



## **The WebGIS application of the IFFI Project (Italian Landslide Inventory)**

A. Trigila, C. Iadanza, **E. Vittori**

Agency for environmental protection and technical services of Italy  
(alessandro.trigila@apat.it)

The IFFI Project (Italian Landslides Inventory) aims at identifying and mapping landslides over the whole Italian territory, based on standardized criteria. The project has been financed in 1997 with 4 Mil. Euro by the Committee of Ministries for the Soil Protection, established by the law n. 183/89. The institutions involved in the accomplishment of the IFFI Project are: a) APAT - Department of Land Resources and Soil Protection - Italian Geological Survey, with the task of organizing and coordinating the activities, developing the guidelines, verifying the data conformity, building up a national geo-database and a WebGIS; b) Regions and Autonomous Provinces, charged to collect historical documents, archive data and to map areas affected by landslides. The IFFI inventory currently holds about 460,000 landslides and represents an important tool for hazard and risk assessment and land use planning. The IFFI geo-database contains vector layers of landslides and an alphanumeric archive of attributes. The relational alphanumeric database schema is based on the Landslide data sheet organized in three information levels: the 1st level contains the basic data on landslide location, type of movement and state of activity; the 2nd level provides data on morphometry, geological setting, lithology, land use, causes of activation; the 3rd level gives detailed information on damages and remedial measures for risk reduction. Landslides are represented with a georeferenced point, located at the highest point of the crown, with a polygon when the surface is wider than 10,000 square meters or with a line when the width is very narrow. The working scale varies between 1:10,000 and 1:25,000. The web publishing of the IFFI Inventory (<http://www.sinanet.apat.it/progettoiffi>) is focused on promoting and spreading out the landslide information to national and local institutions, research institutes, geologists, engineers and citizens. It is hoped that this enables people to make informed decisions such as to choose where living, where

purchase properties and locate economic activities. Through a simple and clear navigation, the user can view the landslides of the IFFI Inventory together with other vector layers (the urban areas - Corine Land Cover 2000, the roads and railways, the drainage network) and raster layers (the digital terrain model, digital orthophoto TerraItaly it2000, Landsat satellite images and IGM topographic map at scale 1:25,000). Among the WebGIS functionality, the Identify tool provides attribute information about landslides and the Photo tool allows to view images of more important landslides. Using the Buffer tool, critical points along the communication network can be selected. The web application integrates the vector datasets, served from ArcSDE and ArcIMS Server (ESRI) and Oracle DB, with the imagery served from the Image Web Server (ER Mapper) in ECW (Enhanced Compressed Wavelet) format. According to the recommendations of the European Directive INSPIRE (Infrastructure for spatial information in Europe) and the Open GIS Consortium specifications, WMS services of the IFFI inventory have also been developed by APAT (Agency for environmental protection and technical services of Italy). These interoperable services allow the users to overlay the IFFI landslides theme with layers that reside on their own desktop.