PERSEUS

POLICY-ORIENTED MARINE ENVIRONMENTAL RESEARCH IN THE SOUTHERN EUROPEAN SEAS

Web GIS Application tool on line

Deliverable Nr. D9.6

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EXECUTIVE SUMMARY / ABSTRACT

The deliverable aims to provoke the use of modern technologies as services on demand offered to Decision makers, for managing and controlling environmental and ecological hazards. For this purpose the deliverable has the form of a demonstrator for the depiction of a scenario of tracking an oil spill event in the sea area of Saronikos Gulf. Throughout the scenario all the possible hazards aroused from the oil spill are depicted (nearby coasts disasters, protected areas threats, ecological pollutions, social-economics affects etc)

SCOPE

The system developed having the scope to act as an Early Warning System for controlling environmental and ecological hazards especially in the area of Ecological Protection of seas and coasts capable to provide the decision-makers strategic information regarding environmental and security issues.

In particular the Decision makers will be able to focus automatically to the threaten areas (e.g. a protected area on which the oil spill drifts towards it) by the use of an interactive map and at the same time they will can exploit information from various thematic sources by the combination of miscellaneous geospatial layers simultaneously. Thus, through the System the people in charge of crisis management (Decision makers etc) will be helped to trigger the necessary events and actions in order to control the crisis.

SYSTEM DESCRIPTION

The whole entry can be described as a special Early Warning System. By this system it is combined a Web Interface together with the dynamic realization of how an oil spill is forecasted and spread.

The interface displays a variety of information related to:

1. Marine and Coastal areas that potentially the oil spill may threat such us:
   - marine habitat,
   - sensitive and protected areas in sea or in the coasts near by
   - nautical charts
   - land areas characteristics i.e. administrative limits, topography, road network, rivers, land cover etc
   - coastal guard stations
   - Urban areas near by
   - Hotels and beaches around

2. At the same time the Interface may display if available a variety of sea and oil characteristic such:
   - Sea bathymetry
   - Oceanographic conditions in the areas of the oil spill
   - Oil spill depth
   - Oil spill slick measurement
   - Type of Oil

3. Socioeconomic information regarding the side effects of the oil spill and the cost of protection of the hazard such as :
   - Population data about Urban areas (Average population in the urban areas near the coasts)
   - Population data about hotels potential hospitalities
   - Economic activities which are taking place in the coasts nearby the event (e.g. Fisheries)

All the above Information sets can be displayed synthetically together but at the same time the end user has the ability to turn on/off in the map any set of information seems necessary or unnecessary during the oil spill event.

Finally a very innovating characteristic of the system is that by the use of a Time Bar (scroll bar) at map interface, the user is able to see the forecast of the oil spill drift at specific time intervals between the begging of the event and the end time of the available forecast. For the scenario purposes it is assumed that the available oil spill drift forecast is 24 hours form the begging of the event.

At the time being the system has the form of a demonstrator of an example of a virtual oil spill event in Saronikos Gulf coastal area. That is to say that the system is not yet in productive mode but the whole infrastructure is ready made to be configured and pameterized to act as a special Early Warning System in any sea area of the Mediterranean or Black Sea.

DESCRIPTION OF ACTIVITIES

1. Collection of all the necessary data sets (geospatial thematic layers) which are divided in 3 (two categories)

    - Datasets about the oil spill itself as following
        - ✓ Forecast about the drift of the oil spill
        - ✓ Oil characteristics
    - Datasets about the coasts nearby (Saronikos Gulf)
        - ✓ Natura network data
        - ✓ Corine 2000 data about the Land coverage
        - ✓ Data sets about municipalities boundaries
        - ✓ Boundaries of Coastal waters data
        - ✓ National network of in citou observation stations regarding coastal waters quality
        - ✓ Beaches with blue flags
        - ✓ Local Authorities in nearby coasts of the pollution event (Police stations, Coast guards stations)
    - Socioeconomic Datasets regarding:
        - ✓ Hotels in the nearby coasts that maybe threaten
        - ✓ Possible Population data for each hotel (number of beds) dealing with the date season of the oil spill event
        - ✓ Economic activities which are taking place in the coasts nearby the event (e.g. Fisheries)
        - ✓ Average population in the urban areas near the coasts (villages, municipalities, settlements etc)

2. Data Base creation and insertion of the Data sets.
3. Transformation of each Dataset into geospatial layer
4. Design and development of the user Interface (Web GIS Interface, search criteria, toggling between layers ect)
5. Integration and Development for materializing the whole entry

SCREENSHOTS OF THE DELIVARBLE

The link of the deliverable has as follows:

innovator.ath.hcmr.gr/perseusdemonstrator

The images bellow are some screen shots and guidelines for the basic functionalities as they appear in the beta version

1. The system is enforced with a users authentication sub model so the user has log in the system

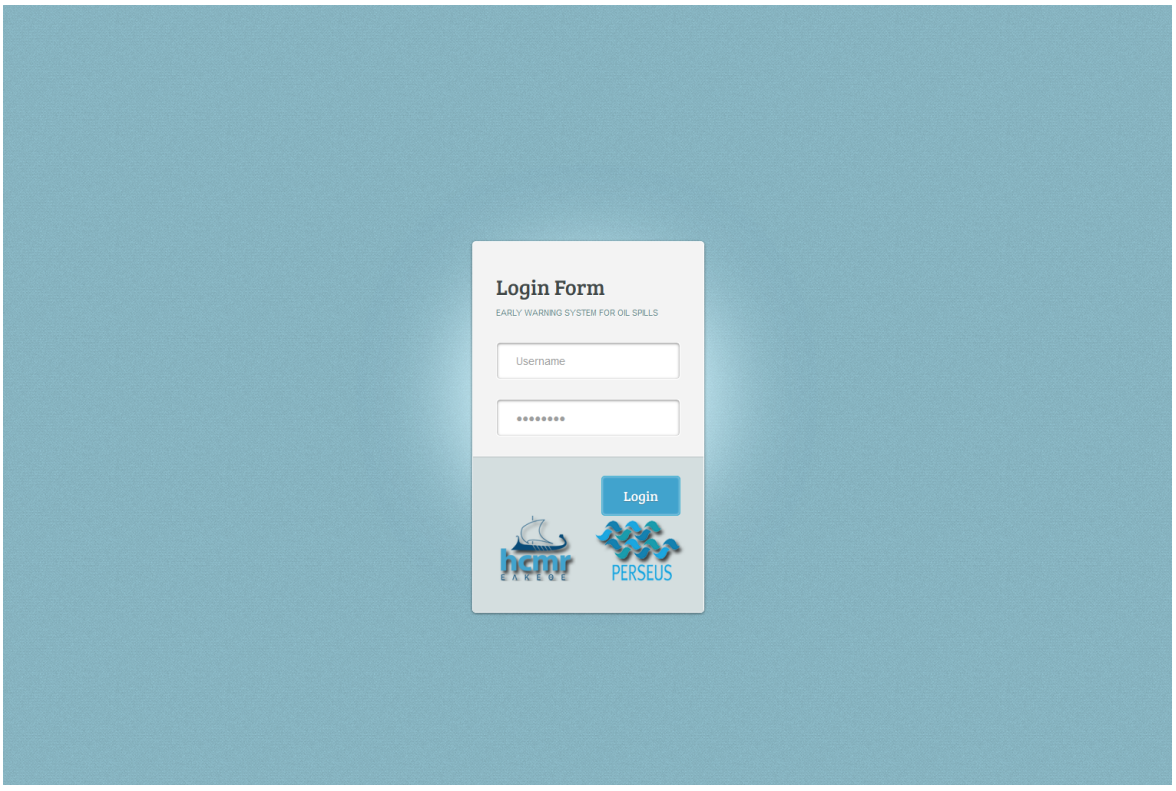

Image 1: Log in Screen

2. The system displays a general overview of the event by the use of an interactive map which depicts the area the event. For demonstration reasons the event is taking place in the sea area of Saronikos Gulf. The oil spill is displayed as the black spot on the map.

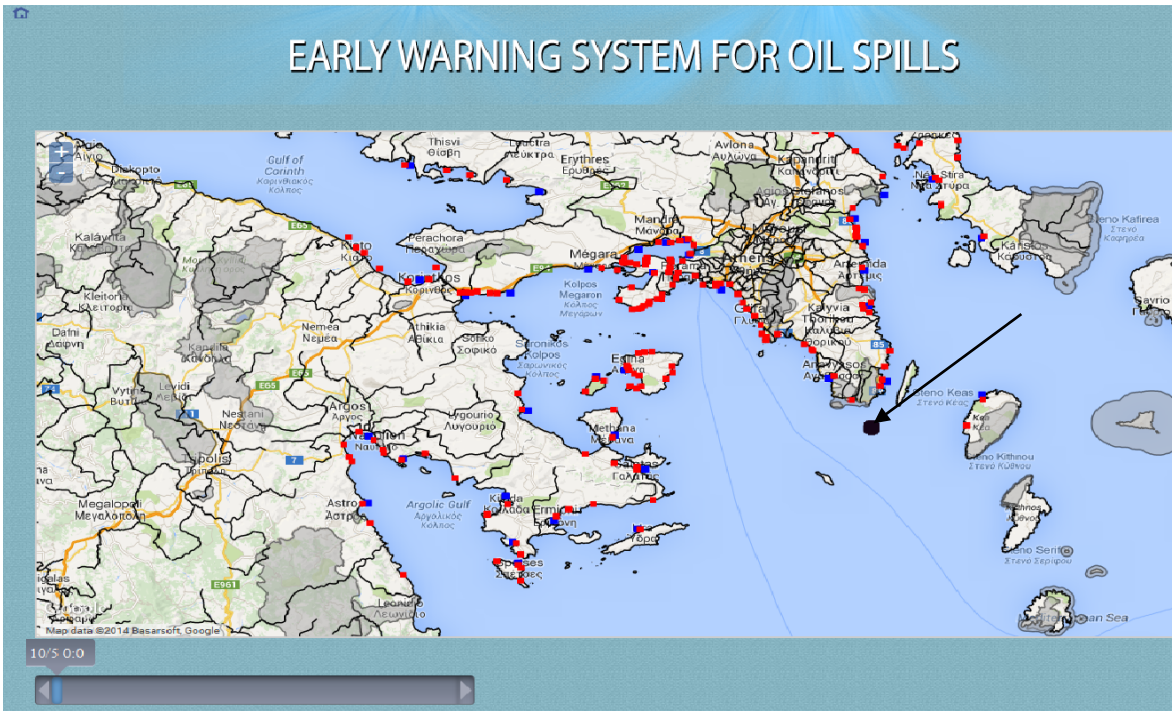

Image 2: General Overview

Together with oil spill spot several other geospatial layers are displayed relevant to the event. In Image above the red spots are “Ship transport points” and the blue ones “Coastal Guard Stations”.

3. The user by the means of the right panel may toggle between the various geospatial layers. For the demonstration needs the layers are as the image display, if the application will set in productive the set of the layers can enhanced depending with the needs of the threaten area

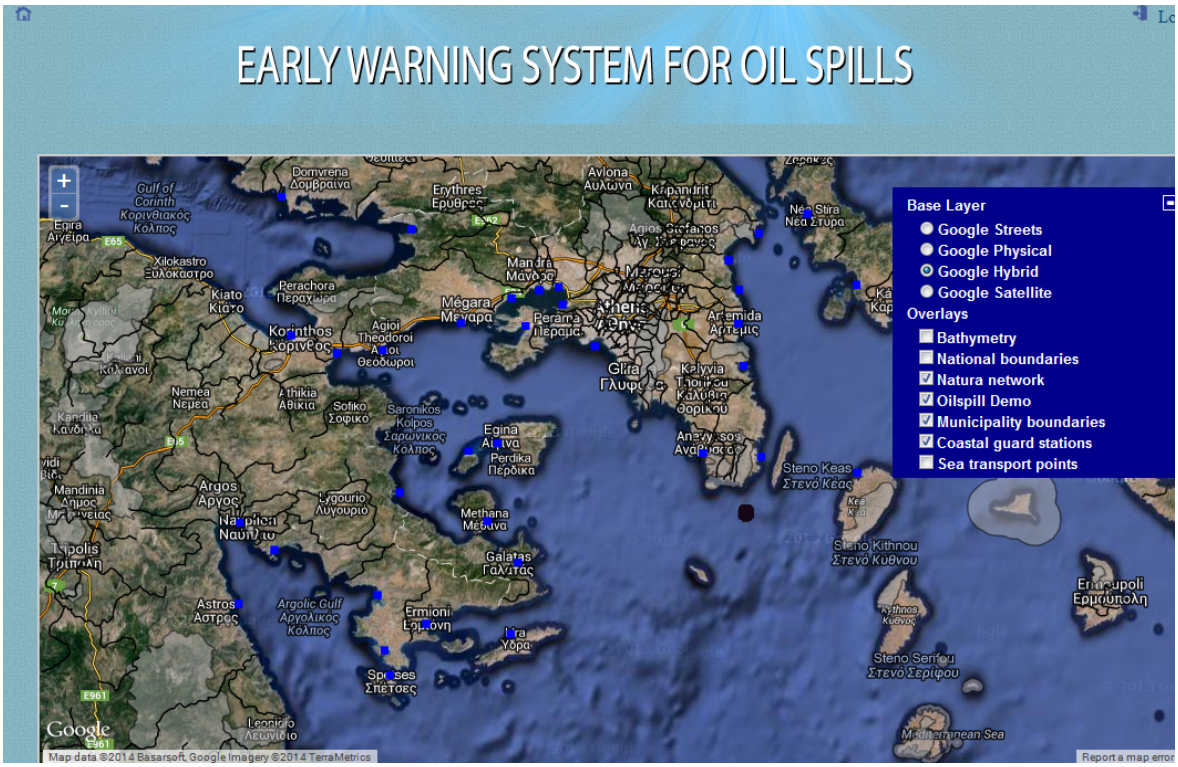

Image 3: The Toggle Layers Panel

4. By the use of the use of the Time Bar (scroll bar) at the bottom of the screen the user is able to see the forecast of the oil spill drift at specific time intervals.

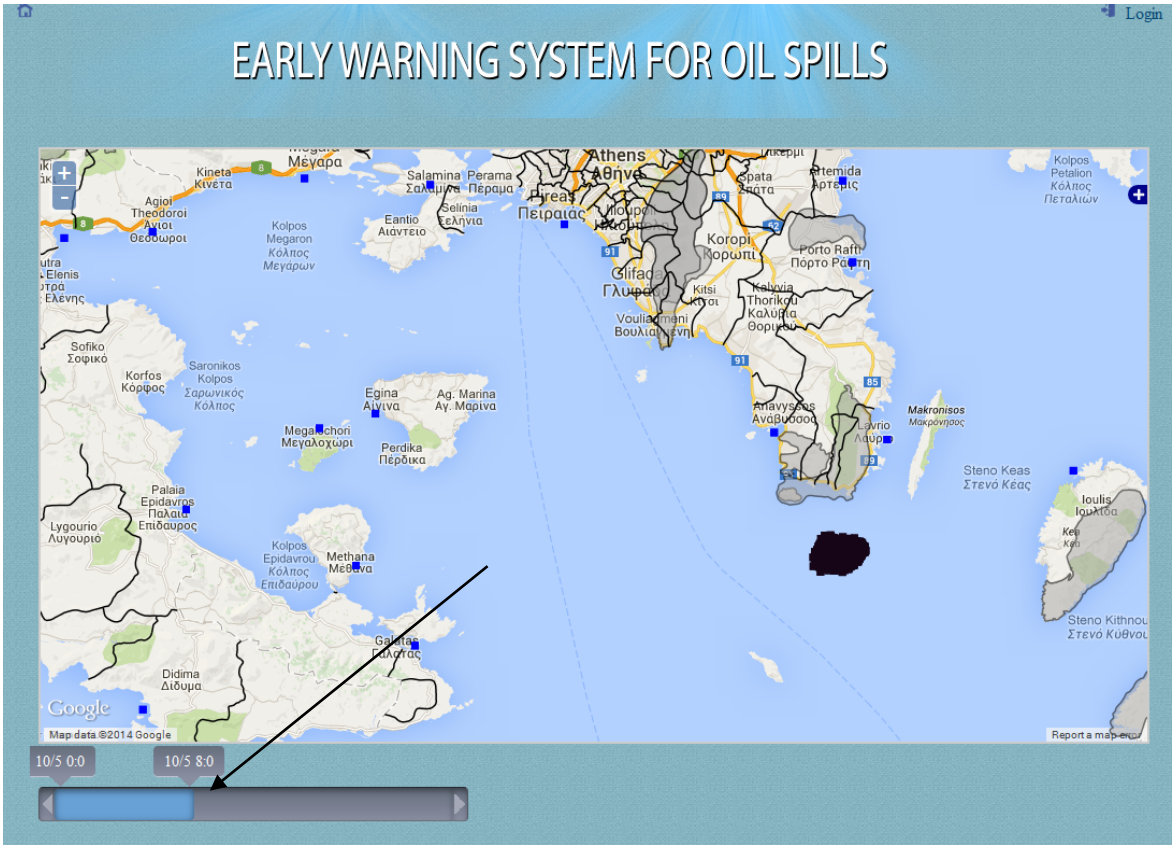

Image 4: Forecast Drift of the oil spill at 0:0 time till 8:00 time

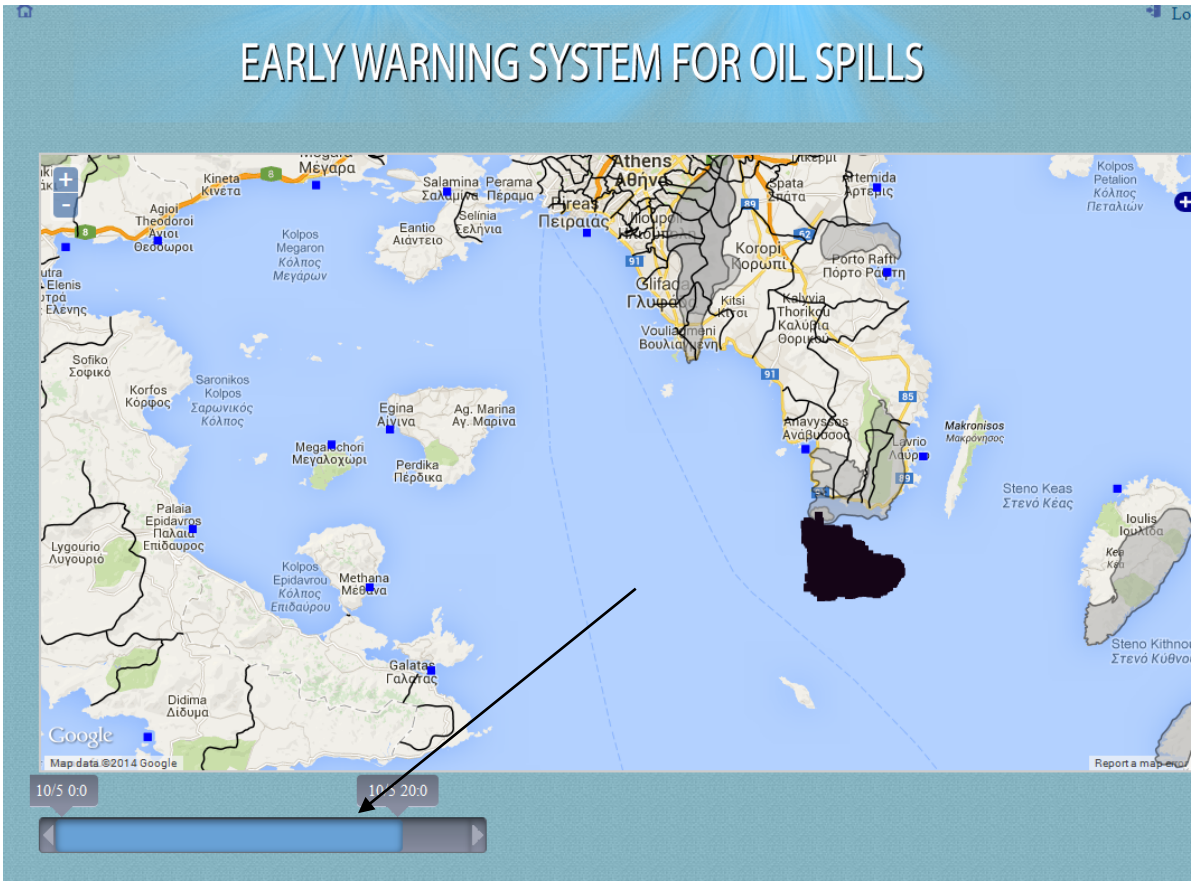

Image 5: Forecast Drift of the oil spill at 0:0 time till 20:00 time

5. The Time Bar can also be used to display the slick of the oil spill for a specific time range of the event. In the image bellow the status of the oil spill is displayed for the time interval 10:00 to 15:0

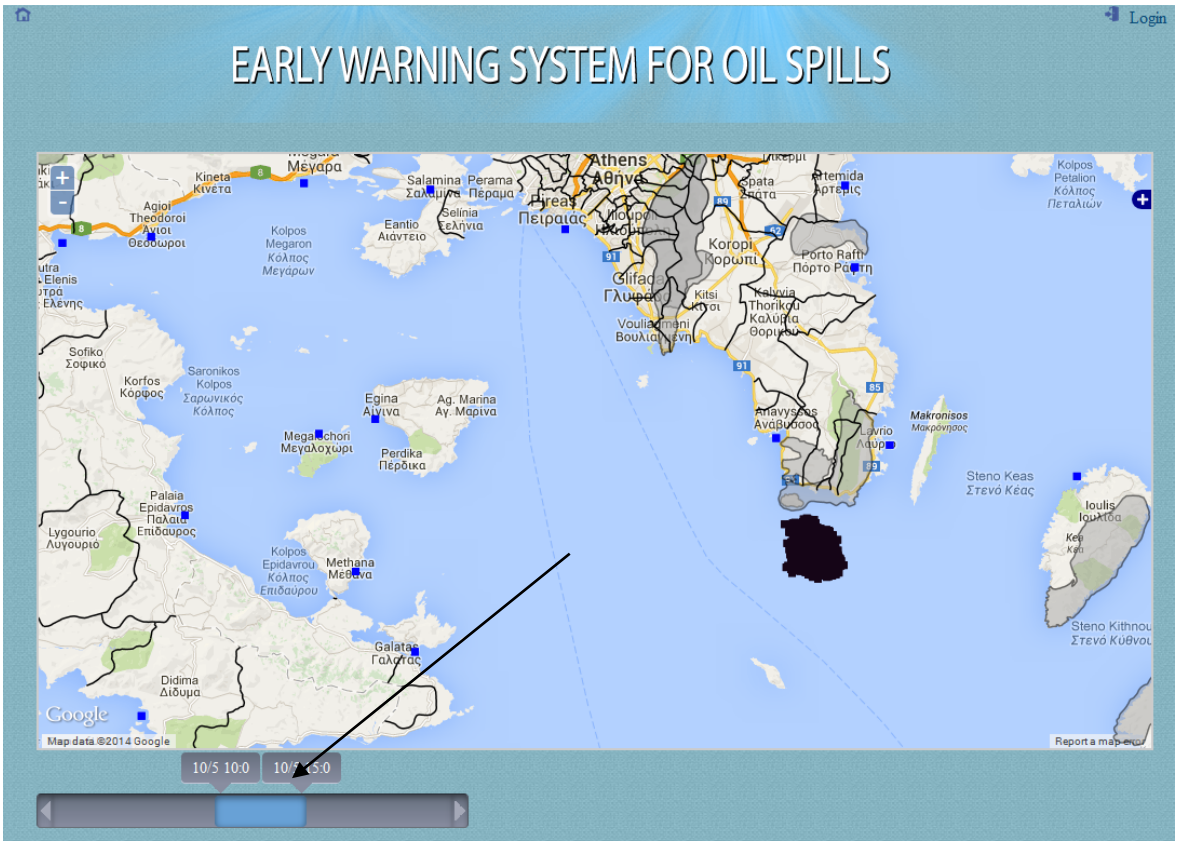

Image 5: Focus in a specific time interval

6. By clicking in any point of the oil spill information relevant to the oil is displayed or depending on the click point relevant to the geospatial layer which is displayed. In the example bellow the user clicks on the Natura 2000 area Layer which is going to be throated from the oil spill and takes all available information's.

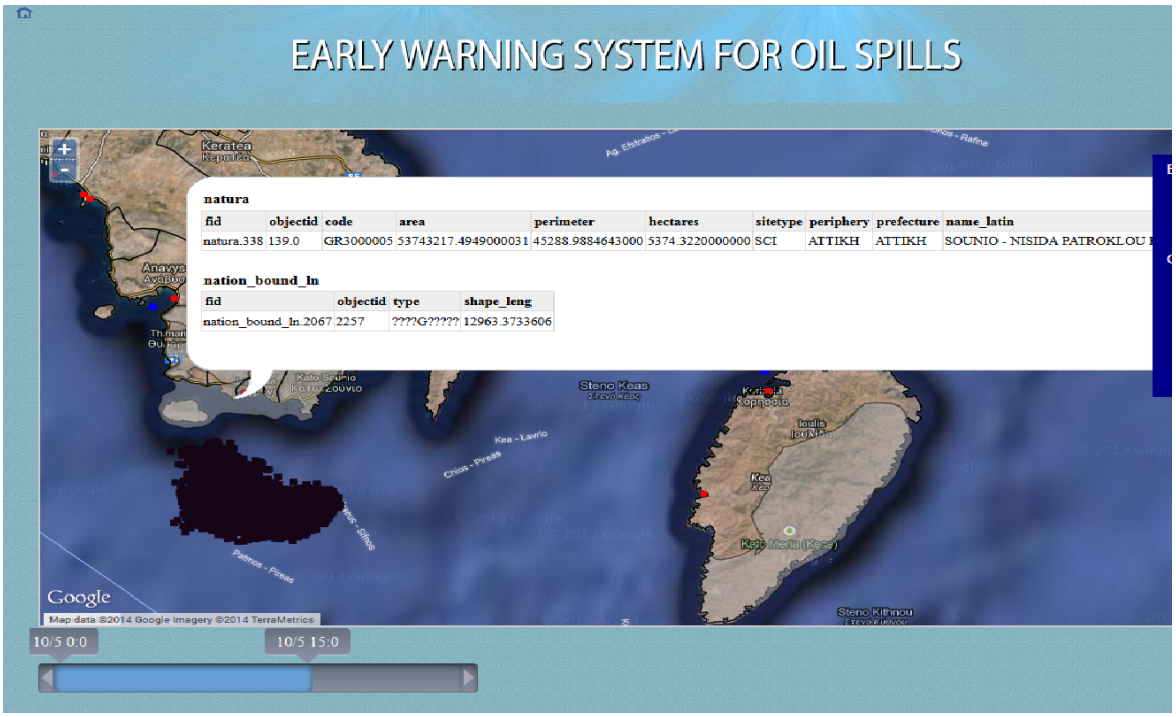

Image 6: Focus in a specific time interval

7. Since the forecast diagnosis shows a threat on sensitive area the system automatically create alerts in the locals authorities, owners, stakeholders of the area. The form of the alerts may be e-mails and SMS messages

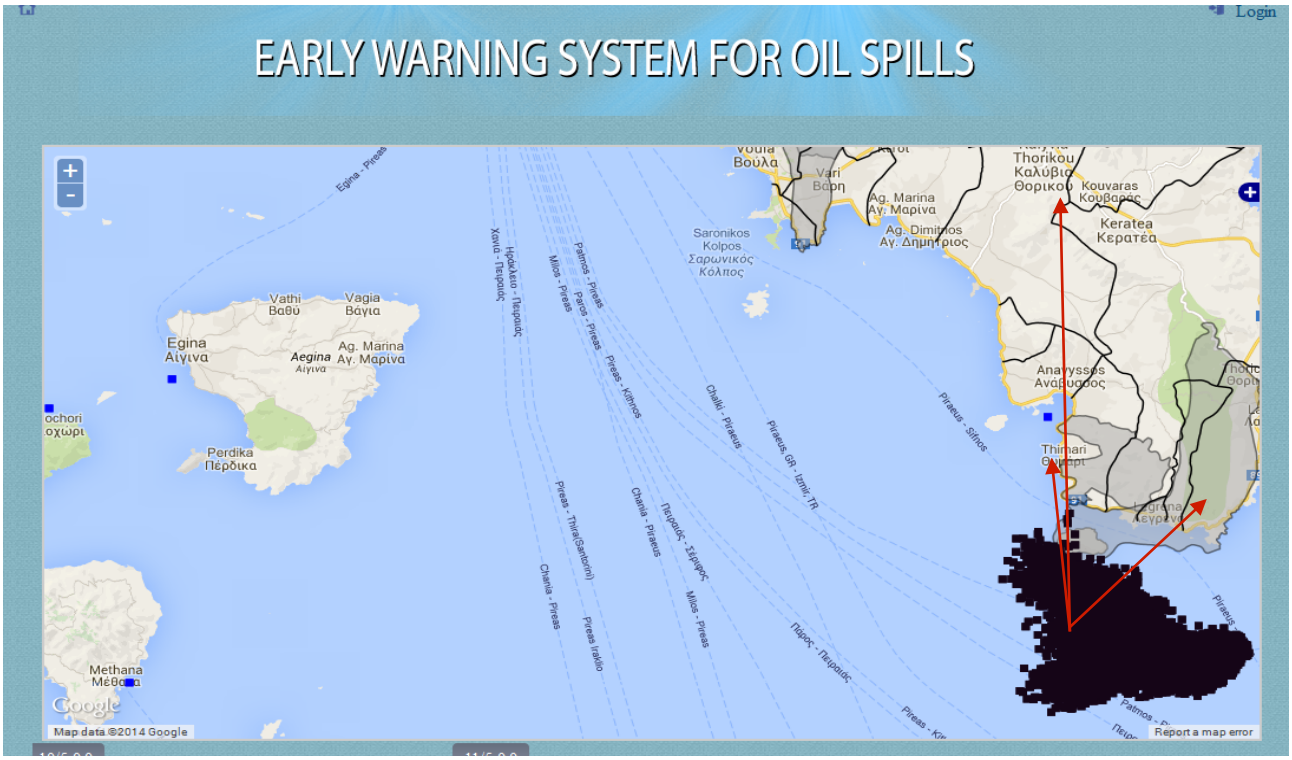

Image 7: System Alerts


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