

Mahanadi Delta – Geology, Resources and Biodiversity. N. K. Mahalik (ed.). Asian Institute of Technology, Alumni Association (India Chapter), New Delhi. 2000. 169 pp. Price: Rs 500/US\$ 50.

The Mahanadi Delta along the east coast of Orissa is an area of interesting geological and geomorphological evolution with significant economic resources, biodiversity and great human interest. The book under review with 16 contributions, variously grouped under geology, resources and biodiversity, is an attempt to focus on diverse aspects of this classical delta.

In the introductory chapter, Mahalik briefly describes the various aspects of deltas of the world before providing significant details about the Mahanadi Delta, supported by maps on location, satellite imageries, distributary channels and geology. In the second chapter, he discusses the origin and development of the Mahanadi coastal basin which forms an integral part of east coast sedimentary basins of India. The Mahanadi Delta has subsurface features of depression and ridges. These aspects are further dilated by Mall and Tewari in the next chapter in which the authors, based on refraction data, have given basement configuration along Konark–Cuttack–Mukandpur, Athgarh–Cuttack–Kendrapara and Paradip–Kendrapara–Chandikhol profiles. This has brought out that crustal thickness under Mahanadi Delta varies between 30 and 34 km, indicating a crustal thinning in this sector in comparison with other areas.

The discussion on the Mahanadi drainage basin and process environments in delta-making by Mahalik is well-illustrated by eight maps. This drainage basin with an aerial spread of about 1,41,589 km² is an area of good forest cover in the hills and uplands, cultivation in low-lying areas and human settlement. The coastal depositional basin whose history commenced

from Late Cretaceous displays fluvial, aeolian, marine, littoral current and tidal environments.

Maejima and Mahalik describe the geomorphology and land use in Mahanadi Delta. It has a delta margin, upper deltaic plain and a lower deltaic plain. They have also brought out the relation between sedimentation, morphology and land use. The Mahanadi river which is prone to devastating floods, brings about continuous changes in the delta area and the river, in a prograde action, is continuously building into the sea. The authors opine that the land use and land cover in the Mahanadi Delta are directly related to the geomorphological features of the area. The delta area, in view of large human population, needs sustained investigation and community projects for economic regeneration. Stratigraphy, palaeogeography and evolutionary history of the Mahanadi Delta provide an interesting Quaternary episode. The deltaic sediments as cover over the Eastern Ghats crystallines show intermittent marine incursions. However, all the sediments deposited on Mio-Pliocene surface are related to the Mahanadi river (Mahalik).

The Mahanadi Delta has plentiful of surface water, derived both from deltaic rainfall and catchment area rainfall (Dass). The water resource provides great scope for irrigation and inland navigation (Das and Mahalik). However, the area is a site of recurring floods and cyclones, bringing untold misery to the teeming millions inhabiting the delta. This area currently is under the grip of a severe flood of unprecedented nature. Considering these aspects, there is need for more concerted effort to mitigate the misery of the millions by construction of barrages and by effecting better drainage flow for flood water. The Mahanadi Delta needs an integrated study of its drainage, groundwater resource management and productivity of soil.

The Mahanadi coastal basin is a potential area for oil and gas and some sectors have been offered for detailed exploration.

The biodiversity in tidal swamps with mangrove forests and fauna, the annual visit of the remarkable Olive Ridley turtles to the Orissa coast for breeding all the way from the distant Pacific, and the famous Chilka lake, the largest coastal lagoon in Asia with a variable and dynamic hydrographic character, all make the Mahanadi Delta an exciting area for a variety of studies in the field of biodiversity and environment.

The Mahanadi, with its tortuous journey through the Eastern Ghats mountains finally reaches the Bay of Bengal, creating a vast delta at its confluence with the Bay of Bengal with a fascinating diversity of geomorphology, fertile soil, dynamic drainage, biodiversity and scenic splendour. The present book on Mahanadi Delta covers these aspects in various chapters and represents an attempt to present a diverse aspect of this great delta to serve as a source material. The book has a variety of information to offer.

There is some overlapping of information due to smaller chapters. A more consolidated presentation could have been cohesive. Also, spelling mistakes could have minimized. The reproduction of figures and maps is clear. The book needs a wider reading for an understanding of the delta area and for deltaic studies, and provides a good reference material.

S. V. SRIKANTIA

*Geological Society of India,
P. B. No. 1922,
Gavipuram P. O.
Bangalore 560 019, India
e-mail: gsocind@bgl.vsnl.net.in*