

Environment Research and Technology Development Fund S-13

Development of Coastal Management Method to Realize the Sustainable Coastal Sea

The Environment Research and Technology Development Fund administered by the Ministry of the Environment provides funding for research and development in virtually all environmental domains. Its purpose is to promote the accumulation of scientific knowledge that is indispensable for furthering the environmental policy that will build a sustainable society. Areas include preventing global warming, creation of a recycling-based society, achieving coexistence with the natural environment and ensuring safety by managing environmental risk.

As one part of this effort, in FY 2014 the International EMECS Center began activities relating to “S-13 Development of Coastal Management Method to Realize the Sustainable Coastal Sea.”

1. Title of Research

Development of Coastal Management Method to Realize the Sustainable Coastal Sea

2. Head Researcher Name and affiliation

Tetsuo Yanagi (Principal Researcher of International EMECS Center)



3. Research period: FY 2014 – FY 2018

4. Purpose of research and overview

The establishment of marine protected areas (MPAs) is included in the Aichi Biodiversity Targets. However, the environmental administration has been slow to act in this regard.

This study will involve a comprehensive examination of natural and human activity in coastal seas and the land areas that constitute their hinterlands, in order to determine how these areas should be changed from their present state to an appropriate status in terms of material circulation and ecotones. Specific actions will be proposed as methods for the environmental management of coastal seas in Japan.

To create methods for environmental management of coastal seas near land areas, a policy for the environmental management of coastal seas using the following as model areas must be established:

- (1) Seto Inland Sea, the largest enclosed coastal sea in Japan
- (2) Sanriku Coast, which has a succession of open inner bays such as Shizugawa Bay
- (3) Coastal areas of the Sea of Japan, an international enclosed coastal sea
- (4) Discussions regarding the societal and humanities aspects
- (5) Integrated numerical models for coastal sea management will be established.(beginning in FY 2015)

Through these research efforts, specific methods will be proposed for the environmental management of coastal seas.

5. Research topics and organization for implementation

General overview and Topic 5

General overview and establishment of integrated numerical models for coastal sea management
(International EMECS Center)

Topic 1: Development of methods for managing nutrients concentrations in the Seto Inland Sea
(enclosed coastal sea)

- (1) Development of methods for managing nutrients concentrations (Hiroshima University)
- (2) Determination of the function of tidal flats and seaweed beds in nutrient circulation and biological reproduction (Kagawa University)

Topic 2: Development of coastal environmental management methods on the Sanriku Coast, which has a succession of open inner bays

- (1) Monitoring of changes in coastal environments use of the results to develop methods for coastal sea management (The University of Tokyo)
- (2) Determination of the mechanism of nutrient transfer among forests, rivers and oceans (Hokkaido University)
- (3) Determination of the role of organic matter in material transport between forests and oceans (Tokyo Institute of Technology, Tohoku University)

Topic 3: Development of methods for ocean management in the Japan Sea, an international enclosed coastal sea that includes continental shelves and islands

- (1) Proposed management methods for international enclosed coastal seas (Northwest Pacific Region Environmental Cooperation Center)
- (2) Construction of a model to predict environmental changes in the Japan Sea (Nagoya University, Kyushu University)
- (3) Construction of a higher trophic level ecosystem model for the Japan Sea (Ehime University)

Topic 4: Proposed economic assessment and integrated coastal management model for ecosystem services in coastal seas

- (1) Economic assessment of ecosystem services (Ritsumeikan University)
- (2) Proposed three-stage management method for coastal seas (Kinki University)
- (3) Discovery, construction and passing on of stories that connect the general public with coastal seas, based on discussion from a humanities perspective (Aichi University)
- (4) Coordination of fisheries activities in the Tsushima and Goto marine protected areas (Kyushu University)

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