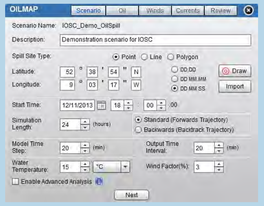
Web Based Oil Spill Response System

Shannon Estuary Anti-Pollution Team, Shannon, Ireland

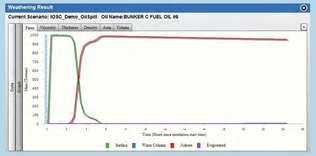
Authors: Eoin Howlett: eoin.howlett@rpsgroup.com, Nicole Mulanaphy: nicole.mulanaphy@rpsgroup.com, Andrew Menton: andrew.menton@rpsgroup.com, Stephen Sontag: stephen.sontag@rpsgroup.com

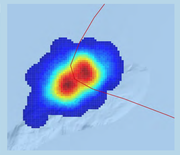
RPS ASA, 55 Village Square Drive, South Kingstown, RI 02879

OIL SPILL MODELING SYSTEM

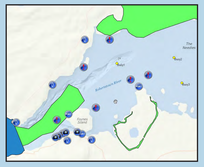


The Oil spill modeling system is a web based version of OILMAP that allows remote users to run and retrieve oil spill simulations. The system allows the user to visualize oil transport and view model output. For Shannon, the OILMAP model uses high-resolution wind forecasts from MeteoGroup and hydrodynamic data from a hydrodynamic model implemented by Hydroenvironmental Ltd. The system also allows the user to access RPS ASA's Environmental Data Server (EDS). The EDS allows access to wind and current forecast datasets.



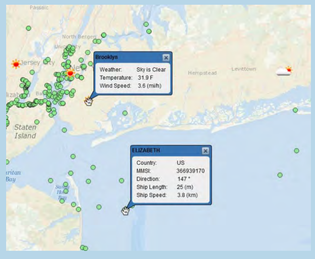


INTERACTIVE MAPPING SYSTEM



The system includes an interactive mapping system developed using Adobe Flex technology, which includes an interactive oil spill model and visualization of GIS resources. The system connects to map data served by the Ordinance Survey Ireland (OSI) that provides high resolution Orthophotographs. These land-side maps are seamlessly integrated in the system with nautical chart data from the British Admiralty. The system includes the ability to create and edit GIS layers. In addition a set of GIS layers are included that provide information on sensitivity and vulnerability for the region. These layers were prepared by Environmental Management Services and include layers for flora, fauna and other sensitive data and infrastructure.

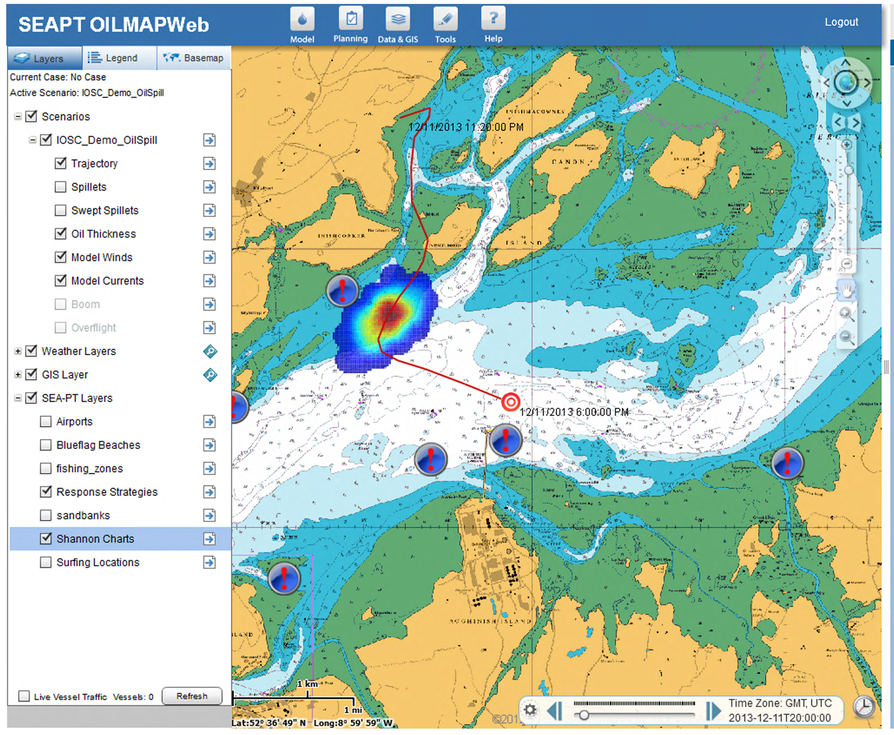
LIVE DATA



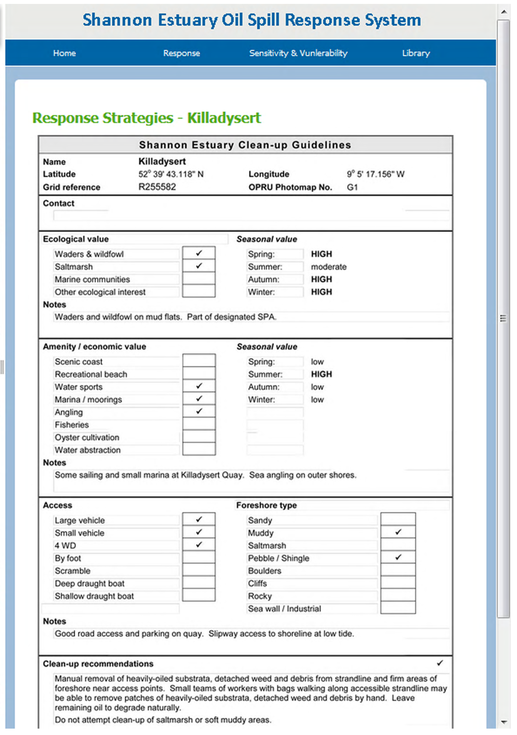
OilmapWeb provides access to live worldwide Automatic Identification System (AIS) data. The AIS data is an automatic tracking system used on ships and by vessel traffic services (VTS) for identifying and locating vessels by electronically exchanging data with other nearby ships, AIS base stations, and satellites. The user can interrogate each point to retrieve information relating to that vessel. The AIS data feed is provided by Marine Traffic (MarineTraffic.com).

OilmapWeb also allows access to live worldwide weather data. The user can interrogate each point to retrieve a brief weather overview for that point. The data is provided by Open Weather Map (openweathermap.org).

SEAPT OILMAPWeb



Shannon Estuary Oil Spill Response System



ABSTRACT 300313

When oil is spilled in a marine environment the impact can be catastrophic to a sensitive region damaging natural resources. It is important to respond quickly and efficiently to maximize the response effort and minimize the impact. In order to plan and train for incidents within the Shannon Estuary in Ireland, The Shannon Estuary Anti-Pollution Team (SEAPT) required a centralized system for its members to allow for remote collaboration and effective response. SEAPT required the ability to seamlessly run and share oil spill models in conjunction with their response planning assets and sensitivity and vulnerability information.
RPS ASA leveraged OilmapWeb, a web based oil spill modeling system, as a platform to build a custom oil spill modeling and response system. This customized system allows remote users to run and retrieve oil spill models and relate the output to GIS and multimedia response information. This decision tool is designed to produce fast and accurate results to improve response times and deploy the most effective response plans. The system provides a common operational picture for this region allowing for greater response collaboration and increased preparedness. This helps SEAPT to improve their response planning and facilities the sharing of information remotely in the case of an incident.

INTRODUCTION

In March of 2013 The Shannon Estuary Anti-Pollution Team (SEA-PT) launched their custom OilmapWeb system, a web-based version of OILMAP for oil spill response planning and training.

When an oil spill occurs, the user can run the oil spill model, entering the location of the accident, and amount and type of oil that is released. OilmapWeb uses this information and the latest wind and current forecasts to provide trajectory and weathering results. These results identify the areas that may be impacted and links to the relevant response strategies for those regions. The user may examine details for these areas, including information on suggested response activities, access availability for responders and contact information for the relevant regional authorities.

This project represents the next generation of oil spill decision support tools, allowing multiple remote users to model, interpret, and respond to emergencies using the latest web technologies.

CONCLUSIONS

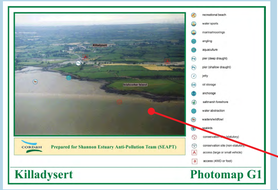
Since launching, SEAPT has operated this system on a regular basis to carry out basic oil spill modeling studies and response preparation and training. The system is accessible by a number of stakeholders such as the Irish Coast Guard, Clare County council and other response planning members. In April 2013 SEAPT carried out an Oil Spill exercise in Moneypoint Power Station, Kilrush, Co. Clare, Ireland (http://www.shannonresponse.com/). This exercise demonstrated SEAPT's response readiness and used RPS ASA's Web Based Oil Spill Modeling and Reponses System. The system was used to model oil transport and share model output information with the various response teams to support their response plans. The system has helped improve SEAPTs response readiness and facilitated the collaboration of various response agencies in the region.

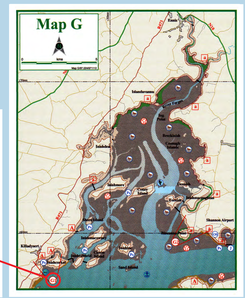
REFERENCES:

1. SEAPT Shannon Estuary Anti Pollution Team - http://www.seapt.ie/ 2. MeteoGroup - www.meteogroup.com/ 3. Hydroenvironmental Ltd - http://www.hydroe.ie/
4. http://www.oilmapweb.com/ 5. map.asascience.com/shannon/ 6. Environmental Management Services, Tullynally, County Westmeath

MULTIMEDIA RESPONSE REFERENCE SECTION

The multimedia response reference catalog contains information pertaining to emergency response, recovery, and the sensitivity and vulnerability of the region. The Emergency Plan, Pollution Plan and Booming Plan contain information regarding agreed-upon actions to be taken during any emergency or potential emergency in the estuary, including guidance for oil spill response actions in different sections of the estuary. Ariel photography for response regions and access points is also included to aid in the planning. The interactive mapping system is connected to the response plan through map hot links. These hot links allow the user to click on a specific GIS object and link to important information relating to that object.

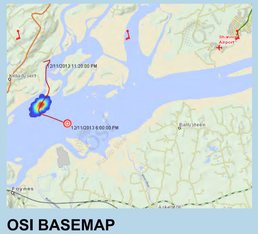




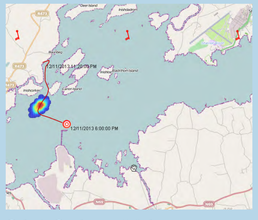
BASEMAPS

OilmapWeb includes the ability to choose from a large variety of basemap such as ESRI, Google, Bing and open street maps. The system also incorporates custom basemaps served by the Ordinance Survey Ireland (OSI), which provides a high-resolution basemap and orthophotographs.

ESRI SATELLITE



OSI BASEMAP



OPEN STREET MAP