AMSTERDAM INTERNATIONAL WATER WEEK

pearl
Preparing for Extreme And Rare events in coastaL regions

The PEARL knowledge base platform

for resilience measures and strategies, and on the integration of PEARL results into the planning and policy making processes

International Water Week,
Amsterdam, the Netherlands, 2-6 November 2015

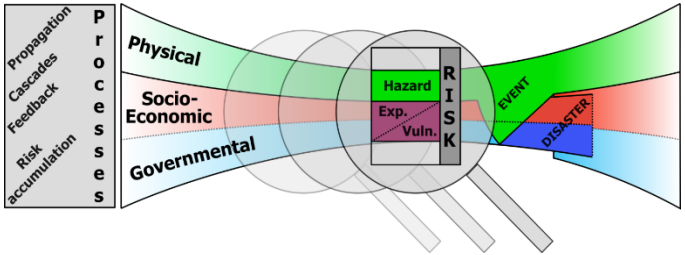
Presenter: Christos Makropoulos,
Assistant Professor, NTUA

SEVENTH FRAMEWORK PROGRAMME

The PEARL project

pearl
Preparing for Extreme And Rare events in coastaL regions

Protecting **coastal cities** from extreme hydro-meteorological conditions: risk evolution; model cascades; risk analysis; decision support: built around several cases



The PEARL Knowledge Base

The PEARL knowledge base is (will be) a "**comprehensive repository**" of:

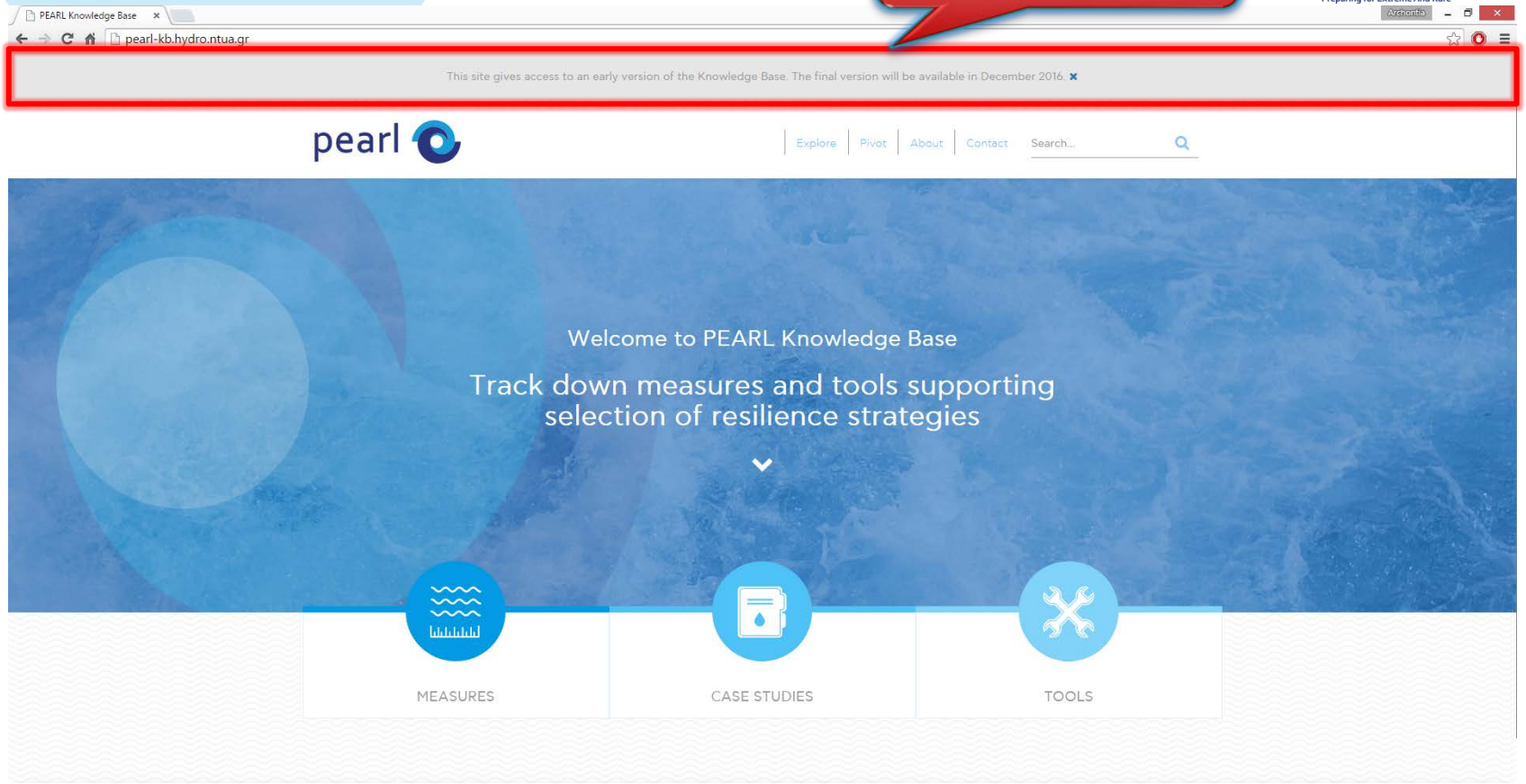
- **Resilience measures and strategies** for flood management including engineering, environmental and operational strategies and solutions for adaptation and mitigation
- **Applications** of resilience measures (single or combined) i.e. real, modelled/simulated case studies or even prototypes/physical models enabling the extraction of **lessons learned** and knowledge of "suitability" of measures per type problem and case study
- **Tools** supporting measures' selection such as multi-objective optimization algorithms and multi-criteria decision analysis methods along with their references. Utilising the identified tools, users are qualified to examine alternative interventions options and evaluate strategies and measures alone or in combination against efficiency indicators

An early version of the Knowledge Base is available through:

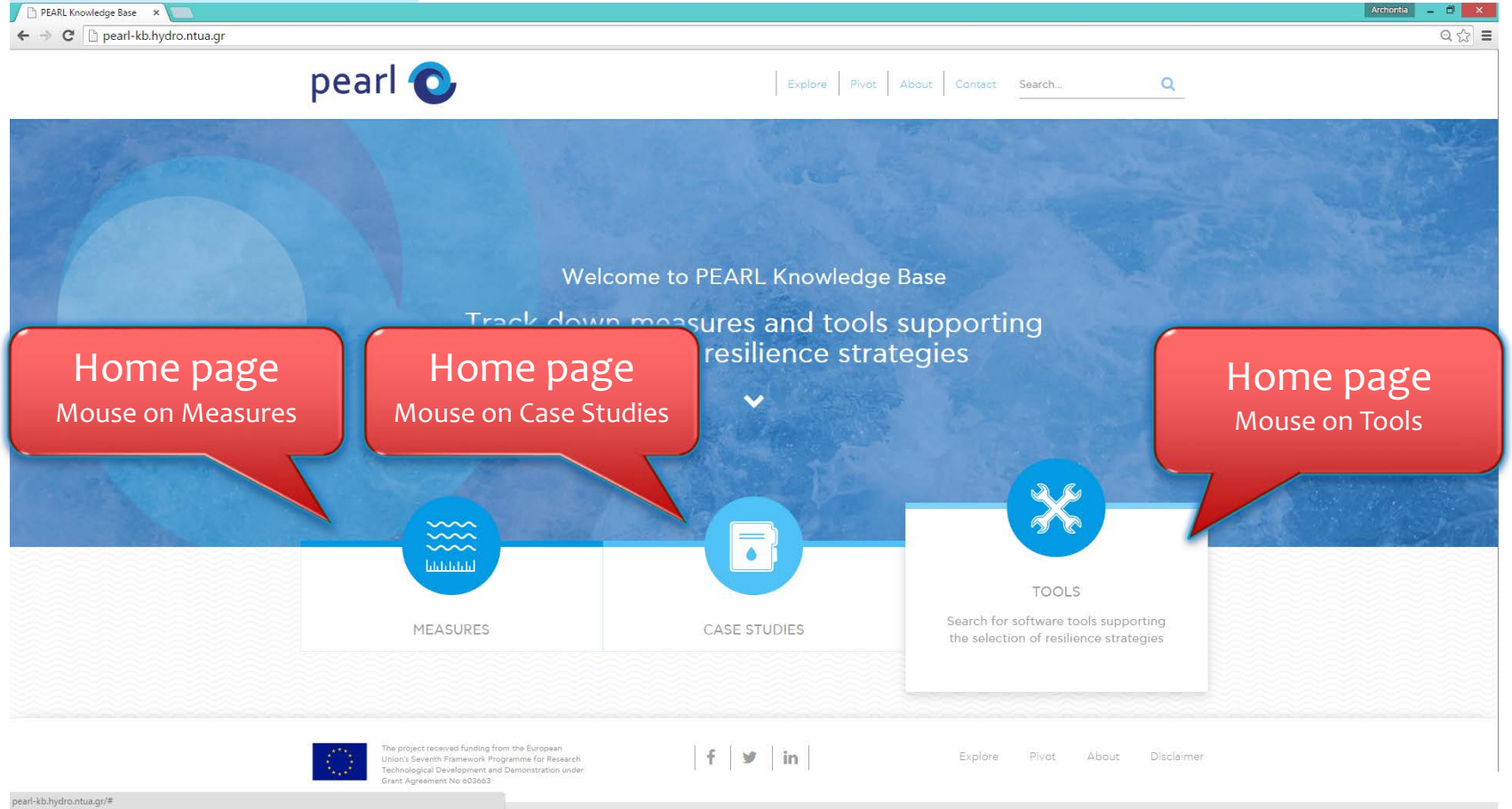
http://pearl-kb.hydro.ntua.gr/

perl-kb.hydro.ntua.gr

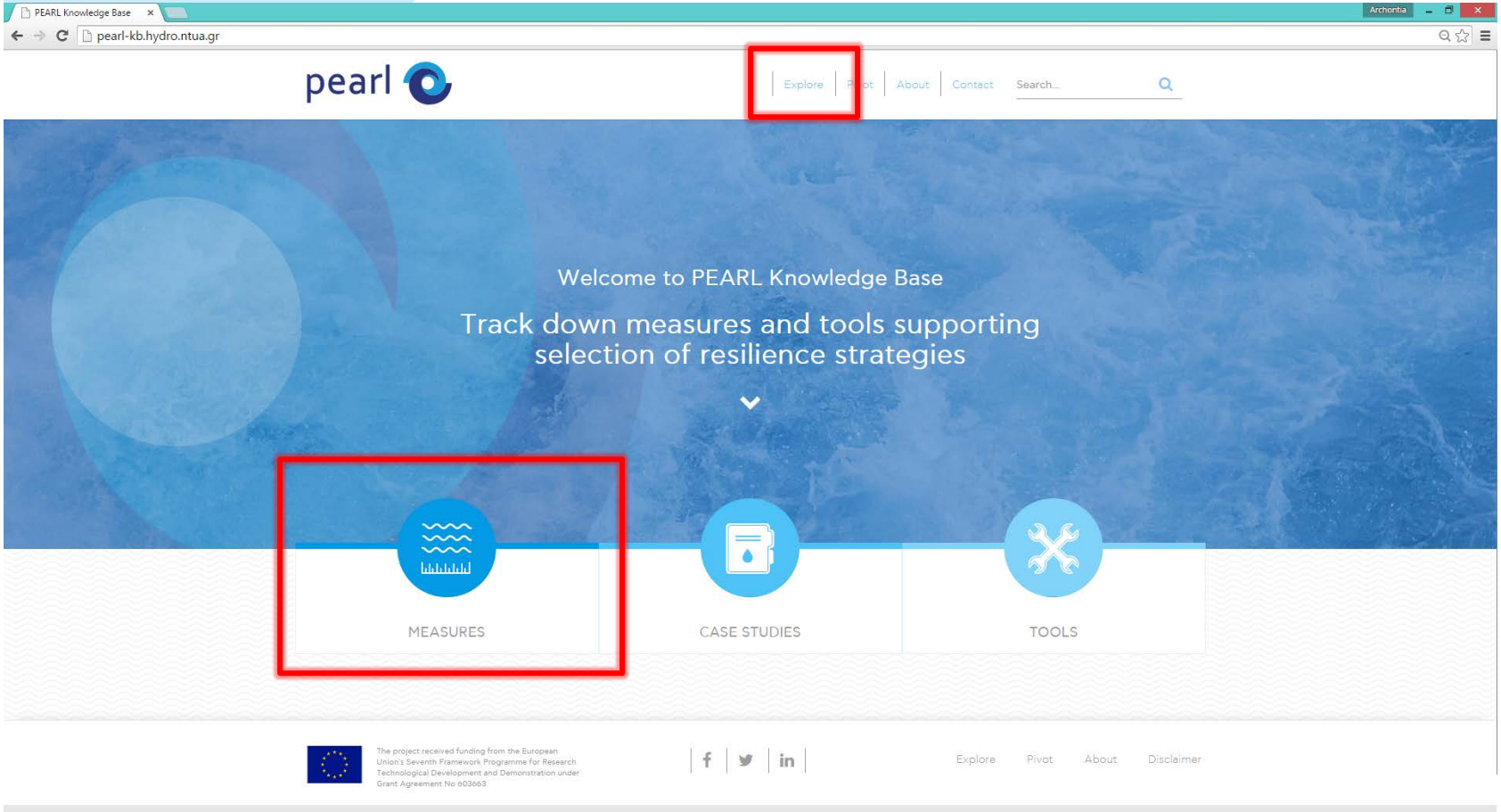
Notification «early version»



Home page

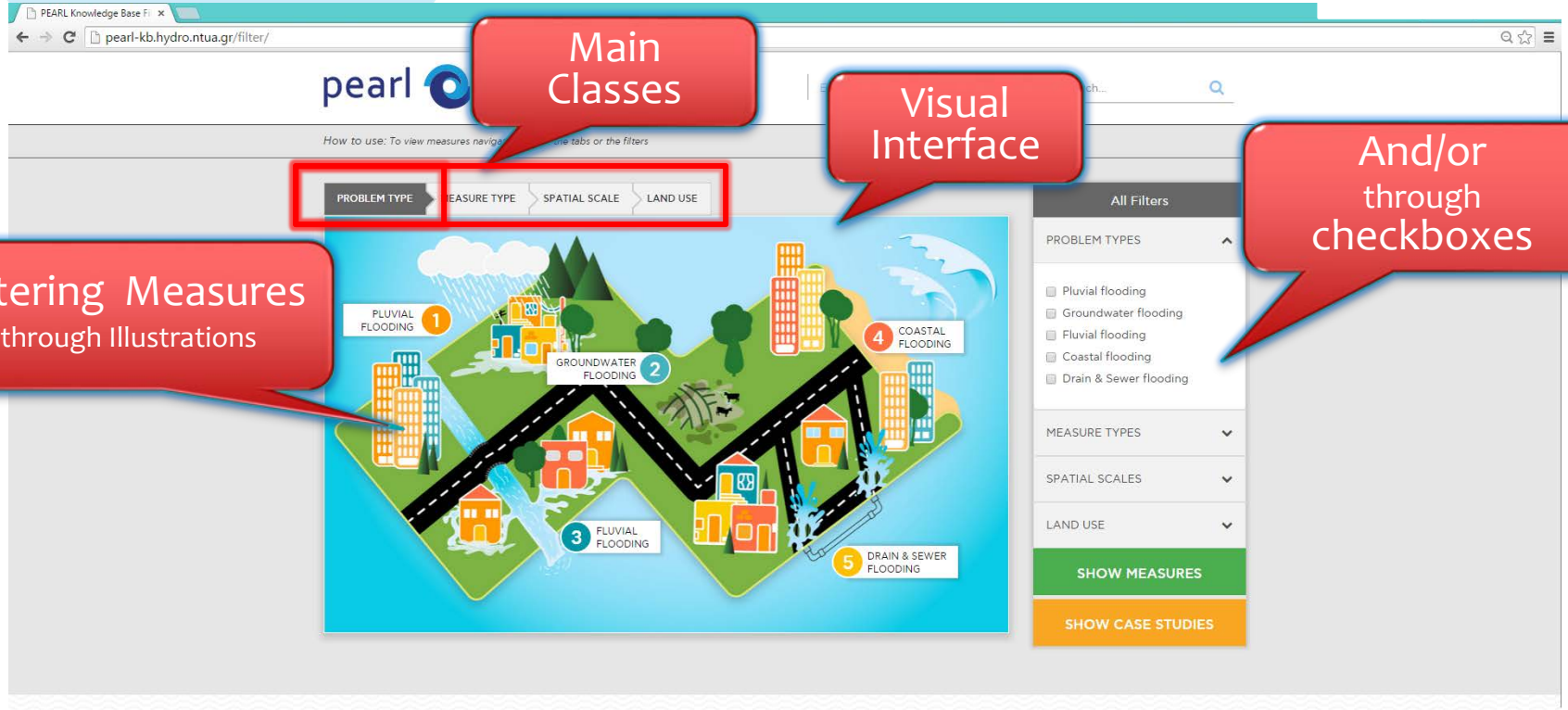

PEARL Knowledge Base
pearl-kb.hydro.ntua.gr
pearl
Explore
Pivot
About
Contact
Search...
Welcome to PEARL Knowledge Base
resilience strategies
Home page
Mouse on Measures
Home page
Mouse on Case Studies
Home page
Mouse on Tools
MEASURES
CASE STUDIES
TOOLS
Search for software tools supporting the selection of resilience strategies
The project received funding from the European Union's Seventh Framework Programme for Research Technological Development and Demonstration under Grant Agreement No 603663
Explore
Pivot
About
Disclaimer
pearl-kb.hydro.ntua.gr/#

Initialising a query… on Measures



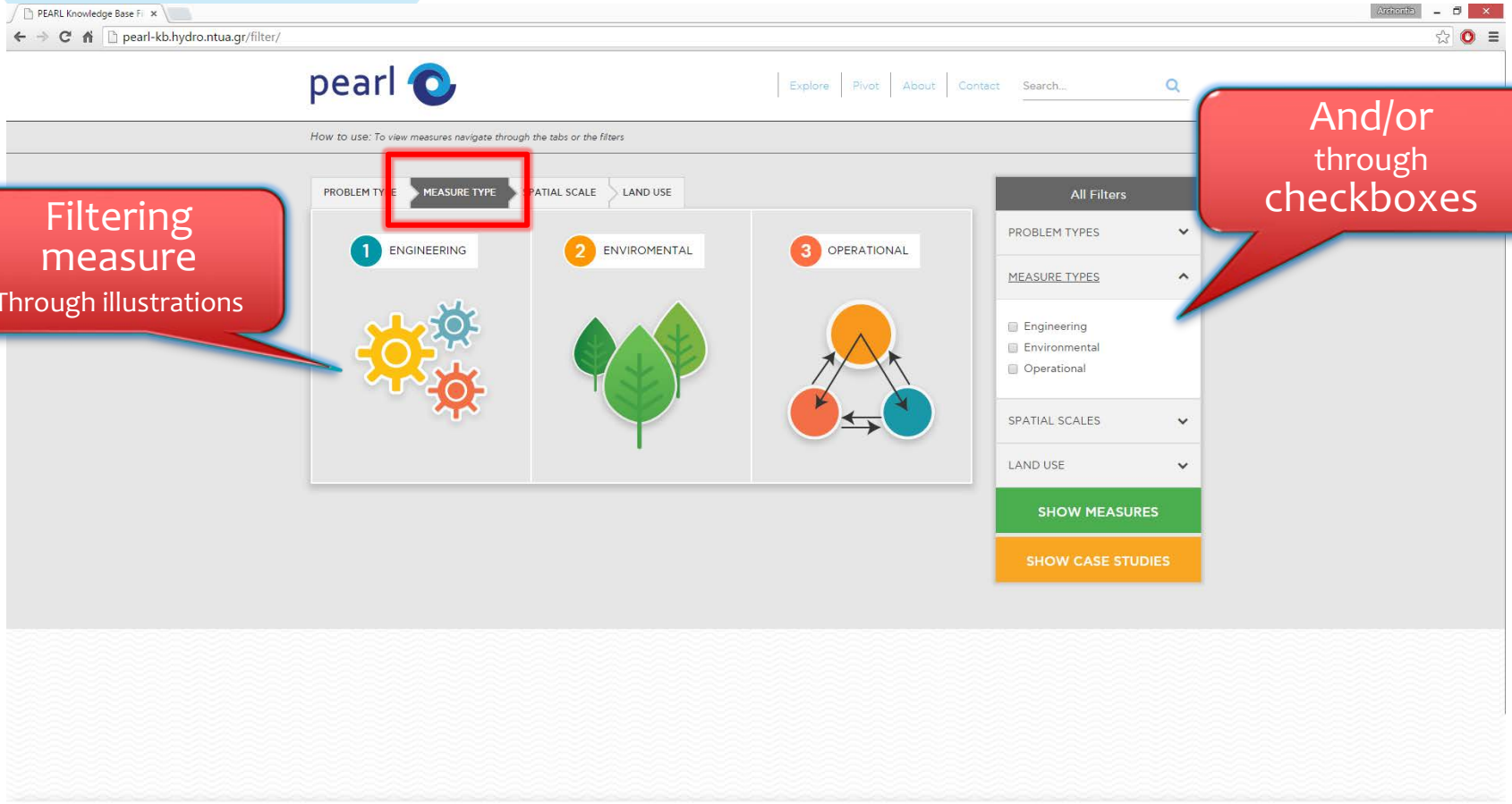
Filtering measures… based on Problem Type

Pluvial, Groundwater, Fluvial, Coastal, Drain & Sewer Flooding



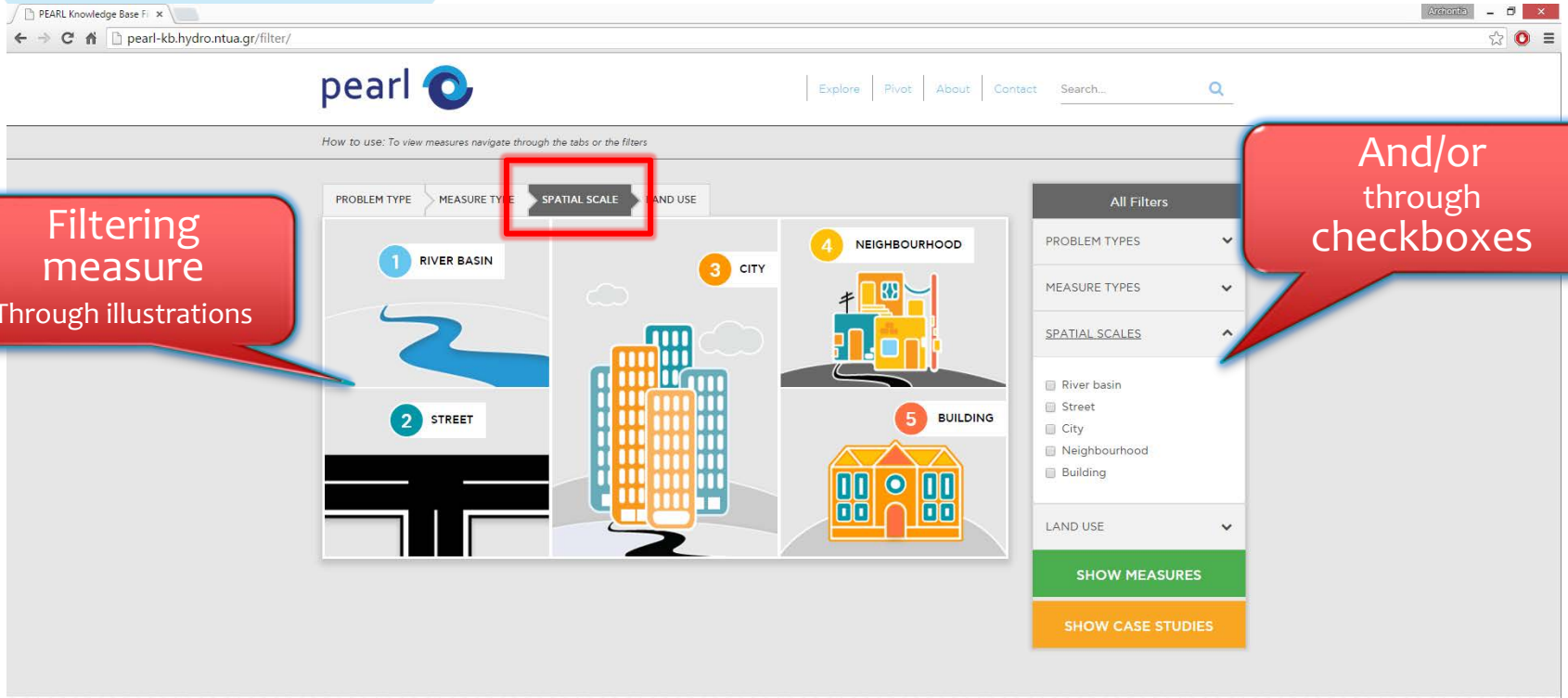
Filtering measures… based on Measure Type

Engineering, Environmental, Operational



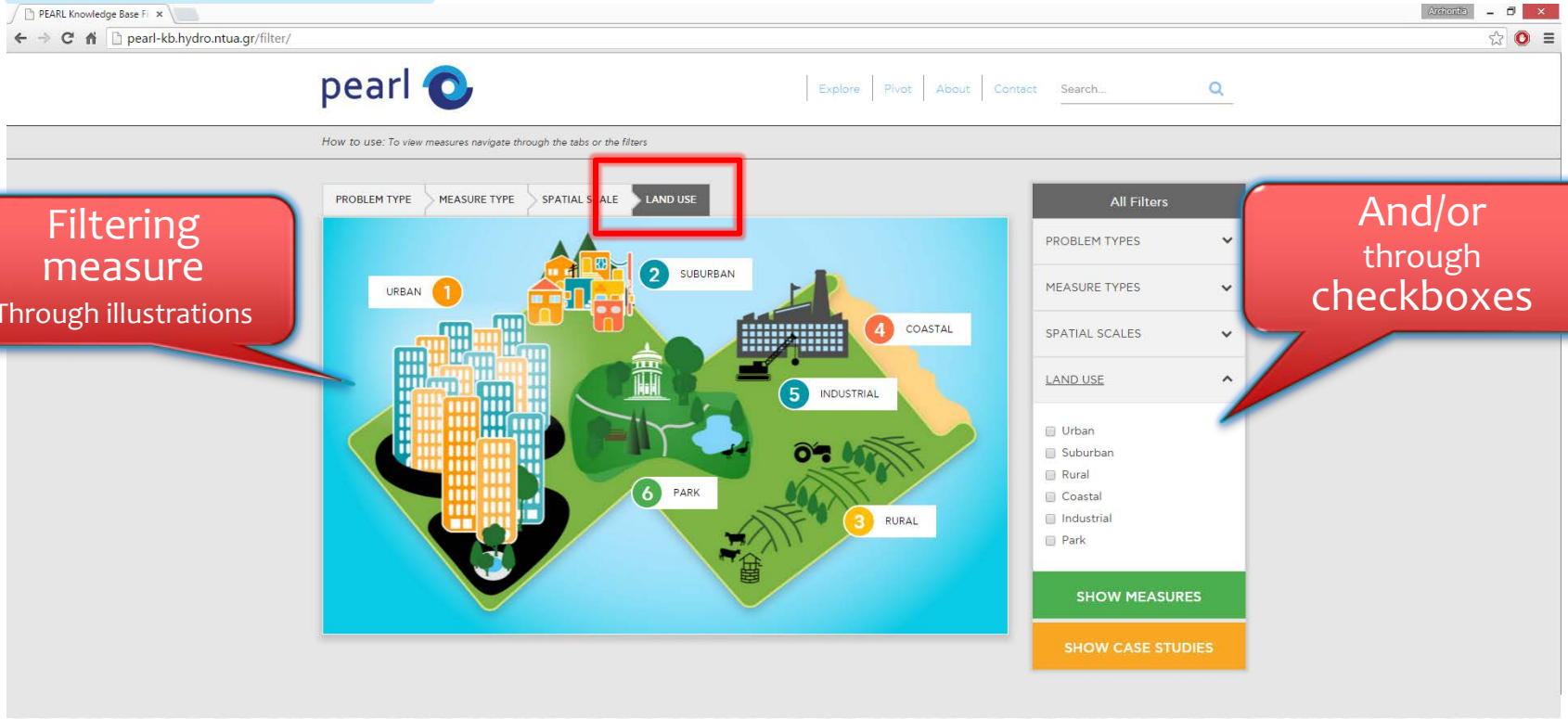
Filtering measures… based on Spatial Scale

River Basin, Street, City, Neighbourhood, Building

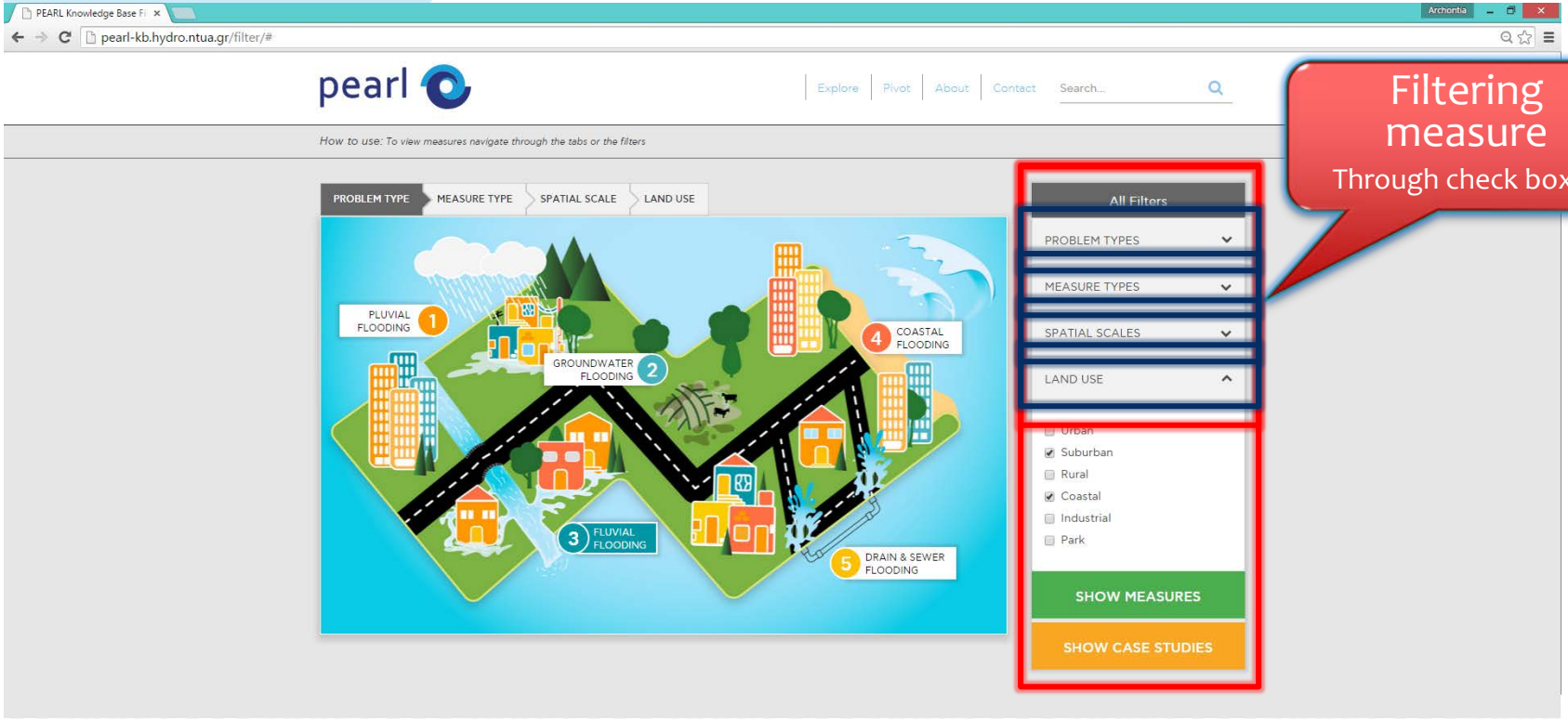


Filtering measures… based on Land Use

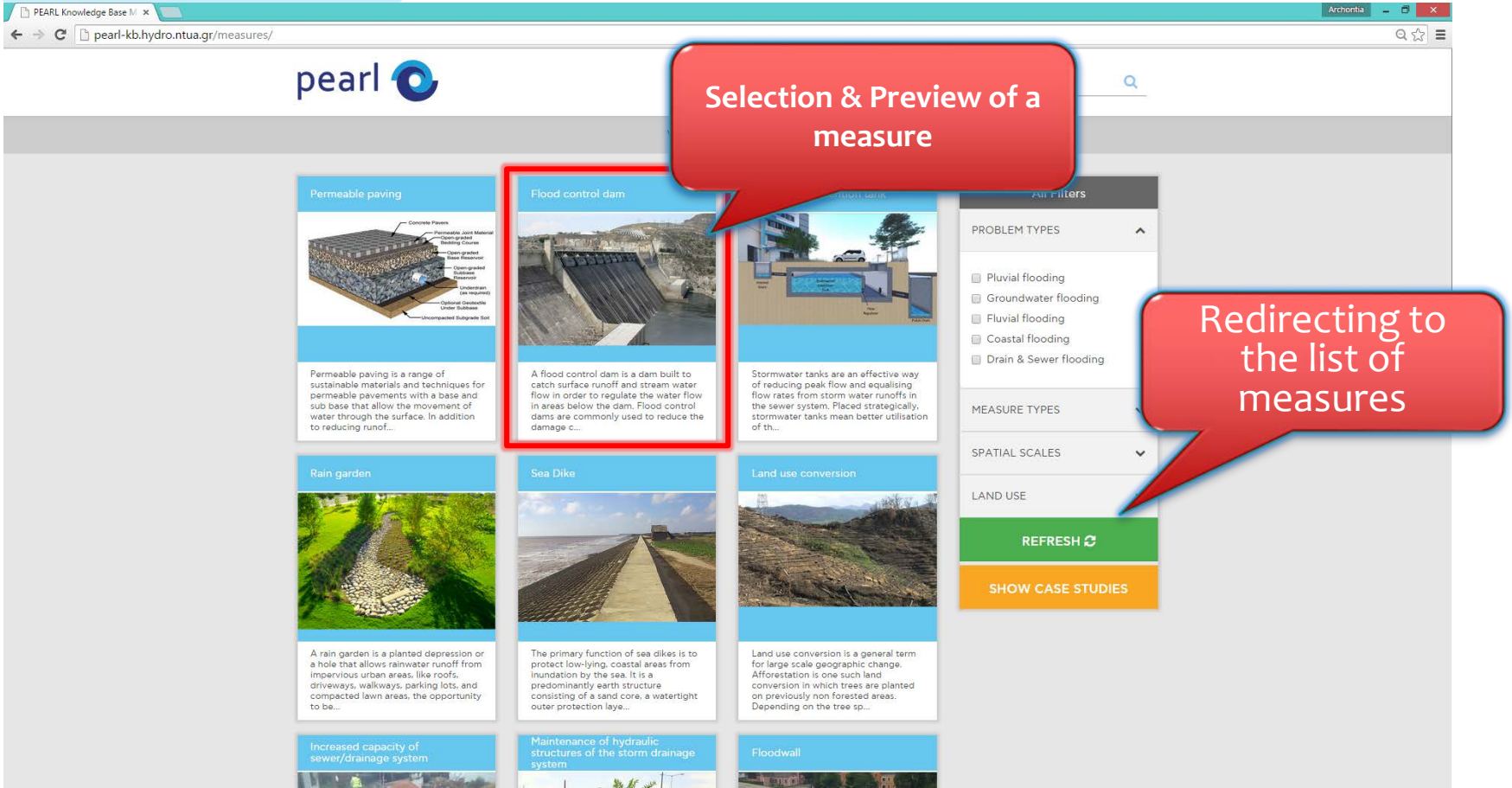
Urban, Suburban, Rural, Coastal, Industrial, Park



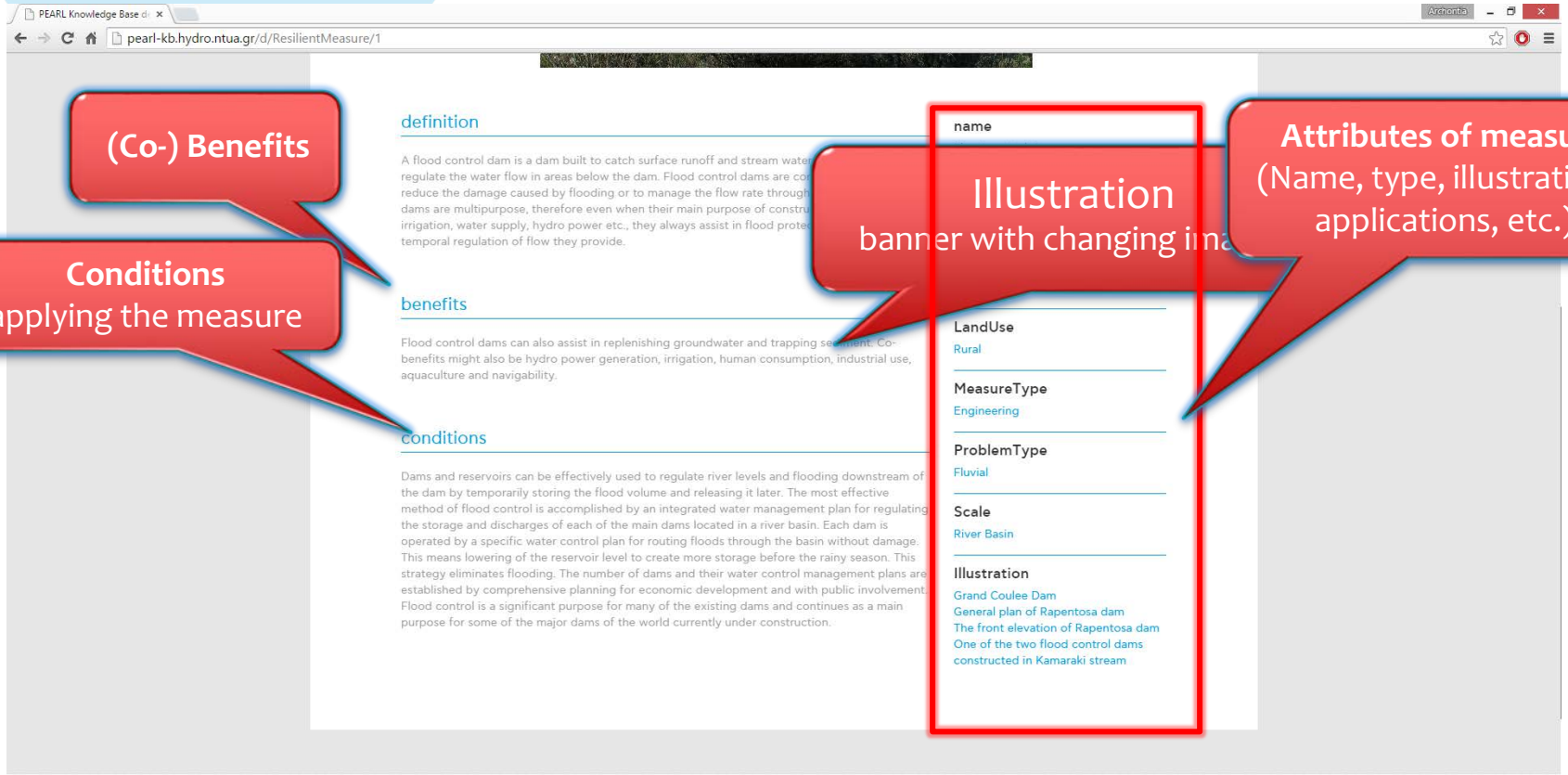
Filtering measures… through checkboxes only



List of measures… with or without filters



Detail page of a measure…Flood Control Dam



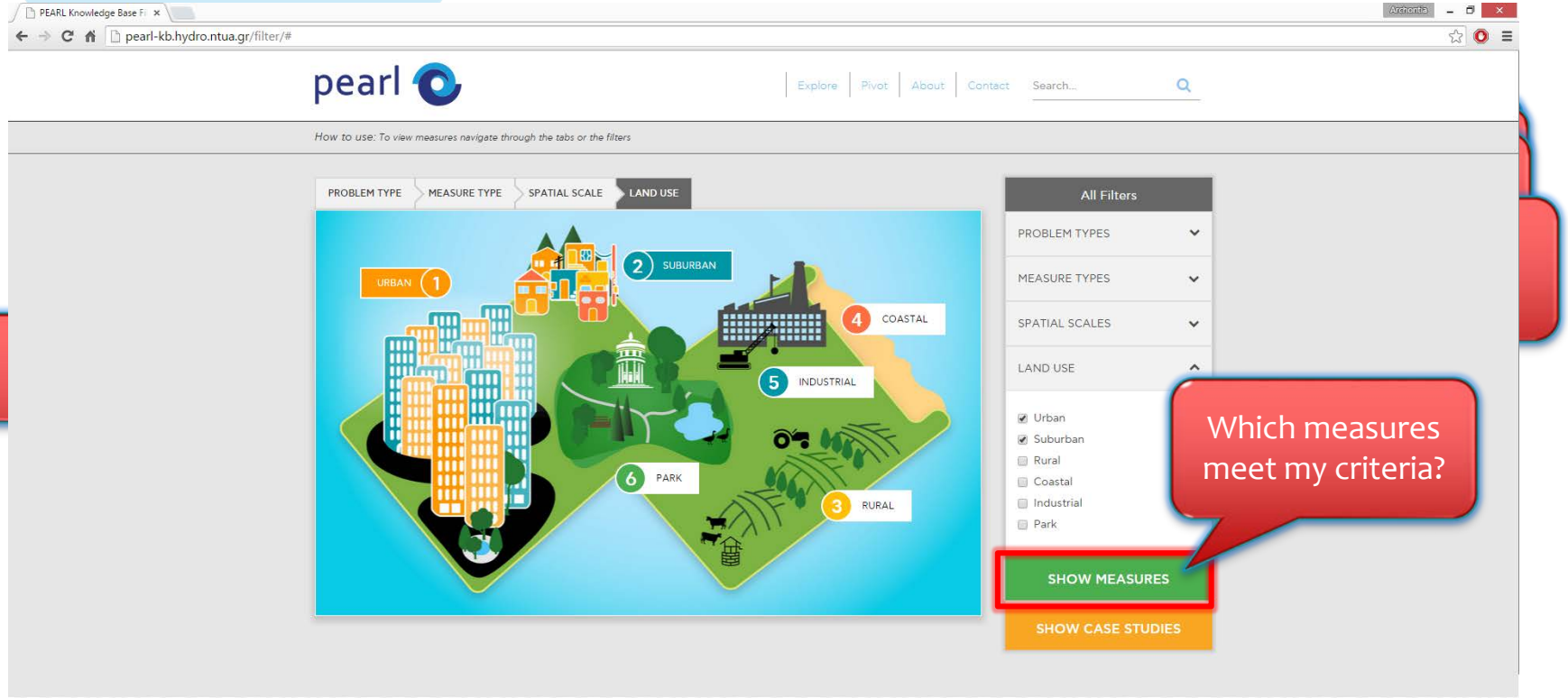
Example of query… on Measure

I am interested in exploring measures & strategies:

- for **Pluvial Flooding**,
- a measure which is **engineering**,
- independent of **spatial scale** (river basin, city, neighbourhood, etc.)
- and might be implemented in an **urban and rural** area

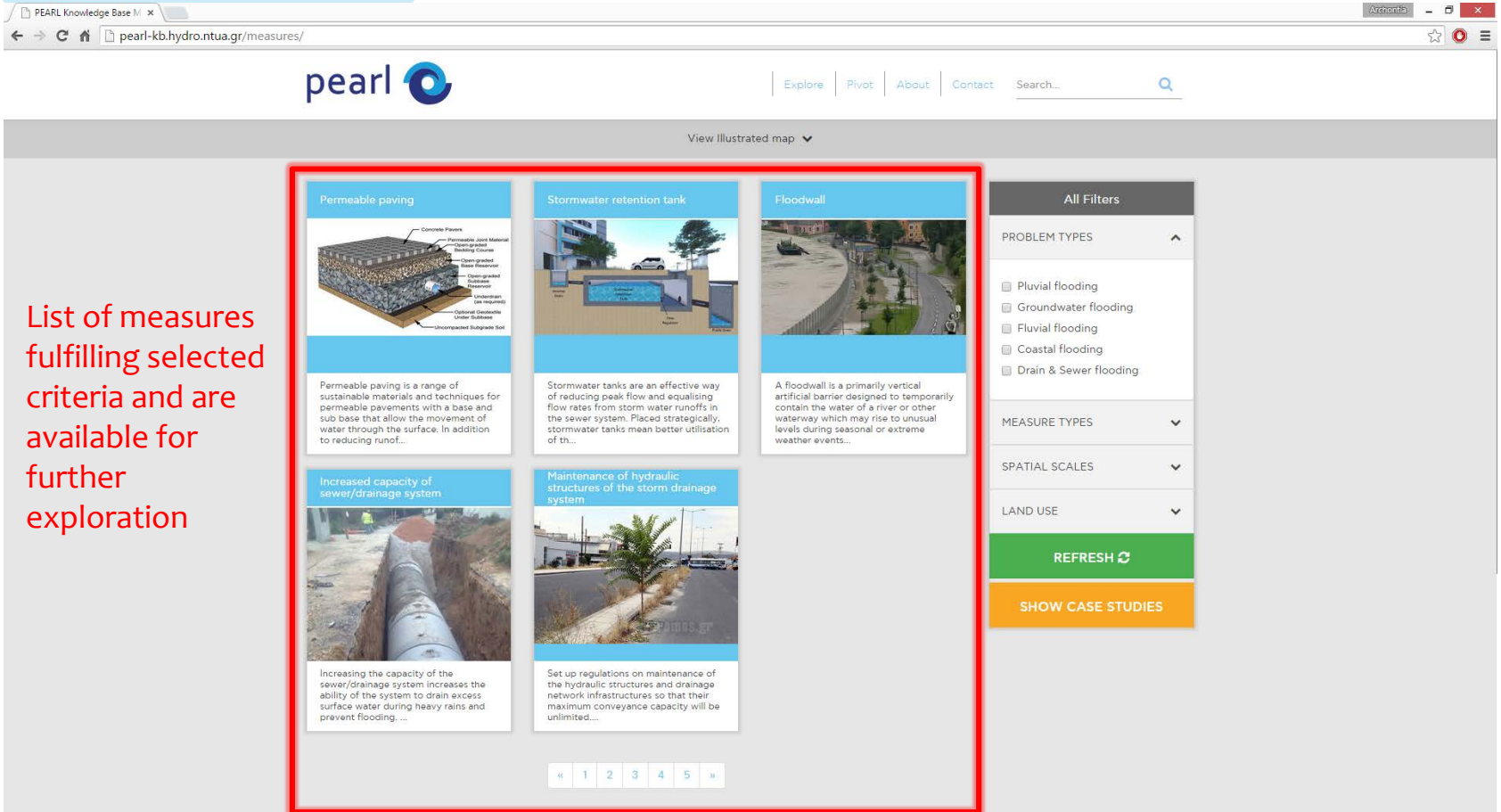
Example of query on Measure…Steps

User's "Choices" are depicted both in graphics & chekcboxes

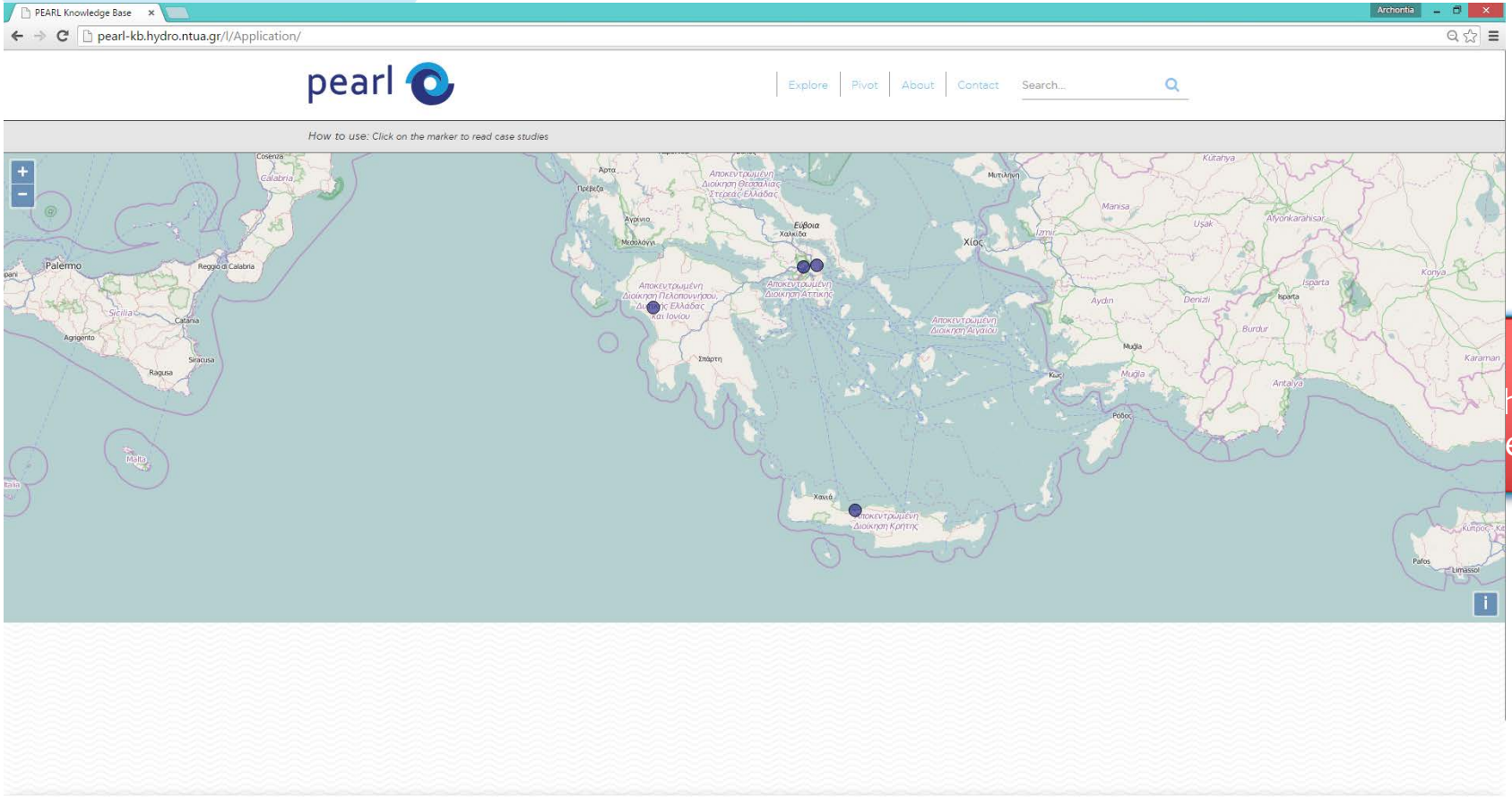


Query's results on measures

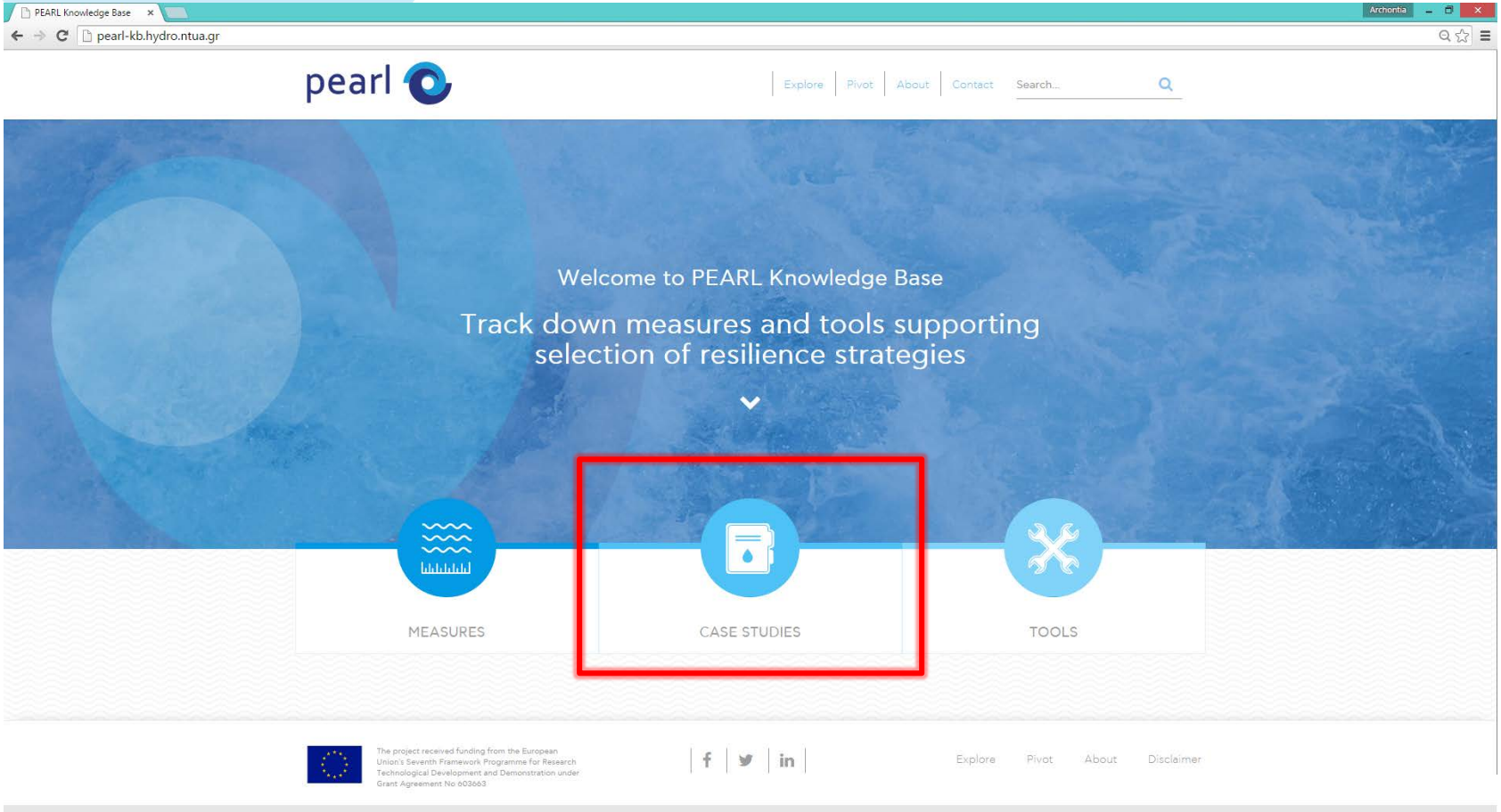
List of measures fulfilling selected criteria and are available for further exploration



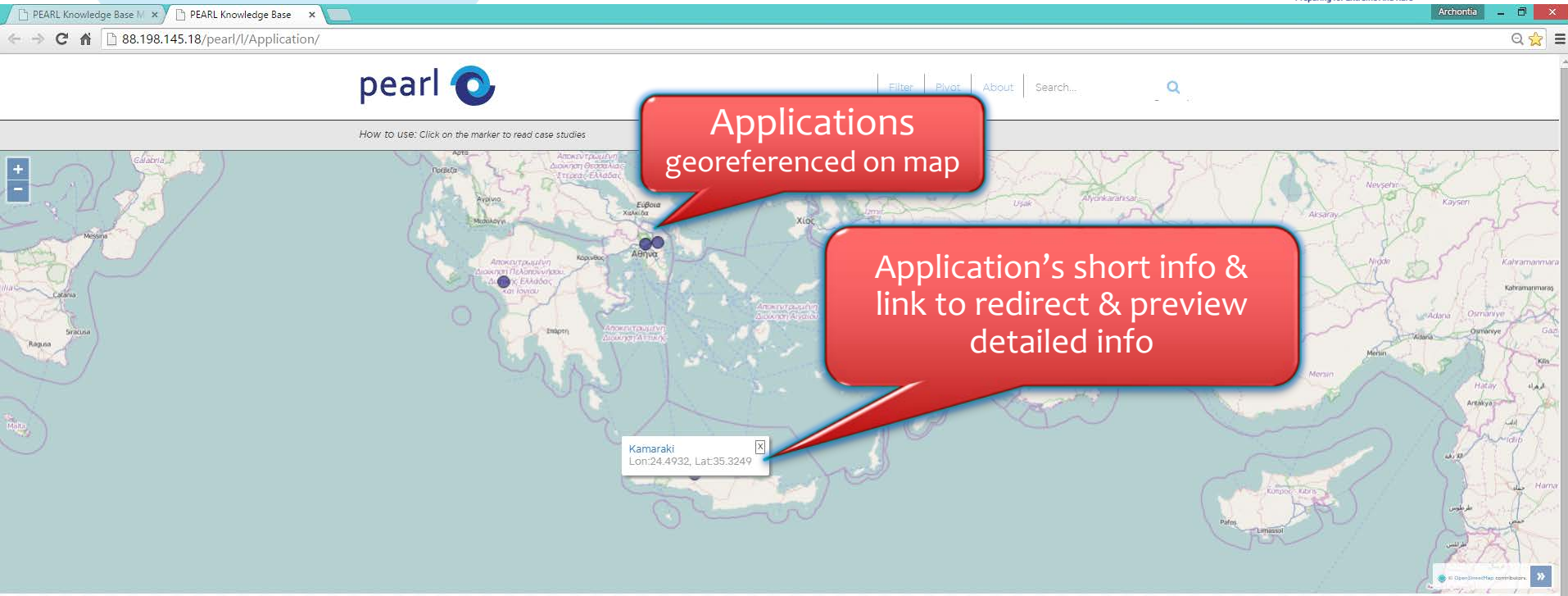
Applications… with or without filters



Initialising a query… on Case Studies

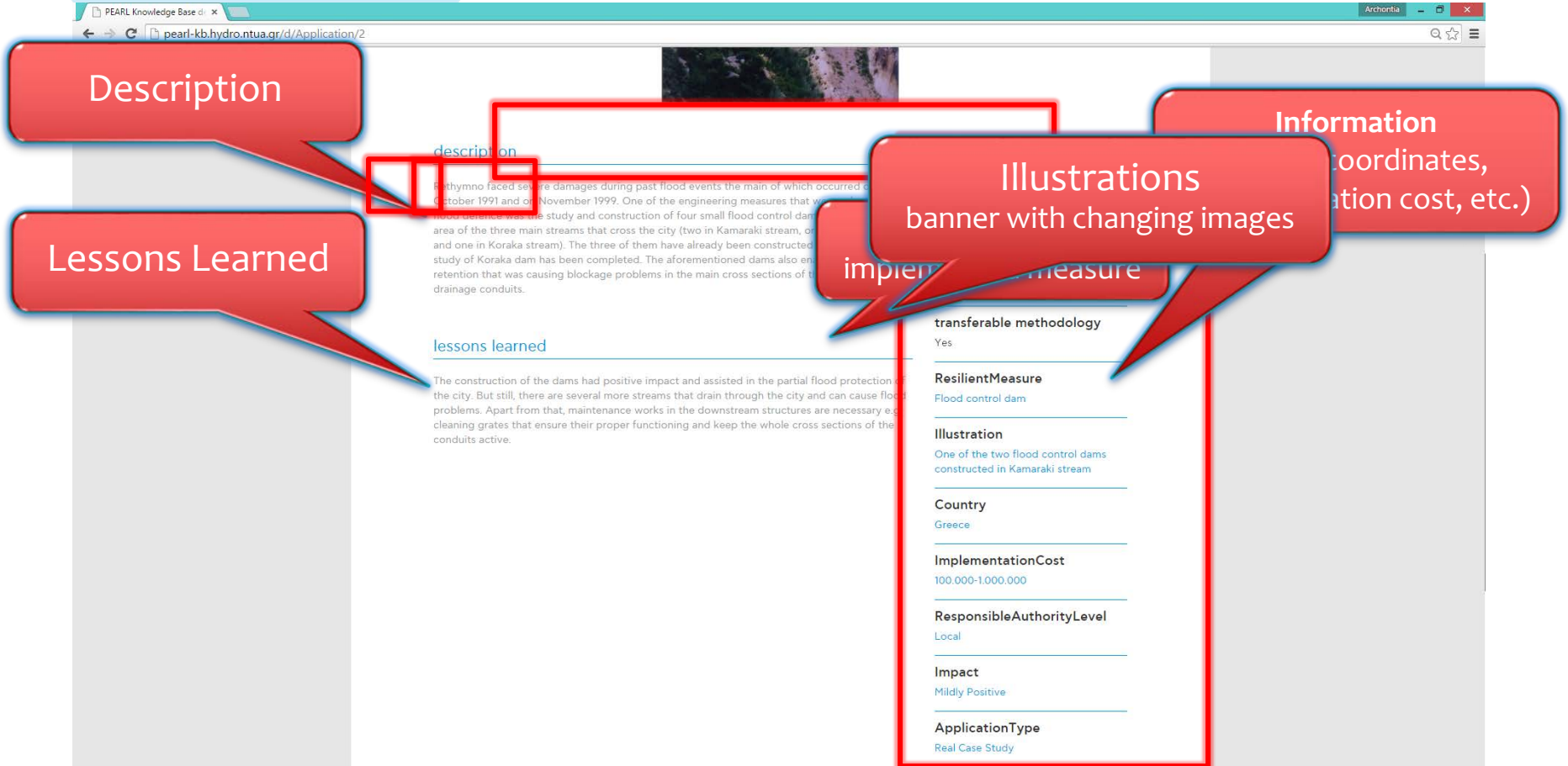


Map explorer page

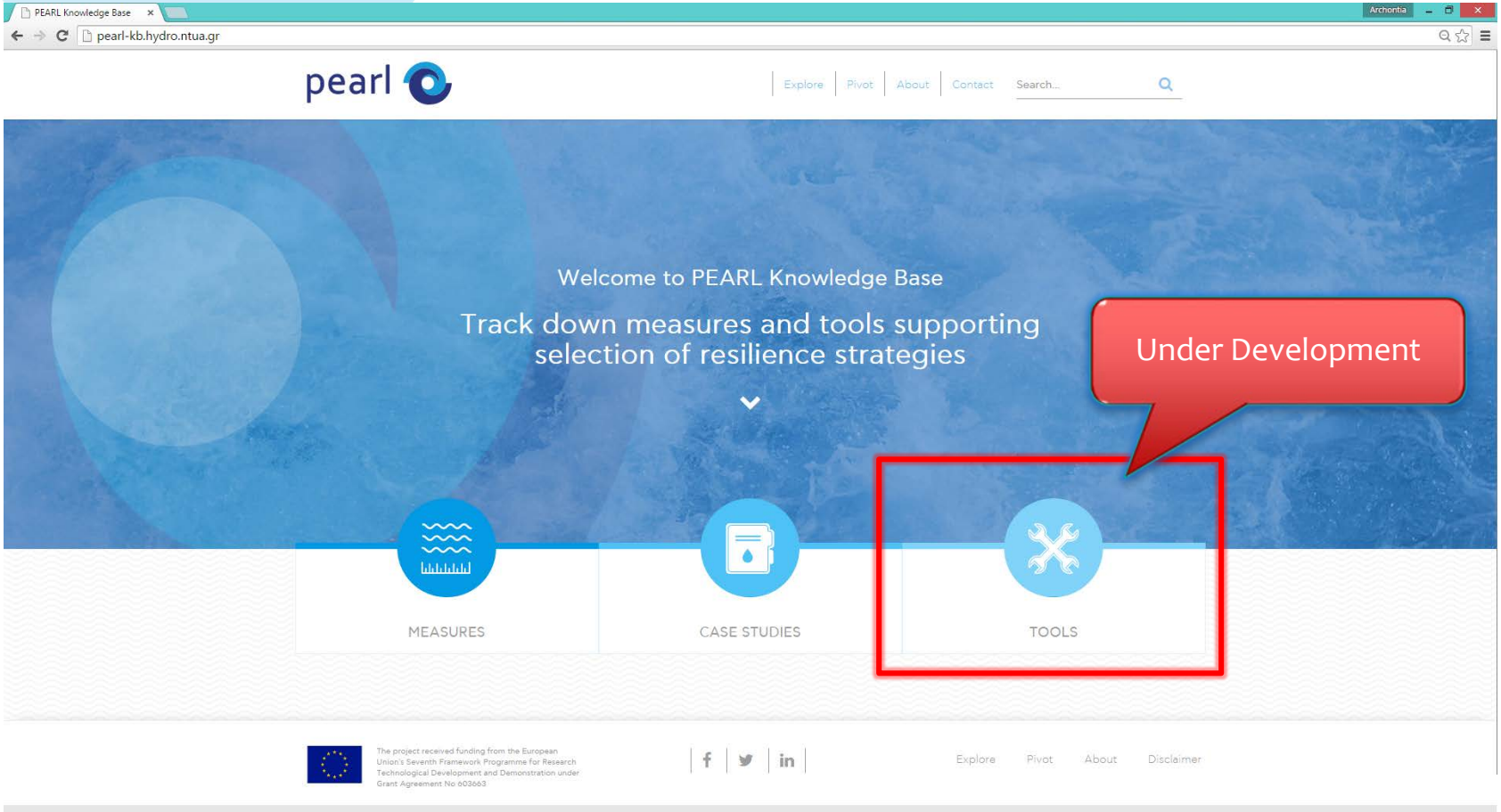


Application of a flood control dam in «Kamaraki» stream

application of measure in Rethymno, Crete, Greece



Initialising a query… on Tools



Call for Contribution…

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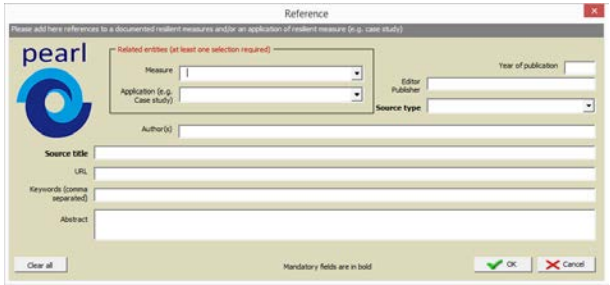
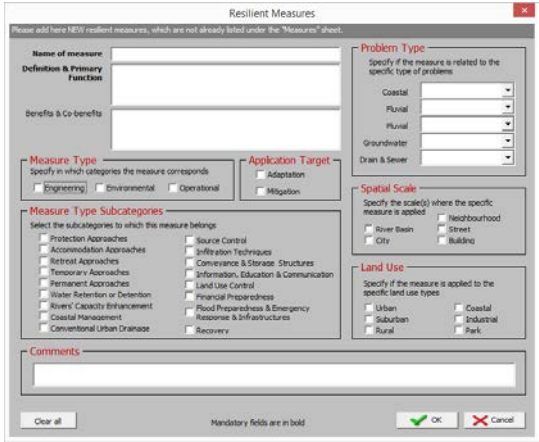
Would you like to **fill in the excel** macro-enabled questionnaire and assist in the collection of **Application of Measures** (description, illustrations, references) and enrich the PEARL Knowledge Page?

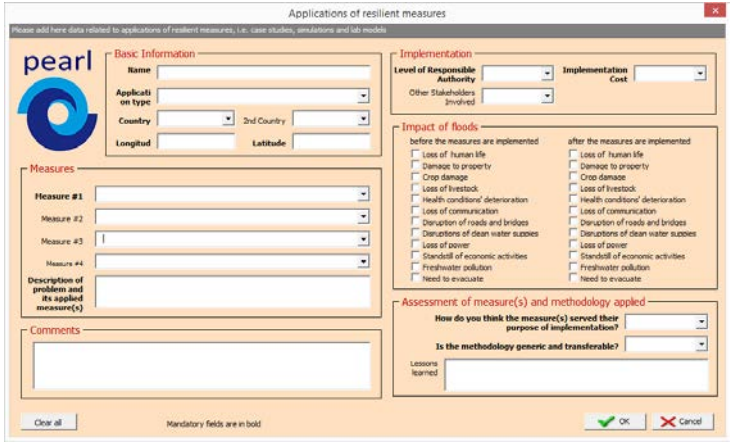
Contact George Karavokiros (gkaravo@itia.ntua.gr) and Archontia Lykou (alykou@central.ntua.gr) from NTUA



References



Resilience Measures



Application of Resilience Measures

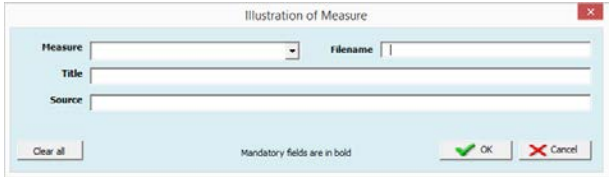


Illustration of Measures

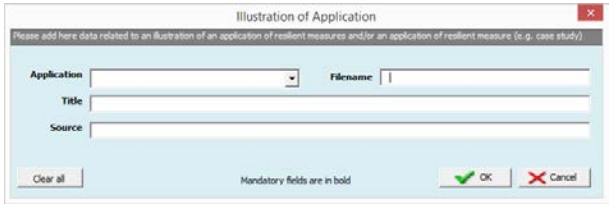


Illustration of Application

The PEARL Knowledge Base combined with the PEARL Web Learning & Planning platform

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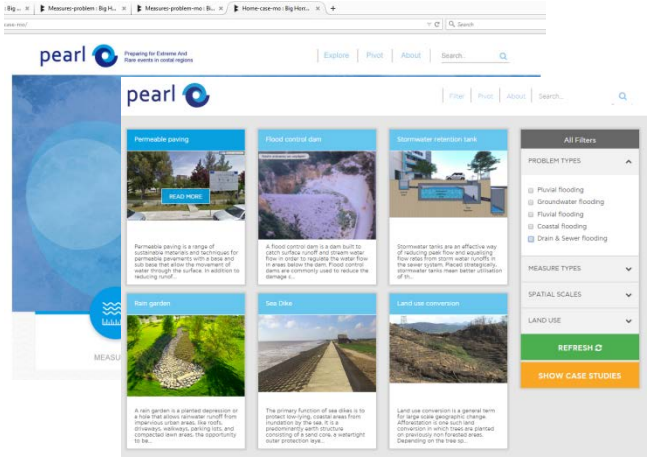
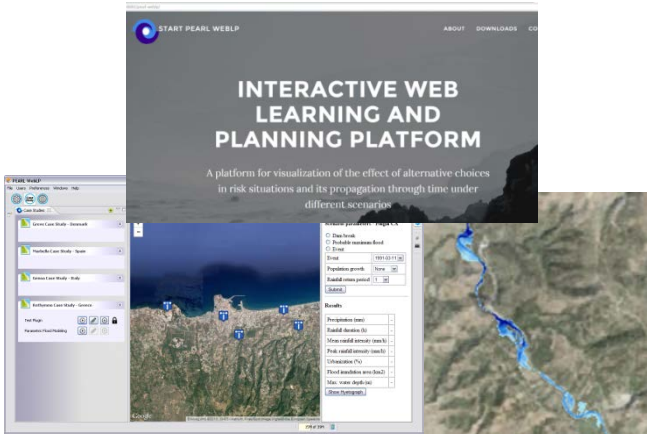
enhancing policy making processes and flood management procedures

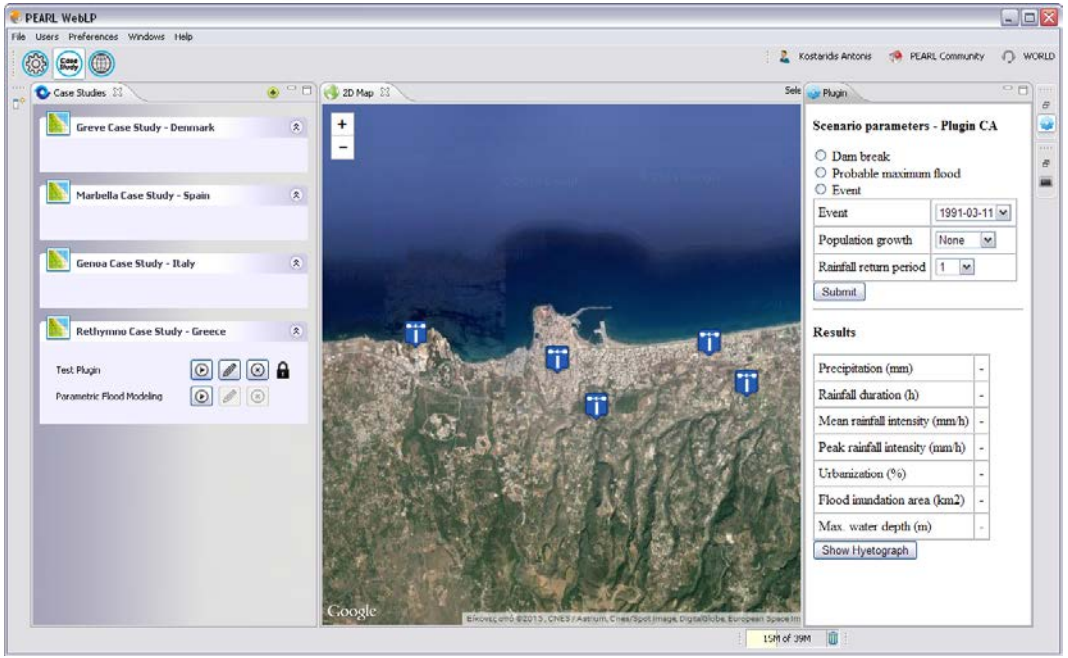




Access to the **Knowledge Base** for resilience measures, strategies & tools supporting their selection & enabling end users to find solution to flood problems

An interactive platform enabling visualisation of the **effect of the alternative choices on risk situations** examined through simulated scenarios

The PEARL WebLP

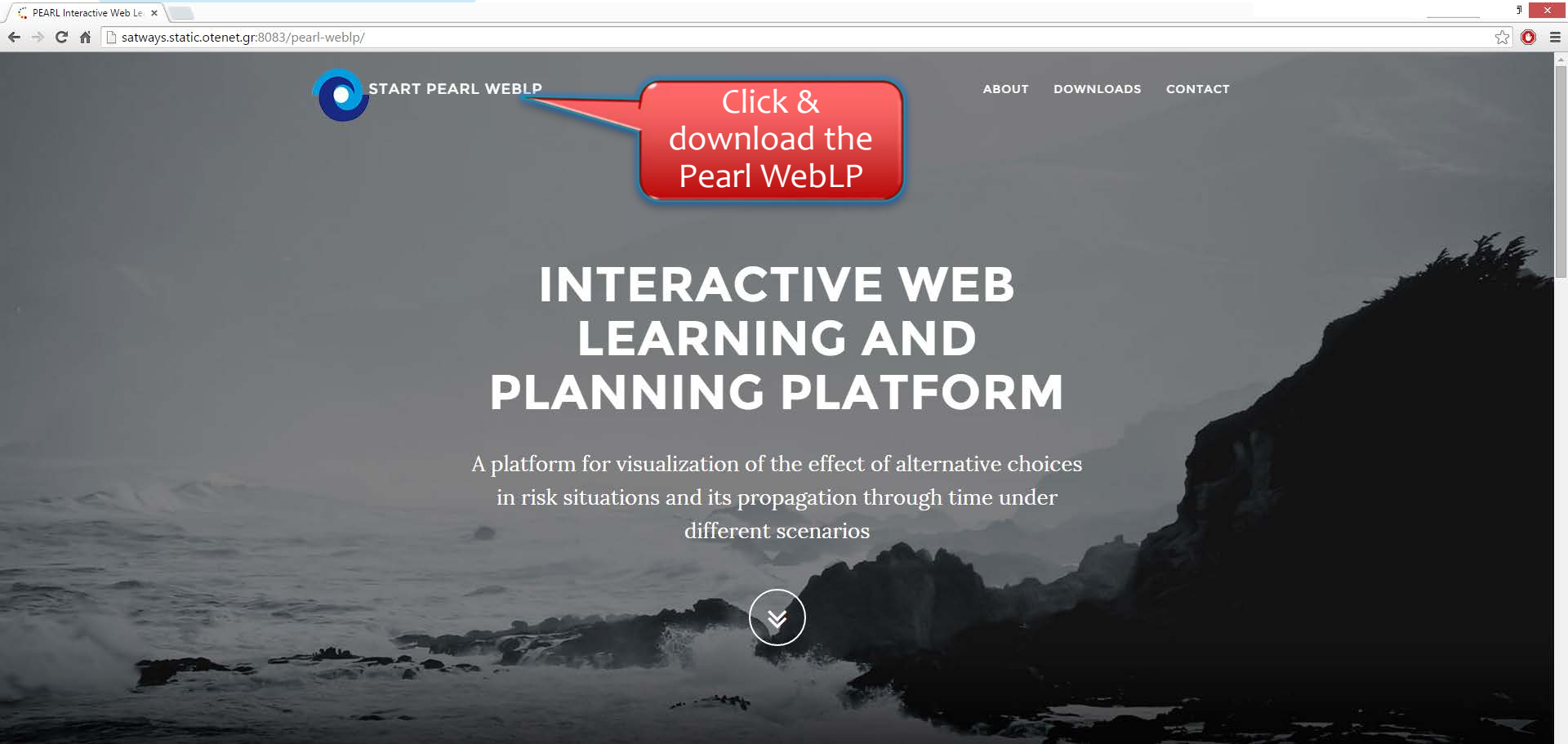


An interactive platform enabling visualisation of the **effect of the alternative choices on risk situations** by giving access to a library of possible future that will assist future analysis and decision making processes of the local authorities

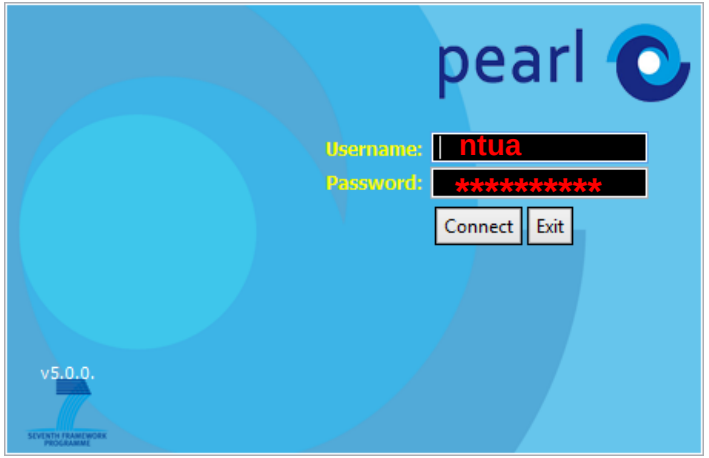
Scenario Manager application per Case

Future downloading of the WebLP from Satways' server:

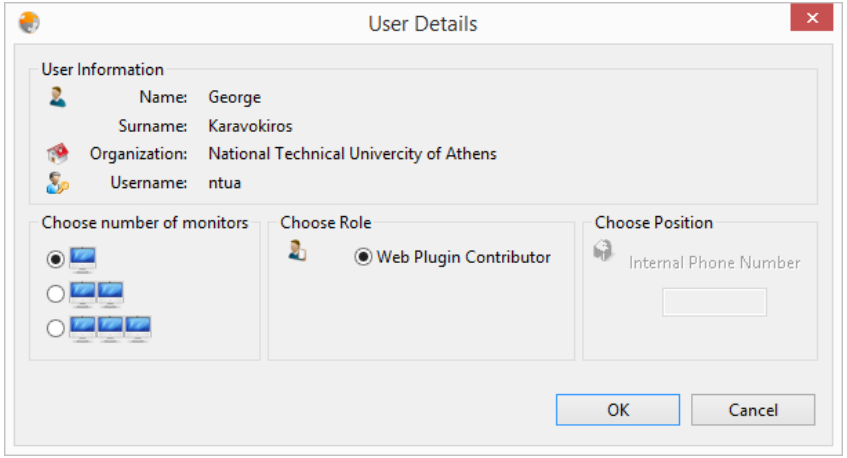
URL:http://satways.static.otenet.gr:8083/pearl-weblp



Logging in… using personal credentials

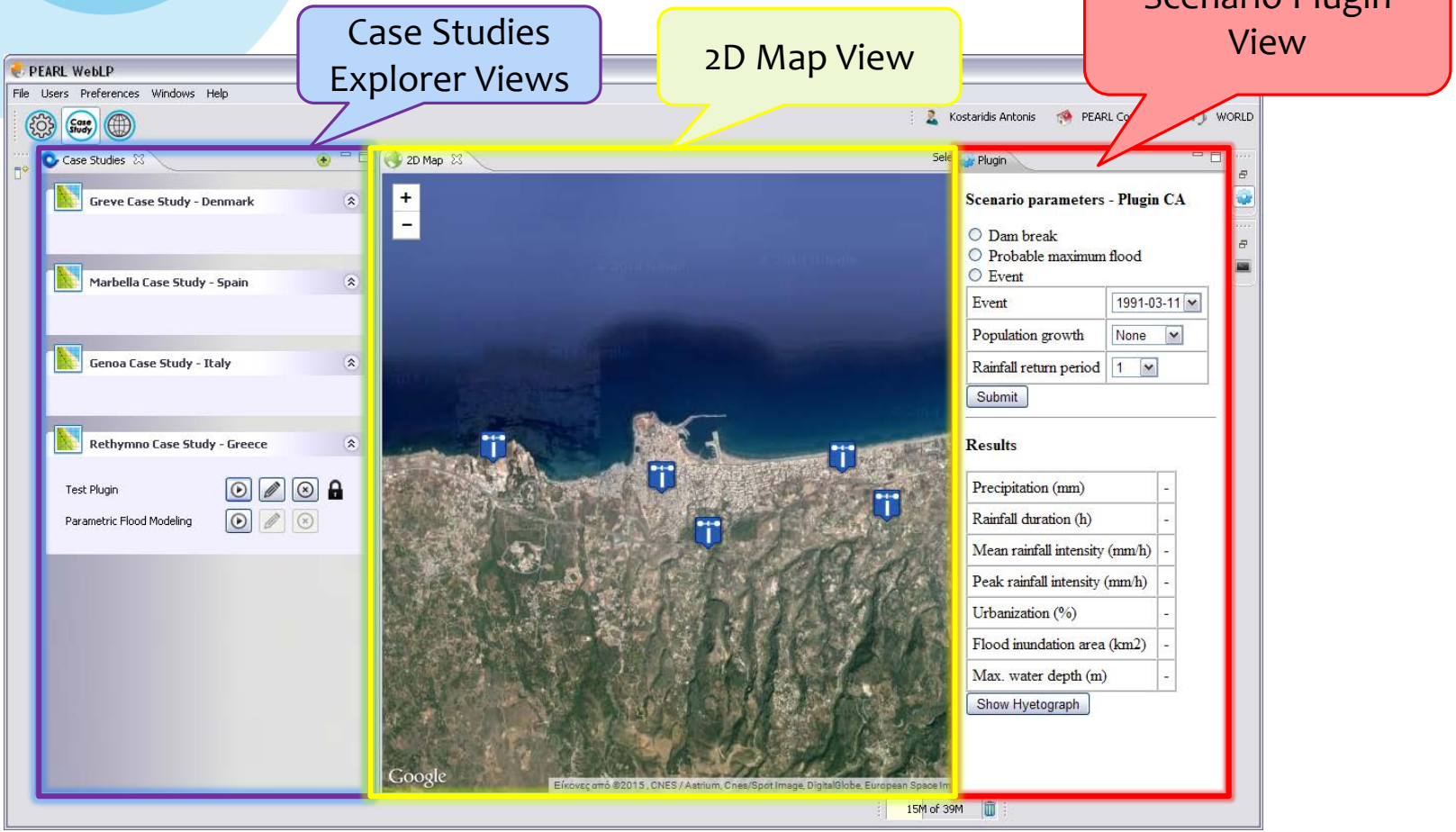


1. Logging in



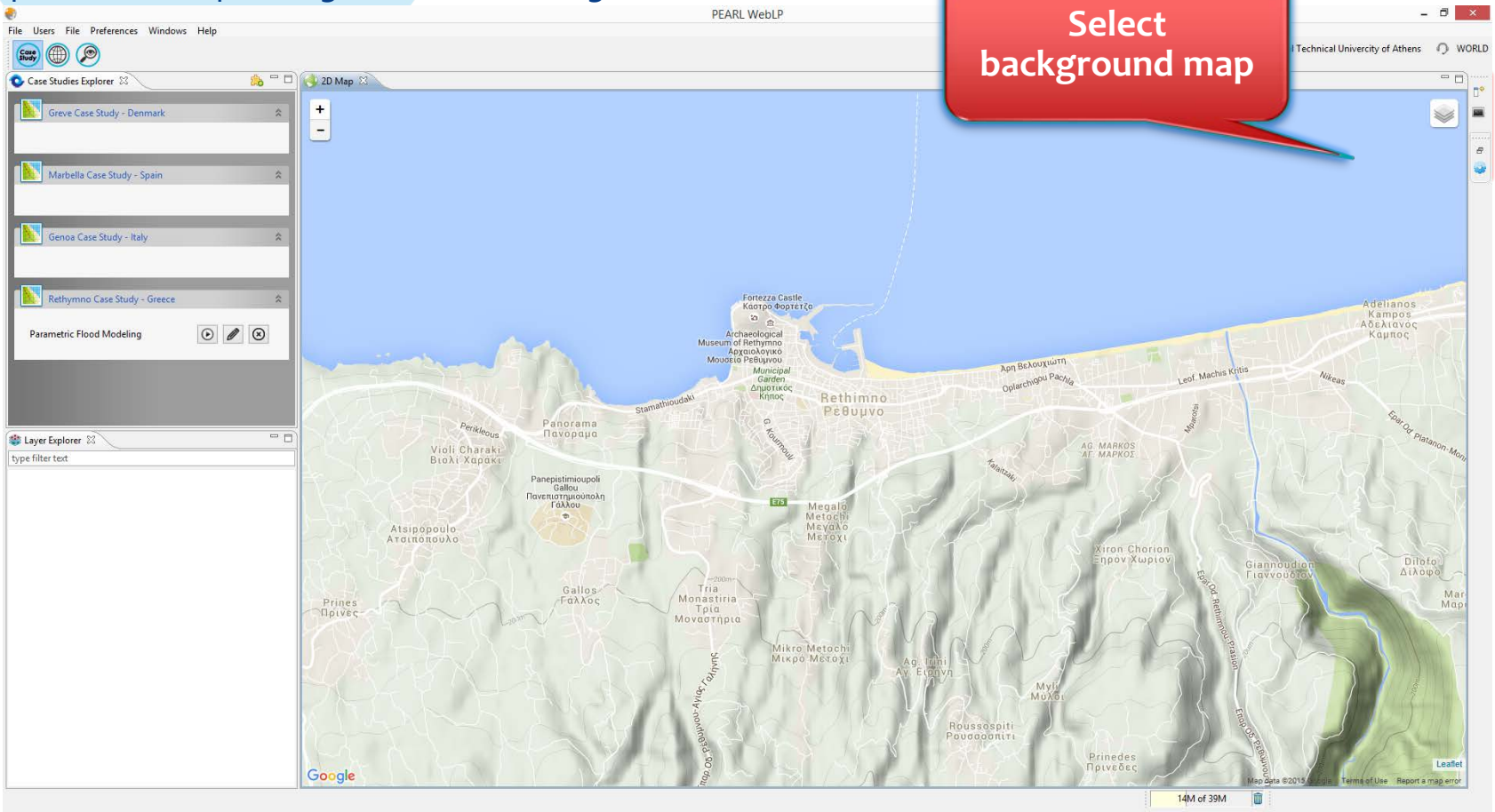
2. User detail login dialog

Home page

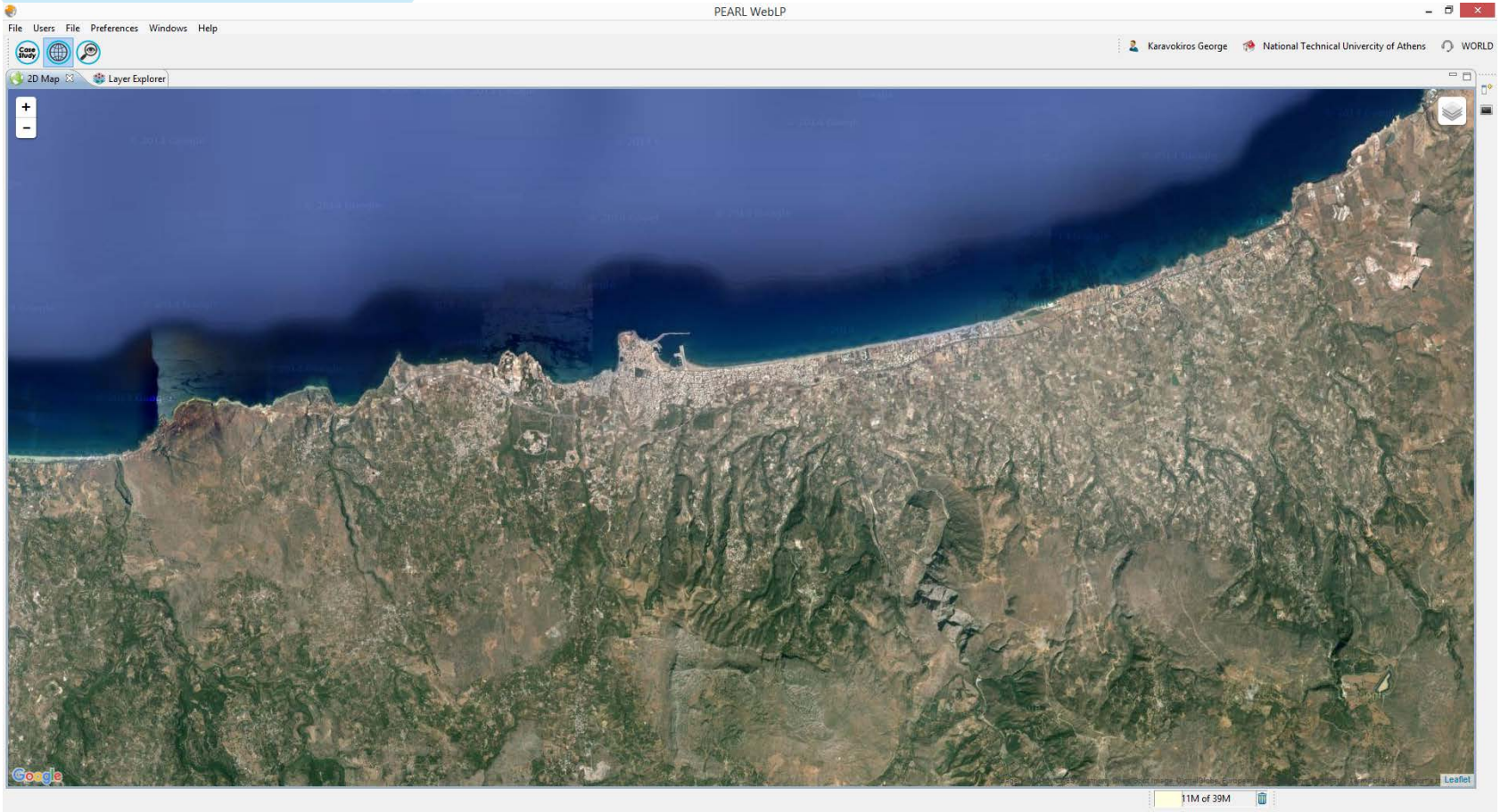

Case Studies Explorer Views
2D Map View
Scenario Plugin View
PEARL WebLP
File Users Preferences Windows Help
Kostaridis Antonis
WORLD
Case Studies
Greve Case Study - Denmark
Marbella Case Study - Spain
Genoa Case Study - Italy
Rethymno Case Study - Greece
Test Plugin
Parametric Flood Modeling
2D Map
Google
Plugin
Scenario parameters - Plugin CA
Dam break
Probable maximum flood
Event
Event 1991-03-11
Population growth None
Rainfall return period 1
Submit
Results
Precipitation (mm) -
Rainfall duration (h) -
Mean rainfall intensity (mm/h) -
Peak rainfall intensity (mm/h) -
Urbanization (%) -
Flood inundation area (km2) -
Max. water depth (m) -
Show Hyetograph
15M of 39M

Available background maps

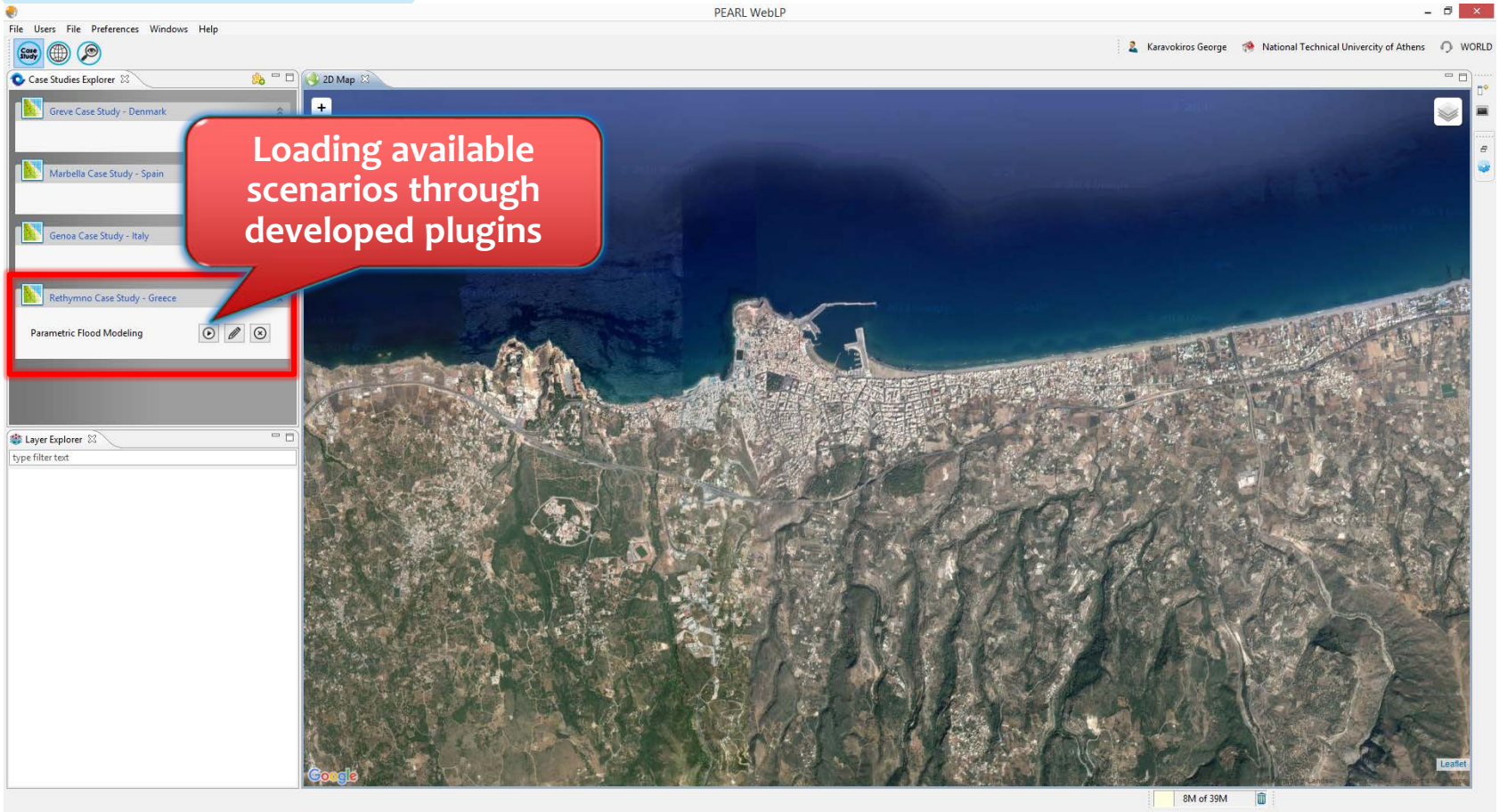
OpenStreetMap, Google Satellite, Google Terrain



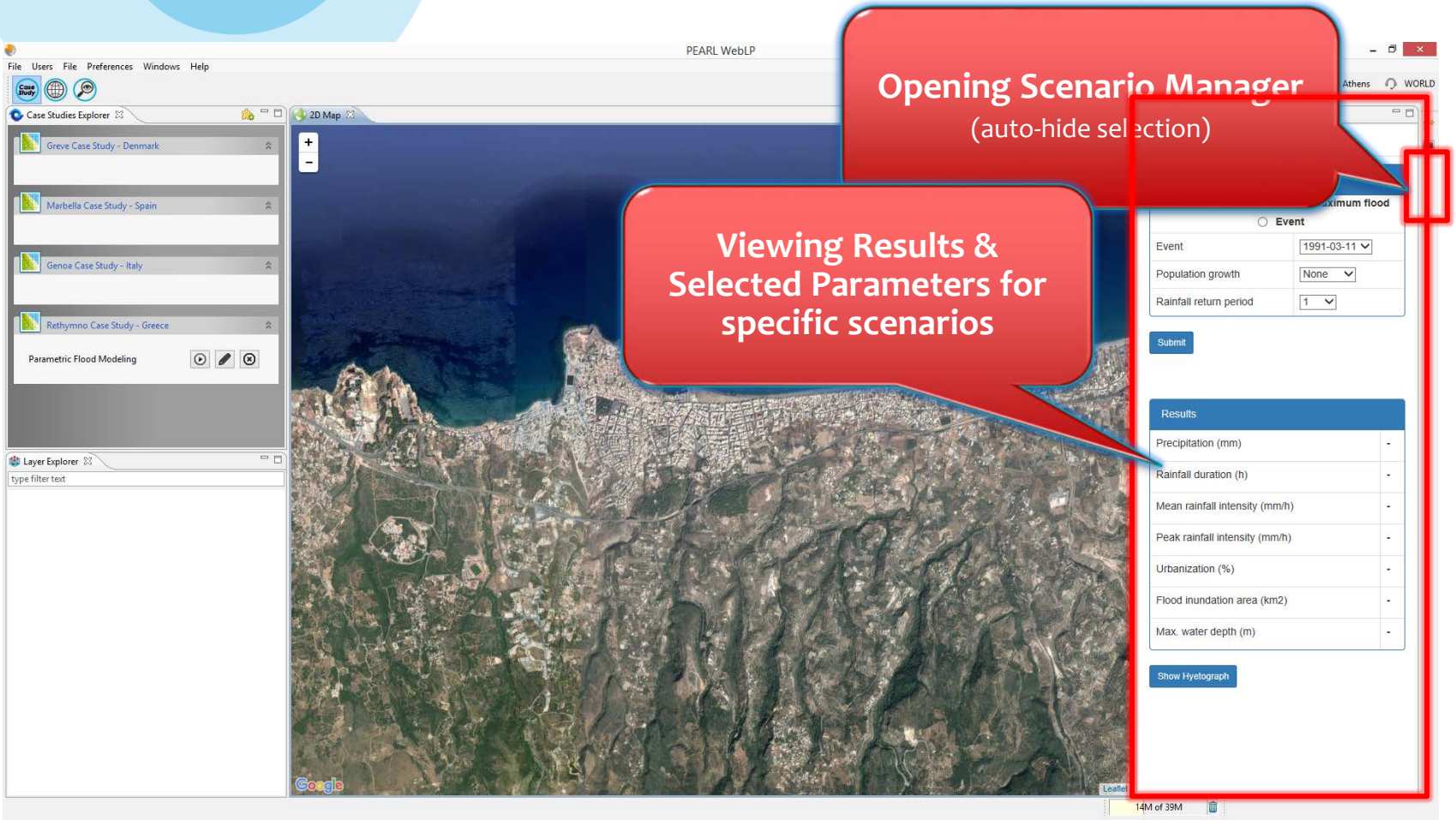
Full screen option



Available scenarios per case studies

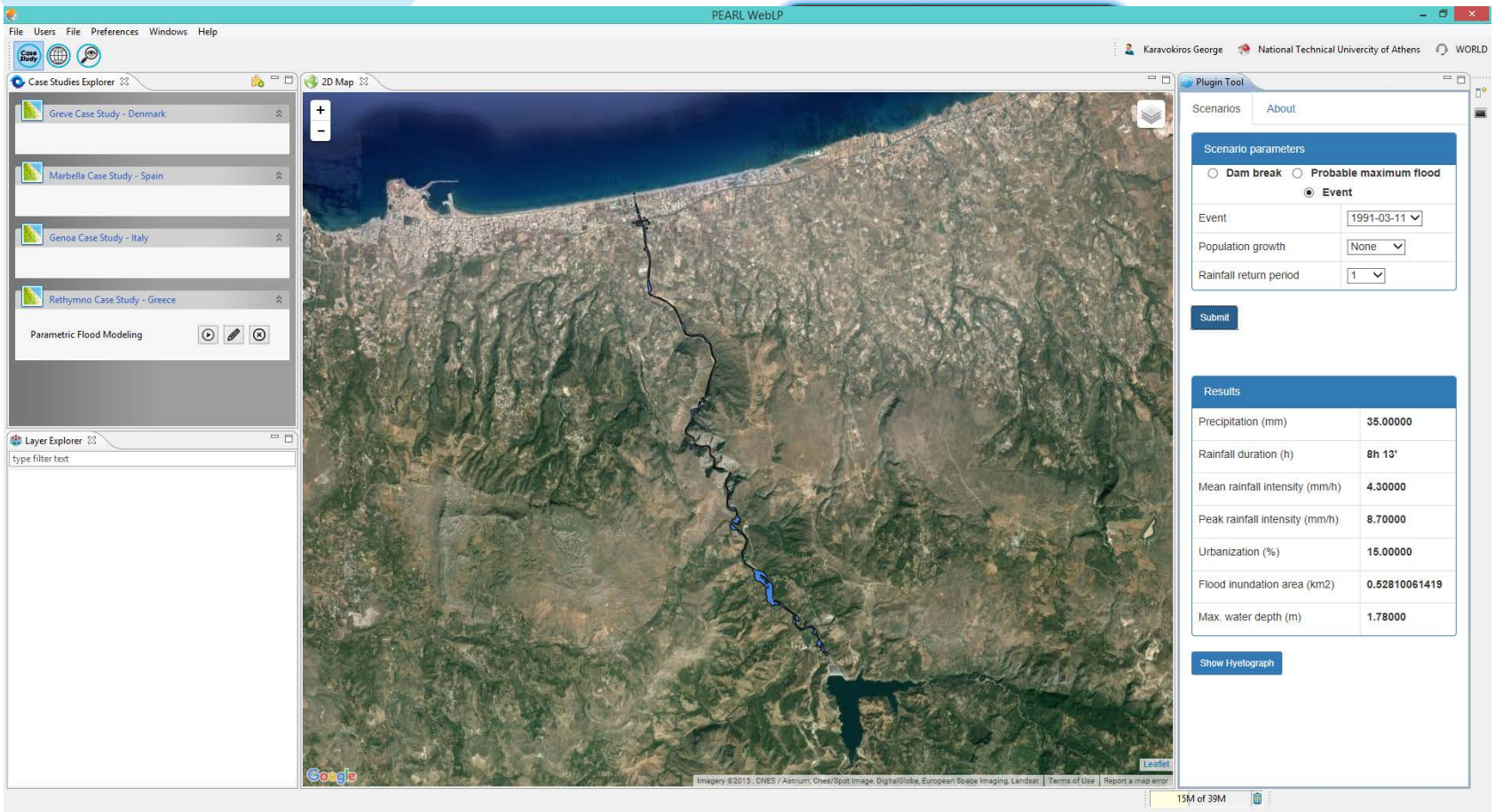


Different scenarios & parameters selection



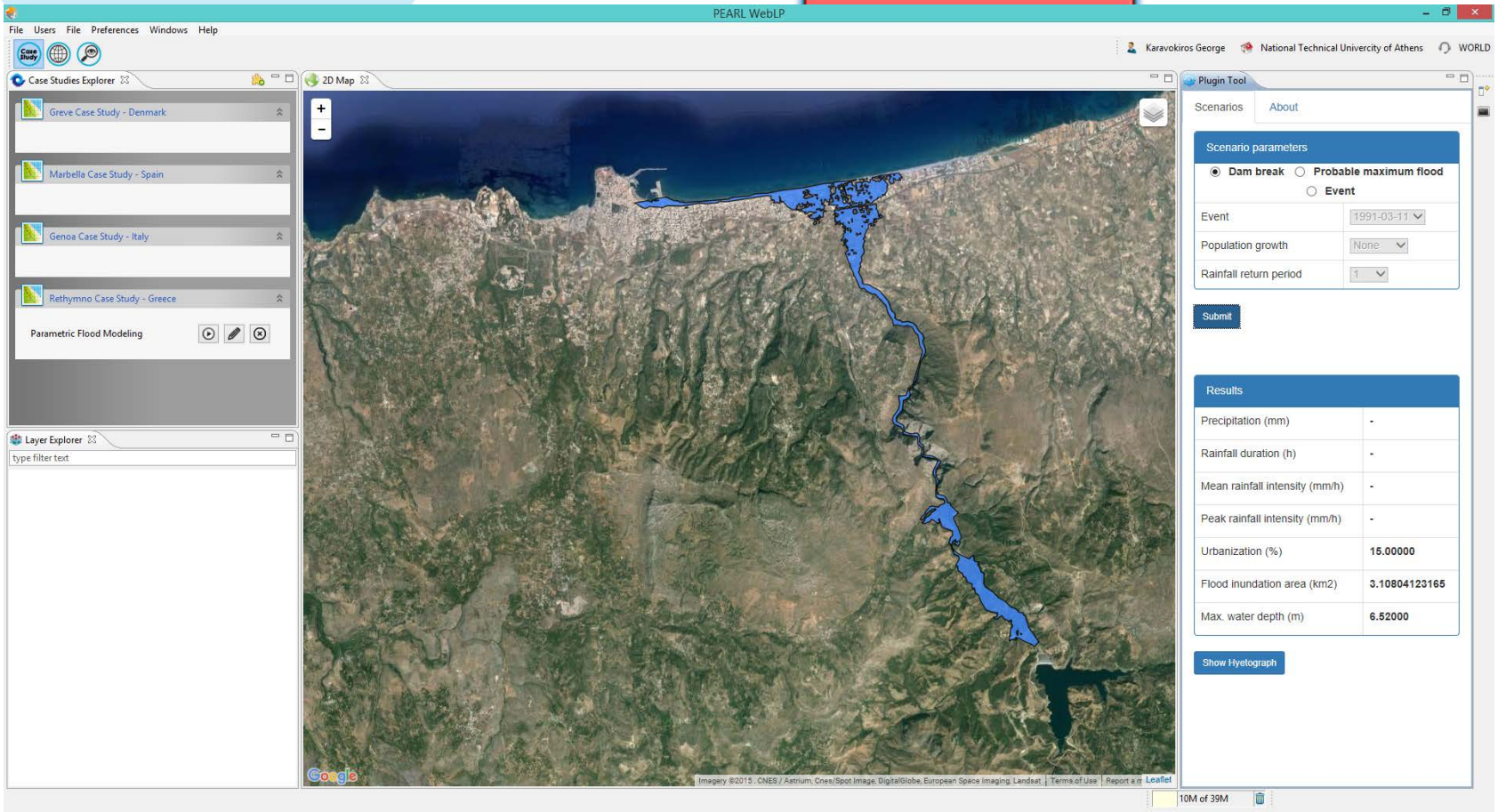
Viewing Scenarios & their results

based on different Precipitation Return Periods

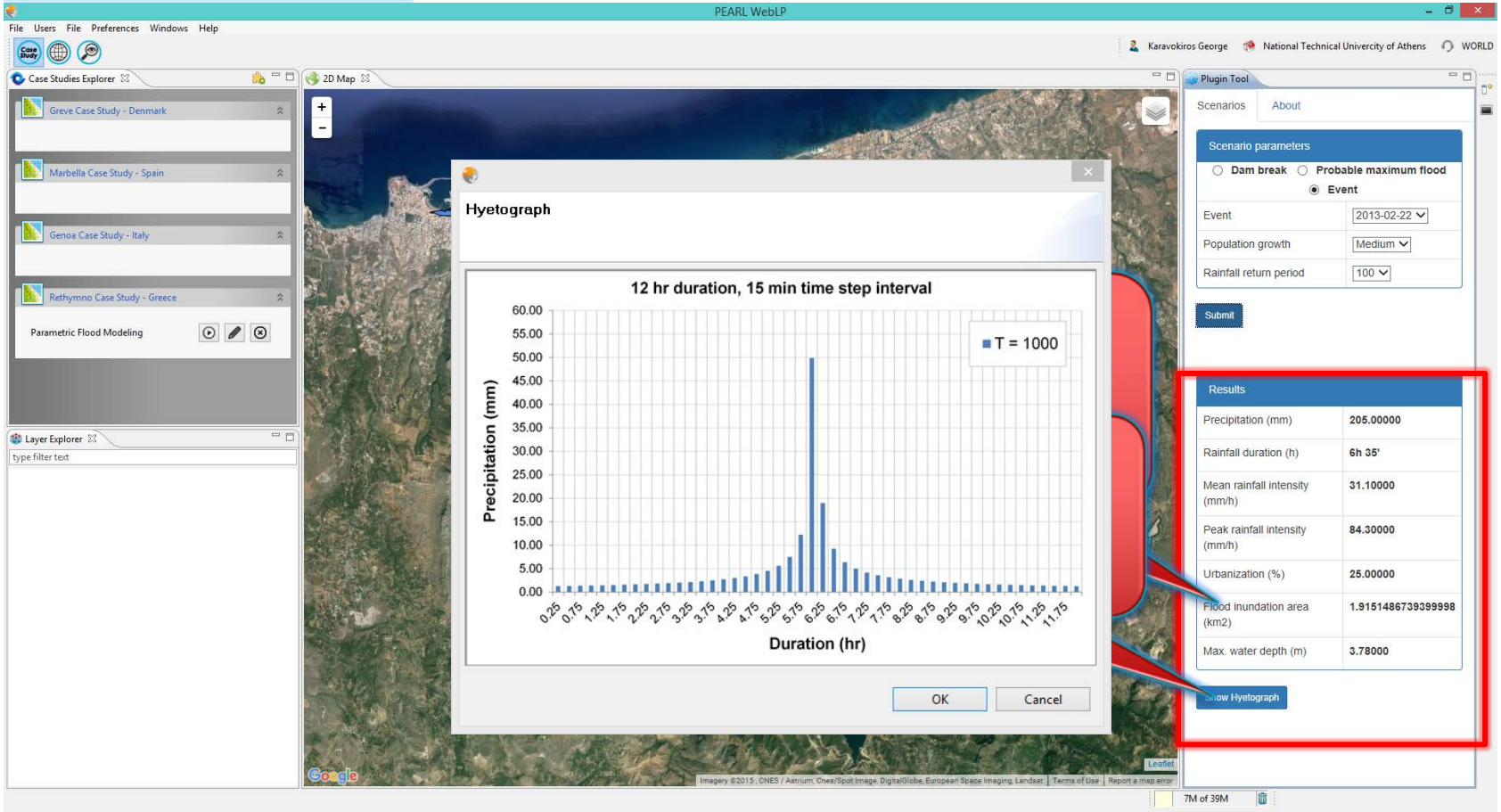


Viewing Scenarios & their results

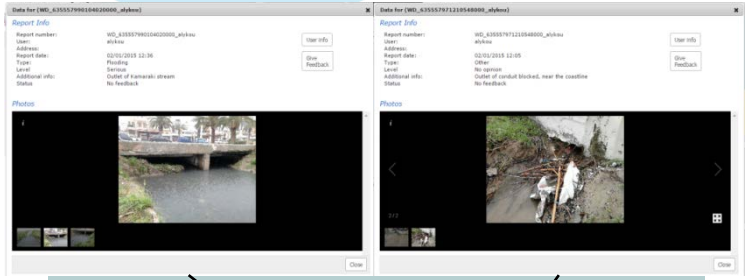
based on structure failures e.g. dam break

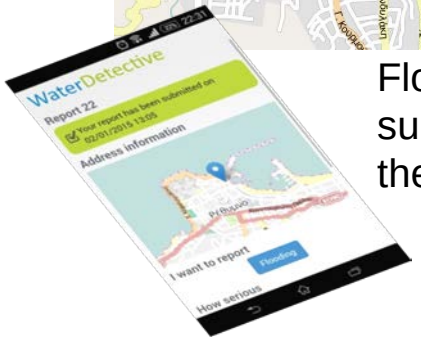


Viewing Scenarios & their results

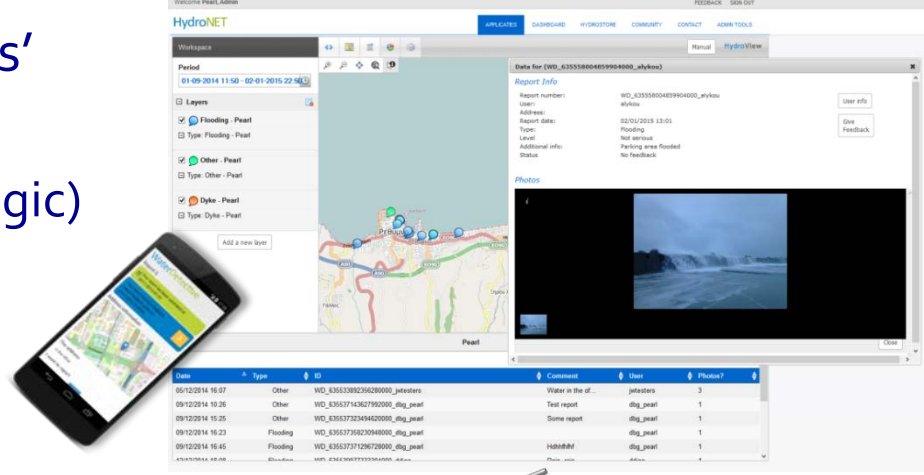


PEARL WebLP integrated with citizens' reporting flood event app "Water Detective" (developed by Hydrologic)





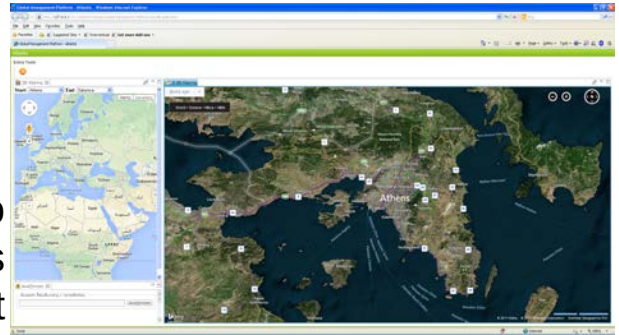
Flood repots created and submitted by citizens using the app



HR's WD portal

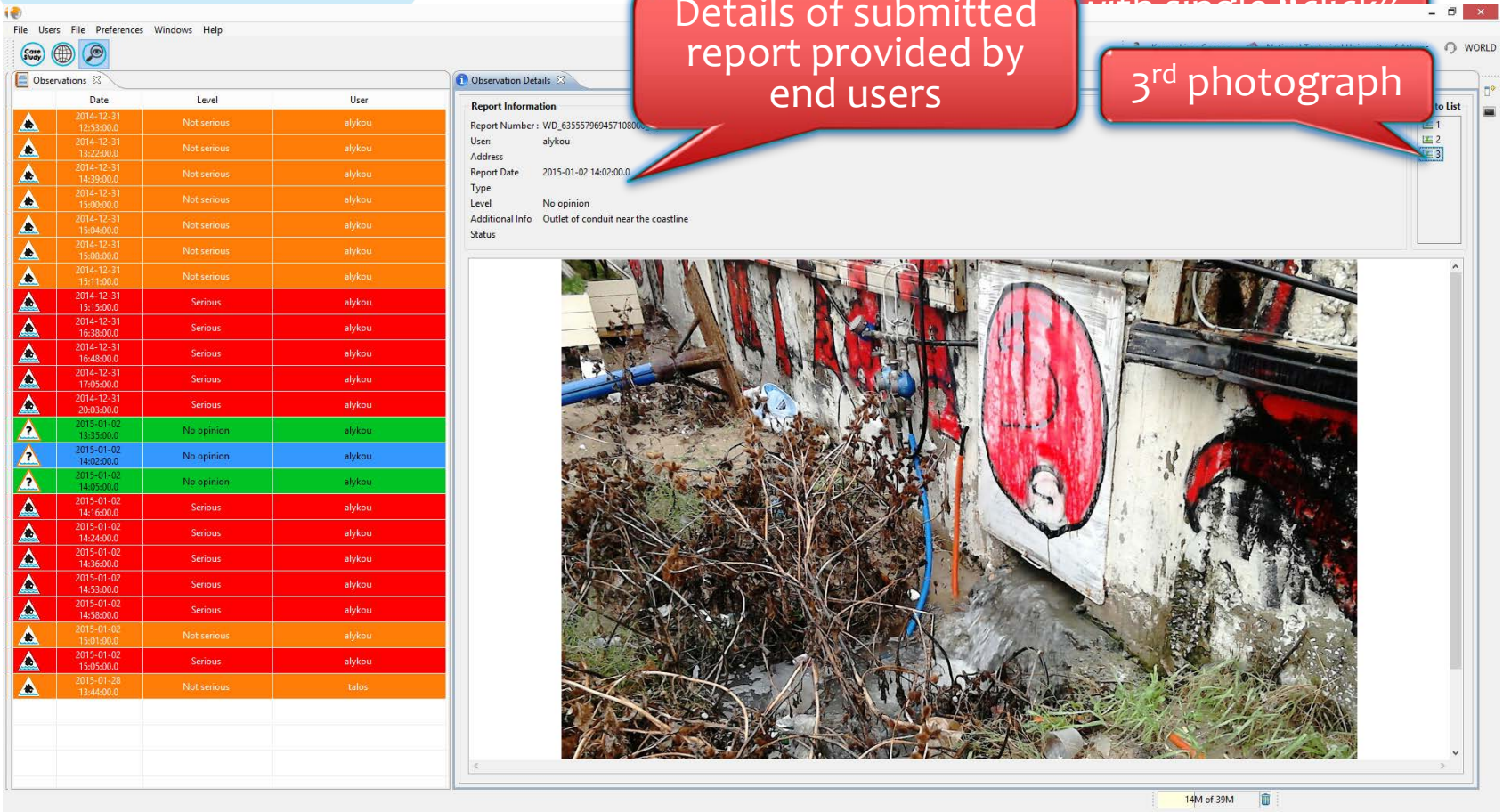
PostgreSQL/PostGIS

Web based front end of Satways platform



Rerouting of reports to responsible authorities based on content

Viewing selected report



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