



# An ocean view

MyOcean Project Coordinator Pierre Bahurel charts advances in operational oceanography technology and its potential impact on oil spill drifts...

**U**nderstanding the ocean to better protect the Earth is one of the key objectives of operational oceanography. Ocean forecasts, nowcasts and hindcasts are provided on a regular basis through 3D models by an increasing number of operational oceanography centres in the world, contributing to a large range of applications including marine resources, maritime safety, climate research and marine environment. They use data collected by Earth observation satellites and oceanography ships, as well as automatic sensors (in situ, especially for the subsurface measurements) transmitting in real-time via satellites. Monitoring and forecasting the physical state of the oceans – such as temperature, ice coverage, sea level and currents – are now core services for many marine purposes, notably in the event of the worst maritime pollutions.

One such example was the 1989 Exxon Valdez oil spill off the Alaska coast. At that time, operational oceanography was at an embryonic stage. More than 20 years later, however, the monitoring and forecasting of the oceans has become a reality. The explosion of the Deepwater Horizon drilling rig off the Gulf of Mexico on April 22nd 2010 and its related oil spill – described by President Obama as a potentially unprecedented environmental disaster – may illustrate the benefits of operational oceanography. For example, the analysis of the intensity and direction of currents is of utmost importance to anticipate oil spill drifts and adapt emergency actions accordingly. The ultimate impact of the rig explosion will depend on many variables of ocean currents, and forecasting them is therefore vital to protect citizens, wildlife and ecosystems.

The forecast of upper ocean currents and dynamics also requires a reference description such as a log time series of ocean data. These are also useful for backtracking models

(hindcasts) in locating the origin of an oil spill in oceans. Ocean currents are numerically simulated in models and studied on a retrospective basis. These models can then be compared with oil spill observations, from which we can track where the oil spill come from, and identify the tanker responsible.

For many years, a challenge in oceanography has been to develop an ocean forecasting system capable of meeting user demand. After years of coordinated international endeavours, and benefiting from spatial, marine and meteorology expertise, operational oceanography is finally a reality. In Europe, this is reflected by MyOcean – a concerted and integrated service delivery capacity implemented in the frame of GMES Marine Care Service.



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