



Deutscher Tropentag, October 8-10, 2003, Göttingen

“Technological and Institutional Innovations
for Sustainable Rural Development”

Sea Level Rise Affecting Hydrology and Rice Production in the Vietnamese Mekong Delta

REINER WASSMANN¹, NGUYEN XUAN HIEN², CHU THAI HOANH³

¹*Karlsruhe Research Center, Institute for Meteorology and Climate Research, Germany*

²*Sub-Institute for Water Resources Planning, Vietnam*

³*International Water Management Institute, Sri Lanka*

Abstract

In this study, we assessed the impact of sea level rise, one of the most ascertained consequences of global climate change, for water levels in the Mekong Delta. We used a hydraulic model to compute water levels (in relation to sea level) from August to November – when flooding can already be critical under present conditions— under sea level rise scenarios of 20 cm (= SLR 20 cm) and 45 cm (= SLR 45 cm), respectively. The contour lines of water levels are shifted up to 40 km towards the sea by higher sea levels. At the onset of the flood season (August), the average increment in water levels in the Delta is 14.1 cm (SLR 20 cm) and 32.2 cm (SLR 45 cm), respectively. High water discharge from the river system attenuates the incremental changes in water levels at the peak of the flood season (October), but average water elevations of 11.9 cm (SLR 20 cm) and 27.4 cm (SLR 45 cm), respectively, still imply a substantial aggravation of flooding problems in the Delta. GIS techniques are used to assess vulnerability in three categories, i.e. areas with high (2.3 mio ha = 60 % of the Delta), medium (0.6 mio ha = 15 %) and low (1 mio ha = 25 %) vulnerability to sea level rise. Rice production will be affected through excessive flooding (in the tidally inundated areas) and longer flooding periods (in the central parts). These adverse impacts could affect all three cropping seasons in the Delta as long as no preventive measures are taken.

Keywords: Cropping pattern, GIS, land use, model, season, tide, vulnerability, water level