

Application of research data to junior high school, high school and university educations

*Norio Umemura¹, Yoshimasa Tanaka^{2,3}, Shuji Abe⁴, Yasuo Saito³, Shin ya Nakano⁵, Atsuki Shinbori¹, Yasuyuki Minamiyama³

1. Institute for Space-Earth Environmental Research, Nagoya University, 2. Polar Environment Data Science Center, Research Organization of Information and Systems, 3. National Institute of Polar Research, 4. International Center for Space Weather Science and Education, Kyushu University, 5. The Institute of Statistical Mathematics

ROIS (Research Organization of Information and Systems) has a plan to provide various kinds of research data with several universities and research institutions to education sites (junior high school, high school and university educations) in 2020 as a part of its data science business, in order to promote human resource development (information utilization, mathematicians and high level informatics skill) along with the Japanese government plan Society5.0.

As a first step, our preliminary project including Nagoya University and Kyushu University is now building a test platform including several scientific data (climatology data, environmental data, geology data, earth-space data, biology data and so on) managed by NIPR (National Institute of Polar Research). The detailed steps and functions are shown below:

- Data Archive: online archive to constantly provide research data,
- Data Information Appending: add basic data information, and valuable information to enable users to understand how the selected data contribute to their own field, and visualization result etc.,
- Data Proof: providing data for users to find data, identify data, select data and obtain data,
- Data Conversion: additional function to enable users to view/analyze/decide with general software,
- Data Fusion: additional functions to enable users to find related data.

Especially, data conversion is an important process to convert research data from research field-dependent format to general ASCII format, in order easily to view, analyze and decide the data, and leads to an enhancement of opportunities of scientific activities to users. Furthermore, data fusion is another process for computer to list similar data with statistical mathematical calculation, and strongly promotes mathematical activities for elucidating mechanisms which are the essence of science at the research and education sites.

In an official operation in 2020, we have a plan to expand the data we handle to more fields and more universities, and start human communications such as a school visit, application for teaching materials, extracurricular activities, and theme studies. We will start the high-knowledge cycle, make opportunities to reach the essence of science, and aim to produce talented persons with advanced knowledge to lead the advanced information society.

Keywords: Society5.0, elementary and secondary education, higher education, human resource development, information utilization, data science