SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Lift Off - Secondary Space Education (2)

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DEVELOPMENT OF THE SPACE EDUCATION PROGRAM FOR THE NEXT GENERATION USING EARTH OBSERVATION DATA

Abstract

Space education for the next generation aims to deepen their consciousness, widen their thinking, help them to feel the universe in their daily life, and to give them a universal point of view by exploiting the educational potential of materials about space science and technology and their outcomes. Although these materials are dispensable in space education, children are profoundly affected whenever we use them. We call such an experience as "Hon-mono experience".

Earth observational data from satellites are especially attractive material for "Hon-mono experience". They are used in education in the form of images or photographs. However, an educational method has not been systematically developed by which children can analyze the original satellite observation data and develop their own thinking from their analysis. One of the reasons to become high barrier for educational utilization is that the satellite data are expensive and the software is not coordinated with children and their educators' usage. Another is the difficulty for children to understand some concepts, such as wavelength, spectrum, and infrared rays, when they analyze satellite observational data.

To overcome these challenges, we developed software that children and their educators can easily use and teaching methods for helping children to form the concepts required for recognizing and analyzing satellite observation data after some learning and experiences by using the developed teaching materials. Moreover, the factor-analysis results of the questionnaire to children were applied to classifying satellite data and establishing work subjects. Using the software and teaching methods, we trained educators for school education and/or social education and presented this educational program to children in various places in Japan.

Through these practices, it became clear that a two-step curriculum is needed for this space education program using satellite observational data. In the first step, children can recognize and understand satellite observational data as their own information. In the second step, children can analyze satellite observation data by themselves with their scientific mind and extend or deepen their thinking in various ways in connection with other knowledge. In this paper we show the development of the space education program and the results of its practices over three years.