

Coastal Erosion in a New Phase

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1. Trend conversion of sandy beach area changes in recent years

Table 1 compiles erosion and accretion area of sandy beach by examining the topographic maps of the Geospatial Information Authority. From latter 1970s to the early 1990s, the coastline considerably retreated, while from early 1990s to 2000s, the coastline slightly advanced. It shows trend conversion of sandy beach erosion recently.

Table 1. Long-term Changes in Coastline (except Okinawa Pref.)

		Erosion (ha)	accretion (ha)	Balanc e (ha)	Rate (ha/yea r)
Period	I	17,908	14,479	-3,429	-47
	(1905-1978)				
Period	II	5,377	3,203	-2,174	-145
	(1978-1992)				
Period	III	2,788	3,098	310	28
	(1992-2006)				

(Derived by examining the topographic maps of the Geospatial Information Authority)

2. Beach erosion still continues

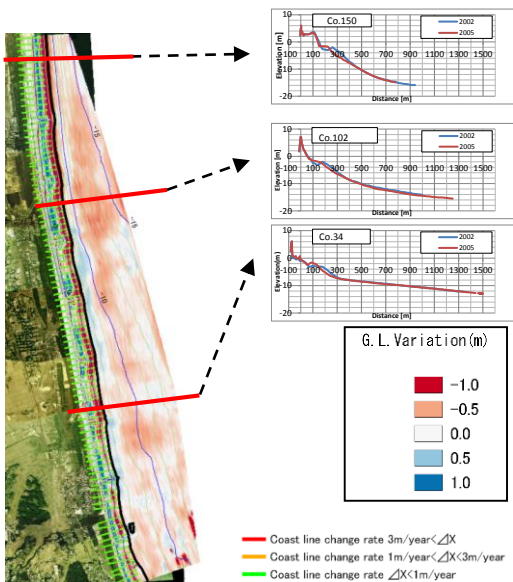


Figure 1. Littoral distribution of coastline change rate(1992-2006) and, planar distribution of ground level change(2002-2005)

Figure 1 shows littoral distribution of coastline change rate (m/year) derived in the same way as previous section, and ground level change (m) change by sonar sounding in Southern Sendai Bay Coast. Green line shows the rate of erosion is less than 1(m/year) or accretion, this shows coastal erosion are controlled.

However, for topography changes under the water surface, the ground level fell except very shallow area (Figure 2). In the shallow area from the area of 7 m in depth up to the beach above sea level, there are increase and decrease due to bar shift, but on the whole, sand volume has decreased at a rate of 196,000m³/year. In the wide area where water depth is 7 m or more, sand volume decreased at a rate of 483,000m³/year. Consequently the possibility of increase in run-up height and damage to coastal structures has increased.

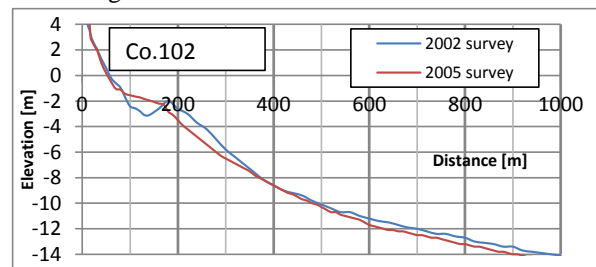


Figure 2. Enlarged view of cross-section (Survey line Co-102)

The National Institute for Land and Infrastructure Management (NILIM) has been surveying changes in coastline and submarine topography in major coasts eroded, and there are some coasts where retreat of the coastline has been prevented but volume of submarine sediment has reduced, as in Southern Sendai Bay Coast.

There are many eroded coasts where the coastline retreated up to revetment with no room for retreat or many coasts where retreat of coastline is being stopped as the result of implementation of various erosion control measures, but monitoring including submarine topography is necessary to determine whether the risk of high wave disaster has been controlled. In other words, it is considered to have entered a phase that the trend of coastal erosion cannot be grasped simply by surveying coastline.