



UNIONE EUROPEA  
Fondo Sociale Europeo



Ministero dell' Istruzione,  
dell' Università e della Ricerca



PON  
RICERCA  
E INNOVAZIONE  
2014 - 2020

PhD in Geosciences - XXXII cycle

# Advanced analysis and integration of remote sensing and *in situ* data for a flood monitoring system

Marina Zingaro  
[marina.zingaro@uniba.it](mailto:marina.zingaro@uniba.it)

## Industrial partner



Planetek Italia is a company engaged in the acquisition, management and processing of geospatial data to design and produce solutions in different fields of application, including environmental monitoring.

*Within the PhD project they collaborate in the development of innovative services (products, tools, apps) for flood monitoring through the analysis and combination of Earth Observation & Remote Sensing based informations.*

## International partner



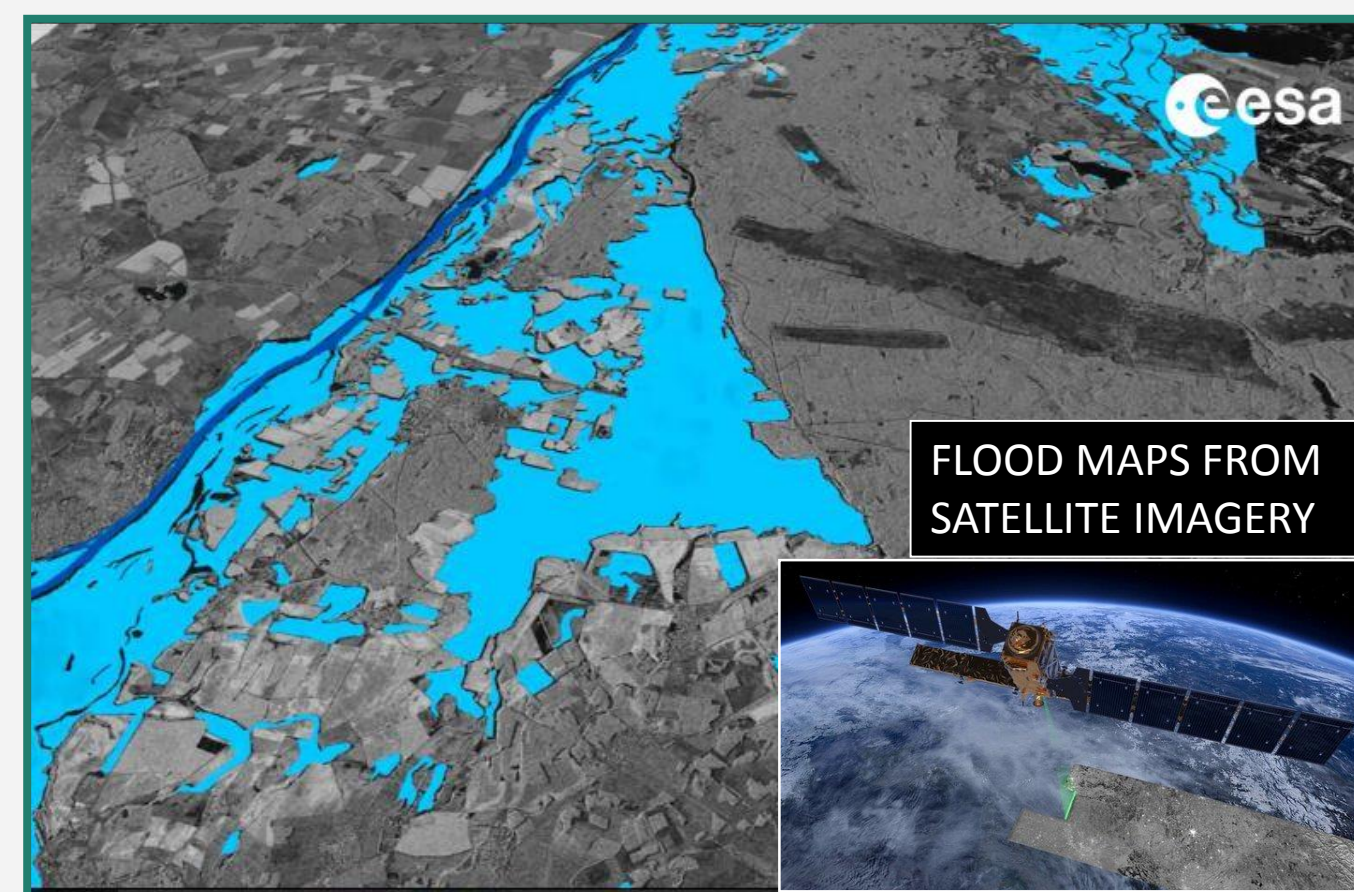
LIST is the Luxembourg Institute of Science and Technology that develops technology-intensive solutions focused on environmental innovation, digitalization and advanced materials.

*Within the PhD project ERIN department of LIST (Environmental Research and INnovation) collaborates in the development of an innovative data assimilation methodology for flood hazard through the integration of satellite data and hydrodynamic modeling.*

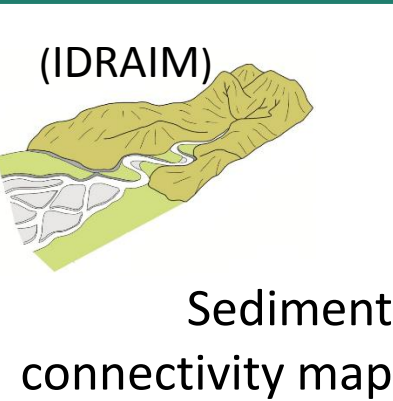
## Description of Activities

Development of an automatic and operational flood monitoring system (valid at global scale) based on the exploitation of different and complementary sources of data: fluvial geomorphology, satellite remote sensing and hydrodynamic modeling.

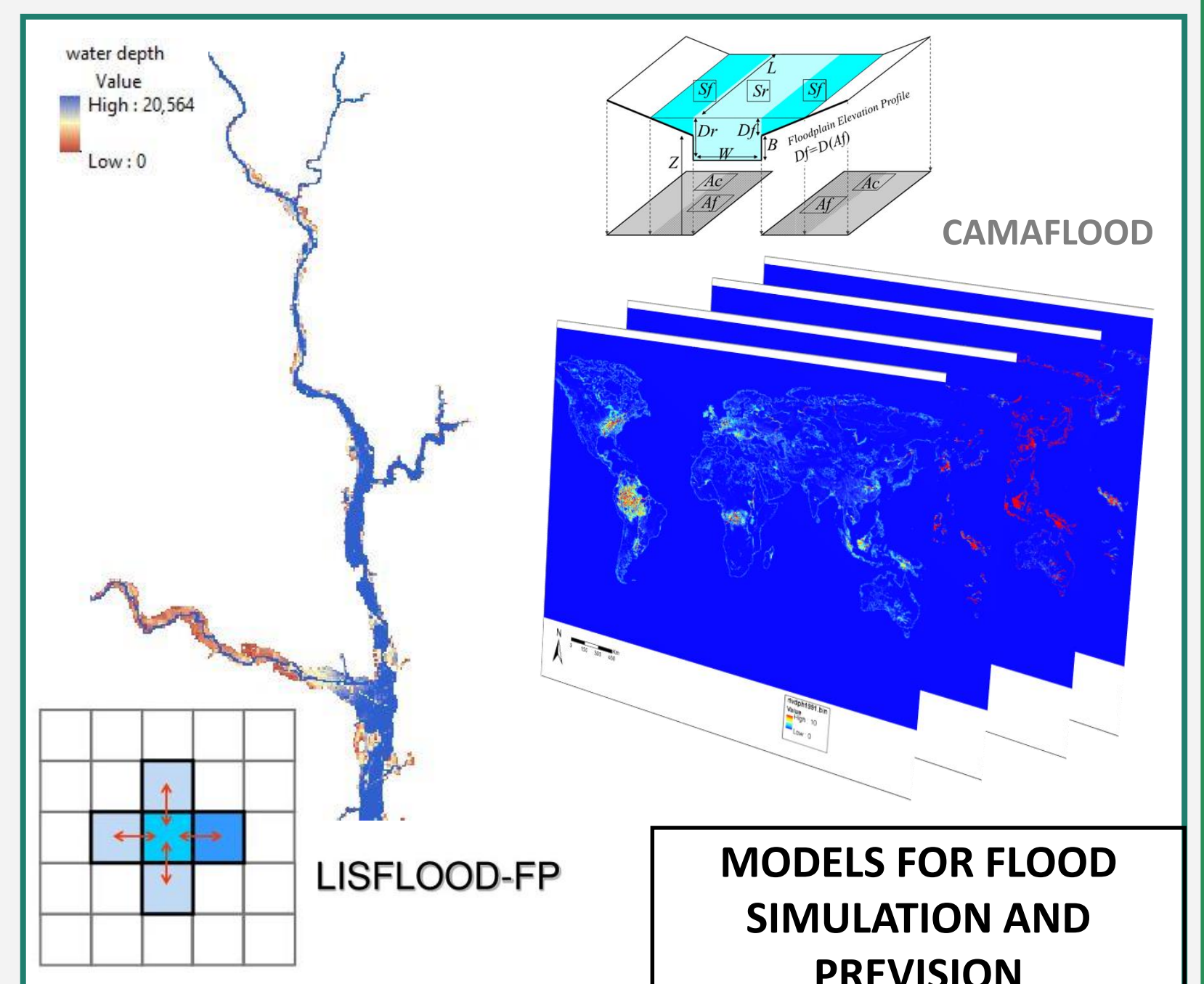
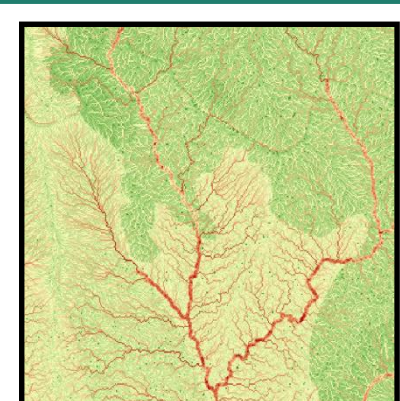
The combination of data, finalized to improve flood forecast, is done via the application of complex techniques and advanced technologies (digital image processing, area mapping, modeling, statistical analysis) to obtain maps of geomorphic indices, maps of flood extent and maps of predicted water depth.



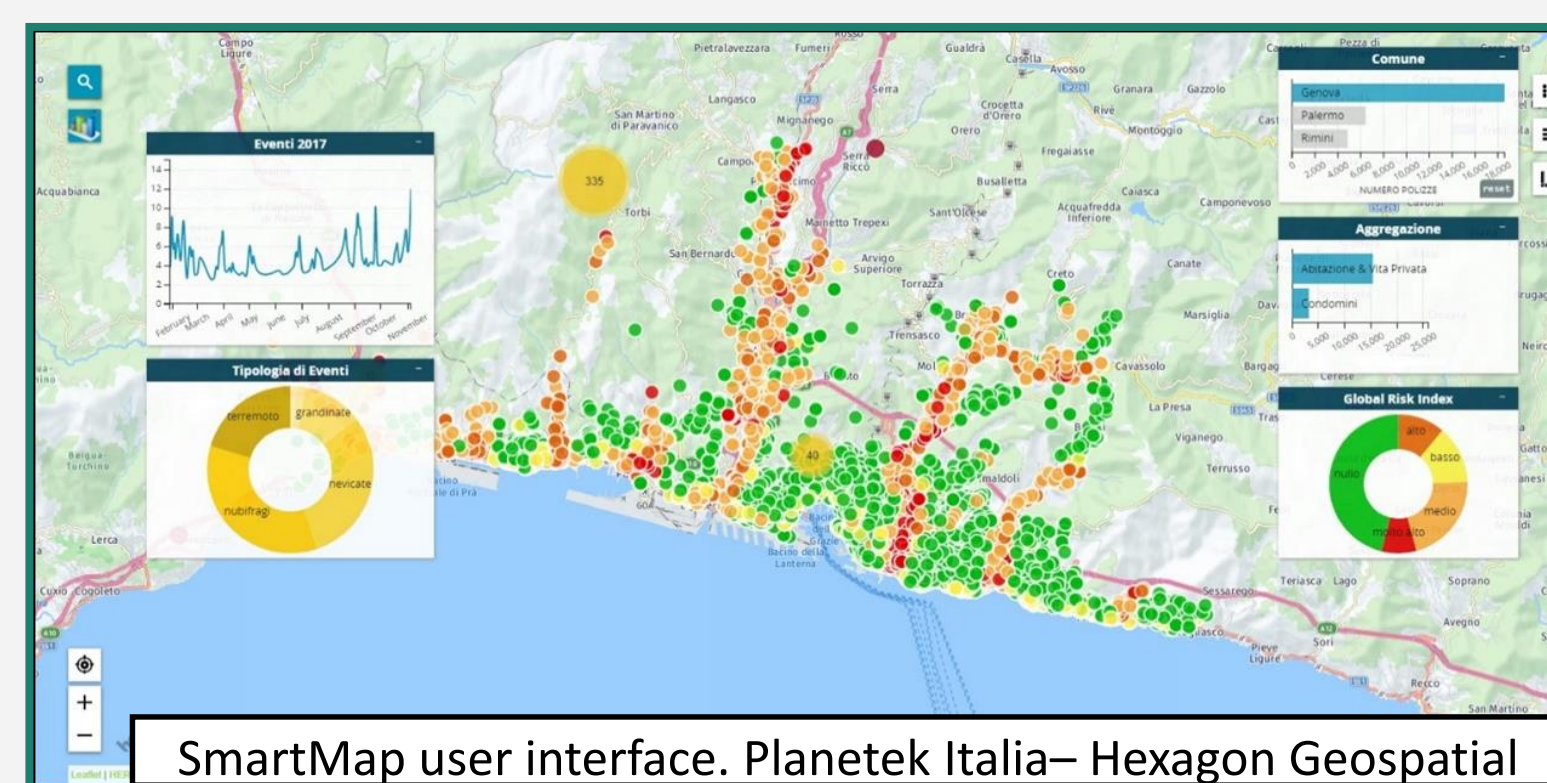
GEOMORPHIC INDEX MAPS FOR FLUVIAL DYNAMICS AND MORPHOLOGICAL MODIFICATION ANALYSIS



(IDRAIM) Sediment connectivity map



MODELS FOR FLOOD SIMULATION AND PREVISION



SmartMap user interface. Planetek Italia– Hexagon Geospatial

Development of solutions for flood hazard evaluation, usable by a large end-user community in charge of flood monitoring and landscape planning activities.

Industrial partner supervisor

Ing. Sergio Samarelli [samarelli@planetek.it](mailto:samarelli@planetek.it)

International partner supervisor

Dr. Marco Chini [marco.chini@list.lu](mailto:marco.chini@list.lu)

Supervisor

Prof. Domenico Capolongo  
[domenico.capolongo@uniba.it](mailto:domenico.capolongo@uniba.it)

