Visualisation Possibilities for the Interpretation of Dynamic Phenomena and Complex Oceanographic Data

Jacques HAUS[1], Jean-Marie BECKERS[2] and Pierre BRASSEUR[2]

[1]Visuallisation Group, IBM UK Scientific Centre, WINCHESTER (**United Kingdom**)
[2]GHER, University of LIEGE (**Belgium**)

Analysis of the already huge and still increasing amount of available data, both simulation results and real data, remains a difficult task. Visualisation is a fast and powerful approach making efficient use of the enormous capabilities of the human brain for image interpretation.

The projection of 3D (or 4D) multi-variable fields on a 2D picture needs careful attention to the type and number of represented variables, adequate use of symbols and colours in order to provide the observer with as much information as possible while avoiding overloading.

Using the results of the GHER direct and inverse models, it has been successfully applied to practical examples dealing with the Mediterranean Sea like study of regular 3D scalar or vector fields (salinity, velocity,...) location of 3D structures (water masses : spreading of Levantine Intermediate water in WMED)simultaneous representation of different variables and search for correlations, streamline analysis, direct representation of scattered real data (CTD stations) allowing fast interpretation and making easier error detection.

Most of all, the representation of time evolution through video animations is of particular interest for understanding of dynamic phenomena as it has been shown with the study of a test case (using the GHER mathematical and numerical model) of the instabilities development in the Algerian Current. Or for the assessment of seasonal variations in the Mediterranean (based on results of the GHER variational inverse model).