

THE EAGLE CONCEPT – A DATA MODEL FOR FUTURE LAND MONITORING

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ABSTRACT:

The current environmental challenges require the interconnection of ecological, economic and social factors at local to global scales. There is therefore a fundamental need to monitor these factors, their impact on land, their spatial distribution and changes over time in the form of land cover (LC) and land use (LU) observations. To work effectively across the required temporal and spatial scales these observations need to be modeled in a consistent and machine readable way.

A broad variety of LC/LU classification systems have evolved over time in response to specific needs and available technology. Each application emphasizes different aspects of LC and LU and many have mixed LC and LU information. Incompatibility caused by variations in class definitions (semantic overlaps/gaps etc.) often hampers the exchange of data between different applications. The globalization of information on land requires harmonization, which so far was approached by spatial and thematic generalization resulting in coarsely aggregated data. Future tasks require a more differentiated and detailed description of landscape.

Meanwhile, progress in the development of remote sensing and database technology has increased the methodological capabilities in the land monitoring domain and opened the way for a more sophisticated approach in land description.

The EAGLE concept (developed by the Eionet Action Group on Land Monitoring in Europe) represents a data model that consistently separates LC and LU information by decomposing landscape into Land Cover Components, Land Use Attributes and further landscape Characteristics. The concept can be used (a) as a semantic translation tool, (b) for semantic ontological analysis of existing class definitions, (c) as a guideline for the design of classification systems or mapping activities. It can be considered as a conceptual proposal for a future European land monitoring framework building upon preceding achievements while integrating new possibilities of parameterized data storage and modelling.

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