BOOK REVIEW

TROPICAL GEOMORPHOLOGY by Avijit Gupta; Cambridge University Press, Cambridge, UK, 2011, Hardcover, Pages: 450. Price: £ 45.00

Although the definitions of tropics vary amongst disciplines (Seidel et al. 2008), the tropics are traditionally defined as the area approximately between 30° N and S latitude. This low-latitude region, covering over half of the total surface area of Earth, is characterized by rich diversity of landforms including high mountains and plateaus, mighty rivers, deep weathering profiles, ancient erosional surfaces, mega deserts, large deltas and alluvial fans, extensive alluvial plains and wetlands. Some of the greatest rivers in the world, ranked by magnitude of discharge and sediment load, are located in the tropics.

Even though the tropical landforms have attracted the attention of European geomorphologists for a long time, textbooks in geomorphology with special reference to tropics started to appear only after 1970s. Some of the popular and widely used textbooks were – *The Landforms of the Humid Tropics, Forests and Savannas* by J. Tricart (1972), *Tropical Geomorphology* by M. F. Thomas, (1974), *Humid Tropical Geomorphology* by A. Faniran and L. K. Jeje, (1983), *Geomorphology of the Tropics* by A. Wirthmann and D. Busche (1987/translated 2000) and *Tropical Geomorphology* by M. F. Thomas (1994). A most up-to-date textbook on geomorphology of tropics, therefore, was overdue. The book under review is a welcome addition, because it summarizes all recent research publications and provides up-to- date information about the landforms and geomorphic processes, in both humid and arid tropics as well as the tropical highlands.

The textbook is aimed at undergraduate and graduate students of earth sciences and is also intended to appeal to researchers and environmental managers in tropics. Written in a student-friendly style, the 450-page text is organized into nineteen well-illustrated chapters that include 150 black-and-white illustrations, 10 colour illustrations and 100 student exercises. Although the illustrations are clear and well drawn, some of the photographs could have been reproduced in color. One of the strong points of the book is that most chapters also introduce the geomorphological concepts, principles and terms, making it beginner-friendly.

The text is organized into three primary sections. The first section of four chapters introduces various aspects of the tropical environment, namely geological framework, climate, hydrology, erosion, vegetation cover and major landforms. A brief history of tropical geomorphology is also given in this section.

The second and the main section of the book is devoted to the description of processes and landforms in tropical regions and includes 12 chapters. These dozen chapters describe landforms and geomorphic processes with numerous examples and illustrations so that the reader can learn about the complexity of processes behind the distinctive tropical sceneries. Six individual chapters focus on weathering, hillslope, coastal, aeolian (arid) and karst processes and landforms. Not surprisingly, more space is devoted to rivers and riverine landforms. Apart from a full chapter on rivers in the tropics, there are three separate chapters exclusively dealing with large rivers, alluvial valleys and deltas in the tropics. Five large rivers, namely, Amazon, Zambezi, Ganga, Brahmaputra and Mekong are discussed in greater details in this chapter.

A unique feature of this textbook that is missing in most of the earlier books is a full chapter (Chapter 13) on tropical highlands, in which the glaciation in tropical mountains (Mount Kenya, Kilimanjaro, Ruwenzori and Jay, besides Himalay and Andes) has been discussed. Volcanic landforms also find a place in this section of the book in the form of separate chapter. Chapter 16 synthesizes the results of numerous studies on Quaternary glaciation, climate change and sea level changes in tropics.

The third and final section of three chapters provides the background to anthropogenic changes in low-latitudes. The chapters discuss the anthropogenic alteration of geomorphic processes, urban geomorphology and geomorphological adjustments in tropics to future climate and sea level changes. The section ends with a note on the tropical geomorphology in the near future.

Although a full chapter is devoted to weathering, its types and products, the discussion on laterites and duricrusts is brief. Similarly, tropical soils, tropical wetlands, pediments and inselbergs are some of the other topics that could have benefited from more discussion and examples. Nevertheless, these are minor short-comings that are easily outweighed by the book's other strengths. The strongest message conveyed by the book is that although there are no landforms or geomorphic processes distinctive of the tropics, the tropical region is certainly distinct from other regions of the world because

of remarkably higher rates and intensity of geomorphic processes.

Overall, the textbook provides an excellent synthesis of current knowledge on the geomorphology of tropics, with numerous examples and good illustrations. The textbook will undoubtedly become an essential reference for researchers and graduate students interested in tropics. The book would also serve as very useful text for other disciplines, particularly the field sciences such as ecology, archaeology, environmental sciences and forestry.

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References

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