

PPS023-P01

Room:Convention Hall

Time:May 26 16:15-18:45

Planetary explorations and community: a case study

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For an efficient progress of lunar-planetary explorations, roles of a community around an exploration project are very important in addition to an existence of strong team developing a payload instrument. Making a community does not directly relate to a future plan of the explorations but it would be an important factor on realization of them and strengthening scientific gains and repercussions. In this presentation, we introduce two attempts building a community. One is a community developing a broadband seismometer for a future lunar-planetary exploration and the other is a school of data analyses of lunar-planetary missions such as "HAYABUSA" and "KAGUYA".

Lunar-A was the Japanese mission to explore the lunar interior by building an observation network with penetrators having short period seismometers and heat flow probes. It was however cancelled in 2007 due to a large delay in completion of penetrator technology. Although the seismometer technology is applied in commercial seismometers, scientists working in the projects had severely less gains from the project. A lunar-planetary exploration is very expensive and often forced to be ambitious with hard technical hurdles, and does often not go as scheduled. We should have a strategy in development of an instrument that scientists participating the project can get gains in such a situation. We currently develop a broadband seismometer for a future lunar-planetary exploration and manage that the development team is not specialized to a specific project and has intention to apply it to terrestrial seismology from the lesson in the Lunar-A project. The team consists of not only scientists developing the broadband seismometer but also researchers in ocean bottom seismology and terrestrial broadband seismology, seismological analysts and theorists, and those in planetary sciences. We have a monthly meeting in which we report recent progress in the development of the seismometer, current situation of lunar-planetary exploration projects, that of the OBS project and topics in seismology and planetary sciences. We hope and enjoy the discussion producing a new science and technology in the development process.

The other attempt is the school of data analyses of lunar-planetary missions. We feel that there is a gap of thinking between a project team and its surrounding community in the previous missions to the moon and the asteroid Itokawa. It is however necessary for us to have a sense of unity between them in progress of a large project, and it will be more and more. The school is managed that we provide young researchers and students with an opportunity to deal with data from the missions and enjoy them. Through the school activity, we hope they will be main players in a future mission and strong supporters leading the surrounding community. In planning a future mission, it must be a common obligation in both the project teams and community to make use of the data from the previous missions as much as possible. We also hope the school is a help in that point. We however feel concern that only the school is not enough powerful to realize future plans discussed in "the coming 10 years". In this presentation, we would discuss how we can raise utilization of the data from "KAGUYA" and "HAYABUSA" maximum and how we can build a strong community.

Keywords: lunar and planetary explorations, community, Lunar-A, broadband seismometer, data analyses, school