Report on the 'Quest for the Atmospheric Flow' as a part of 'Dokodemo Musium Eco' project

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The 'Dokodemo Museum Eco(Hands-On Museum of Ecology)' project, which is carried out by the National Science Museum and Tokyo Gakugei University in cooperation with other museums in Japan, is aimed to perform a series of scientific activities of environmental education. Two of the activities in the 2005 year were held in cooperation with the Earth & Energy Exploratorium (commonly known as 'Wonder Ship') in Yokohama, Japan. One of the activities is entitled as 'Quest for the Atmospheric Flow', which is the subject of this report.

1. The Aim of the Event.

The Earth & Energy Exploratorium performs unique activities on environmental educations, and is characterized by the following features.

(1) Practical environmental-education activity is performed focusing on the materials of daily life.
(2) The main target of the exploratorium is for junior high school students and the younger.
(3) The exploratorium is located in the Keihin industrial area and it is subject to the land-and-sea breeze.

Thus, according to such features, we planed to develop a program, which is aimed to understand the following facts.

(1) It is usually difficult to observe the air flow or water flow directly, because they are transparent.
(2) But the visualization by tracer make the flow is observable.
(3) The gas discharged in a human life is driven to a (unexpectedly) far long distance by wind.

2. Performing the event.

The following four developed programs were mainly performed in the event.

(1) Visualization of the water flow by dye (paints for marbling, food color, and miso soup).
(2) Visualization of the indoor air flow by fog.
(3) Visualization of the outdoor air flow (wind) by balloons, which buoyancy is adjusted to be zero.
(4) Observing cloud moving by digital cameras to estimate the speed of the upper air flow.

3. The Results and Discussion.

There are various viewpoints in environmental problems. For example, the flow in the atmosphere, in the ocean, and of the river is important from the viewpoint of transportation and diffusion of a substance, energy , and momentum. However, the environmental education is usually thought to be a subject of chemistry and biology. Thus, through this activity, we have tried to shed a light over the geophysical viewpoints of environmental education.

The results of the questionnaires of the participants show that the activities we performed are very attractive as well as educational for the children. Thus, we are willing to continue this kind of activities. And we hope that geophysical environmental-education programs should be performed more actively from now on.