## B-10 Estimation of Effects of Sea Level Rise in Coastal Regions (Final Report)

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According to the summary of the Second Assessment Report of IPCC, the amounts of the rise in sea level by 2100 is about 50 cm, although much uncertainty remains.

The primary impact of the rise is the change of hydrological conditions in coastal regions. The changes will affect the land form and protective facilities along sea shore and lead to reduce the safety of the society in coastal regions.

In order to adopt appropriate countermeasures to the impact, sufficient preliminary assessments are required. B-10 group studied the impact, from various points of view. The studies are positioned as pilot cases for the future assessments.

The results of this study are as follows,

a) Re-distributed land use pattern was acquired by the simulation study, taking into account of land use suitability, under the retreat strategy in the two case study areas( Niigata in Japan and Bangkok in Thailand).

b) The Geographical Survey Institute(GSI) and Communicatio Research Laboratory(CRL) developed a small VLBI equipment that can be used near tide gauges. Some precise control points was established using the VLBI and GPS system in this research.

c) The influence of sea level rise on coastal environments induced from the changes of coastal environments in the early Holocene sea-level rise was evaluated by using borehole samples. Oyster reefs in Otadomari-numa were submerged and abandoned by the Holocene sea level rise of which the rate is the same as that of estimated future rise by global warming.

d) A hydraulic experiment focusing on the deformation of barrier showed that the barrier moves toward the land as the water level rises. Some countermeasures against extinction of barrier due to sea level rise were suggested.

e) Water level of the large river with gentle bed slope has a statistic correlation with the strength of precipitation. Sediment deposition area was found to move upward in the river as sea level rises. Climatic change may amplify the water level rise in large rivers not only by sea level rise itself but by sedimentation on the river bed and increased precipitation.