



DG ENVIROMENT



Capitanerie di Porto  
Italian Coast Guard



# **Marine Pollution Monitoring and Mitigation by Remote Sensing Project co funded by the European Union**



CoNISMa



School of GeoSciences



University of Malta  
Physical Oceanography  
Unit IOI - MOC

LATTANZIO ASSOCIATI



Municipality of Genoa



# The MAPRES project

## Objectives

The aim of MAPRES concerns the cooperation in the field of accidental or deliberate marine pollution, in particular the main activity relates to "Marine Pollution Monitoring and detection by aerial surveillance and satellite images". Large spills of oil and related petroleum products in the marine environment can have serious biological and economic impacts. Around 20% of oil transported by sea traverses the Mediterranean Sea, amounting to an annual flux of 350 million tons of crude oil and refined products. Most of this maritime traffic travels across the Malta Channel, the coastal zones near Sicily Island and Genoa City. North Sea is also a region threatened by this type of pollution. Public and media scrutiny is usually intense following a spill, with demands that the location and extent of the oil spill be identified.

Remote sensing is playing an increasingly important role in oil spill response efforts. Through the use of modern remote sensing instrumentation, oil can be monitored on the open ocean around the world. With a knowledge of slick locations and movement, response personnel can more effectively plan countermeasures in an effort to lessen the effects of the pollution.

An operating manual on methods, techniques, sensors and procedures for remote sensing and Oil Spill detection, on Hydrodynamic Numerical Simulations for spill propagation forecasting and mitigations procedures, will be the deliverable of the project. An exercise on these procedures will be devoted to the crew members of Coast Guard and aerial surveillance aircrafts and personnel working in the field of Satellite Imageries valuation.

## MAPRES Activities

- a. Scientific Task: Sensor, platform and related methodologies to detect oil spill by remote sensing: field of active sensors
- b. Scientific Task: Sensor, platform and related methodologies to detect oil spill by remote sensing: field of passive sensor
- c. Scientific Task: Hydrodynamic modelling to forecast the fate of oil spills.
- d. Scientific Task: Impact on coastal environment and best practices for mitigation and damage recovery
- e. Exercise to test the results achieved from the Scientific Task with Capitaneria di Porto – Italian Coast Guard
- f. Management and reporting to the European Commission.
- g. Dissemination activities such as website, press office and conference organized by Lattanzio e Associati in collaboration with Municipality of Genoa

## Expected results

As pilot project results an **operating manual** will be delivered aiming to:

1. Describe techniques, methods and chain processing for Oil Spill detection by Remote Sensing image processing both using active and passive sensors;
2. Describe and use Oil spill propagation models to forecast the possible threat of oil spill on coastal areas;
3. Defining best practices to be applied to mitigate and recover a coastal area after an oil spill event.

Moreover crew members of Italian Coast Guard and aerial surveillance aircrafts and personnel working in the field of Satellite Imageries valuation will be trained by means of the exercise.



# The MAPRES Scientific Tasks

## **Sensors, platforms and related methodologies to detect oil spill by remote sensing :field active sensors**

This scientific board is led by Conisma, University of Palermo aims to analyse methods for oil spill surveillance used in maritime Member States. Moreover MAPRES will analyse the literature the existing approaches, methodologies, suitable platforms and problems (false target, sea state etc.) for oil spill detection using images acquired by active sensor (RADAR).

## **The hydrodynamic modeling to forecast the fate of oil spills heading towards the coast**

This task, led by University of Malta (Physical Oceanography Unit, IOM-Malta Operational Centre) and Conisma University of Palermo, aims to set up a demonstrator consisting of a suite of mathematical models aiming to use forecasts of sea currents and wind at joint shelf and coastal scales for predicting the fate of oil spills. This pilot project will target to set up a pre-operational system for the Malta Channel and Maltese Islands serving as an example for oil contingency planning and mitigation.

## **Sensor, platform and related methodologies to detect oil spill by remote sensing field of passive sensors**

This scientific task led by University of Edinburgh, aims to analyse the existing operational aspects and methods for oil spill detection used in maritime Member States. Moreover MAPRES will analyse the literature review of existing approaches, methodologies, suitable platform and relative problems for oil spill detection by use of images acquired by passive sensor.

## **The impact on coastal environment and the best practices for mitigation and damage recovery**

This scientific task led by Conisma, University of Genoa, aims to analyse the different processes for the cleanup of the coastal environments, in order to define which technique is more suitable and should be preferentially selected related to the type and characteristics of the events and of the environment.



# The MAPRES Network

---

## MAPRES Partners:

ITA - Conisma: [www.conisma.it](http://www.conisma.it)

UK - The University of Edinburgh - School of GeoSciences: [www.geos.ed.ac.uk](http://www.geos.ed.ac.uk)

MT – University of Malta - Physical Oceanography Unit, IOM-Malta Operational Centre: [www.capemalta.net](http://www.capemalta.net)

ITA - Lattanzio e Associati: [www.lattanzioeassociati.it](http://www.lattanzioeassociati.it)

---

## Supporting Organisations

ITA – Municipality of Genoa [www.comune.genova.it](http://www.comune.genova.it)

ITA - Capitanerie di Porto, Italian Coast Guards [www.guardiacostiera.it](http://www.guardiacostiera.it)

[www.mapres.eu](http://www.mapres.eu)

[info@mapres.eu](mailto:info@mapres.eu)