ADVECTION-DIFFUSION EXPERIMENTS OF PASSIVE TRACERS
IN THE NORTH ADRIATIC SEA

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In the Northern Adriatic sea a very important source of nutrients and
suspended matter is the Po river,the major input of fresh water to the basin.

The Po river plume can be recognized as extending both in southward
direction and in cross basin direction, where, in summer time, it can
reach the opposite yougoslavian coast. Local cyclonic (to the North)
and anticyclonic (to the south) smaller gyres can be recognized to
be formed by the plume in CZCS satellite imagery through the analysis
of phytoplanckton concentration (Barale, Malanotte-Rizzoli and McClain,1986).

In this work we simulate the Po river as a source of a passive tracer,
be it the total suspended matter or phytoplankton concetration.

We carry out advection –diffusion experiments, integrating a time dependent
advection-diffusion equation coupled with a multi-level model for the
circulation.We observe the distribution pattern of a passive tracer released
at initial time at the Po mouth and let afterwards to evolve under the
effects of currents and turbulent diffusion. The experiments are carried
out under different wind patterns, corresponding to the two major wind
fields observed to exist in the Adriatic (bora and scirocco).The results
are discussed and compared with the analyzed satellite imagery.

Refernces

V.Barale, P. Malanotte-Rizzoli and C. McClain
"Spatial and Temporal variability of the sea surface color field in the
Northern Adriatic sea" in press on Journal of Geophysical Research,1986

STORM SURGES ALONG THE EAST COAST OF THE ADRIATIC SEA

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A B S T R A C T

A statistical method for the forecasting of storm surges along the east coast of the Adriatic Sea was applied. On the basis of the theoretical results obtained by solving equations of motion and applying the multiple regression method, the models for calculation of the residual sea level elevations were constructed. Models were tested for meteorological situations with strong cyclonic SE wind in Koper, Split and Dubrovnik stations. It was found that the multiple regression models present very good estimate of the residual elevations for the situations with permanent air pressure decrease and SE wind increase.

The maximum values of observed residuals in 1982 are two times higher than mean tidal ranges at all studied stations. Residuals increase going towards the North Adriatic Sea because wind fetch increases and depth decreases.

R É S U M É

Une méthode statistique a été appliquéé pour la prédiction des ondes de tempête le long de la côte Est de la mer Adriatique. Sur la base des résultats teoriques obtenus par la solution des équations du mouvement et l'application de la méthode de régression multiple, on construisait des modèles pour la calculation de l'altitude residuelle de la mer. Les modèles ont été testés pour les situations météorologiques avec le fort vent cyclonique du SE sur les stations de Koper, Split et Dubrovnik. On a trouvé que les modèles de la regréssion multiple représentaient une trés bonne estimation de l'altitude résiduelle pour les situations où la pression barométrique diminuait et le vent du SE augmentait.

Les valeurs du maximum résiduel observeés en 1982 se sont révélées deux fois plus élevées que le marée moyenue pour toutes les stations étudiées. Le niveau résiduel augmentait en allant dans la direction du Nord étant donné que le vent fetch augmente et la profondeur diminue.

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