

From Satellite Images to Maps –

The RGB-Classifier as a Simple Classification Tool for Pupils

Kerstin Voß, Henryk Hodam*, Roland Goetzke*, Andreas Rienow**

**Arbeitsgruppe Fernerkundung, Geographisches Institut, Rheinische Friedrich-Wilhelms-Universität Bonn, Meckenheimer Allee 166, 53115 Bonn*

Maps as a basis for spatial orientation play a key role in teaching geography. A main subject in teaching pupils aged 10-11 geography is the topic “mapping”. This subject area contains the question how maps can be derived from aerial or satellite images. The aim of the teaching unit “*From Satellite Images to Maps*” is to put the pupils in a position to derive thematic maps from digital satellite images with simple analysis tools and to formulate statements regarding landscape composition.

The learning module’s first part introduces the topic to the pupils in a problem-oriented way. After having started the learning module, the pupils watch a scientist sitting desperately in front of his computer. He wants to transform a satellite image into a thematic map and doesn’t make any progress. In order to help the professor, the pupils are guided through the module by tasks and background information in info-boxes. The info-box informs about what satellite images are and how they are obtained. The info-box is the substantial basis for dealing and working with the imagery within the learning module.

The teaching module consists of the following substantial parts:

- Spatial orientation and location of the satellite image

Important key competences in geography are spatial thinking and spatial orientation. For this reason, the pupils are asked to familiarise with the satellite image in the learning module. They get the task to think about which area is shown in the satellite image. For assistance, three map sections are integrated into the learning module. Through comparing the satellite image to these three map sections, the pupils ought to spot similar spatial structures and locate the area shown on the satellite image.

- Derivation of a classification key

To prepare for classification, the pupils make a list of all land surfaces they detect in the satellite image. They are encouraged to consider by which characteristics different surfaces can be distinguished in the satellite image.

- Classification of the satellite image

In the closing module, the pupils can classify the satellite image with the help of the so-called “*RGB classifier*” and convert it into a map. To find out how to use the information displayed in the image for mapping, another info-box named “*classification*” is available for the pupils.

At the end of the teaching unit every pupil should have created a classification of Cologne. Through deriving a classification key, the pupils are sensitized for the land surfaces included in the image. With the help of the “*RGB classifier*”, the pupils learn that digital images are made of raster cells which all have a characteristic colour. This colour originates in a mixture of the three primary colours red, green, and blue. Building on this, the pupils learn how these colour information can be used to derive a thematic map from an image. Thereby, the computer makes use of similarities regarding colour values for categorisation.