



## **Impact of different wave physics parametrisations in ECMWF Earth System model**

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The global analyses and medium range forecasts from the European Centre for Medium range Weather Forecasts rely on a state of the art atmospheric model. In order to best represent the momentum exchange at the surface of the oceans, it is tightly coupled to an ocean wave model. Recently, an ocean model has been included as part of the operational medium range forecasting system. In this context, a first set of sea state effects on Upper Ocean mixing and dynamics was successfully added to the system. Impact of sea-state dependent momentum forcing, the Stokes-Coriolis force and the enhanced mixing by breaking ocean waves have been added.

So far, the implementation of the coupled system was done with ECMWF own wave physics parametrisation, an evolution of the original WAM cycle-4 physics. The ST4 physics from WaveWatch 3 has already been implemented in ECWAM and is used by Météo France in their standalone configuration. Plans are to also introduce the ST6 version.

A first assessment of the different parametrisations will be presented in the context of the fully coupled system.