

Mapping Urban Dumps from Space

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The Illegal dumps have a heavy impact on the landscape and the urban environment and are a source of danger for the health and safety of the inhabitants. Land monitoring and control bring to the recognition of abuses: the use of satellite remotely sensed data helps to improve the environmental management system. The availability of object-oriented techniques to process satellite imagery allows to detect such situations of illegality.

The traditional image processing and image interpretation methods are usually based only on the information extracted from features intrinsic of single pixel: the object's physical properties, which are determined by the real world and the imaging situation-basically sensor and illumination. A limitation of this method is that it allows evaluating only a part of the information content of the images, without exploring the appearance as important as geometric-textural information. The application of Object Based Image Analysis on very high resolution data allows, with an automatic or semi-automatic process – with a minimal manual participation-a good classification also in presence of high and very high resolution data, where higher is the chance of error. The final classification, through a suitable hierarchy of classes that takes into account the relationships between the produced segmentation levels, may be highly accurate. Thus we introduce other rules for the location of the context, and the relation between the objects increases meaningfully the chance of automatic recognition of objects on the land surface. Object-based techniques allow an elaboration of satellite data to detect an uncontrolled storage of waste. By including a shapefile containing some detected test areas in the segmentation process, we proceed to the recognition of the landfill areas. In this work are also used some cadastral data for the multiresolution segmentation and the object-based classification. This research is still in progress in order to refine the techniques used but already an application of the same methods in other contexts is possible.