18. Research on the Flood and Micro Landforms of Hat Yai Plain, Southern Thailand with SRTM Data and GIS

Masatomo UMITSU (Nagoya University, Japan),
Takahiro HIRAMATSU (Asia Air Survey Co. Ltd., Japan)
and Charlichai TANAVUD (Prince of Songkhla University, Thailand)

The purpose of this study is to clarify the relationship between the 2000 flood and the landforms of the HatYai lowland, southern Thailand.

The HatYai lowland is located in the southeastern part of Peninsular Thailand which faces Songkhla Lake. The main river of the plain is the U-Taphao, which flows northward to the Songkhla Lake, and the natural levees of the river and their tributaries develop widely in the main part of the plain. Depths of flooding water over natural levees at the time of the 2000 flood were measured about 1m or less. On the other hand, flood water levels in some flood basins surrounded by natural levees were over 2 m, and the maximum depth was measured ca. 4m in the eastern marshy lowland. Several flood flows at the time were interrupted by natural levees and artificial embankment such as abandoned railway embankment and roads with embankment changed their courses.

In order to examine the relationship between the flooding condition and the geo-environment of the region, SRTM DEM data were used with GIS. The Maximum water level of the 2000 flooding in the eastern and western part of the plain is larger than the depths expected from the topography and ground level estimated by the SRTM DEM data, and this is considered due to the strong flood current which flew to the eastern and western parts of the plain. Stream flow of virtual drainage network based on the SRTM DEM indicates good coincidence with the flooding water direction measured in the field, and the virtual drainage network based on the SRTM data is considered to be good information for the prediction of the flooding in the lowland.

Key words: flood, SRTM, GIS, natural levee, Hat Yai


Sikke A. HEMPENIUS and Somboon PORNPINATEPONG
(Prince of Songkla University, Thailand)

All along the eastern coast of peninsular Thailand—from Pattani to Nakhon Sri Thammarat and beyond it in terms of location, from Lanka Sukha to Ligor in terms of time and history—, the coastal landscape has been formed from sand and clay by water, wind, and waves. Usually, but not always, there has been accretion of the beaches, dunes, tidal flats, and fertile valleys. The land was winning over the sea, the coast was stable: people would build their dwellings and villages near the beach. Then, 20-30 years ago, the sea started to eat the beaches first, later the dunes, then the land for the crops and their palm trees: coastal erosion. When they lost the beach they pulled their fishing-boats onto during the stormy season and when their houses collapsed into the sea the locals asked the authors: ‘Why does it happen, why now, why here at our place?’ Natural causes: global warming, rising-sea-level, typhoons? Or man-made troubles: poor land management, untold effects of coastal engineering projects, multiple dams up-river? The paper answers: It is the sad
consequences of civil engineering projects, pushed by state agencies for their own benefit and that of the powers-that-be, in short it is 'Money-Politics'.

To prove this, one ought to understand how such coastal landscapes are generated, modified and maintained over decades, centuries, and even millennia. Here we need an applied earth-science to learn to see how landscapes are formed; we have to apply Geomorphology.

Civil engineers, local inhabitants, even visitors from overseas have to be briefed about what happens when the stable, centuries-old sand-transport to and along the coast is altered. Then the common wisdom 'Sand sinks' is transposed into discovering 'Sand Sinks' along the coast.

On our stroll along the coast and somewhat inland, we will visit a few dozen locations and show with maps, remote sensing images, and snapshots key geomorphologic processes and resulting directly-visible features in the landscape at typical locations. We will point at costly measures to turn the tide of coastal erosion, show apparent successes and bare long-term failures.

The unique spits at Pattani and at Pak Phanang deserve a computer-simulated study of how they were formed, how they grew, and how they now lose their protective function, due to the imbalance between the twain sediment-supplies that generated those arcs.

Then we will pay attention to the catastrophic events and violent processes that impact on the landscapes, the vegetation, and the human settlements, as there are typhoons and volcanic eruptions. At the southern coast, typhoons occur thrice in a lifetime and leave behind a 5-10km track of completely destroyed trees in forests, orchards and plantations, with quite different patterns of damage, depending on the type of trees or palms. Landslides on vulnerable mountain-slopes are another major impact of such catastrophic phenomena. From far one observes its effect in the lack of vegetation; even then vegetation gives great clues on the type of landscape. Volcanic eruptions didn't occur in Southern Thailand in historic times, but still the effects of a violent eruption that hit Thailand (and the whole world) in the year 535/536 has left its marks.

The Years without Summer postulates a huge explosion, possibly in Strait Sunda. Its tsunami-like waves destroyed probably some 20-30 main coastal settlements in Thailand, including the town & kingdom of Lanka Sukha. The resulting 'wandering of whole nations' across continents may have brought the Indians in, yes, Ligur, and later to the Khmer region.

Key words: sand sink, coastal landscape, coastal erosion, typhoon, volcanic eruption

20. Geomorphic Development of the Alluvial Lowlands related to the Evolution of the Coastal Barrier (Sandbar) during the Late Holocene

A.B.M. Kamal PASHA (Tohoku University, Japan)

This Study describes several coastal lowlands, which are located along the coast of Fukushima Prefecture in Japan with the emphasis on alluvial sequences, depending on the development of coastal barrier (sand bar). The author discusses the stratigraphy and geomorphic evolution of the back barrier region, in response to the late Holocene sea-level change.

The selected alluvial coastal plains are defined as lowlands generally broad but