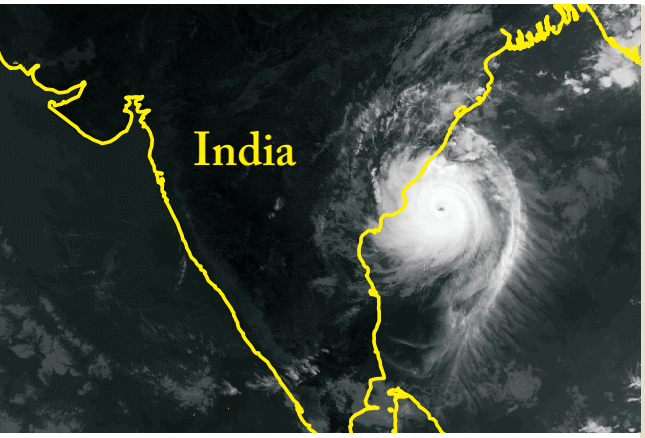
Tropical cyclones and the added value of ICZM:

an integrated approach reducing vulnerability

Marcel Marchand *(Deltares, the Netherlands)*
Peter Winchester *(Divi Seema Foundation, AP, India)*



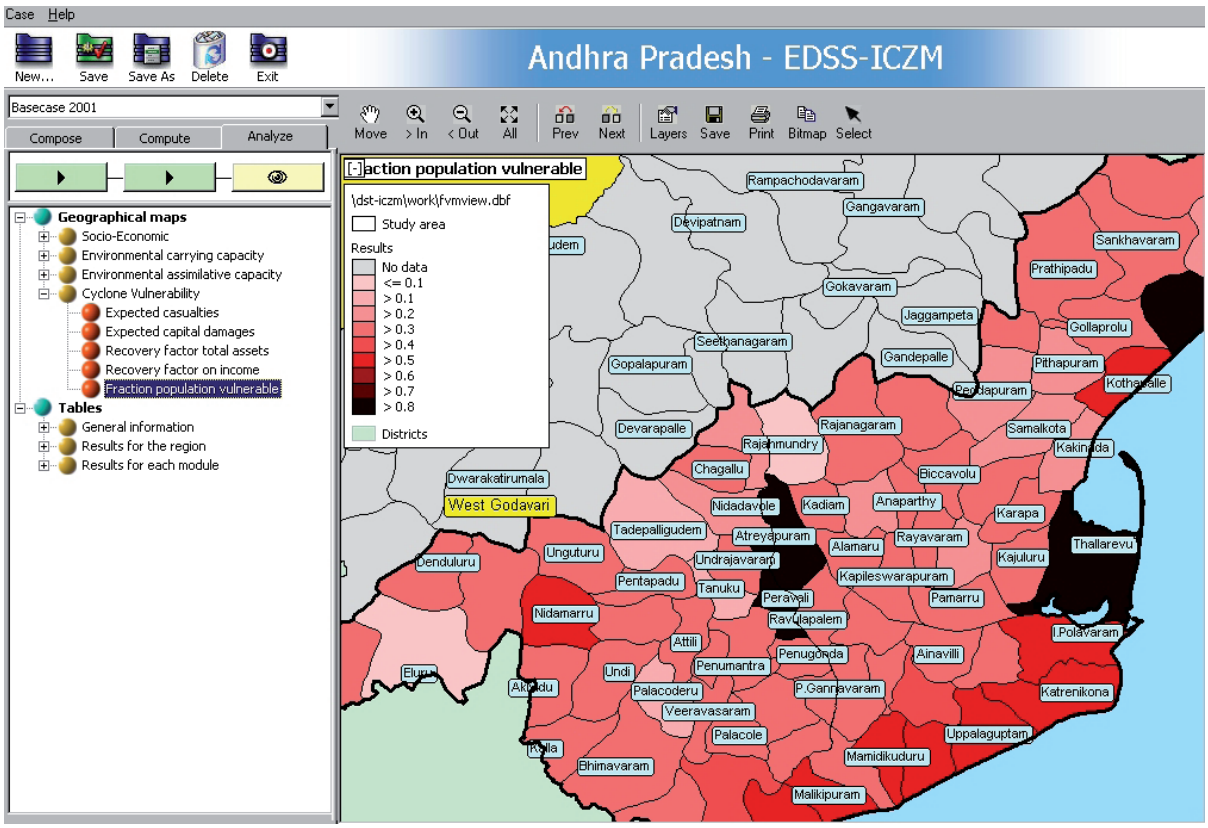
***Cyclone 07B** - over the Godavari Delta, Andhra Pradesh State, during 6-7 November 1996, with wind speed to 230 km/hour. (photo: National Geophysical Data Center / National Oceanic and Atmospheric Administration)*

Summary

Strengthening early warning systems and planning Integrated Coastal Zone Management (ICZM) were simultaneously applied on the Andhra Pradesh (AP) coast of India. The number of casualties and damage caused by cyclones can be reduced by implementing these forward-looking approaches.
In this example the ICZM programme centred on the development of a decision support model, providing integration of disciplines, structure and synthesis of complex data and predictions for the future. It brought together a considerable variety of information on natural processes, hazards and socio-economic issues. Indian and Dutch experts from both the natural and social sciences, working in one project team, developed this integrated interdisciplinary approach. They also contributed to an improved understanding of the complex problems and feasibility of potential solutions.
This formed a solid basis for the Expert Decision Support System (EDSS)-ICZM, which allowed an exploration of future long-term scenarios and strategies, as well as providing estimates of loss of life and damage from hazards such as cyclones. Building the EDSS for the Godavari Delta (AP), helped synthesise expert knowledge of the relationship between the coastal environment, its inhabitants and hazards.
The benefit of such a combined and integrated approach is also demonstrated by improved decision-making related to spatial planning and efforts to reduce poverty. Poverty is one of the dominant factors in post-cyclone recovery.

Contents

The location of the Godavari Delta, in the State of Andhra Pradesh: *Twenty cyclonic depressions and tropical storms have crossed the Andhra Pradesh coastline between 1977 and 1996; the Expert Decision Support System (EDSS) was set up and calibrated in the Godavari delta.*



Godavari Delta – an output of the Expert Decision Support System (EDSS): *the fraction of population vulnerable for cyclones. The population is multiple vulnerable: in the inland district Atreyapuram the inhabitants are vulnerable for wind damages and in the near coast district Thallarevu for severe flooding associated with the landfall of cyclones; the poor inhabitants endure a longer post-cyclone recovery period than the somewhat wealthier families.*