Table 1 Grain size distribution of surface sediment (0-0.05 m, in 2006) and benthos (in 2007)

Section	Const-ruction	Grain size distribution (%)					Wet weight (g/m^2)				
		- 0.005mm	0.005-0.075mm	0.075-0.25mm	0.25-0.85mm	0.85-2mm	Mollusca		Anne-lida	Arthro-poda	other
							Bivalvia	Gastropoda			
NE01	2001	0.9	8.1	48.1	32.9	10.0					
NE02	2002	3.3	20.4	47.4	19.0	10.0	18862	147	93	4	267
NE03	2003	0.8	10.8	63.4	21.9	3.0	12142	178	0	0	360
SE01	2001	0.2	2.0	84.2	12.5	1.2					
SE02	2002	0.7	4.4	66.5	22.7	5.8	1787	218	0	22	111
SE03-1	2003	0.8	4.6	80.9	12.8	0.9					
SE03-2	2003	0.5	3.7	87.8	5.4	2.7					
NW01	2001	2.1	7.8	45.0	35.6	9.5					
Sw01	2001	0.6	3.6	39.4	40.2	16.2					

Studies on variability of phytoplankton concentrations in the Bay of Bengal and associated physical processes using remote sensing data

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The Bay of Bengal (BOB) surface water is considered as oligotrophic but bottom nutrient levels are higher relative to global ocean. Despite large influx of river water into the BOB, it is considered as moderately productive ecosystem (150—300 gC m^{-2}/yr) based on SeaWIFS global primary productivity estimates. The climatology of surface Chlorophyll-a (Chl-a) concentration as obtained from SeaWIFS show clear seasonal cycle with maximum concentration (>0.5 mg/m^3) during post-monsoon season (September to November). Most fascinating features of BOB is the seasonal reversal of monsoon current and the summer upwelling across the east coast of Sri Lanka associated with the strong southwesterlies which pull up the thermocline.

Surface Chl-a concentration during summer (JJAS) and winter (NDJF) of 2000 and 2001 were derived from SeaWIFS data and were studied in relation to zonal Ekmann transport based on estimate from QuickSCAT wind field, SST from NOAA-AVHRR and SeaWIFS derived photosynthetically available radiation (PAR). It is observed that coastal upwelling due to Ekmann transport is not sufficient to overcome the stratification and to enhance the surface production. As most of the sky remains cloudy during summer monsoon season, it becomes an inhibiting parameter for the growth of primary production despite the fact that PAR is higher in summer compared to winter months. The strengthening of seasonal thermocline in summer results in nutrient limitation of phytoplankton growth. Monthwise SST- Chl-a relationship for 2000 and 2001 show SST Chl-a anti-correlation and particularly during summer and winter months. Monthly sea surface height anomalies (derived from TOPEX/POSEIDON satellite altimeter data) overlaid on the monthly Chl-a (based on SeaWIFS) clearly show that a prolonged positive/negative sea level anomaly can lead to sparse/dense Chl-a levels. Monthwise composite of net surface flow with Chl-a concentration in the monsoon current province during 2000 show a strong linear relationship between the two. Chl-a concentration during some special weather events such as tropical cyclones which occurred during November and December 2000 were also examined as these short weather events significantly alter the biological state of the BOB surface water.

Thus, the above study clearly depicts the biological response of the BOB surface water to various physical forcing and their variability in time and space. Further, the study also points to the important use of multiple satellite data sets/observations, with or without model simulations, in understanding the complex bio-physical environment in the Bay of Bengal, one of the largest fresh water and sediment input sites of the world ocean.

Approach to improve nutrient situation in the Seto Inland Sea, Japan

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The nutrient load from the land influences the nutrient concentration in enclosed coastal sea. On the other hand, even if the fishery damage that the nutrient state relates is caused, it is difficult to solve such problems, because extent where the nutrient load from the land influences the sea area water quality is not revealed yet. Then, in Bisan-Seto (central area of the Seto Inland Sea), a research project is started to clarify the behavior of the nutrient from the source (land) to coastal sea consistently. In this project, we are trying to specify the region where the possibility that the fishery damage occurs is high. And, by recycling underground water, we are aiming at technological development to decrease the nutrient concentration of the underground water at the farmland that is the nutrient source. This time, the outline of this project and the characteristics of Bisan-Seto are explained.

1. Outline of this research

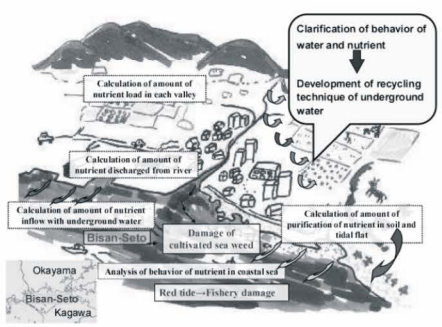
This study project is composed of the item chiefly shown as follows, and shows the image in Figure1.

1) Calculation of behavior of nutrient that discharged from river and underground.

2) Calculation of amount of nutrient purified in soil and tidal flat.

3) Presumption of behavior of nutrient in coastal sea.

4) Development of recycling technique of nutrient contained in underground water in farmland



2. Characteristic of Bisan-Seto

In order to clarify the characteristic of Bisan-Seto, we analyze the water quality data observed by Kagawa Prefecture and Okayama Prefecture. And using these data, numerical model experiments are carried out to calculate water flow field. As a result, the following fact was clarified.

1) The stratification doesn't develop enough even in summer, because tidal current is strong.

2) The nutrient concentration is usually low, except near the shore.

3) The nutrient concentration reaches the maximum value in autumn, though the cause cannot be clarified.

4) Because the stratification doesn't develop in summer, the seasonal variation of residual current is not found except around river mouth.

Nutrients, organic carbon and oxygen budget in semi-enclosed Ago Bay, Japan

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Ago Bay is a small semi-enclosed coastal water body of Japan and is well known as the birth place of the pearl culture. The culture began about a century ago and the production reached a peak point about 40 years ago. Since then, the production has declined and the present production had fallen down to the one fifth of its peak point. The deterioration of the marine environment has become serious in recent years, but it is unclear whether the long usage of the water body by the culture is the cause. The sediment quality in terms of COD at the bay head area has increased and had exceeded far the local regulation limit. The settlement of hypoxic water mass in the bay head area continues during warm season, every year.

Mie Prefecture, which is the local government, had conducted the corresponding research project called CREATE for five years. The outline of the project was presented on the EMECS 7 conference1) to 4). This article reports a