The Research of Correlation Between Ecology and Environmental Control System in Sea-Coast

Shu FUNADA
Faculty of Business Administration, Sakusin Gakuin University

The aim of the study are; to research the relationship between ecological changes and productivity together with environmental control of the sea range, to estublish an effective environmental control system, and to analyze and develop methods of technological problems in using sea-coast as a place of biological productivity.

1. Measurement of Environmental Factor in Sea Water and Land Water

(Hiroo INOUE, Tadashi OCHI)

Primary studies were carried out on monitoring the water quality by considering the fundamental features in the light attenuation process. Soluble humic substances in sea water seem to cause a basal absorption which steadily increases in the range 240 - 400 nm towards shorter wavelengths, except the presence of an absorption band near 270 nm. For this basal absorption curve, a model was applied as follows.

$a_{d\lambda}=a_{d340}\exp[-0.0155(\lambda-340)]$

Upon the basal absorption curve a distinct absorption peak at 270 nm seems to be lain.

Absorption bands near 270 nm for filtered pore water in marine sediments were found, similar to most filtered sea water. However, another noteworthy feature was that pore water in marine sediments gave a very weak shoulder near 300 nm.

For the pore water,it would have to be considered that two types of basal absorption curves are present as follows.

$a'_{d\lambda}=a'_{d430}\exp[-0.0155(\lambda-430)]$, $a''_{d\lambda}=a''_{d430}\exp[-0.0076(\lambda-430)]$

Moreover, the relationship between DOC and $a_{d\lambda}$ was discussed in detail.

2. Environmental Control in Sea-Coast

(Kinzo NAGAHORI, Hajime NARIOKA)

We studied how to analyze and improve the process of extracting salt from the agricultual soil by the sea-side.

2.1 For instance, Kasaoka Bay Polder, we made it clear that we improve a method reforming Na-type clay with Ca-type clay. (1)Depth of the root zone was fixed and objective value was gained to show ESP and EC curve by mixing plaster. (2)A fundamental calculation method of plaster requirement was fixed. (3)Effectiveness of the adding plaster by measuring dispersion, sedimentation and its volume various mixing ratio.

2.2 A fundamental study on salinization mechanism at in-situ soil and a method of improvement of barren soil for mangrove transplanting to inland were done. We pay attention that mangrove can prosper in brackish area.

For leaching of accumulated salt in surface soil, we need percolation spreading whole of surface soil by irrigation or rainfall. Accordingly, if surface soil is saturated temporary by the existence of the cut-off zone for capillary water, most of accumulated salt in soil can be leached and salt accumulation caused by brackish groundwater can be controled.

Soil water in soil is circulating on same direction which downword in plant growth area and upword in barren area from in-situ soil profiles.