

On the Performances of the Third Generation Spectral Wave Models in the Black Sea

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ABSTRACT

In the present work some comparisons are performed between three state of the art spectral phase averaging wave models that were tested in the Black Sea basin. These are WAM, WAM PRO and SWAN. Although all of them are third generation wave models and are based on the integration of the spectral energy balance equation in all the fifth dimensions (time, longitude, latitude, frequency and directions) the numerical schemes are rather different between WAM and SWAN, while WAM PRO is an adapted version of WAM especially to extend the models capacities to intermediate and shallow water. Although SWAN was initially designed for shallow water, now it seems to be very appropriate for sub oceanic scales as the present target area is. One of the major advantages introduced by using SWAN is the flexibility of the model. In this connection two deep water processes were also analyzed as reflected by the SWAN model simulations. These are whitecapping and quadruplet non linear wave-wave interactions. As reference point, the Gelandzhik directional buoy, located on the east side of the sea, was used.

Keywords: wave models, SWAN, WAM PRO, numerical simulations

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