



BEYOND FLOODS MONITORING

Alexia Tsouni
Haris Kontoes
Emmanouela Ieronymidi
Themistocles Herekakis

Institute for Astronomy & Astrophysics, Space Applications and Remote Sensing
National Observatory of Athens
Greece

ONE step BEYOND Workshop, 15 October 2015
ESA - Frascati, Italy



FP7-Regpot-2012-23-1



Flood events are the world's most frequent natural disasters affecting a large number of people and assets.



Factors affecting floods

- * Rainfall intensity and duration;
- * Characteristics of the river and the basin (area, shape, slope, soil type and land use), antecedent conditions, extreme temperature;
- * Drainage systems and river (or generally water resources) management;
- * Human activities, such as agriculture, urban development, industry and tourism, but also climate change, contribute to an increase in the likelihood and adverse impacts of flood events.



BEYOND

Building a Centre of Excellence for EO-based monitoring of Natural Disasters



European Union Floods Directive 2007/60/EC

The EU Floods Directive “*on the assessment and management of flood risks*” aims to reduce and manage the risks that floods pose to human health, the environment, cultural heritage, economic activity and infrastructure.

This Directive applies to inland waters as well as all coastal waters across the whole territory of the EU, and defines flood as ‘*a covering by water of land not normally covered by water*’.

Member States are ultimately required to establish **flood risk management plans focused on prevention, protection and preparedness.**





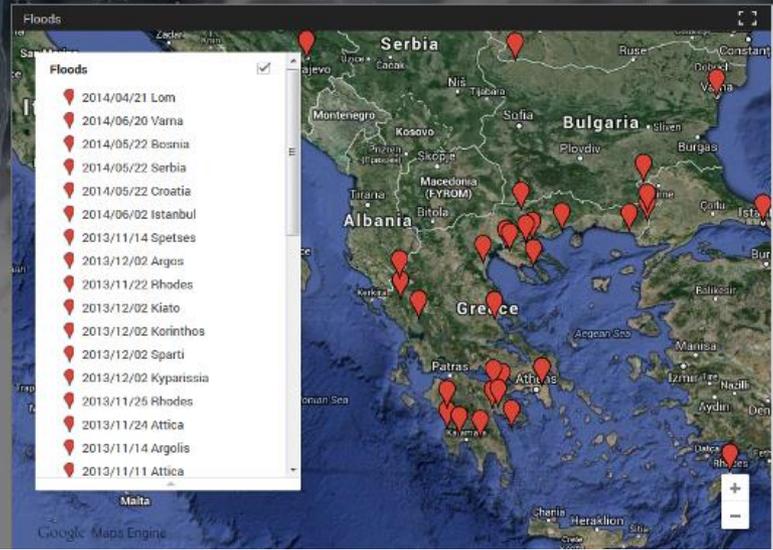
BEYOND

Building a Centre of Excellence for EO-based monitoring of Natural Disasters



BEYOND's Floods Observatory for Greece & South-Eastern Europe

FLOODS OBSERVATORY / ΠΑΡΑΤΗΡΗΤΗΡΙΟ ΠΛΗΜΜΥΡΩΝ
 WITHIN THE FRAMEWORK OF THE BEYOND PROJECT SINCE JUNE 2013 / ΣΤΟ ΠΛΑΙΣΙΟ ΤΟΥ ΠΡΟΓΡΑΜΜΑΤΟΣ BEYOND ΑΠΟ ΤΟΝ ΙΟΥΝΙΟ ΤΟΥ 2013



We register major flood events and we publish the flood mapping results produced following the processing and photo-interpretation of satellite Optical and SAR images.

Bosnia and Herzegovina Flood - May 22, 2014



ONE step BEYOND Workshop, 15 October 2015
ESA - Frascati, Italy



FP7-Regpot-2012-23-1



MoU with the Public Power Corporation S.A. Hellas (PPC S.A.)

We have established cooperation with the Public Power Corporation S.A. Hellas (PPC S.A.), as there is a mutual interest in the field of studying floods and developing a methodology for monitoring and management of flood risks.



The contribution of PPC S.A. covers the provision of relevant expertise and information derived from the processing of the in-situ collected data of the hydrometeorological network operated by PPC S.A., and data relating to the management of the hydrological basins under study.



BEYOND

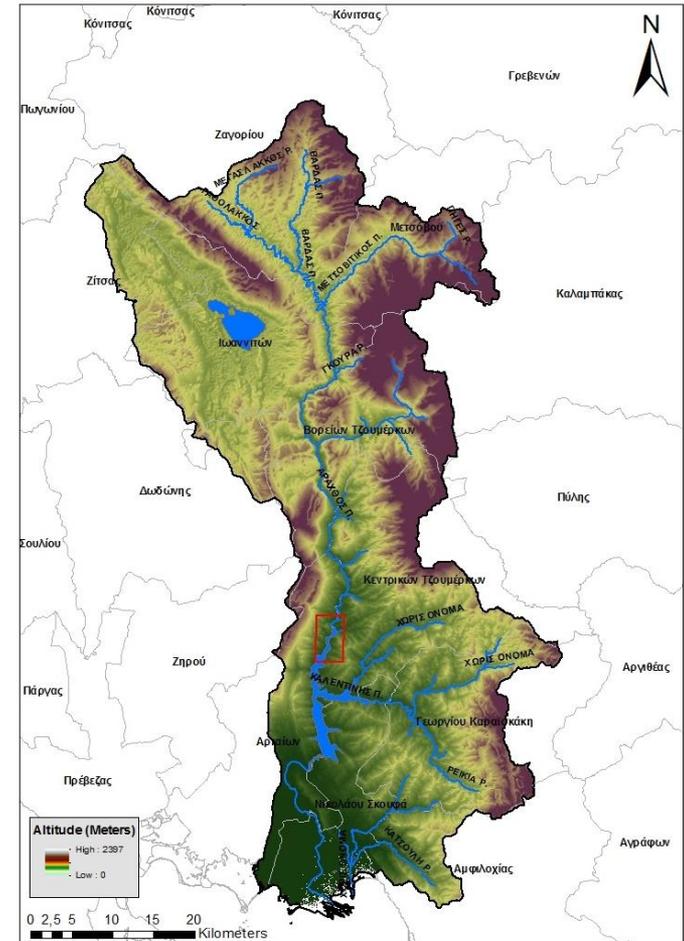
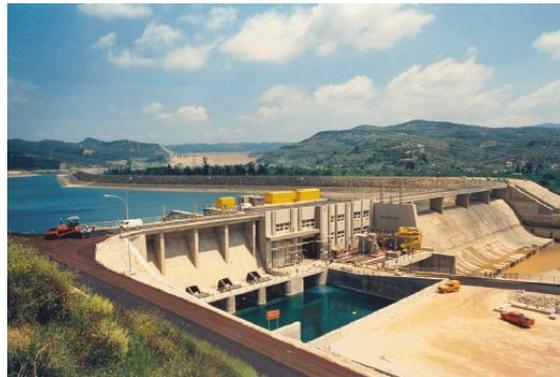
Building a Centre of Excellence for EO-based monitoring of Natural Disasters



CASE STUDY:

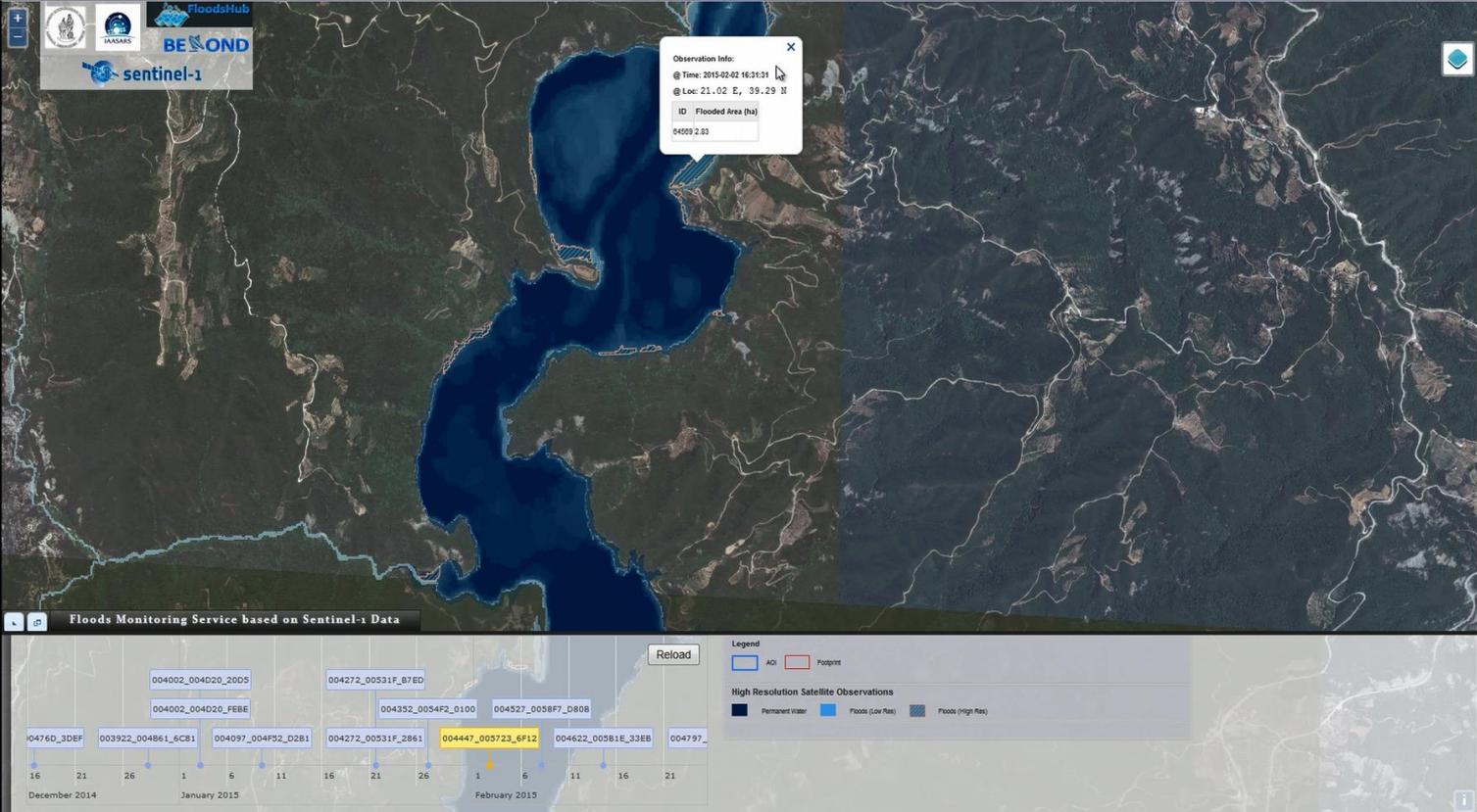
The first case study is the river basin of Arachthos (2.209 km²), a river with several flood events, just upstream of the city of Arta, where PPC S.A. is operating two hydroelectric plants:

- 1) a large one known as Pournari I (effective capacity of reservoir 303 million m³)
- 2) a smaller one known as Pournari II (effective capacity of reservoir 4 million m³).





BEYOND's Floods Monitoring Service for Arachthos river basin



**ONE step BEYOND Workshop, 15 October 2015
ESA - Frascati, Italy**



FP7-Regpot-2012-23-1



BEYOND's Floods Monitoring Service for Arachthos & Acheloos river basins

We monitor all the flood events and we publish the flood mapping results produced following the processing of Sentinel-1 SLC images of IW swath mode from the Hellenic National Sentinel Data Mirror Site.

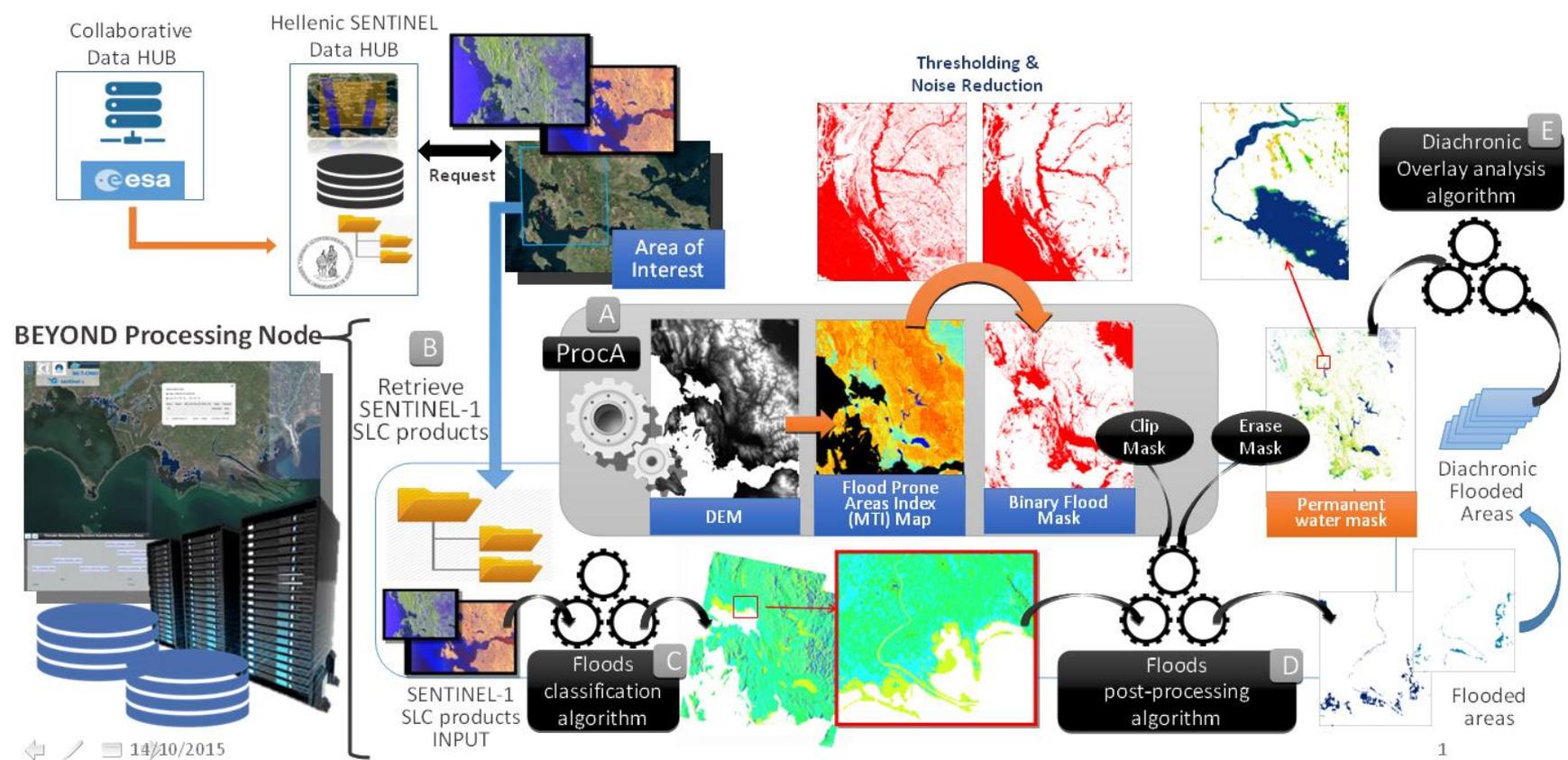
The screenshot shows a web-based interface for flood monitoring. At the top left, there are logos for the National Observatory of Athens, IAASARS, BEYOND, and Sentinel-1. The main area is a satellite map of Greece with a red and blue rectangular region of interest. A legend on the right lists layers: FOOTPRINTS, FLOODED_AREAS, PWATER_AREAS, and DRAINAGE_BASINS. Below this, there are sections for "Overlays" (Toponyms, CLC 2000) and "Base maps" (BingMaps). At the bottom, there is a "Floods Monitoring Service based on Sentinel-1 Data" section with a "Reload" button and a "Legend" for AOI and Footprint. Below the legend is a "High Resolution Satellite Observations" section with a legend for Permanent Water, Floods (Low Res), and Floods (High Res). A timeline at the bottom shows data points from 2014 to 2015, with one point highlighted in yellow.

ONE step BEYOND Workshop, 15 October 2015
ESA - Frascati, Italy



FP7-Regpot-2012-23-1

BEYOND's FloodsHUB Architecture





BEYOND

Building a Centre of Excellence for EO-based monitoring of Natural Disasters

