

Planetary Science Consortium

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Space exploration in Japan starts from the conception stage, and after going through so-called phase A (concept study), B (development research), C (development), D (operation), it leads to the result creation using acquired data. JAXA, as an "execution organization", carries out projects responsibly in phases A to D, but in principle, the first conception stage and the creation of the final results are left to the self-help of individual research groups and individual researchers. However, in space exploration, JAXA cannot evaluate various mission proposals and equipment proposals from scratch, and it is required to select them in advance. In the stage of achievement creation, the community must adjust the balance between priority on data use of project researchers and prompt data disclosure to maximize scientific results. In this way, at the entrance and exit of the project, the community has a heavy responsibility, and it is necessary to have a system that only bears the responsibility.

At the mission concept stage, the community is responsible for basic development of onboard equipment, brushing up the mission proposal, and prioritizing within the community. On the other hand, as the research group (RG) organized at this stage develops into a working group (WG) ⇒pre-project in the conceptual examination and project preparation stage, the community and ISAS members must work closely together. In particular, in the mission concept - concept examination stage, it is important to return the experience of equipment development at ISAS to universities. On the other hand, the community supports the concept examination and project preparation by ISAS through realistic simulation which is generally difficult to be recognized as a "research result". At present, there is no responsible system in the planetary science community, and there is a serious obstacle to cooperation with ISAS. Chiba Institute of Technology and ISAS have established a timed collaboration base for asteroid flyby mission DESTINY+, and are working on this problem, and it is necessary to further expand the activities of such cooperation in the future.

In top-down projects such as Artemis, individual research groups are incorporated directly into JAXA projects. In order to reflect the future plans and roadmaps of each field of community, it is necessary to reach out to JAXA through ISAS, but the construction of such systems is currently being explored. In top-down projects implemented for the purpose of security and industrial promotion, in order for the planetary science community to maintain a consistent scientific strategy, various options for onboard equipment must be always available. In order to do so, it is necessary to have a command tower to supervise strategic equipment development and information distribution in the community. The education of interdisciplinary human resources is the duty of a university that values basic education more than JAXA specialized in space technology. In realizing Japan's planetary exploration projection together with ISAS, it can be seen that the planetary science community is required to play various roles, and we propose a planetary science consortium as a system to play such a role.

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