TOWARD THE INCORPORATION OF HF RADAR CURRENTS DATA INTO THE TAGUS COASTAL OPERATIONAL SYSTEM

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RESUMO

High-frequency (HF) radar systems are now widely use as part of coastal ocean observation networks and prediction systems all around the world (Chao, et al. 2017, Glenn et al. 2000b; Paduan et al. 1999). Because it is a cost-effective monitoring technique that allows to obtain high-resolution continuous near real time surface currents (Hernández-Carrasco, et. al). These currents carry nutrients, pollutants as well as any floating object, which information is very valuable to search and rescue (SAR) operation.

Usually HF radar data currents and the observed wind indicate strong correlation, because inadequate knowledge of the wind stress is probably a significant source of uncertainty in model solution, the idea of using HF radar data to provide corrections to the model wind-forcing is promising (Paduan, 2004). Particularly, for the case of Portugal, understanding hydrodynamics in the vecinity of the Tagus estuary is complicated to model, mainly for the presence of strong spatial wind variation and the constant plume of fresh water coming from the estuary.

Several high-frequency (HF) radar networks has been deployed by Instituto Hidrográfico since 2013 as part of the Portuguese Coastal Observing System, also an operational model for the Tagus estuary region, using the MOHID as its numerical core, with horizontal resolution up to 300 m has been providing three-day forecasts continuously since 2012 (Campuzano *et al*, 2012).

In this work, a preliminary assessment of accuracy of a two-sites shore-based HF Radar network along Tagus will be presented along with the circulation of the Tagus coastal area. Both solutions will be compared from an Eulerian and Langrangian perspective. In the latter, the evolution of particles position estimation was estimated using results from HF radar and model output with different winds scenarios.

The aim from this work is to determine the best methodology to assimilate HF-Radar observation into MOHID model to improve forecast capabilities into Tagus-MOHID

operational systems.

Palavras chave: HF Radar; Model Validation; MOHID, Tagus estuary, circulation

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