MODELLING THE DYNAMICS OF SEDIMENT TRANSPORT AND RESUSPENSION IN THE NORTHERN ADRIATIC SEA

X. H. Wang (1), N. Pinardi (2)

(1) School of Geography and Oceanography, University of New South Wales at Australian Defence Force Academy, Canberra, ACT 2600, Australia, (2) Corso di Scienze Ambientali, University of Bologna, Ravenna, Italy (Hua.wang@adfa.edu.au/Fax: +61-2-62688313)

A coupled Adriatic Sea General Circulation and sediment transport model was used to study the dynamics of coarse and fine sediment transport and resuspension in the Northern Adriatic Sea. The sediment sizes of coarse (>50 µm) and fine (<50 µm) materials were sorted by their settling velocities. The bottom boundary layer (BBL) was discretized by a vertical sigma coordinate system with high resolution, and the wave-current interaction mechanism was considered. The sediment distributions and fluxes under various forcing conditions such as the Po River plume, the Bora and Scirocco wind stress and the surface waves were studied by process oriented numerical simulations. The conclusions are that maximum northward sediment transport occurs under the forcing by the Po River plume with the Scirocco wave resuspension. The largest southward sediment transport was due to the combined effect of the Po River plume and the Bora wind forcing under the Bora wave conditions. A realistic forcing numerical experiment was also conducted for November 1994 when the full range of forcing functions were experienced by the region. In this presentation, we show the existing complexity of the sediment distribution and flux features in the Northern Adriatic Sea. The significant roles that wave driven sediment resuspension played in determining this complexity in the shallow coastal areas of the region will also be highlighted.