

# The 47th Liege Colloquium: marine environmental monitoring, modelling and prediction

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The 47th International Liege Colloquium was held on 4–8 May 2015 on the subject of Marine Environmental Monitoring, Modelling and Prediction. Nowadays, observational networks and ocean models have become a central asset in the management of the ocean environment. This topic was already addressed during the 36th edition of the International Liege Colloquium in 2004 (Desaubies et al. 2006) and it has become clear that models, data networks and products have matured significantly since 2004. The range of topics addressed by this colloquium is also reflected in the present collection. The first theme discussed during the colloquium was the monitoring of the ocean. The topical collection includes an example of in situ measurements for an ADCP and space-time optimal interpolation of currents by Sentchev and Yaremchuk (2016) and remote sensing by Ciancia et al. (2016) where MODIS/AQUA level 2-derived chlorophyll-a data were used to determine the primary productivity

generated by vertical mixing. Several contributions to the modelling session addressed issues around multiscale interactions. The topical collection includes works of a 2-way nested model of the Northern Current in the North Western Mediterranean Sea at a resolution of 1/192 degrees resolving submesoscale processes (Declerck et al. 2016). A barotropic unstructured mesh model of the Congo River (Bars et al. 2016) and a baroclinic model of the Turkish Strait System are also part of this collection (Sannino et al. 2017). Yáñez et al. (2016) provide an example of an ecosystem model using an artificial neural networks for landings of anchovy (*Engraulis ringens*), common sardine (*Strangomera bentincki*), and jack mackerel (*Trachurus murphyi*) in the context of the A2 climate change scenario.

The 2015 colloquium had a relatively strong focus on data assimilation. First, assimilation schemes and systems were discussed and presented during the colloquium, for instance the OpenDA assimilation system coupled with NEMO (van Velzen et al. 2016) and more theoretical work on the implicit definition of error covariance matrix (Chu et al. 2016) and local assimilation scheme with global constraints and conservation (Barth et al. 2016). The collection includes also several studies of data assimilation with realistic ocean models. The work of Verlaan and Sumihar (2016) discusses the impact of individual or group of observations on forecast accuracy improvement. Vandenbulcke et al. (2017) shows an example of asynchronous assimilation of HF radar data. A way to address biases, in particular for low resolution models, is given by Canter et al. (2017). An example of assimilation of temperature profiles with the ensemble Kalman filter in 3-dimensional model of the North Sea is presented in Ponsar et al. (2016). Pein et al. (2016) discusses how salinity measurements in the Ems Estuary affect the reconstruction of the salinity field. The article by Sepp Neves et al. (2016), evaluating the risk of oil

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spills using ensemble simulations, is a contribution from the operational oceanography and applications session.

In total, 127 participants joined the Liege Colloquium for this memorable event. The following topical collection gives a good overview of the range of subjects addressed during this event.

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