

Indonesian Deltas Problems

<p>Urban Delta</p> <ul style="list-style-type: none"> • Jakarta (Ciliwung, Cisadane) <ul style="list-style-type: none"> ▪ Floods, drinking water, ground sinking ▪ Salt water intrusion ▪ Urban renewal • Surabaya (Brantas, Bengawan Solo) <ul style="list-style-type: none"> ▪ Clean water ▪ Urban renewal • Semarang <ul style="list-style-type: none"> ▪ Spring tide ▪ Salt water intrusion ▪ Ground water extraction and ground sinking 	<p>Rural Delta</p> <ul style="list-style-type: none"> • Mahakam <ul style="list-style-type: none"> ▪ Ecological disaster by shrimp ponding ▪ Salt water intrusion ▪ Incipient vector diseases ▪ Floods • Musi – Banyuasin, Batanghari - Jambi <ul style="list-style-type: none"> ▪ Monoculture exploitation (palm oil) ▪ Fisheries ▪ Ricefields • Maro, Papua <ul style="list-style-type: none"> ▪ Land conversion for food estate
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Delta classification (Galloway (1975))

River

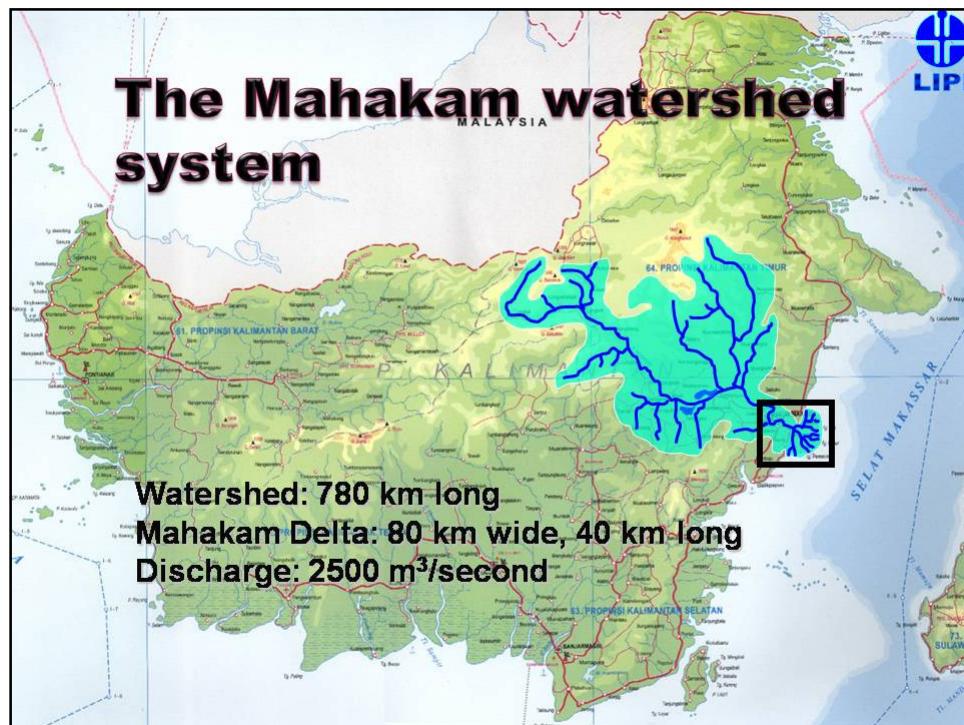
Wave

Tide

The diagram shows the classification of deltas into three main categories based on Galloway (1975):

- RIVER-DOMINATED:** Mississippi, modern Mississippi, St. Bernard (Miss.), Danube, LaFourche (Miss.), Yukon ?, Mahakam.
- WAVE-DOMINATED:** Ebro, Rhône, São Francisco, Burdekin, Drinoco, Niger, Copper.
- TIDE-DOMINATED:** Fly, Youlou, Ganges-Brahmaputra, Klang-Lengat.

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Mahakam Delta setting ..1

Delt Alliance Indonesia Wing

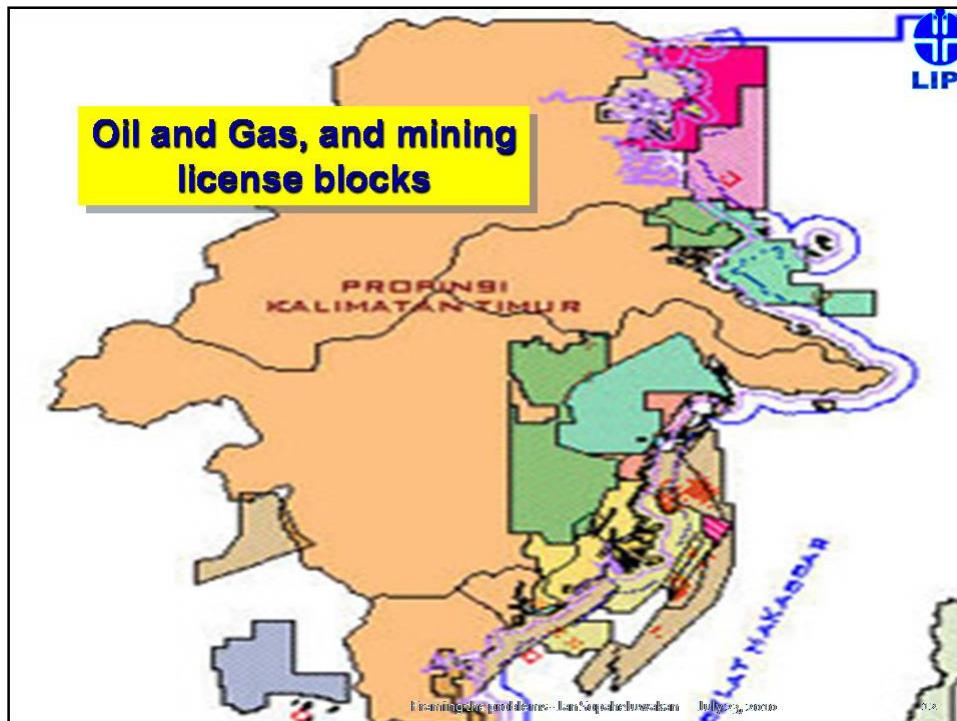
	Mahakam Delta
Nearest main city and population	Samarinda 590 thousand (2006)
Delta area (< 1 m msl.)	5,200 km ²
Length and Catchment area	980 km and 77,000 km ²
Average annual precipitation	2,500 mm
Average annual discharge	2,500 m ³ /s

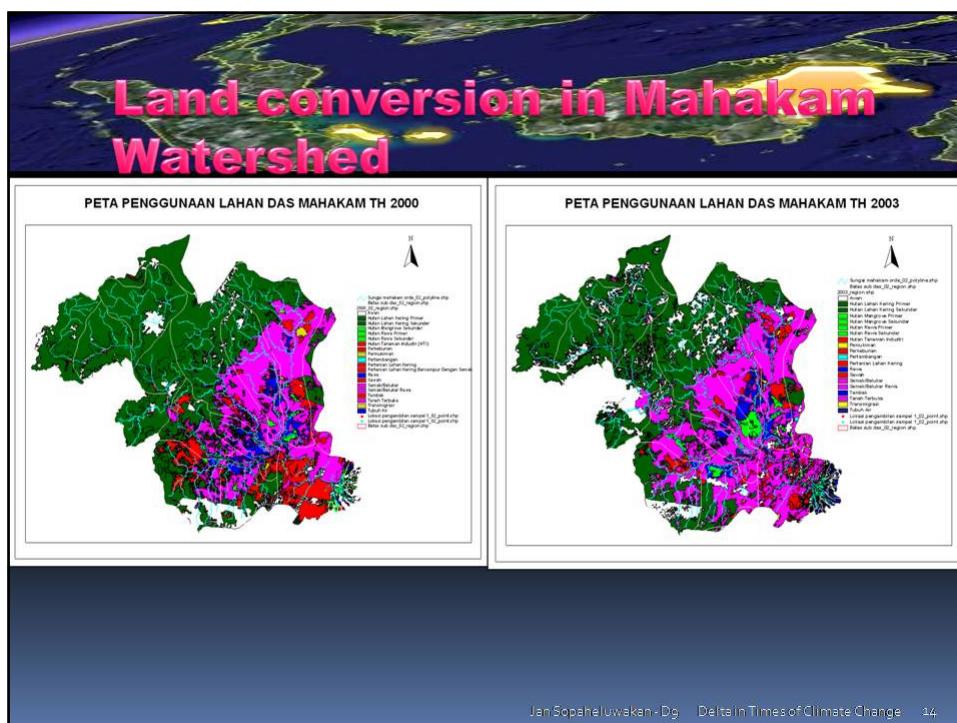
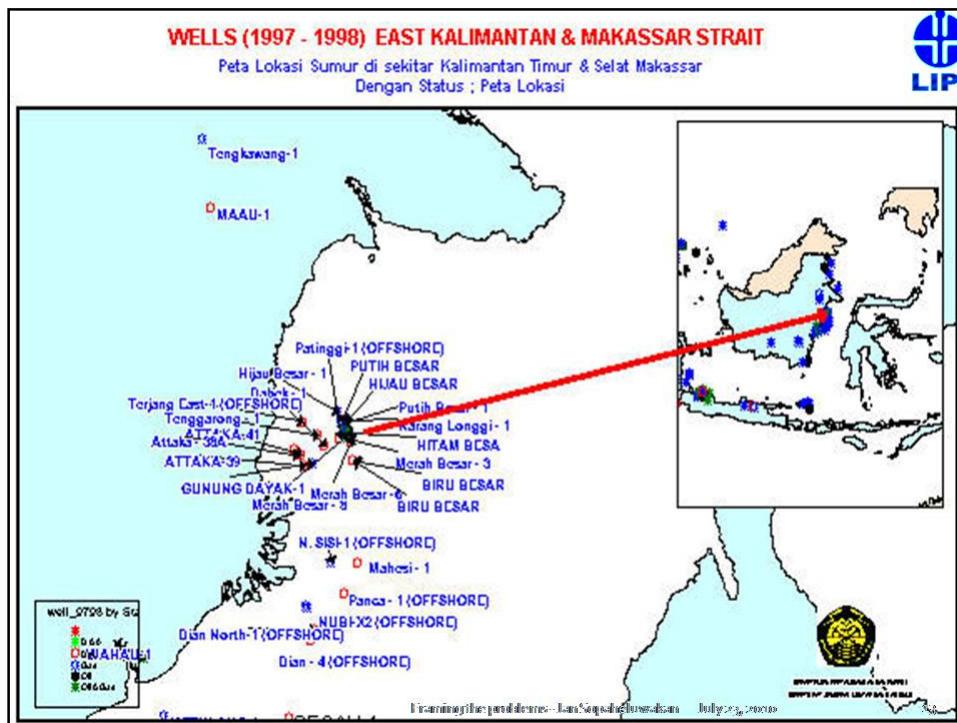
Data are from various sources. Deltain Times of Climate Change Jan Sopaheluwakan - Dg

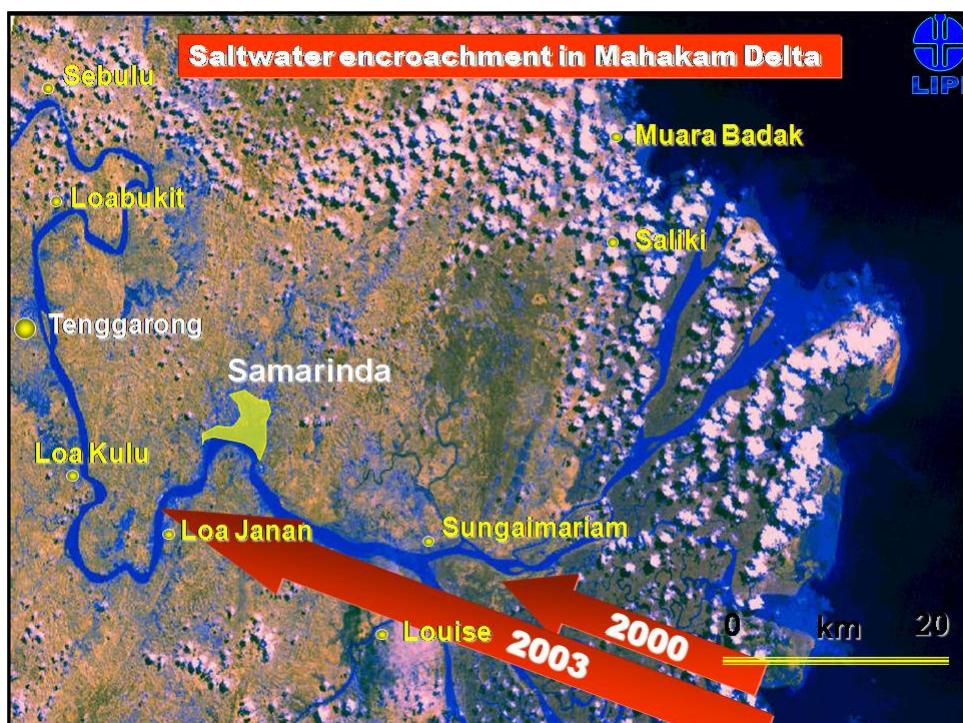
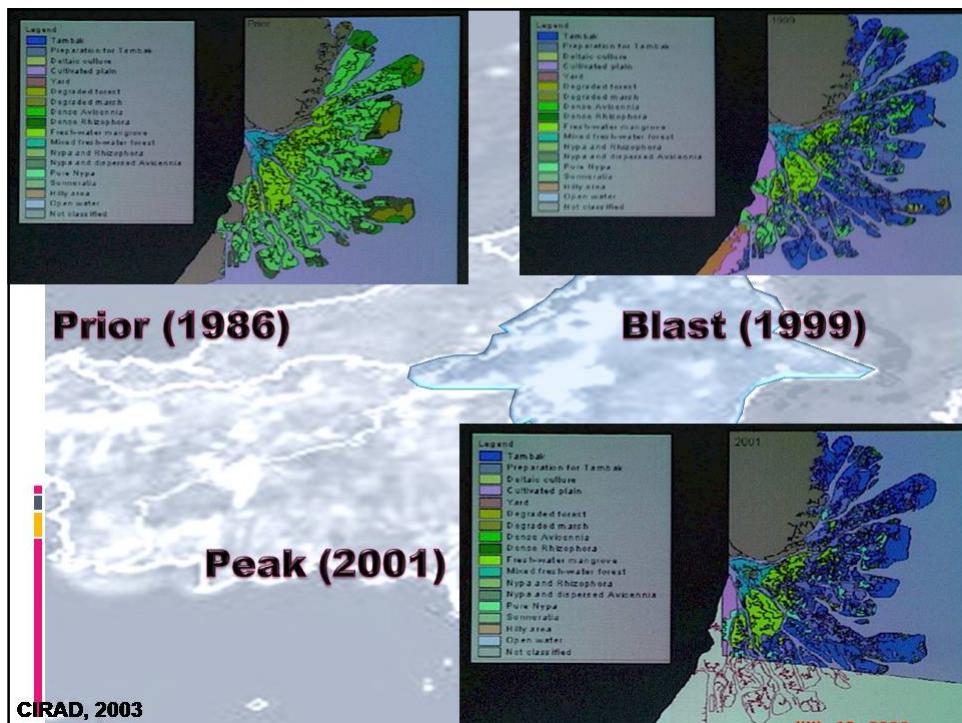
Mahakam Delta setting ..2

	Mahakam Delta
Major infrastructures along the river	None
Main ecosystem and condition	Peat and mangrove, degraded
Main ecosystem services used by people	Water for domestic use and industries, aquaculture (shrimp ponds)
Major issues	Human intervention on sediment and mangrove dynamic
Climate change threats	Sea level rise, peat fire, flood

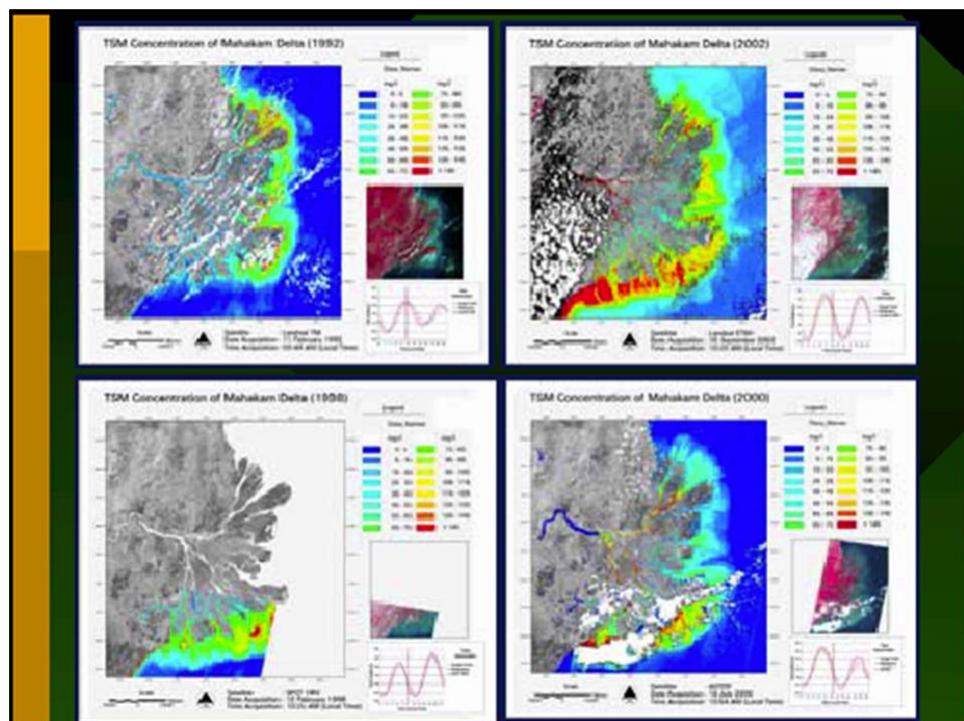
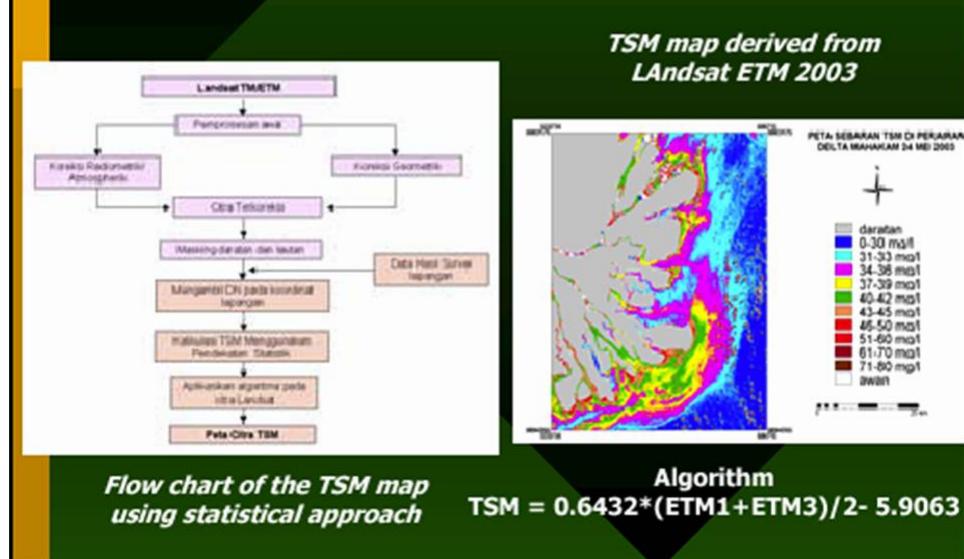
Data: GPC from various sources
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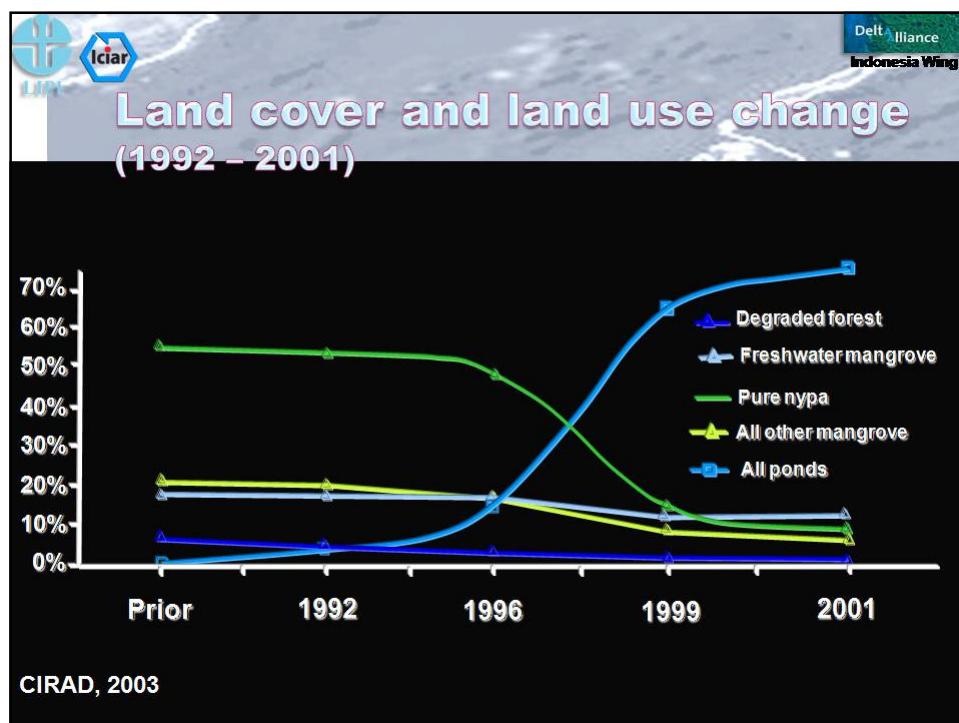
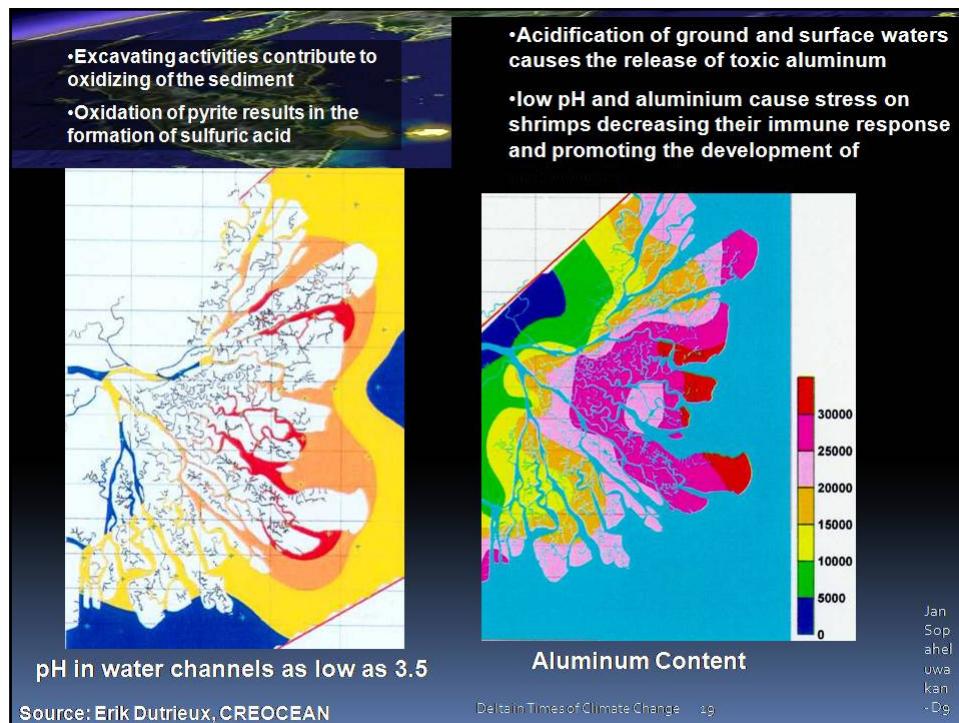


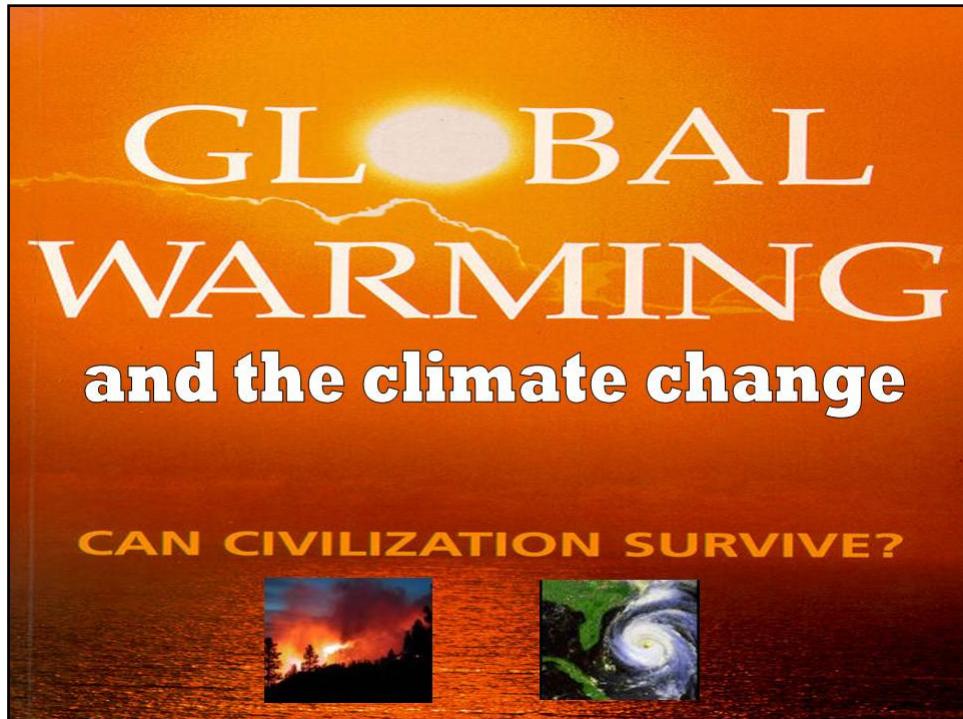
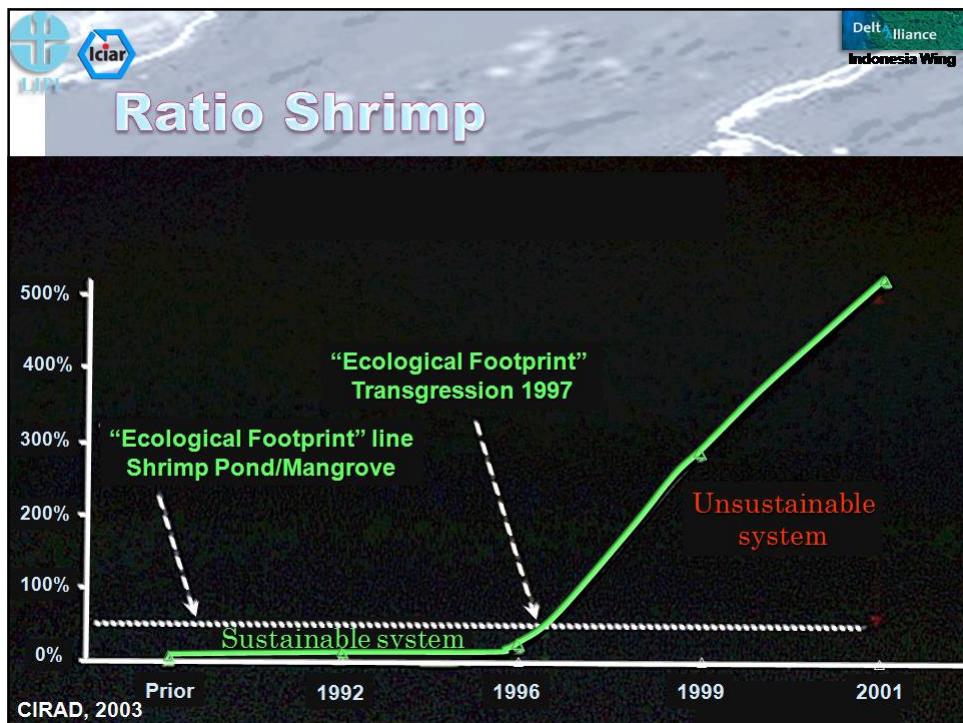


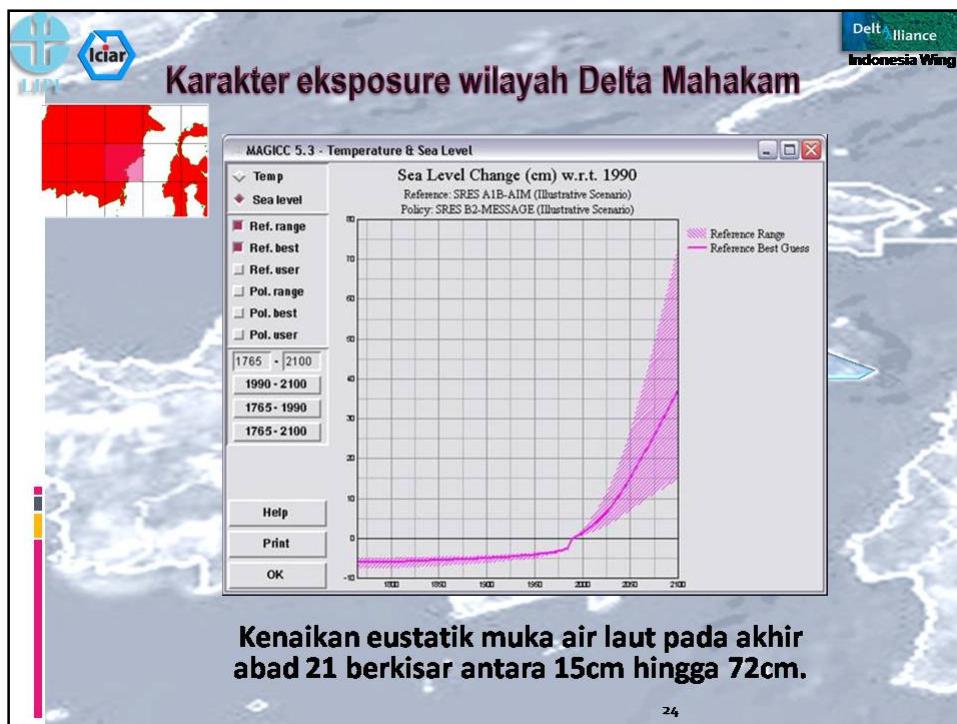
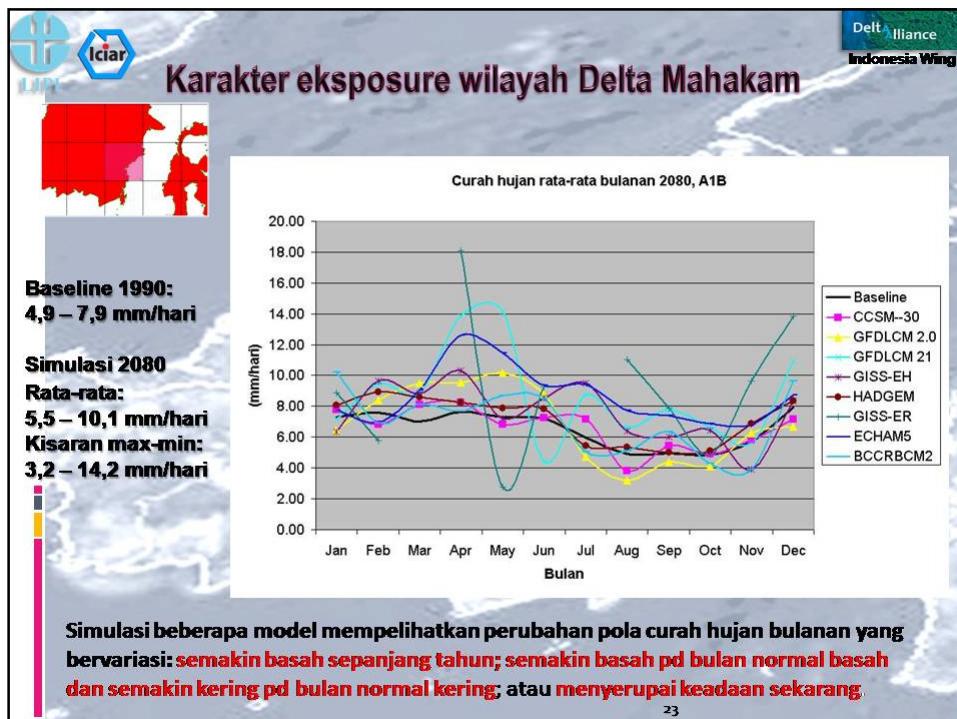


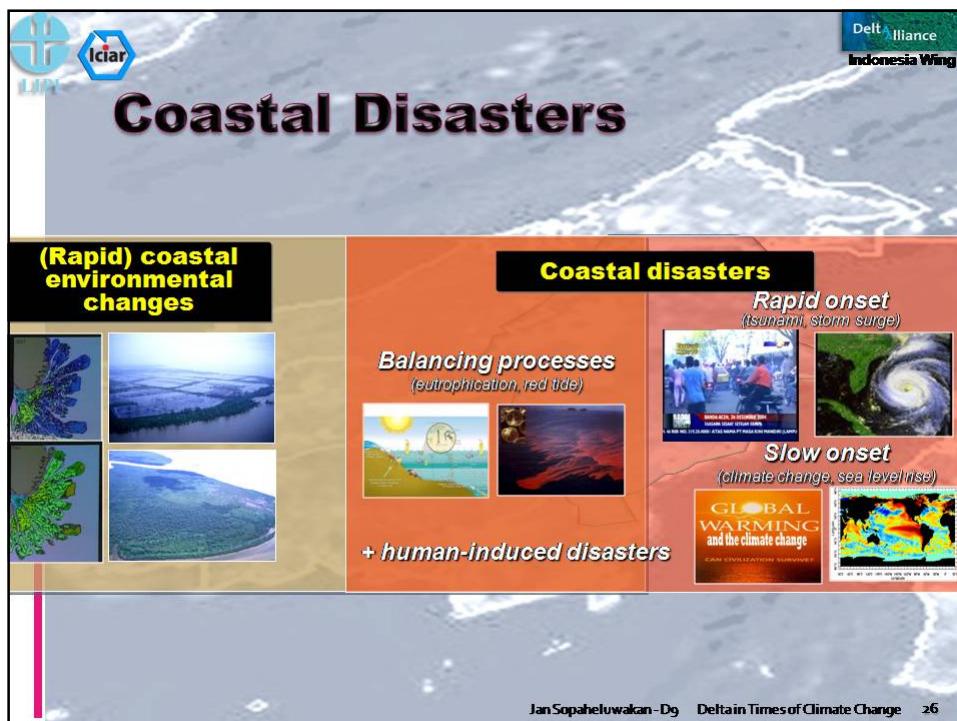
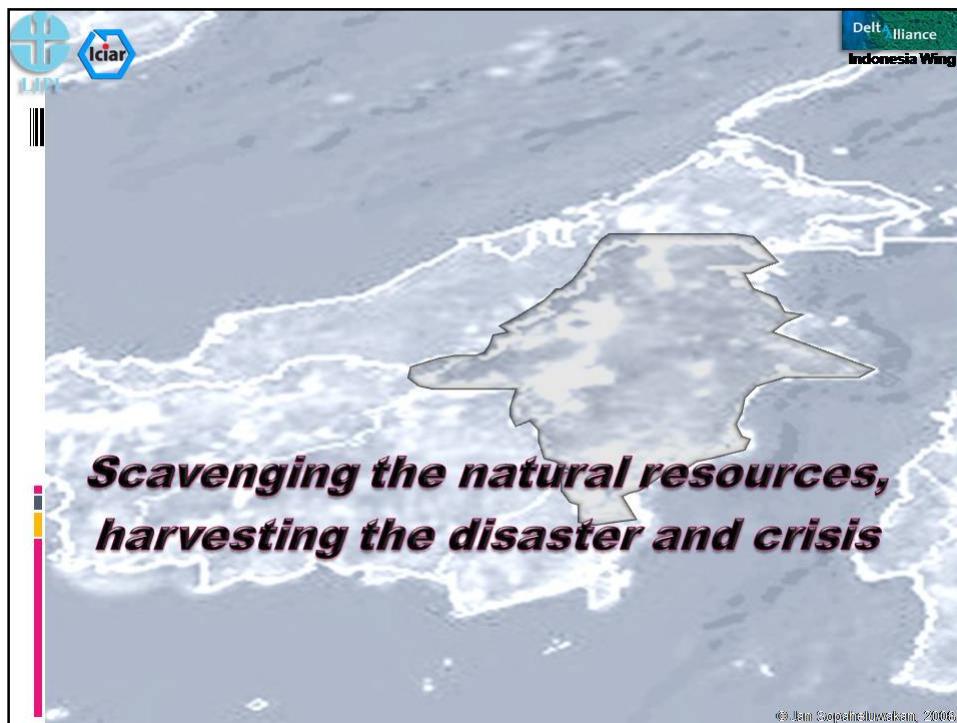
3.a. Study of TSM Concentration Distribution using Statistical Approach

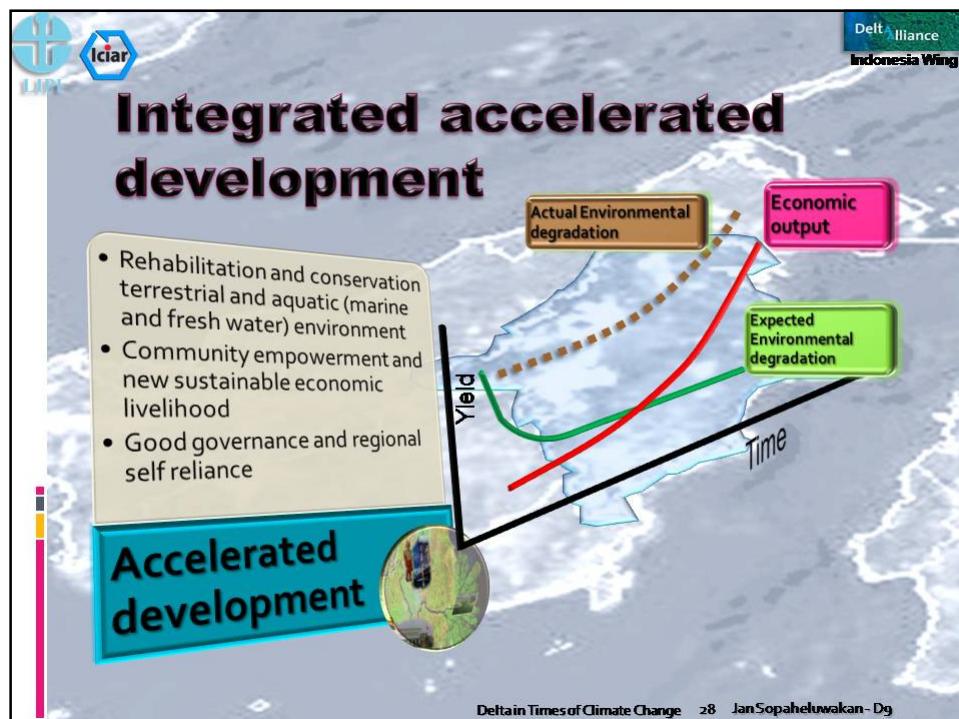
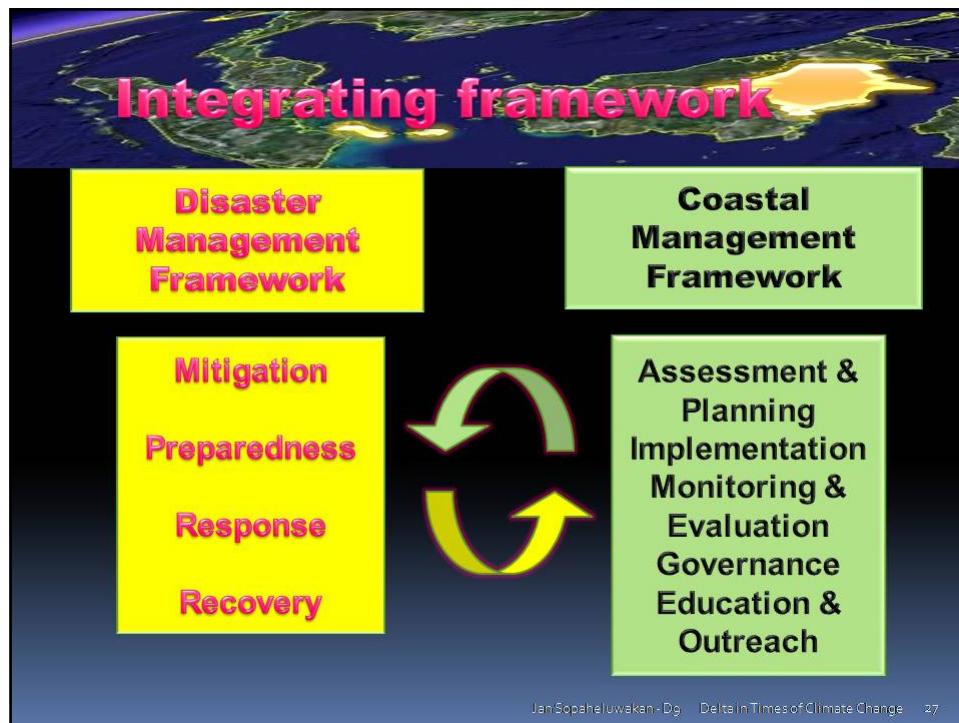


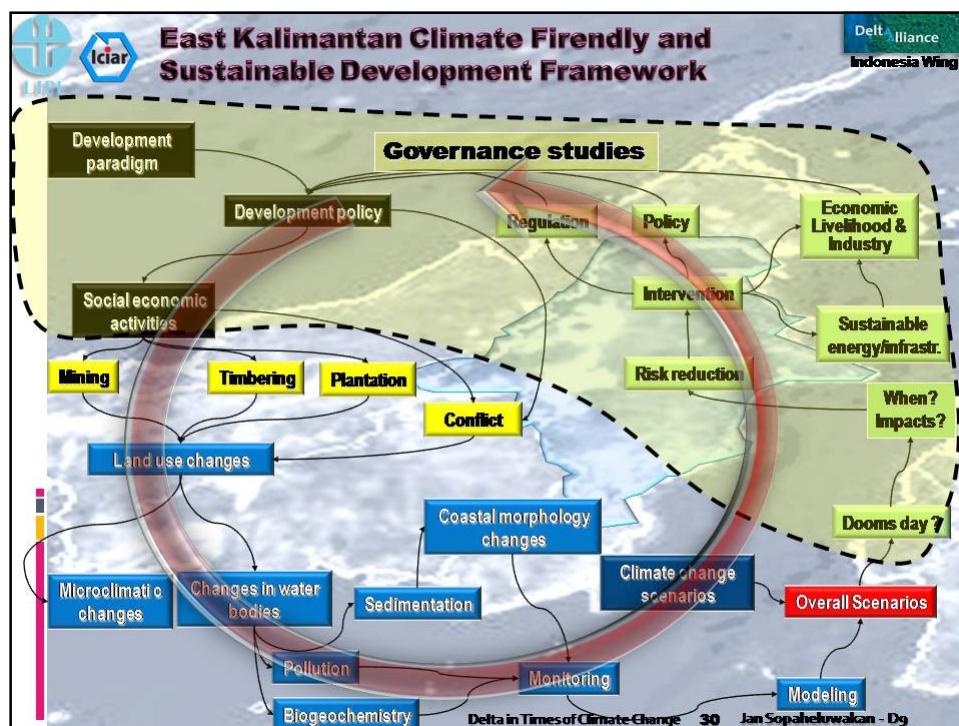












Concluding remarks

The development experience of the Mahakam delta is typical of lowland deltas in Indonesia and leads to unsustainable conditions.

Key areas of attention for sustainable development are

- the bio-physical environment;
- livelihood management and poverty alleviation;
- laws, regulations and institutional development, and
- climate change mitigation and adaptation

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