

Data Utilization Promotion and Education/Public Outreach activity of SELENE (KAGUYA). H. Otake¹, K. Masuda¹, Yoshiaki Ishihara¹, Kuniyuki Kageyama², Taketo Fujita², and A. Yamamoto², ¹Japan Aerospace Exploration Agency, JAXA Space Exploration Center, 3-1-1 Yoshinodai, Chuo-ku, Sagami-hara-city, Kanagawa 252-5210, Japan. ²Remote Sensing Technology Center of Japan (RESTEC), TOKYU REIT Toranomon Bldg. 2F, 3-17-1, Toranomon, Minato-ku, Tokyo 105-0001, Japan., (aya@restec.or.jp).

Introduction: “SELENE(KAGUYA)” was launched on September 14, 2007 from Tanegashima Space Center in Japan. After successfully completion of nominal and extended missions, KAGUYA was impacted to the south-east of near side of the Moon on June 10, 2009 (GMT) under the control of the operation. KAGUYA has 15 instruments to observed the Moon and those obtain various scientific data of the moon. The processed observation data (called Level-2 data) are archived in the Level-2 Data Archive and Distribution system (L2DB) located at JAXA Sagami-hara Campus in Japan. Level-2 data were opened to the public from Nov. 2009 [1].

Data Utilization Promotion Activities: In addition to data archive system, JAXA is promoting the utilization of KAGUYA data through (1) setting up the order desk (data order and user help counter), (2) training for teachers of elementary school and junior high school, and (3) providing data visualization systems.

Data Order Desk: The SELENE (KAGUYA) Data order desk offers the following services; Data search, Data acquisition, Consultation on analysis software and data handling. For information about data order desk, we opened the website [2].

Educational activity: In Japan, the upper grades of elementary school students start to study about the moon, and they will study about our planetary systems (including Earth's moon) in junior high school. At present, many teachers often have trouble at teaching this field because of the lack of suitable education materials, which support the official textbook. That is actually something we are looking into in these promotion activities. We discussed "suitable materials (and how2 for them)" with teachers and university researchers at education field. This year, we prepared some prototype materials and offer them to teachers. In the next phase, we will gather feedback from teachers and analyze them. On the one hand, education researchers had taken an alternative approach to teaching about the moon. They debated meaning of "the moon study" not only in science education but also in other subjects. After their study, we will introduce their ideas and concept for the teaching materials, and with the analyzed teachers feedbacks, we will brush up those materials. In addition, we need to study about expand route for developed education materials.

Data Visualization Systems: As for data visualization system, SELENE project prepared “KAGUYA 3D GIS” [3,4]. This is a kind of web-based GIS system for the purpose of promotion for both research and EPO (Education and Public Outreach). The visualized observation data is stored in the KAGUYA Web Map Server (WMS) and released using GIS browsers “Kaguya 3D Moon Navi (KAGUYA 3D GIS)” at [5]. This is an effective way to disseminate the observation data for the public and the educational use. Also it is useful for the scientific research derived from the integrated data of various instruments because it allows scientists to make a map, to overlay and to share the data of multiple instruments easily.

To use this “Kaguya 3D Moon Navi”, users had to be connected by internet access because of Web GIS system, however, recently we prepared “Stand-Alone” type of “Kaguya 3D Moon Navi (KAGUYA 3D GIS)”, which enable the users to use this Web GIS based application without internet access. Application and all data were stored into a DVD, and you can set up the application and data from DVD and enjoy all KAGUYA WMS data. This is a necessary step for education field use because many schools (both elementary and junior high school) in Japan have not good Internet access. Teachers who need this DVDs could access to data order desk for request.

Next step for KAGUYA 3D GIS is to develop the tablet PC version. These days, tablet PC (including Apple's iPad) become widespread rapidly in the classrooms. We are now studying about WMS client software on Android OS and iOS, and we will start to develop new version of KAGUYA 3D GIS in next fiscal year.

References:

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