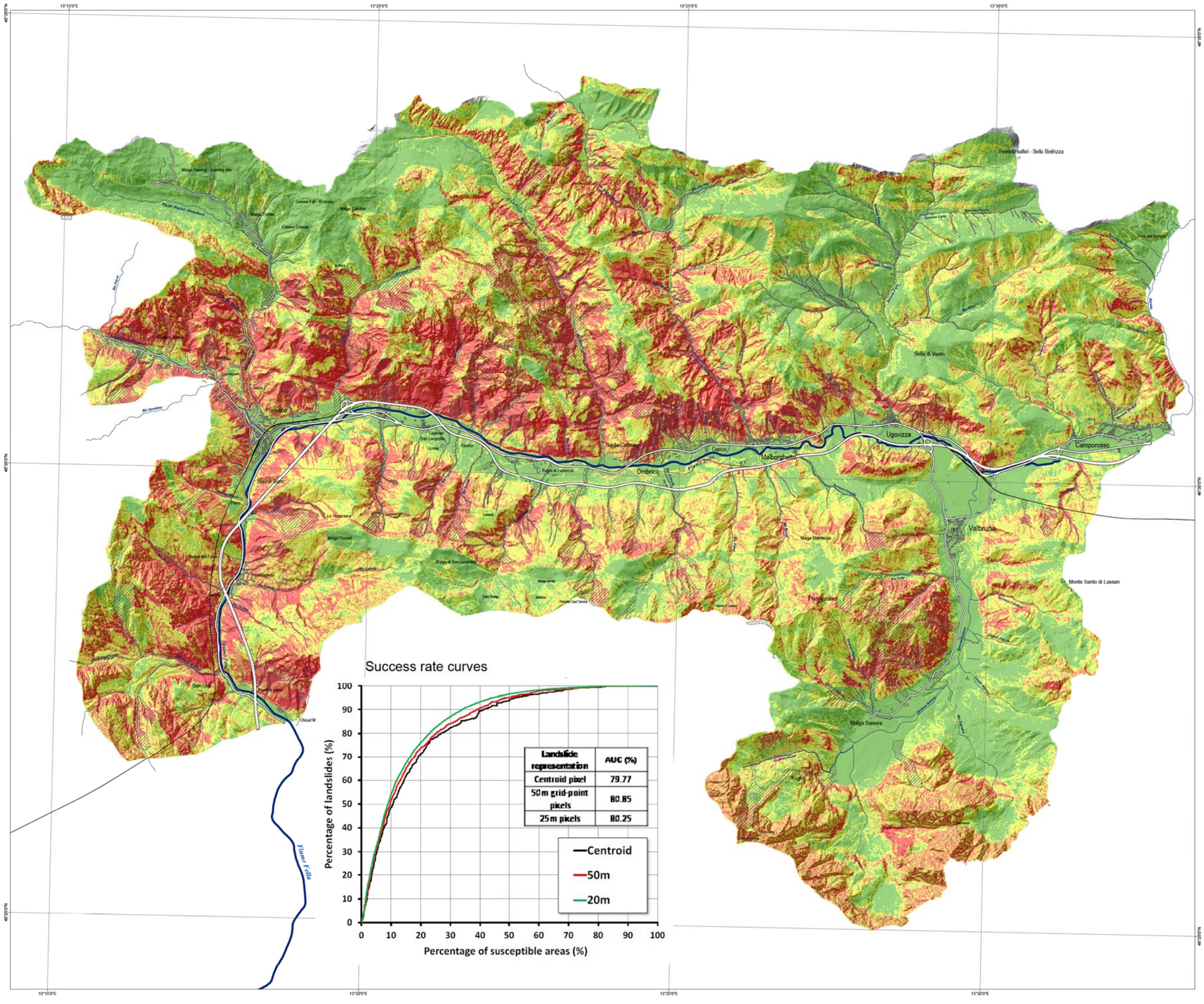
Debrisflow initiation susceptibility map



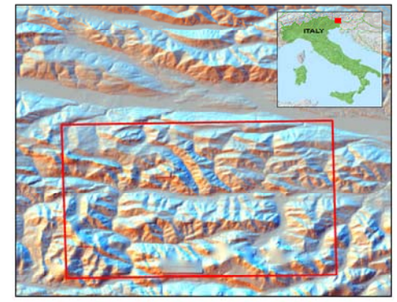
Landslide representation	AUC (%)
Centroid pixel	79.77
50m grid-point pixels	80.85
25m pixels	80.25

Landslide susceptibility maps

for debrisflow initiation

Fella River / Italy

Overview map



Legend

Population
- Settlement

Hydrology
- River
- Stream

Debrisflow initation suspectibility
- Very Low
- Low
- Moderate
- High
- Very High

Infrastructure / Transport
- Motorway
- Primary road
- Secondary road
- Residential road

Elevation
- Normal Contourline
- Index Contourline (+2000 — Contour Interval 20 meter)
- Compiled historical debris flows

Interpretation

The following methodological steps have been followed:
The historic debris flow source areas inventory was produced through the analysis of historic archives and interpretation of aerial and satellite imagery between 1999 and 2011 by the Italian Landslide AVI (CNR-IRPI 2014) and IFFI projects (ISPRA 2014), the Geological Service of the Friuli-Venezia Giulia region (FVG) and landslide experts at University of Trieste.
The inventory consists of 1046 debris flow source area polygons mostly mapped in the northern part of the study area in the Val Canale valley with the amount of landslides decreasing from north to south.
Debris flow initiation map. This map was generated using bi-variate statistical analysis. Weights-of-evidence modelling was used. Five causative landslide factor maps (lithology, land-cover, altitude, plan curvature and slope) were used in the susceptibility analysis for debris flow initiation.
The calculation of weight tables for each factor and the subsequent susceptibility mapping was carried out using the Weights-of-Evidence Arc-SDM (Spatial Data Modeller) geoprocessing tools in ArcGIS 10. A large number of susceptibility maps were prepared to test the effect of different landslide representation and sampling strategies.. The relative probability values in the unclassified susceptibility maps were used to assess the model performance using Success Rate Curves (SRCs). the map was classified inot three classes

Map information

Geographic Coordinate System: GCS WGS 1984
Datum: D WGS 1984

Scale 1:40,000

0 0.5 1 2 3 4 Kilometers

Data Sources

The Digital Elevation Model (DEM) of the Fella River Basin was acquired from airborne laser scanning by the Civil Protection of the Friuli-Venezia Giulia region in 2003. The lithological map available at 1:150,000 scale was produced by the FVG Geological Service and originally contains more than 35 classes, which were reclassified in 8 classes. The land-cover map at 1:100,000 scale was developed by the CORINE land cover project and later updated by the MOLAND project. The map with more than 30 classes was generalized to 7 classes based on similarities in land cover types. Both geo-environmental factor maps were rasterized using a 20m grid resolution. The three factors derived from the DEM were classified into 10 quantile classes.
Data collection was coordinated by Simone Frigerio and Alessandro Pasuto (CNR-IRPI)

Framework

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement n° 312461 (Increasing Resilience through Earth Observation - IncREO - www.increo-fp7.eu). The IncREO project is coordinated by Airbus Defence & Space (Spot Image S.A.).

Work package partners:

Compilation of the landslide inventory was done by Lixia Chen and Haydar Hussin (UT-ITC).
Landslide initiation modelling was done by Haydar Hussin (UT-ITC), Simone Sterlacchini, and Paola Reichenbach (CNR-IRPI)
Runout modelling was done by Haydar hussin and Cees van Westen (UT-ITC)
Map produced by: Koert Sijmons (GeoMapa) © 2014