

## The European Landscape Map

Project title: The landscape of Europe

Commissioned by: Alterra (SEO Landschap) and Landscape Europe

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Region: Europe



At the 1995 Sofia conference on the Pan-European Biological and Landscape Diversity and Strategy (PEBLDS) the participating environment ministers decided to give greater importance to nature and landscapes and defined eleven action themes. Action theme 4 included the establishment of a Pan-European Landscape Map, the development of landscape assessment criteria and a SWOT analysis of European landscapes. The Environmental Sciences Group then launched an initiative to produce a pan-European landscape classification using state-of-the-art technology.

The purpose of this European landscape map

is to provide a practical and easy tool for European policy implementation. Possible applications include integrated environmental assessment, monitoring and reporting of environmental trends and changes, and indicator-based approaches for the implementation and monitoring of agri-environmental measures at the European level.

### *European landscape map: methodological approach*

The first step was to construct a conceptual framework for the development of an Environmental Classification and a European Landscape Classification (Mücher et al., 2003). After formulating user requirements and possible target groups, a critical review of the existing European environmental data sets was undertaken and further data requirements identified. The following key data sources were selected for the delineation of the major physiographic landscape units:

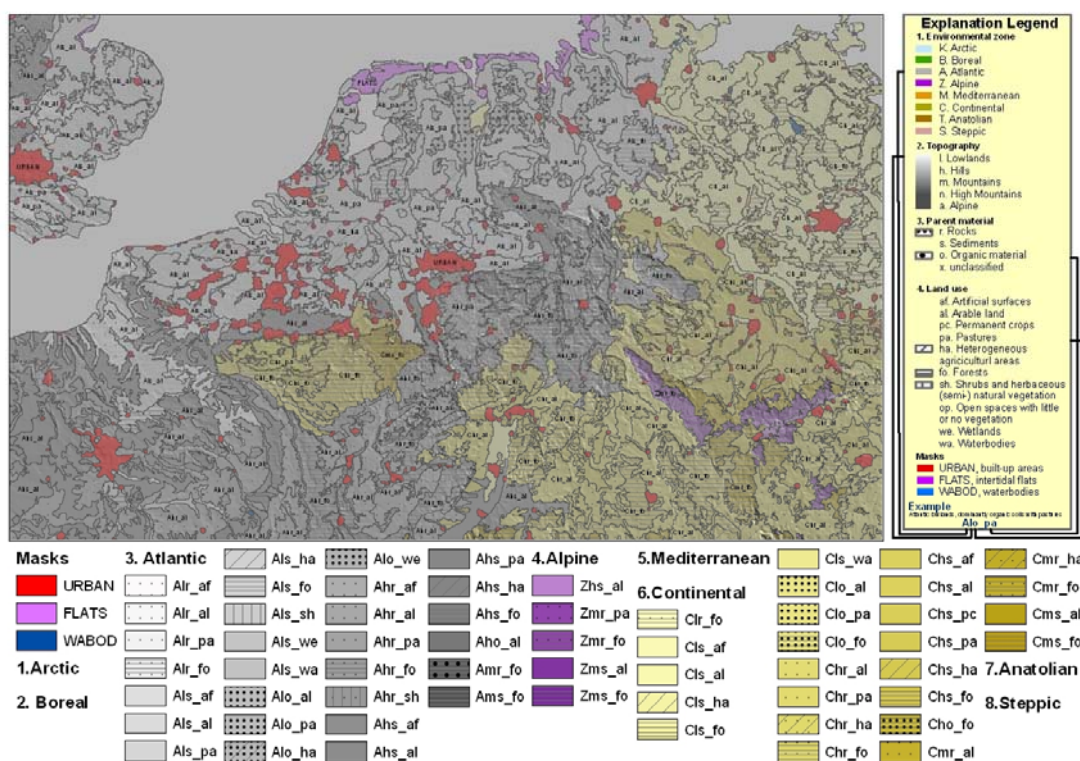
- Climate (using the Environmental Classification and the Biogeographical Regions Map of Europe)
- Topography (GTOPO30)
- Parent material / ecological stand conditions (ESDB, FAO soil map)
- Land use / land cover (CORINE, PELCOM and GLC land cover)

Various data sources had to be integrated to obtain pan-European coverage and the most accurate and detailed data sets were used where available. Since a detailed geomorphological map of Europe did not exist, information on topography and parent material was selected as an adequate substitute. The four core data sets listed above formed the basis for the identification of the landscape units. A segmentation methodology was used for the spatial identification of the landscape mapping units: eCognition, an object-oriented image segmentation and classification software package for multiscale analysis of Earth Observation data of all kinds. Specific landscape types such as intertidal flats and urban conurbations were identified purely on the basis of land cover information.

LANMAP2

The European Landscape Map, LANMAP2, is a pan-European landscape database at a scale of 1:2,000,000. The European landscape classification covers the whole of Europe, from Iceland in the north-west to Azerbaijan in the south-east and from Gibraltar in the south-west to Nova Zembla in the north-east. LANMAP2 covers an area of approximately 11 million km<sup>2</sup>, more than three times the area covered by LANMAP1. LANMAP2 is a hierarchical classification with four levels and has 350 landscape types at its lowest level (level 4), which includes intertidal flats, urban conurbations and water bodies. At this level there are more than 14,000 mapping units with an average size of 774 km<sup>2</sup>; the smallest mapping unit is 11 km<sup>2</sup> and the largest is 739,000 km<sup>2</sup>. The highest level of the classification is determined by climate and has only eight classes. The second level is determined by climate and topography and has 31 classes. The third level, determined by climate, topography and parent material already has 76 classes.

Figure 1. Detail of LANMAP2 (version 1.0) showing part of Western Europe



### Applications

The European Landscape Map, LANMAP2, can be used in many application fields for European projects and policy initiatives, including:

- a framework for further integrating national and regional approaches to landscape character assessment at the European level for ELCAI (The European Landscape Character Initiative);
- the basis for developing landscape indicators for an environmental risk assessment of agriculture in Europe for ENRISK (Environmental Risks from Agriculture in Europe);
- a spatial reference for measuring pressures on biodiversity for BIOPRESS;
- integration of landscape character when developing a regional framework for sustainability impact analysis for SENSOR;

- identifying trans-frontier landscapes and everyday landscapes under the European Landscape Convention.

#### *Future perspectives*



The construction of a European landscape classification still presents a major challenge. The use of a consistent framework, thematic data sources with high spatial accuracy and new techniques in object identification can be considered to be a major breakthrough in the field of European landscape mapping. However, it is still too early to conclude that we have a complete product; the European

Landscape Classification still has to be improved and more widely validated. Much more effort needs to be invested in an extended characterisation of the identified landscape units in terms of cultural history and landscape patterns, in addition to the general description of landscape types. Moreover, improvements are needed in terms of spatial identification of certain landscape types, such as the coastal dunes.

#### *Sources of information*

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