a sky tool, terrain analysis tools, data and map comparison tools, smart legends, and much more. The interactive AoS series was a big success: overall, more than 25,000 copies were distributed during its life span.

Online Version

In 2016, a new generation of the Swiss National Atlas was launched. The “Atlas of Switzerland – online”, this focuses on real-time 3D visualisation of geographic data by means of a virtual globe. The basic idea of the 3D-based concept is to seamlessly combine 2D and 3D by allowing the user to choose a conventional 2D map view, but also to detect additional information in a 3D map view. Within this 3D environment, new rules, interactive methods and user-friendly tools for 3D navigation in space and time, map graphics and layer handling, as well as explorative analysis have been developed. Concerning topics and map views, a collection of classical map themes such as Geology, Soil, Population, and Language can be selected. But two groups of maps make the “AoS – online” really special: 1) Door-Opener topics (e.g. Swiss Records, Chocolate Factories and Beer Breweries), and 2) typical 3D map topics (Cable Cars, Flight Trajectories and Ice Volumes).

Between 2016 and 2019, the “AoS – online” has been downloaded more than 20,000 times. This desktop application is updated continuously and is available for free: atlasofswitzerland.ch/downloads

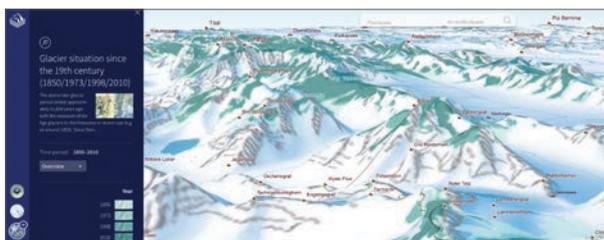
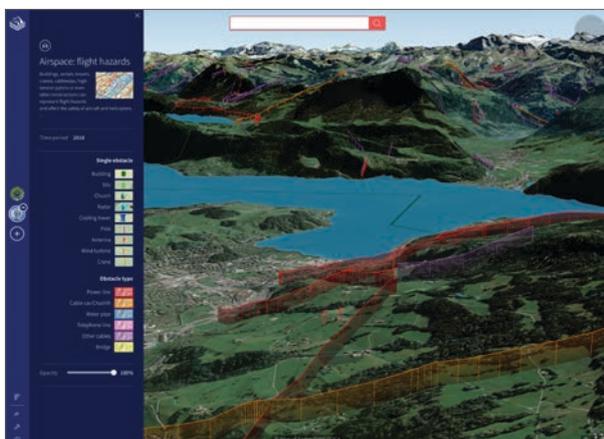


Figure left: Layer combination of glaciers since 18th century (green tones) and last glacier maximum (white).



Flight obstacles visualised as 3D objects and curtains (region of Lake Lucerne).



The population of Swiss communities by age, distributed according to density (Zurich and surroundings).

The New Edition of the Swiss World Atlas

by Christian Häberling and Lorenz Hurni,
Institute of Cartography and Geoinformation, ETH Zurich

The Swiss World Atlas

In June 2017 a new edition of the printed Swiss World Atlas was published (→ *Figure 1*). This atlas is the most commonly used atlas in all Swiss schools (grades 7 to 13). First published in 1910, the atlas is available in all three official Swiss national languages German, French and Italian. It is published by the Swiss Conference of Cantonal Ministers of Education (EDK) and edited by the Institute of Cartography and Geoinformation at ETH Zurich. The Swiss World Atlas provides a collection of maps addressing a broad range of physiographic features and socioeconomic phenomena at national, regional, continental, and global scales. Based on an exemplary approach, over 430 maps, satellite images, and illustrations with different geographic extent, scale, and thematic content are available.



Figure 1: The new edition 2017 of the Swiss World Atlas, published in the three official Swiss national languages German, French, and Italian.



Figure 2: The country overview.

Concept and Structure of the New Edition

The concept of the new Swiss World Atlas has retained some key characteristics from the 2010 edition. The number of pages, the page format and, at a technical level, reliance on the same printing process with six special atlas colours remained the same. In many other respects, the new edition was completely redesigned, restructured and updated. For its didactic concept, the new curriculum for Swiss secondary schools had to be considered.

The new Swiss World Atlas has a new contemporary design. Its general layout is based on a new colour scheme in red, white, brown and grey. The front cover with a red globe on a white background is certainly the most striking novelty of the new corporate design. The general structure and the sequence of maps in the 256-page book have been completely revised. A more clearly arranged table of contents and list of topics are now available as well as improved comprehensive name and subject indices. New features include navigation aids, such as globes with overlaid map frames and side tabs, a fold-out general key and a country overview (organised by continent and illustrated with the national flags) (→ *Figure 2*).

The introduction chapter is an entirely new part of the atlas (→ *Figure 3*). Arranged over 14 pages, it explains the principles of geo-information and cartography in a concise format. Besides topics like GIS, map projections, map design, scale, generalisation, and map types, a new double page explaining map competences and map handling fosters a skills-oriented approach to work with maps.

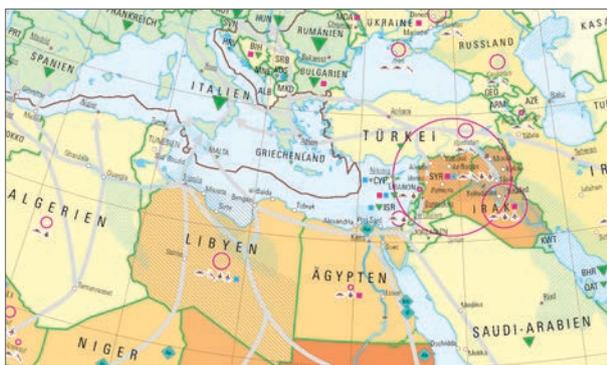


Figure 4: Specialised maps portraying current topics such as the conflicts in Western Asia are in accordance with the new Swiss school curricula.



Figure 5: The new Univers Next Pro font enables a space-saving, legible map labelling.

Revised Map Collection and Technical Workflows

The map section of the Swiss World Atlas was updated, expanded, and graphically revised. Classic, uniform overview maps displaying topography, political structure and the economic status of countries, major regions and continents allow users to easily compare different geographical regions. This synoptic view of the world is complemented by thematic maps on climate, geology and population density.

Furthermore, in this new edition, numerous other maps address specific topics related to the environment, resources, transportation, energy, natural hazards and conflicts (→ Figure 4). Some of the atlas' traditional relief maps have been further complemented with high-resolution satellite images of typical landscapes.

Some new map design standards have been introduced: The minimum map size spans now a quarter page, and the map scales for the different map types have been unified (with a few exceptions). Additionally, Univers Next Pro is now the standard font (→ Figure 5). Last but not least, an up-to-date technical workflow based on GIS-supported data handling for base maps, graphic software, and layout software was developed.

The editorial board is convinced that the expectations and needs of geography teachers and didactic experts are met. Nevertheless, the completely revised Swiss World Atlas has certainly some potential for further improvements. Future polls and interviews will help to optimise this modern printed atlas.

schweizerweltatlas.ch/en

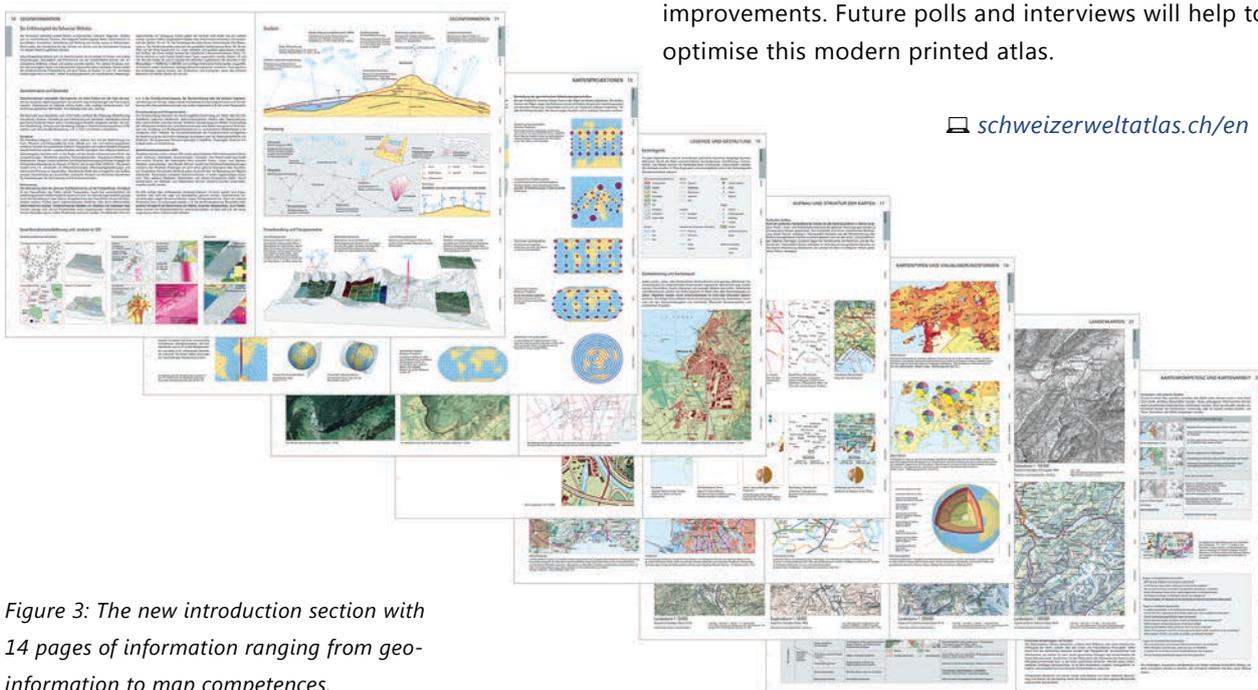


Figure 3: The new introduction section with 14 pages of information ranging from geo-information to map competences.

Maps for the Rainforest

by the Bruno Manser Foundation

Mapping and Cultural Documentation

The clearance of the rainforest in Borneo represents a real threat to the traditional Penan tribal area. The Bruno Manser Fonds (BMF) located in Basel, is committed to the cause of the threatened people of Penan in the Malaysian rainforest of Sarawak.

The Penan would like to ensure that their habitat as well as their culture and history are properly documented for the benefit of future generations. They also need the cultural and historic documents and maps as evidence of the use of their land and the borders of their territories in order to be able to claim their land rights before the courts.

15 Years of Mapping

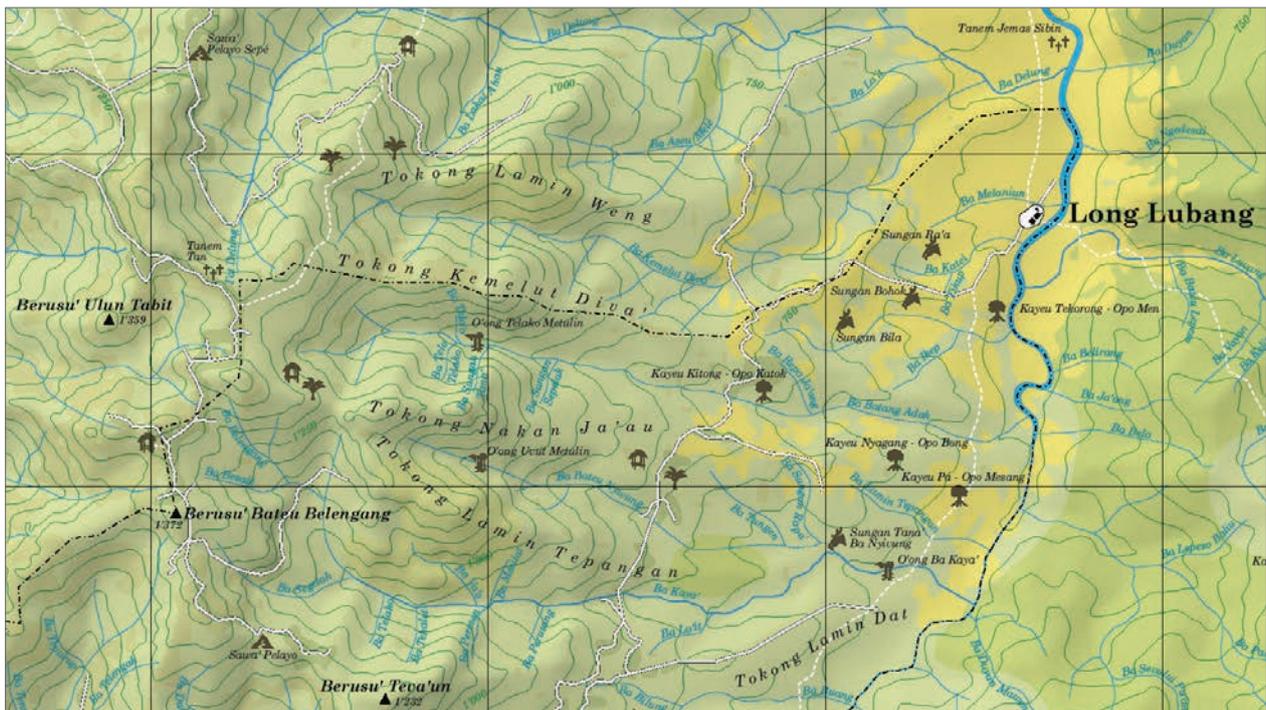
Beginning 15 years ago, the BMF has now mapped a rainforest area in the Malaysian part of Borneo, which covers almost a quarter of the area of Switzerland. Working closely with the indigenous people of

Penan, 23 precise maps were produced using traditional methods and state-of-the-art technology (GPS localisation, drones, etc.). These maps cover an area of almost 10,000 km² of rainforest and traditionally cultivated land at a scale of 1:35,000. This project mapped 7,000 rivers and streams, 1,800 mountain peaks and ranges and over 800 trees important to the Penan (e.g. dart-poison trees, sago palms, etc.).

The cartographic work is managed on site and in Switzerland by BMF project coordinator and geographer Baptiste Laville. The maps were created using ArcGIS together with Adobe Illustrator and were printed in Switzerland. On 17th November 2017, a Penan delegation officially submitted the map work to the Vice President of the Malaysian state of Sarawak.

The collected geographic information led to the online mapping project Sarawak Geoportal:

bmfmaps.ch



Geographical, cultural and historical knowledge of the Penan are recorded on the new maps.

The Swiss Breeding Bird Atlas

by the Swiss Ornithological Institute

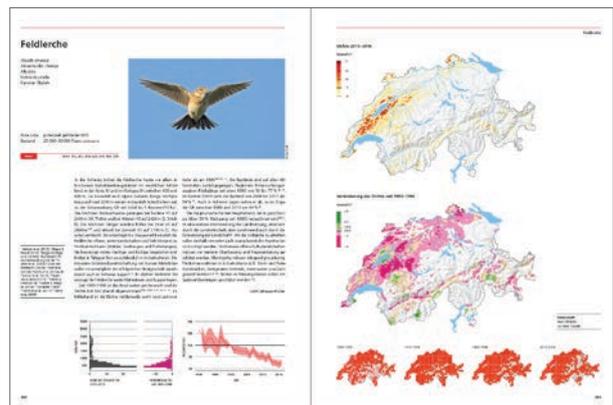
Birds Face a Changing World

The state of birdlife reflects our relationship with nature and our landscapes. The atlas presents the current distribution, abundance and altitudinal distribution of all breeding birds in Switzerland and Liechtenstein with unprecedented precision. Most importantly, it highlights the profound changes that have taken place in the Swiss avifauna over the past 20 to 60 years. This comprehensive reference book provides an important foundation for the protection and conservation of native birds and their habitats (Source: vogelwarte.ch).

During four years, more than 2000 volunteers were out in the field documenting the bird populations of Switzerland and Liechtenstein between 2013 and 2016. Their effort has resulted in a unique overview of the distribution and current state of our breeding birds. Some book facts: 249 species or subspecies accounts, 3.7 kilos of in-depth ornithological knowledge, 1074 atlas maps, 341 charts, 345 photos, and 648 pages. The Swiss Breeding Bird Atlas 2013–2016 is available in three language versions: German, French and Italian. The printed atlas was published in December 2018. The entire content of the 2013–2016 atlas will probably be available online in 2019 according to the website of the Swiss Ornithological Institute.



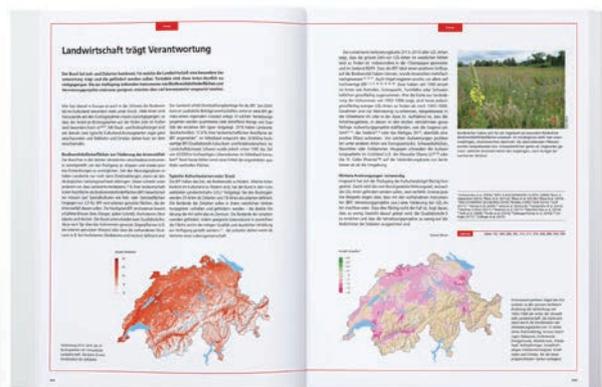
Swiss Breeding Bird Atlas 2013–2016: One of 1074 maps.



A double page showing the European Skylark.

Publisher

Swiss Ornithological Institute
Seerose 1
CH-6204 Sempach

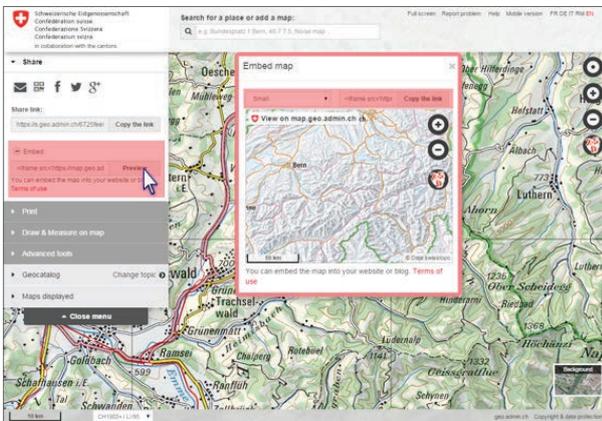


The Federal Geoportal

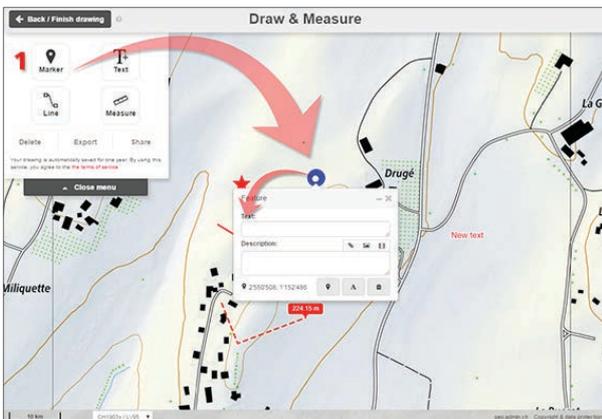
by David Oesch, swisstopo

Federal Geoportal geo.admin.ch

The map viewer map.geo.admin.ch of the federal geoportal received several cartographic related updates: The 3D mode with nationwide coverage of all the buildings, bridges, cable cars and vegetation allow a browser based visualisation of the third dimension of Switzerland. The drawing function enables the user to annotate maps, sharing them publicly and finally integrating their personalised map into their website for free via web standard – resulting on an average day with over 50,000 visits with 5000 annotated maps and over 1000 sites using embedded maps. The next generation viewer test.map.geo.admin.ch is currently open for the public to review and features a new customisable base map and the ability to navigate the world.



Embed the map into your website.



Marker-, drawing-, text- and measure tool.

Awards

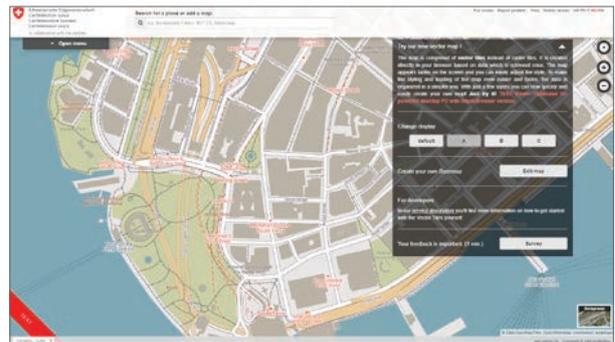
More than a dozen awards at both national and global level recognise and confirm the way chosen to implement the federal geoinformation strategy. Between 2015 and 2019, the federal geoportal received two further awards:

2015 e-government competition

In the 2015 international e-government competition, the “geo.admin.ch” project took second place in both the “Best 2015 e-government Project” and the “Audience Award” categories. This competition acts as an e-government quality indicator in Germany, Austria and Switzerland.

Swiss Digital Transformation Award 2017

This award is given every year to companies and organisations that have made particular progress in their digital development and therefore have significantly increased their competitiveness.



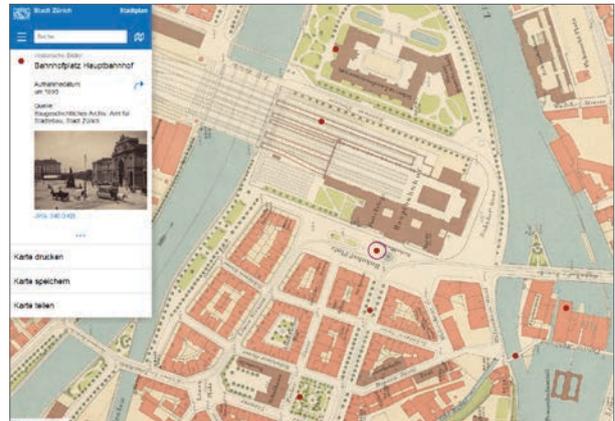
Next generation viewer test.map.geo.admin.ch.

Communal and Cantonal Geoportals

Municipalities and the Swiss Cantons offer a selection of their geodata free of charge.

City Map of Zurich 3.0 (Züri Plan 3.0)

The city of Zurich records, updates and manages geodata and maps on a wide range of topics. All this geodata is freely available on the web. In addition to various historical maps and photographs of the city of Zurich, a precise route planner with elevation profiles for pedestrians and cyclists, weekly updated base maps, as well as aerial photographs are available. Daily information on events (e.g. construction sites) and urban services (e.g. nurseries, bike trails, etc.) are also provided. The geodata can be combined arbitrarily within the city map. Integrating additional geodata from other sources using WMS and KMZ to create, print or share your own sketches is also possible.



Zueriplan with historical content.

stadt-zuerich.ch/stadtplan

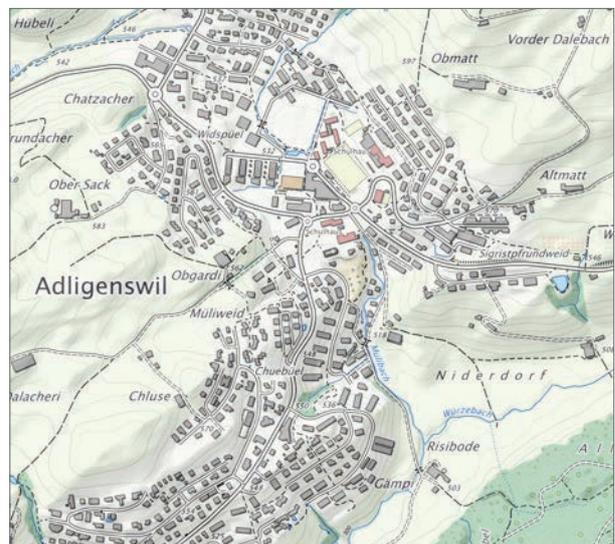
ÖREB Cadastre Canton of Lucerne

Product description: If you own, want to buy or inherit land, you cannot use it arbitrarily. Public ownership restrictions (ÖREB) restrict the permissible use of land.

The ÖREB Cadastre (oereb.lu.ch) is an innovative public web application that shows at a glance how the use of a property is restricted. Maps and the associated regulations provide comprehensive information. Private individuals and the real estate industry in particular benefit from this application.

During the development of the ÖREB cadastre in the canton of Lucerne, user-friendliness was given high priority. The complex ÖREB topics are presented in a simple way:

- The user guidance provided by the web application is consistent and clear in simple three steps.
- For easier orientation, the individual topics are presented in tiered order.
- High-quality web cartography makes the high density of information clear and legible.



ÖREB Cadastre Canton of Lucerne.

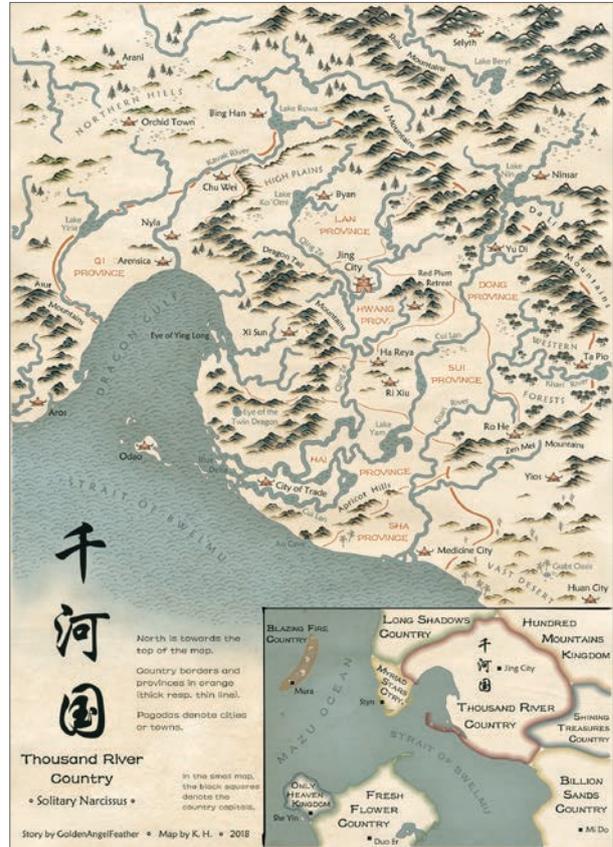
oereb.lu.ch

Fantasy Maps

Thousand River Country – A Fantasy Map for a Fanfiction Story

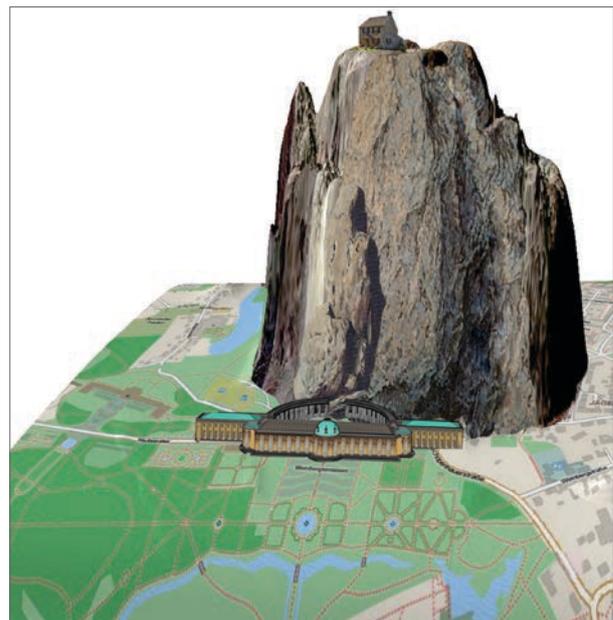
The map depicts the Thousand River Country; (Pinyin: Qiān Hé Guó) in Chinese. Thousand River Country is a fictional country and the setting of a fanfiction story called Solitary Narcissus – an ongoing story written by GoldenAngelFeather on Asianfanfics.com. Thus, the map was essentially created for the readers of the story with the aim to help them envision places mentioned in the story and their relation to each other. As the map is like another introduction to the story, it needed to be aesthetically adequate and fit the story's setting and atmosphere. The story plays in a fantasy world similar to ancient China, therefore, the map features a pictographic style and a bit of an Asian touch.

To make this possible the map was created in Photoshop (mountains, vegetation, pagodas, ...) and Illustrator (coastline, rivers, ...) simultaneously using Smart Objects. The map has no fixed scale (Fantasy map). → The map was authored by Katharina Henggeler.



Dream Cartography

Dream Cartography aims at modeling, documenting, reuniting and graphically depicting the dream space and relevant psychological aspects of dreams in a meaningful but abstracted way, so that each dream presents itself to the map viewer in its actual multi-dimensionality. Dream records will be saved on the project's web platform, thereby extracting elements for their visualisation. Making use of web cartography technologies and of new defined symbology, dream maps will be created and displayed on the platform. The user will be subsequently empowered to adjust and adapt the visualisation using tools especially created for this purpose. The project targets dream researchers and psychology scholars, as well as laymen interested in their dreams. Responsible for this project was Cristina Iosifescu Enescu whilst studying at the Institute of Cartography and Geoinformation, ETH Zurich.



Upload your own dream map: dreams.ethz.ch

Art and Cartography

Moving Worlds

The world is in motion – image proportions change, and the forms of the land masses expand and shrink again. When we take a closer look at these animated world maps, it becomes clear to us that only the area depicted in the middle of the picture changes. But this influences the shape of the whole surface of the Earth. The world maps we know are mostly depicted from a Eurocentric perspective. But this map isn't a faithful depiction of the world. In this sense, the animated world maps are also, at any time, just as truthful (or not) as traditional map depictions. How our world maps appear to us is ultimately determined by our subjective perspective of the world.



Moving Worlds by Julia Mia Stirnemann.

vimeo.com/217629419 www.juliamia.ch

Matterhorn Papercraft Mountain

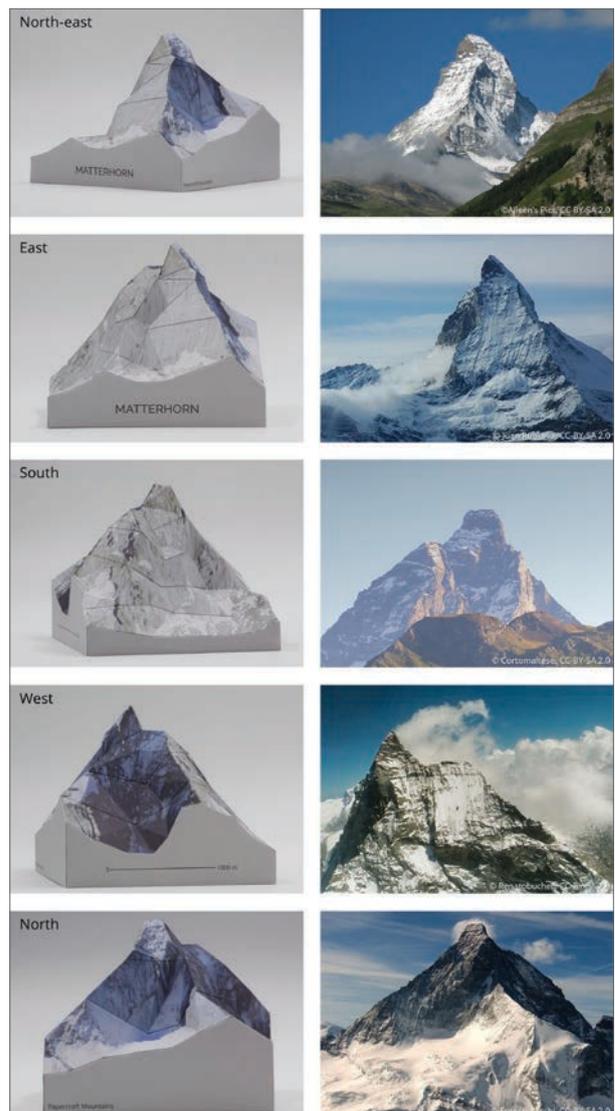
This sheet of paper can be used to build a true-to-scale model of the probably most famous Swiss mountain, the Matterhorn. With the model, the mountains topography can be explored and understood far easier and has a greater impression than when using a two-dimensional map; the construction process also involves a far more intensive examination of the terrain than would be the case with a prefabricated relief model.

The sheet is accurately printed on both sides: on the front there is an orthophoto from swisstopo and on the reverse side the cut lines are printed.

To create the model, digital terrain data was divided into 100 triangles using an algorithm developed by especially for this purpose. These are arranged in such a way that the model is both easy to build, and the terrain surface is reproduced as accurately as possible. The enclosed photos show the finished model in comparison with the original mountain.

Matterhorn Papercraft Mountain by Johann and Jürnjakob Dugge. →

Map art by Sandra Kühne on → *Page 66.*



Prix Carto 2015 – Swiss Cartography Award

Biennially, the society honors new high-quality products in the field of cartography.

Awards in Three Categories

The Swiss Society of Cartography (SSC) awarded the “Prix Carto” for the 6th time on the 4th of November 2015 as part of their Autumn Conference. The event was dedicated to the International Year of the Map (International Map Year, → *Page 26*). The “Prix Carto” is awarded to outstanding, innovative cartographic products that stand out from the abundance of similar works by being both novel and/or trend-setting. Prizes were awarded in the categories “Prix Carto – digital” and “Prix Carto – print”. For the first time young people in training had a category all for themselves, the “Prix Carto – start”. The new prize is intended to promote young talent in the fields of Cartography, Geography, Geomatics and Geovisualisation. The prize is also intended to honour outstanding School, Teaching, Diploma, Bachelor’s, Master’s and other student research projects, to reward them financially and to help promote them to a wider public. From the numerous entries, the following three prizes were awarded, each consisting of prize money and a certificate:

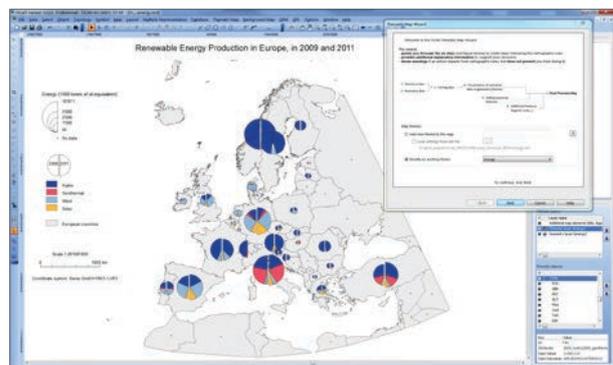
Winner Prix Carto – digital

The “Prix Carto – digital” went to OCAD AG in Baar, which has supplemented its cartography software with a new module for the production of thematic maps. With the ThematicMapper, it is now possible to generate Diagram-Maps by means of an intelligent process-accompanying user guidance. For this purpose, a cartographic wizard is used that supports rule-based map creation – from data analysis to thematic symbolisation and visualisation. The cartography software OCAD, which was previously used worldwide primarily for the production of orienteering maps, now opens up to the broad spectrum of thematic-statistical maps. The ThematicMapper was developed under the leadership of Thomas Gloor (CEO OCAD), Hubert Klauser, Gian-Reto Schaad (software developer OCAD) and Angeliki Tsorlini, René Sieber and Lorenz Hurni (research partner, Institute of Cartography and Geoinformation, ETH Zurich).

Prix Carto



Prix Carto exhibition in 2015.



Thematic Mapper (screenshot) and the authors (above).

Winner Prix Carto – print

The Island Peak/Mera Peak map from climbing-map.com GmbH was chosen as the winner of the “Prix Carto – print”. This printed product is a thematic mountaineering and trekking map showing the routes to these two impressive 6000 m peaks in the Everest region of Nepal. The authors Sandra Greulich and Sacha Wettstein are enthusiastic mountaineers and have been producing topographic maps of touristically interesting peaks in their own publishing house for many years. They collect all the material themselves and produce the whole product, including all the cartographic work from A to Z. The results include a main map at a scale of 1:25,000, an overview map of the region at 1:200,000, route sketches with descriptions, a vegetation profile, village plans of Lukla and Namche Bazar, as well as information on the climate and monasteries of the region. Additionally, the maps contain a UTM kilometre grid and are GPS-compatible. Company portrait on → Page 44.



Figures: Sacha Wettstein and Sandra Greulich.
Extract of the Island Peak/Mera Peak map. →

Winner Prix Carto – start

Fabian Ringli and Pascal Tschudi (ETH Zurich) received the very first “Prix Carto – start” for their special folded map “Individual Travels along the Trans-Siberian Railway”. Whilst journeying along the Trans-Siberian Railway from Moscow to Vladivostok, it was the lack of ideal map material which inspired them to create this product which for them need to be clear, holistic and above all contain handy information in the form of a map with additional essential notes and data. Subsequently, they collected facts from various sources and processed them with the help of various software tools into a large-format folding map of the entire route, which was designed to serve the individual traveller both in their preparation and as a travel companion.



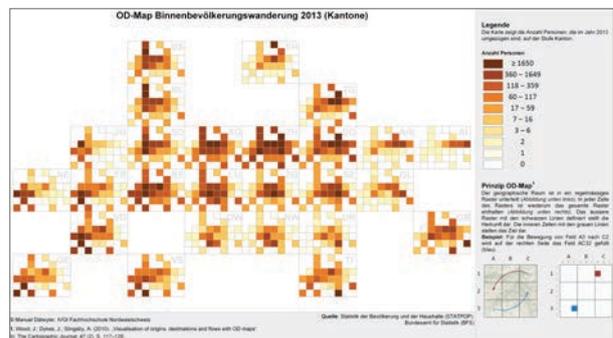
Pascal Tschudi and Fabian Ringli, winner Prix Carto – start, and the Trans-Siberian Railway map (extract). ↓



2nd Place Prix Carto – start

The prize winner Manuel Dätwyler, as part of his Master thesis at the FHNW Muttenz, used the most modern methods and tools for creating OD representations of the Migration of the Swiss inland population, at both cantonal and district level. Origin Destination Data (OD) is data with an origin and a destination. For the interactive design, among other tools, he also used a java script library D3.js. This is state-of-the-art within the Information visualisation branch and is also often used in modern Journalism. The created visualisations show an unbelievable amount of information very clearly. The district level visualisation shows, for example, about 40,000 values spatial distribution simultaneously.

Figures: Manuel Dätwyler (with certificate) and organisers.
The award-winning OD map. →

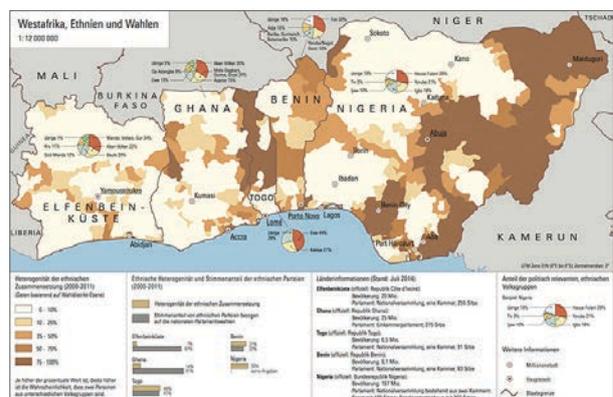


3rd Place Prix Carto – start

The prize winner Shirkou Moradi has designed a sub-Saharan Africa map, a West Africa map and a map of Benin on ethnicities, electoral systems and party strength as part of his master's thesis at the Geographic Institute of the University of Zurich. The maps are at three different scales and show various forms of representation. The maps each contain a great deal of information, are very clear, easy to read and in a coherent designed. Shirkou Moradi also used an online survey, contacting three expert groups to obtain interesting feedback on the practical suitability and comprehensibility of the maps in terms of topics and content which was then fed back into the design of the maps.

Figures: The laudatio speaker Ralph Straumann congratulates award winner Shirkou Moradi (left).

One of the thematic maps with the title "West Africa, Ethnic Groups and Elections" at a scale of 1:12 Mio. →



Prix Carto 2017 – Swiss Cartography Award

The award ceremony was part of "The Evening of Swiss Cartography" in Zurich.

Award Ceremony in the Swiss National Museum

On 30th of October 2017, the SSC awarded the Swiss Cartography Prize "Prix Carto" for the seventh time at the Swiss National Museum in Zurich. The award ceremony was part of "The Evening of Swiss Cartography" programme. The prize was awarded in three categories in the field of Cartography, Geography, Geomatics and Geovisualisation: Prix Carto – start (Young Talent/ Promotional Prize) Prix Carto – print (Print Product Category) and Prix Carto – digital (New Media Category). The Young Talent Prize includes financial support, and the promotion to a wider public. All award winners were also given the opportunity to present their work at the award ceremony in the form of a short presentation. A small exhibition in the hall showed some of the submitted cartographic products.



More than 130 participants joint "The evening of Swiss Cartography".

Winner Prix Carto – digital

OpenMapTiles, Petr Pridal, Klokan Technologies

OpenMapTiles.org is an open-source software and website with ready-to-use geodata. Companies and institutions can download and use the provided maps in their own products and applications. It comes with open map styles and an online editor for designing custom maps. The maps are powered by vector tiles, which contains carefully selected features from OpenStreetMap. There is no vendor lock-in. Maps can run even offline. Standard raster tiles are supported, as well as OGC web map services and custom coordinate systems: openmaptiles.com/coordinate-systems



Winner "Prix Carto – digital": OpenMapTiles.

The project has been developed by Klokan Technologies GmbH team and students from HSR Rapperswil, who received the OpenStreetMap Innovation Award for the work.

OpenMapTiles project launched in early 2017 and has been already adopted by Siemens, IBM, GeoCaching, Amazon, Bosch, Planet.com and others.

Company portrait on → [Page 56](#).



Petr Pridal (right) receives the Prix Carto award.

Winner Prix Carto – print

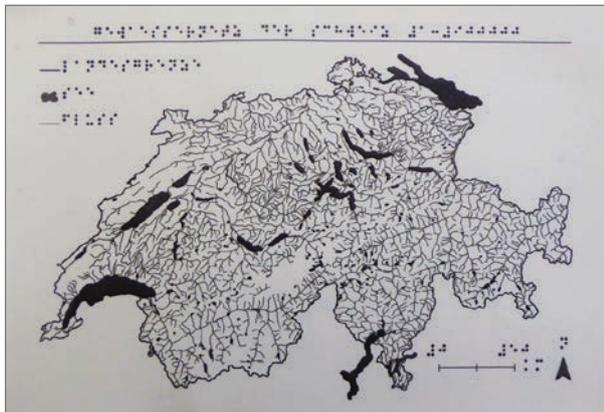
Tactile Atlas of Switzerland, Anna Vetter, Esri Ltd.

For people with a visual handicap there are only a few possibilities to visualise geographic data through maps in order to get a better understanding of the spatial reality. Therefore, the idea was born to create a tactile atlas of Switzerland including tactile maps with a national coverage at a scale of 1:100,000 as well as different thematic overview maps at a scale of 1:900,000.

Five thematic layers have been prepared and symbolised to create two different thematic map sheets and the overview maps with the topics settlement, administrative units, mountains, and the water- and railway network. The labels were added in Braille. The atlas includes 58 maps on 116 pages.



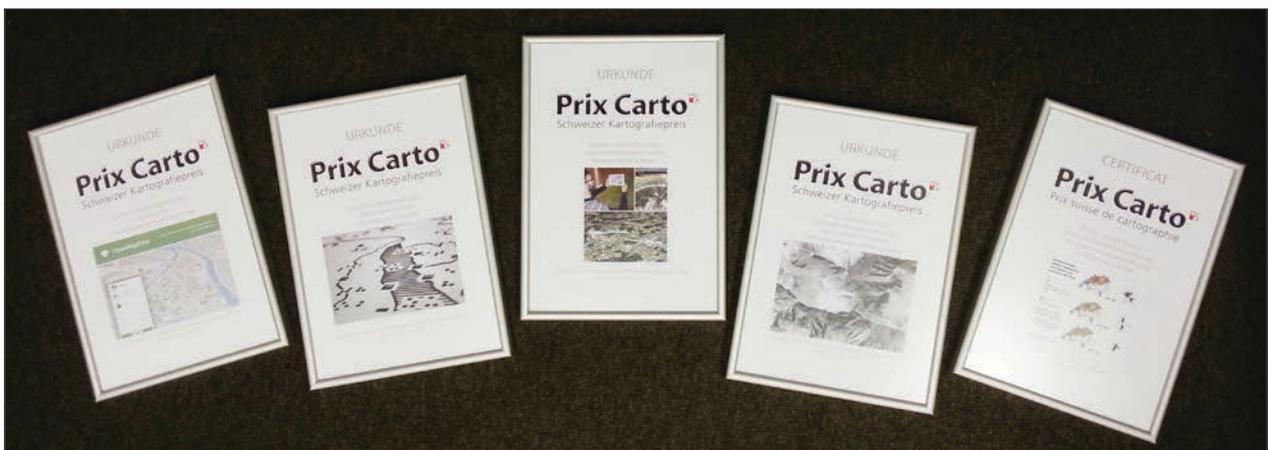
Anna Vetter presents the Tactile Atlas of Switzerland.



Tactile overview map of Switzerland.



Map detail of the Zurich region.



Prix Carto 2017 certificates.

Winner Prix Carto – start

Augmented Reality App Swissarena, Michael Zwick

The Swissarena, part of the Swiss Transport museum in Lucerne, is a place where visitors can walk across an aerial photograph covering 200m² (scale 1:20,000). Michael Zwick has developed an application with Augmented Reality (AR) technology, where variable content can be overlaid individually. The aerial photo of Switzerland is the basis for this AR-app. Virtual content from four thematic areas is defined in three-dimensional space. They are stored in the application or loaded as web services. The users can locate themselves within the aerial photo, query virtual objects and get the results on the mobile device.



Winner "Prix Carto – start": Augmented Reality App Swissarena, Author: Michael Zwick, FHNW MuttENZ.

2nd Place Prix Carto – start

Automatic Swiss style rock depiction, Roman Geisthövel

The main objective of this thesis is the reproduction of the style of rock depiction featured in the Swiss National Map by digital means. The method is automatic in the sense that, apart from the raster elevation model and a mask indicating the raster cells covered by rock, the user is only supposed to enter declarative parameters, e.g. the main lighting direction. It follows that in using this method, expert knowledge is no decisive factor. Different users providing the same input will arrive at equal results.

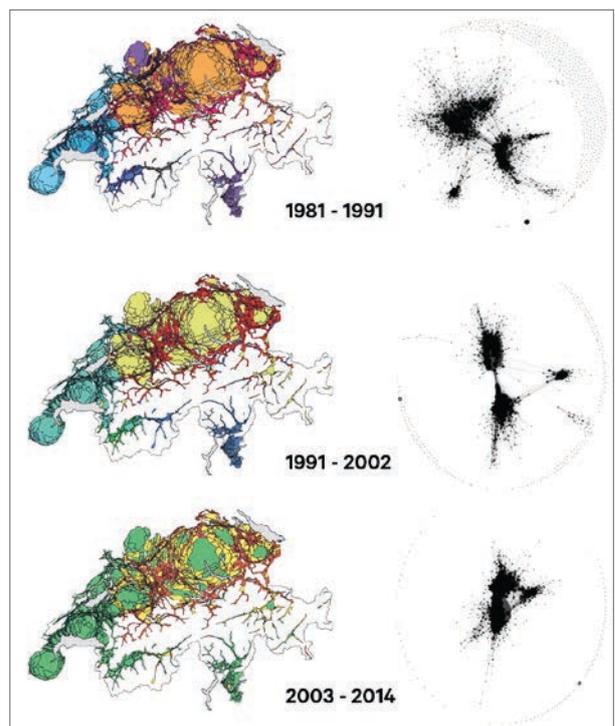


Automatic rock depiction by Roman Geisthövel, ETH Zurich.

3rd Place Prix Carto – start

Evolution of Swiss political communities over popular vote outcomes, 1981–2014. Shin Alexandre Koseki.

Can maps reveal the changing political landscape in Switzerland? This series is instrumental in understanding cultural transformations of Swiss local communities over the last thirty years. As part of my PhD dissertation, the maps combine several innovative layers. The base map, made by the EPFL-Choros, affords a new type of cartograms with a greater readability of the maps and the data it seeks to communicate. My color coding of each municipality translates "Swiss political communities", populations expressing very similar political views during federal popular votes. To produce the data, I crafted the method of "Territorial Topology Analysis," which combines a metric of proximity and social network analysis. I carefully chose colors to illustrate the proximity between clusters, and their evolution through time.



Cartograms by Shin Alexandre Koseki, EPFL. →

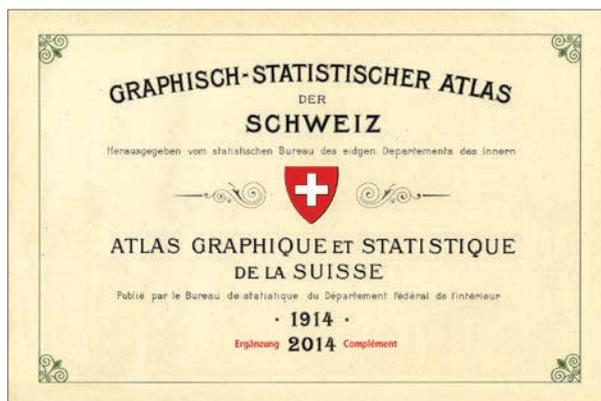
ICA Awards 2015 and 2017

At the ICA International Cartographic Exhibitions in 2015 and 2017, SSC members won a total of six Prizes. Congratulations to all winners.

ICA Award 2015

At the International Cartographic Exhibition in Rio de Janeiro (Brazil), the “Graphical and Statistical Atlas of Switzerland 1914–2014” won the second jury prize in the category atlases.

On the occasion of the 100th publication anniversary of this impressive atlas, the Federal Statistical Office decided to fully reproduce this work and make it available again to the public. In the awareness that exciting stories especially always arise when statistics are not only compared regionally, but over a very long period, the original panels of 1914 were – in a first-time approach – complemented by the statistical maps and diagrams with current figures as of 2014.



The atlas offers impressive facts and insights into the social reality in Switzerland at the turn of the century and up to the time immediately before the start of World War I. 128 pages in German and French, published in March 2015.

ICA Award 2017

At the International Cartographic Exhibition in Washington, Switzerland won an amazing six prizes. Of the 475 mapping products from all over the world exhibited 13 were from Switzerland. An international jury of experts selected the best maps. In addition, an audience prize was also awarded in each category (public vote). Fortunately, of all the participating nations, Switzerland won the most prizes. The following Swiss map products were awarded:

Jury Prizes

- Tactile Atlas of Switzerland, Category “Atlases”, 2nd Place.
Author: Anna Vetter, Esri Switzerland.
- Augmented Reality App Swissarena, Kategorie “Digital Products”, 2nd Place. Author: Michael Zwick, FHNW Muttenz.
- Atlas of Switzerland – online, Category “Digital Products”, 3rd Place
Authors: Institute of Cartography and Geoinformation, ETH Zurich
- Kanton Bern – 3D relief, Category “Other Cartographic Products”, 3rd Place. Author: Gregor Lütolf, PH Bern.



Swiss winners from the International Cartographic Exhibition in Washington D.C., honoured at “The Evening of Swiss Cartography” in Zurich.

Public Vote

- Swiss World Atlas (2017 Edition), Category “Atlases”.
Authors: Institute of Cartography and Geoinformation, ETH Zurich.
- Atlas of Switzerland – online, Category “Digital Products”.
Authors: Institute of Cartography and Geoinformation, ETH Zurich.

Do you know?

A random collection of Swiss cartographic ephemera.

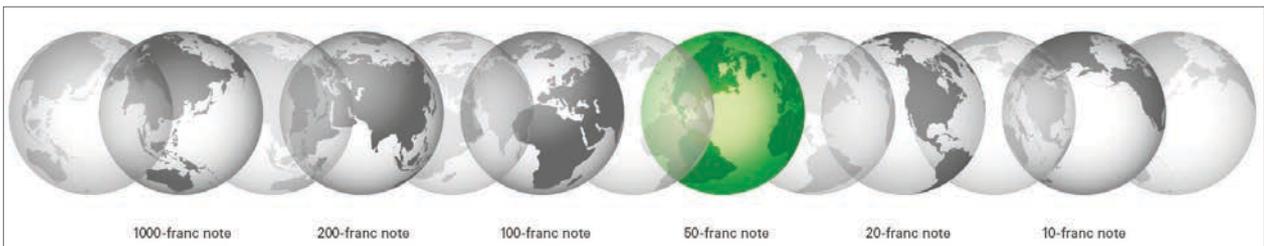
Cartography and Money

The new banknote series introduced by the Swiss National Bank between 2016 and 2019. The 50-franc note focuses on the wealth of experiences Switzerland has to offer – expressed by the wind, symbolised by a globe with wind symbols in different colours. On the back, another cartographic feature features prominently, contour lines and overlay the snow-covered Alp below.



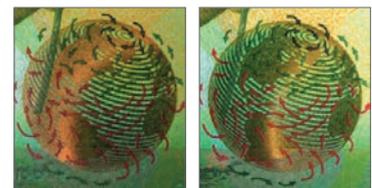
Switzerland, where even the bank notes have contour lines. 50-franc banknote released in September 2016.

Globe



The shimmering globe is another core element that appears on all banknotes of the series and reflects how Switzerland sees itself as part of an interconnected world. In the sequence of notes from 1000 francs to 10 francs, the earth rotates once on its axis and passes through one full day.

The new banknotes meet Switzerland’s traditionally high security standards for its currency. They have numerous security features – one is the globe test: On the front of the note, in the centre, is a depiction of a shimmering globe. Tilt the note from left to right: a golden arc moves across the globe. Hold the note in front of you and tilt it backwards: the colour of the globe changes. →



Cartography and Trash

The artists Ron Temperli and Dominik Heim created a city model purely out of waste. The model was painted using leftover paint and is located in the attic of the Forum Architektur in Winterthur. The model is 8x15 m, shows the city of Winterthur and contains many amusing details. For example, the hospital is built out of old pill packs, other buildings are made of cigarette packs, groups of trees are made from wool, or vines have been lovingly designed with old gift ribbons.



A 3D city model out of rubbish. (Photo: Madeleine Schoder).

Cartography and Beer

Cartography and Beer have always got along well. The GEOBeer is a popular and serious meeting place for people interested in geography, cartography, GIS and the latest technologies. Two to three short presentations provide the setting for the evening. Networking is inclusive. The venue changes and so does the organisation. The event name is symbolic, various other beverages are provided. Information about future GeoBeer events can be found at geobeer.ch.



The GeoBeer event at the Prix Carto award winner Klokan Technologies.

Cartography and Wine

The SSC exclusively produces bottles of red and white Swiss wines for its members. To date, four different editions from Swiss wineries have been produced. A competition for the design of the labels, showing a cartographic subject is organised among the students of cartography. The winners receive prize money, however whether the young people also receive a bottle of wine is beyond the writer's knowledge.



Wine labels from the 2nd and 4th edition.

Cartography and Football

In 2018, the Swiss football team qualified for the last sixteen at the World Cup in Russia without suffering a defeat – including a remarkable 1-1 against the “Celestial globe” Brazil. Switzerland was the only team in Russia wearing shirts with topographical features: Contour lines decorated the teams dress. So, you can guess which team we were supporting! Unfortunately, this was as far as the Swiss team got when we came up against the “IKEA-Team” Sweden and lost 1-0.



Official football shirt for the Swiss national team at the World Cup 2018 in Russia. Contour lines are everywhere.

Cartography and Furniture

Not IKEA furniture, but beautiful tables from the company Modulegno. These tables cleverly show Swiss mountain landscapes in 3D. The table tops are milled mainly from wood and to prevent the tableware from slipping into the valleys, a glass plate is placed over the 3D relief so that the view of the Swiss Alps below is not restricted even at the (dining) table. These specialist pieces of furniture are in the upper price segment and are therefore not comparable to IKEA furniture.



A mountain landscape at home as a piece of your room decoration. modulegno.ch

Cartography and Literature

The cartographer Barbara Piatti has mapped locations mentioned in Swiss literature, thus creating a literary map in 2018. On this map Switzerland appears as an extremely risky place – literary figures plunge into Gorges, drown, are crushed by rocks, stabbed, shot, irradiated or freely choose to end their life. Scenes from fulfilled and unfulfilled love, separation or eroticism can also be observed. An article over the map appeared in the national daily newspaper “Tages-Anzeiger” in April 2018.



A literary map of Switzerland.

Cartography and Love

Four years earlier, with the project “Literaturland-karten” (Literature maps), various thematic maps were created which were then presented at the German Book Fair in Leipzig. One of these maps is a “Love” map: fulfilling love, tragic love, painful separations, erotic – whatever it is, the map shows the literary scenes of love in Switzerland. Further maps showing literary places, e.g. of death, can be found at: literatur-karten.ch. The authors of these maps are Anne-Kathrin Weber and Barbara Piatti.



A “Love” map.

Cartography and Chocolate

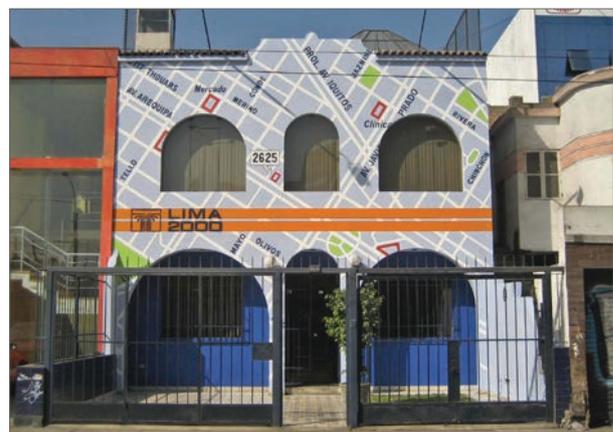
Switzerland made of chocolate. Confectioners and chocolatiers have been making 3D reliefs from the finest Swiss chocolate for several years now. The mould, made with the help of a digital elevation model (mostly from swisstopo), is made of synthetic resin or PET. During the 2016 Zurich Christmas Market, for example, several kilos of chocolate were sold in the form of Swiss landscapes to help mark International Map Year. The cute 3D reliefs make very popular souvenirs, company gifts or promotional giveaways. We know, the only thing better than a Swiss chocolate terrain model is eating it.



Relief model produced at the scale of 1 : 500.000, slightly vertical exaggerated. Food fact: 450g of finest Swiss chocolate.

Cartography and Architecture

Maps “on a Grand Scale”: Maps are constantly being used for decorative purposes. Most impressive however are the super-size map illustrations. The map company Lima 2000, a city and street map publishing company, founded in 1977 by the Swiss Oliver Perrottet, is located on the Avenida Arequipa in Lima, Peru and the façade of the building where the company is based was painted by Oliver himself with an oversized section of his Lima city map.



The façade of Oliver Perrottet's company building Lima 2000.

Cartography and Animals

Marmot, Fish and Spider

You can hardly see it with the naked eye: the marmot, which is hiding in the current 1:25,000 map of the Aletsch region – in the rock at the lower end of the glacier. A now retired cartographer drew it in the rock-face, so to speak as a farewell gift. The marmot wasn't found until 2016 and you have to take the magnifying glass to find the little animal at the lower end of Aletsch Glacier. This marmot is however not an isolated case. On other maps animals have also been added: A spider in the north face of the Eiger, which is in honour of the rocky outcrop with the same name or a fish in a small lake. When these eccentricities are discovered, these cartographic works of art are sadly removed. Cunning cartographers are still however sometimes hiding so-called "Easter eggs" in maps.

Figures: Easter Eggs in the Swiss National maps: a marmot concealed within the rocks, a fish hidden on the banks of a lake and a spider poised on the north face of the Eiger. →



Member List: Companies, Institutions, Authorities

In Switzerland dozens of map producers deal with geodata and GIS. This chapter gives an overview of those map-making companies, institutions and authorities which are organised in the Swiss Society of Cartography. The list is sorted in alphabetical order.

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BSF Swissphoto AG

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Stefan Räber, Swiss Society of Cartography, 2019.

