



## **CYCOFOS new wave forecasting system incorporating sea currents**

George Galanis (2), George Zodiatis (1), Dan Hayes (1), Andreas Nikolaidis (1), and George Kallos (2)

(1) University of Cyprus, Oceanography Centre, Nicosia 1678, Cyprus (gzodiac@ucy.ac.cy, +357-22892575), (2) University of Athens, Department of Physics, Atmospheric Modeling and Weather Forecasting Group

The Cyprus Coastal Ocean Forecasting and Observing System (CYCOFOS) that has been providing operational wave forecasts in the Mediterranean and the Black seas since 2002, recently has established a new wave modeling platform targeting a more accurate sea wave prediction/simulation. The CYCOFOS wave system has been updated and modified in order to provide higher resolution sea surface wave predictions at basin, sub-basin and coastal scales, minimizing, at the same time, the demanded computational cost. Towards this direction, three main steps have been taken:

- The latest parallel version of the wave model WAM (ECMWF version, cycle 33R1) has been adopted. The new model employs a novel advection scheme extended to account also for the corner points of the grid boxes by using the Corner Transport Upstream scheme, as well as new parameterization of shallow water effects, leading to a more uniform propagation of wave spectra. Moreover it is able to run on parallel computer platforms reducing the required CPU resources.
- Sea surface current information from the CYCOFOS and MFS-OPA ocean forecasting systems has been incorporated in the wave integration, providing a second independent forcing input, in addition to the wind speed and direction, for the wave model.
- The resolution of both the wave model and the wind input (provided by the SKIRON/ETA weather forecasting system) has been significantly increased.

The new CYCOFOS wave forecasting system has been tested over a 12-month period and some key results on the forecasting performance as well as on the main characteristics of the model outputs are presented revealing minor effects in the wave model final outputs by the utilization of surface currents at least when using the basin low resolution sea currents field.