CURRENT STATE AND PERSPECTIVES OF LAND COVER MAPPING

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Land cover information is recognized as a critical aspect of geographical and environmental information since it is used by many different disciplines. The theme is incorporated in the INSPIRE directive aiming to create European spatial data infrastructure. Some land cover mapping campaigns covering large territories like pan-European CORINE or the USA's NLCD have resulted in valuable information. Many countries have their own national land cover mapping projects, obtaining more detailed datasets.

However, as the requirements for land cover information grow, the issues related to concept and methodologies of information production arise. First, there is the problem of inefficiency of the information production. The processes are often complicated, time consuming but also institutionally not well supported nor regulated. The second problem, and maybe more serious one, is related to the essentially inadequate classification-based concept of land cover mapping. The concept is based on land cover classification scheme or «nomenclature». It doesn't account for ontology differences that exist between different disciplines and social groups. The different conceptualizations result in possible misunderstanding and thus misuse of applied land cover category system. Alternative option is to have a number of land cover maps with different classification schemes which are, however, difficult to compare. The common solution for such scenario is nomenclature standardization and there have been number of discussions and proposals e.g. UN Land Cover Classification System. However, standardization of land cover classifications inevitably leads to lost of many specific information required by various users, and so, information designed to serve to anyone, suit no one. Another problem related to classification concept is significant amount of information lost in the thematic generalization that is necessarily involved in the mapping process. Considering remote sensing data as the main source for land cover monitoring and mapping, what happens there is that a big data space obtained from a satellite sensors is reduced to rather modest class-based land cover information. There are proposed solutions based on object-oriented data models that don't involve land cover classifications but instead use parameters to describe «homogeneous» land cover objects. It has certain advantages in addressing complexity of land cover information, but also serious disadvantages like time-consuming and defining «homogeneousness».

Finally, there is the option of quantitative land cover modeling which utilize abundances of remote sensing data. The concept is based on quantitative descriptions of biophysical properties of land cover features rather then mapping them into a classification system. The approach offers possibility to the users to map the data into their own conceptualizations and to produce the information according to their requirements. To perform such modeling on a standardized and regular basis, attention should be paid to absolute geometric and radiometric normalization of the remote sensing data as we want to treat remote sensing data as physical measurements of land cover features. The optimal preprocessing is the object of many current research activities. The second aspect of the approach is the interpretation of the remote sensing measurements and establishing empirical relationships with biophysical properties of land cover features. There are many researches dealing with the related topics, but there is the need for standardization required by any kind of operational cartographic modeling.