

Curriculum Vitae (Abridged)

Name	Kathryn Anne Arnold
Date of birth	22 March 1990
Gender	Female
Nationality	South African
Employer	Council for Scientific and Industrial Research (CSIR)
Unit	Urban and Regional Dynamics Research Group, Smart Places Cluster
Position	Researcher
Specialisation	Geographical Information Systems (GIS), Urban Geography
ORCID	0000-0001-5050-933X

Kathryn Arnold is a researcher in the Urban and Regional Dynamics research group at the Council for Scientific and Industrial Research (CSIR), with over six years of experience in geographic information systems (GIS), spatial data analyses and mapping, web-mapping applications and decision support systems for urban planning. Since joining the CSIR, Kathryn has played key technical roles in several national and international (Mozambique, Ethiopia and Ghana) projects focusing on planning decision support for climate risk and vulnerability in the human settlement and road sectors. She has authored and co-authored a number of peer-reviewed journal articles, book chapters and conference papers, as well as an international guideline and handbook with a focus on climate-induced multi-hazard risk and vulnerability. She is an active member of the Geo-Information Society of South Africa (GISSA) and registered as a candidate geomatics practitioner with the South African Geomatics Council (SAGC). Kathryn currently chairs the geo-spatial data infrastructure (GSDI) committee for the Smart Places cluster at CSIR which oversees and assists with optimal use and best practice of the CSIR's geospatial software environment, utilised across the organisation, as well as oversees the standardisation and centralisation of spatial data management within the organization. Her highest qualification is an MSc in Geomatics from the University of Cape Town.

Expertise & Skills

- Geographical Information Systems (GIS)
- Geospatial evidence-based tools and technologies within the South African planning context and system
- Multi-hazard risk analysis
- Web services and portals
- Scientific communication (spatial data visualisation and representation)
- Geo-demographics

Employment & Experience Record

Dates	Position	Firm Name
2017–present	Intern / Candidate Researcher / Researcher	Council for Scientific and Industrial Research (CSIR), Smart Places, Pretoria
Sep–Dec 2022	Visiting Researcher	Leibniz Institute of Ecological Urban and Regional Development (IOER), Dresden, Germany
2015–2016	Undergraduate tutor in Cartography and GIS	University of Pretoria

Education & Qualifications

Year	Name of qualification	Name of Institute
2021	MSc Geomatics (with distinction) <i>Dissertation: A settlement-level perspective of the spatial relationship between economic performance and population change in South Africa between 2001 and 2011</i>	University of Cape Town, South Africa
2016/2017	International exchange semester (MSc Geomatics 3 rd Semester)	Karlsruhe University of Applied Sciences, Germany
2016	BSc (Hons) Geoinformatics (with distinction) <i>Research Topic: Analysing the impact of the Gautrain Stations on real estate in the City of Johannesburg between 2006 and 2015</i>	University of Pretoria, South Africa
2015	BSc Geoinformatics (with distinction)	University of Pretoria, South Africa
2011	BSc Interior Architecture (with distinction)	University of Pretoria, South Africa
2008	National Senior Certificate	Abbotts College, Pretoria, South Africa

Professional Registration & Membership

- Registered as Candidate Geomatics Practitioner (Gisc) (CGPr Gisc 0267) with the South African Geomatics Council (SAGC)
- Member of the Geo-information Society of South Africa (GISSA)
- Member of the Golden Key International Honour Society

Committees & Task teams

Year	Position	Name of Committee	Institution
Jan 2023–Present	Elected member	National disaster risk management research agenda technical task team	National Disaster Management Centre (NDMC), Directorate of Education, Training, Awareness and Research
Feb 2022–Present	Chairperson	Geo-spatial data infrastructure (GSDI) committee	CSIR, Smart Places Cluster
June 2020–Feb 2022	Elected member		

Papers & Publications (Selected)

Peer-reviewed Journal Articles

- **Arnold, K.A.**, Smit, J.L. & Le Roux, A. (Forthcoming). Economic production as a factor in the changing spatial distribution of the working-age population in South African settlements. To be submitted to *Population, Space and Place*.
- Le Roux, A., Khuluse-Makhanya, S., **Arnold, K.**, Engelbrecht, F. Paige-Green, P. & Verhaeghe, B. (2019). A framework for assessing the risks and impacts of rural access roads to a changing climate. *International Journal of Disaster Risk Reduction*, 38: 1–15.
- **Arnold, K.**, Le Roux, A. & Hattingh, M. (2017). Impact of Gautrain stations on property prices and sales activity in the City of Johannesburg between 2006 and 2015. *South African Journal of Geomatics*, 6(2): 184–195.

Peer-reviewed Book Chapters

- Le Roux, A., Cooper, A.K., Ludick, C., **Arnold, K.A.** & Mans, G. (2021). Creating a set of high-resolution vulnerability indicators to support the disaster management response to the COVID-19 pandemic in South Africa. In Rajabifard, A., Paez, D. & Foliente, G. (eds), *COVID-19 Pandemic, Geospatial Information, and Community Resilience: Global Applications and Lessons*. Boca Raton, FL: CRC Press.

Refereed Conference Papers

- Maritz, J., **Arnold, K.**, Roux, M., Le Roux, A. & Verhaeghe, B. (2019). Climate change adaptation in the African roads sector: Constraints, opportunities and policy challenges. *Proceedings of XXVIth World Road Congress*, Abu Dhabi, UAE.
- Roux, M., Verhaeghe, B., Maritz, J., **Arnold, K.**, Le Roux, A. & Paige-Green, P. (2019). Embedment of climatic effects in the road asset management process. *Proceedings of XXVIth World Road Congress*, Abu Dhabi, UAE.
- **Arnold, K.**, Le Roux, A. & Khuluse-Makhanya, S. (2018). Implementing a GIS-based methodology for determining highly vulnerable rural access roads to a changing climate in Ethiopia. *Proceedings of 2018 AfricaGeo Conference*, Ekurhuleni, South Africa.

Extended Abstracts

- Le Roux, A., Maritz, J., **Arnold, K.**, Verhaeghe, B. & Roux, M. (2019). Lessons learned and recommendations from embedding Climate Change Adaptation into the roads sector – from policy to practice. *Proceedings of Transportation Research Board 12th International Conference on Low Volume Roads*, Kalispell, MT, USA, 353–356.

Unpublished Technical Reports

- **Arnold, K.**, Mans, G. & Le Roux, A. (2021). Infrastructure investment needs for achieving the SDGs in South Africa: Population demand scenarios. Unpublished technical report prepared for the World Bank. Pretoria: CSIR.
- Le Roux, A., Van Niekerk, W., Ludick, C., **Arnold, K.**, Garland, R., John, J., Forsyth, G. & Mateyisi, M. (2021). City of Tshwane Climate Risk and Vulnerability Assessment (2020 Update). Unpublished technical report prepared for City of Tshwane. Pretoria: CSIR.
- Le Roux, A., Makhanya, S., **Arnold, K.**, Van Tonder, L., Wools, L. & Mans, G. (2019). Projecting the future growth of South African settlements: Developing a concept model for town growth forecasting in South Africa. Green Book Workstream 3 Report. Unpublished technical report. Pretoria: CSIR.
- Maritz, J., Mans, G. & **Arnold, K.** (2018). Calculation of projected future population in the Mogalakwena area. Unpublished technical report prepared for Anglo America. Pretoria: CSIR.
- **Arnold, K.**, Maritz, J., Roux, M., Head, M., Le Roux, A., Makhanya, S., Engelbrecht, F., Verhaeghe, B & Paige-Green, P. (2018). Ethiopia country report: Management of vulnerability and adaptation to climate change. Africa Community Access Partnership (AfCAP Project GEN2014C). CSIR, Paige-Green Consulting & St Helens Consulting.
- Maritz, J., **Arnold, K.**, Roux, M., Head, M., Le Roux, A., Makhanya, S., Engelbrecht, F., Verhaeghe, B & Paige-Green, P. (2018). Ghana country report: Management of vulnerability and adaptation to climate change. Africa Community Access Partnership (AfCAP Project GEN2014C). CSIR, Paige-Green Consulting & St Helens Consulting.
- Le Roux, A., Maritz, J., **Arnold, K.**, Roux, M., Head, M., Makhanya, S., Engelbrecht, F., Verhaeghe, B & Paige-Green, P. (2018). Mozambique country report: Management of vulnerability and adaptation to climate change. Africa Community Access Partnership (AfCAP Project GEN2014C). CSIR, Paige-Green Consulting & St Helens Consulting.

Guidelines & Handbooks

- Le Roux, A., Makhanya, S., **Arnold, K.** & Roux, M. (2019). Climate Risk and Vulnerability Assessment Guidelines. Africa Community Access Partnership (AfCAP), UK.
- Head, M., Verhaeghe, B., Paige-Green, P., Le Roux, A., Makhanya, S. & **Arnold, K.** (2019). Climate Adaptation Handbook. Africa Community Access Partnership (AfCAP), UK.

Planning Support Tools

- CSIR. (2023). Green Book MetroView: eThekweni Metropolitan Municipality Climate Risk and Vulnerability Profile. Council for Scientific and Industrial Research, Pretoria. (Contribution: contributing developer).
- CSIR. (2021). Green Book MetroView: City of Tshwane Metropolitan Municipality Climate Risk and Vulnerability Profile. Council for Scientific and Industrial Research, Pretoria. [Online] Available at: <https://tshwane-riskprofile.greenbook.co.za>. (Contribution: contributing developer).
- CSIR. (2019). Green Book: Adapting South African settlements to climate change. [Online] Available at: <https://greenbook.co.za>. (Contribution: contributing developer).
- Le Roux, A., Van Niekerk, W., Arnold, K., Pieterse, A., Ludick, C., Forsyth, G., Le Maitre, D., Lötter, D., du Plessis, P. & Mans, G. (2019). Green Book Risk Profile Tool. Council for Scientific and Industrial Research, Pretoria. [Online] Available at: <https://riskprofiles.greenbook.co.za>. (Contribution: contributing developer).

Awards & Achievements

Year	Award/Achievement
2022	Innovation Award winner (awarded to the core Green Book project team), CSIR Smart Places Excellence Awards
	Outstanding Contribution by a Research Team Award winner (awarded to the extended Green Book project team), CSIR Smart Places Excellence Awards
2020	Collaboration Award finalist, CSIR Excellence Awards
	Innovation Award finalist, CSIR Excellence Awards
2019	Green Talents Award, German Federal Ministry of Education and Research (BMBF), Germany
	<i>International award by the BMBF, honouring young researchers for their outstanding contributions to research in support of sustainable development</i>
	https://www.greentalents.de/awardees_awardees2019_kathryn-arnold.php
2017	Young Researchers Establishment Fund (YREF) Award, CSIR, South Africa
	Award for the best graduating BSc (Hons) Geoinformatics student in 2016, University of Pretoria
	Award for the best BSc (Hons) Geoinformatics research project in 2016, University of Pretoria
	Academic Honorary Colours (BSc Hons Geoinformatics), University of Pretoria
2016	Baden-Württemberg Scholarship, Baden-Württemberg-Stiftung, Germany
	Esri Young Scholar Award winner, Esri South Africa
	<i>The Esri Young Scholars Award programme aims to recognise and showcase the work of leading students from around the world who show excellence in scholarship and research associated with using Esri GIS software.</i>
	Award for the best 3 rd -year student in remote sensing in 2015, University of Pretoria
2015	Award for best graduating Geomatics student (including surveying, mining surveying and geographical information science) in 2015, University of Pretoria.
	Academic Honorary Colours (BSc Geoinformatics), University of Pretoria
	Dean's Merit List of Exceptional Academic Achievers, Faculty of Natural and Agricultural Sciences, University of Pretoria
2014	Golden Key International Honour Society acknowledgement for being part of the top 15% of academic achievers for BSc Geoinformatics degree
2012	Academic Honorary Colours (BSc Interior Architecture), University of Pretoria
2010	Golden Key International Honour Society Member (awarded to the top 15% of academic achievers in their field of study, validated by the University of Pretoria)

Professional Profiles

Profile	Weblink
Green Talents	https://www.greentalents.de/awardees_awardees2019_kathryn-arnold.php
Google Scholar	https://scholar.google.co.za/citations?user=TiMOHtoAAAAJ&hl=en
ResearchGate	https://www.researchgate.net/profile/Kathryn-Arnold-4
LinkedIn	https://www.linkedin.com/in/k-arnold/
ORCID	https://orcid.org/0000-0001-5050-933X

ICA Commission on Integrated Geospatial Information for Cartography

Proposed Terms of References

1. Explore and research country-specific implementations of integrated geospatial information for maps and cartography in support of national strategic priorities, share national experiences on this and identify associated research and education needs.
2. In collaboration with other ICA Commissions, participate at the scientific level with other organizations and agencies active in geoinformation management, UN-GGIM IGIF and the creation of geospatial knowledge infrastructures with a special focus on cartography.
3. Develop reports, conference presentations and/or journal articles on our work and help to arrange workshops, conferences or other meetings.
4. Organize reporting sessions on the Commission's activities at the 2025 and 2027 International Cartographic Conferences.
5. Organize and hold full Commission meetings in 2024, 2025, 2026 and 2027, and other meetings with Commission members at suitable events and conferences.

