

## SHADES, RELIEF MAPS AND 3D DISPLAYS

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Within the territorial description that cartography performs we come across three-dimensional data presenting/showing some special characteristics because of the inclusion of altimetry in a bidimensional area.

By using Digital Terrain Models our objective is to generate mapping documents which allow the user to observe a three-dimensional perception of reality. In this way he can not only perceive the representation of the altitude points but also their relative position as well as their relief and geomorphology.

Besides we try to explain which have been the mapping solutions we have adopted for users without a previous knowledge and without experience with maps. These are mapping shades, relief maps and 3D simulations.

### **MAPPING SHADES**

Bellow you will find explained the different solutions adopted according to scale and importance of the altimetric information in any case. They have been processed in this way starting from different documents where either shades are just suggested among the other information or are of the highest importance with the purpose of characterising the morphology of the area.

### **RELIEF MAPS**

With this map we have tried to give an idea of our region relief. To do so the three different characteristics which define the relief -that is the heights, the slopes and the form/shape of the surfaces which result from the combination of elevations and gradients-, have been integrated with different systems of symbols.

**Elevation Representation:** This representation is carried out by adopting a hypsometric ink representation with a 5 metres equidistance which makes the observer have the sense of continuous progression in heights. The colors were taken from an existing 1:200.000 cartography already made up by 10 colors to generate a total of 430 intermediate colors.

**Roughness Representation:** This representation is related to the slopes map which shows the brightness differences caused by an incident light in a zenith position.

Slopes Direction Representación: **As in the rest of conventional mapping the source of light taken was in an oblique position placed in the north-west part of the map.**

### 3-D DISPLAYS

Nowadays this representation is carried out thanks to the use of digital terrain models and to the inclusion of analyses of these kind of data in the Geographical Information Systems and in photorealistic simulations.

Every document made by using this technique has a very concrete objective, which is defined depending on the kind of surface we want to represent.

When choosing this kind of representation it's very important to take into account its geometric particularities:

- The geometry of the elements is variable
- The scale is not constant
- Certain zones hidden by the relief

The morphology of the area states the characteristics of the representations, the position of the observer point of view, and the vertical elevation. The corresponding planimetric information will be projected on this surface. This information can be of three different kinds:

- Hypsometries or mapping shades
- Existing mapping in raster format
- Vectorial information from GIS applications
- Orthophotography
- Satellite images

Any other kind of tridimensional elements, vegetation, buildings, etc.