

APRSAF-18 SEU WG

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Summary of Space Environment Utilization Working Group (SEU WG)

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SEU WG Presentations (1/8)

- SEU WG
 - Attended by 25 participants from 12 Organizations of 7 countries
 - 16 presentations on activities and achievements
- Japan (JAXA) introduced the SEU WG summary of the 17th session of APRSAF
 - The results of the WG in last APRSAF.
 - Action items and its current status.

SEU WG Presentations (2/8)

- Japan (JAXA) updated the KIBO utilization status
 - JEM utilization activity in CY 2011
 - Science experiments in various areas.
 - Launch schedule of the new payloads.
 - Collaborative activities with SEUWG members
 - Parabolic flights, Space Seed for Asian Future (SSAF2010-2011), Protein Crystallization Experiment, etc.
- Japan (JAXA and JSF jointly) reported
 - The status of the activity of the task force
 - Recommendations and lessons learned from the student parabolic flight in 2011.

SEU WG Presentations (3/8)

- Japan (Japan Space Forum, JSF)
 - Updated Status of the KIBO Hi-Vision Earth View Educational System.
 - Real time images taken from Kibo will be distributed to school student not only in Japan but also Asian countries.
 - High Definition TV cameras will be launched by HTV-3 next year, and the educational program is expected to start from next summer.
 - Introduced the plan of 1st APRSAF Satellite Design Contest in 2012.
 - 2012 is the 20th anniversary of satellite design contest in Japan.
 - Together with this memorial event, JSF is proposing to organize the contest at APRSAF-19 next year.
 - Details will be posted on JSF's website early next year.

SEU WG Presentations (4/8)

- Japan (Manned Space Systems co., JAMSS) presented
 - Typical necessary activities for space experiments, such as making a mission scenario and its requirements, crew training, safety analysis, hardware verification etc.
 - The best practices of the expanding space-seeds-related activities, involving many interested people, carried out in Japan.
 - The assistance made by JAMSS for the real-time communication events.
 - Various examples on commercial utilization using Kibo, such as the Space Shoes, launching memorial items, etc. Practical information to realize the similar mission were also given.
 - The practical procedure of Kibo operation and the Astronaut training program.

SEU WG Presentations (5/8)

■ Indonesia (LAPAN)

- Introduced the Space Science Festival organized in Indonesia in 2011.
- Reported the preparation activities made for SSAF and the plan to use the seeds e.g. cultivation, 3D-clinostat experiment.
- The idea of the Space Fruits for Asian Future was presented as a possible future mission.

■ Indonesia (Institute of Technology, Bandung)

- Reported results of ground experiments on ripening of Banana, and showed significant differences due to conditions such as simulated micro-gravity.
- Proposed a project "Space Fruit for Asian Future" as a next step of the Space Seed project.
 - Experimental requirements
 - The selection of fruits

SEU WG Presentations (6/8)

- Korea (KARI) reported
 - Progress of the KARI-JAXA feasibility study for joint space experiment.
 - Result of the theme selection (The theme on muscle atrophy was selected as a candidate and 3 were selected as back up).
 - Status of the grand level prototype development.
 - Development of the micro-gravity research facility and apparatuses, e.g. 1.5 sec drop tower facility, clinostat equipment, and small drop tower for educational purposes.
 - Result of the CFD simulation of smoke flow of a fire in an orbital module.

SEU WG Presentations (7/8)

- Malaysia (ANGKASA) reported
 - The micro-gravity sciences program in Malaysia.
 - Local cooperation and international cooperation through various frame work, e.g. APRSAF, UN, JAXA, ROSCOSMOS, ESA and NASA are ongoing.
 - The highlights of Micro-gravity program in 2011
 - Results of the parabolic flight carried out in Nagoya, JAPAN, under the cooperation with JAXA.
 - 4 seminars on micro-gravity research held in Malaysia with the support of JAXA, education and outreach activities.
 - Organizing the Handing-over-ceremony of Space Seeds.
 - Hosting the UN expert meeting in November 2011.
 - Protein crystallization studies were conducted
 - Status of the utilization of the seeds and the scheduled events.

SEU WG Presentations (8/8)

- Vietnam reported
 - The importance of the participation, for Vietnam, in the Space Seed project.
 - Preparations which were made for the project, the status and schedule of local activities using returned Seeds.
 - Suggestions to JAXA, of putting the theme regarding space utilization in the Winter School's subject and having a fund of scholarship for Asian students.
 - Requests for JAXA to participate events on the Space Seed which would be organized by Vietnam.

Demonstration

- Japan introduced
 - a miniature drop tower and made its demonstration at SEUWG and SEAWG.



- the video of Try Zero G: the scientific experimental micro-gravity demonstration in ISS conducted by Astronaut Furukawa, in SEUWG, to introduce the program and to encourage the participants to apply the program next year.

SEU WG Discussion (1/2)

- JAXA proposed to launch a new initiative to promote ISS utilization, and the following items are explained:
 - The purpose of the initiative.
 - To share the significance and value which Kibo/ISS will bring to human beings and to produce new cooperation projects on Kibo/ISS utilization
 - To promote the production of new cooperation on the Kibo/ISS utilization more systematically with active participations.
 - Examples of activities expected in the initiative
 - Outreach activities related to ISS projects
 - Capacity building for utilization of space environment
 - Cultivation of new orbital experiment in Kibo among Asia-Pacific countries.
 - “Promotion of Asian Cooperation on Kibo/ISS Initiative (PACK-I)” was proposed as the initiative’s name.

SEU WG Discussion (2/2)

- Discussions and comments

The following views were expressed

- Japan should share the resources in this initiative.
- As for the membership, one organization in one country to integrate activities, including non-space organization in the respective country.
- Simple experiments using Multi-purpose Small Payload Rack or Exposed Facility including small satellite deployment, should be made available. To find ways to realize them is a purpose of this initiative.
- The High-Vision Earth View would be one of the preferred activities in this initiative.
- In order to make this initiative a success, the members of this initiative should share the common goal.

- Conclusion:

- SEUWG agreed to launch the initiative.

Student Parabolic Flight

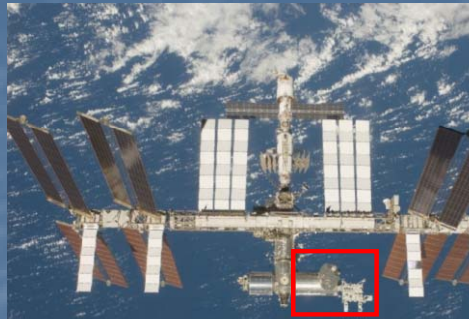


Students from Malaysia and Thailand participated the experiment in 2010

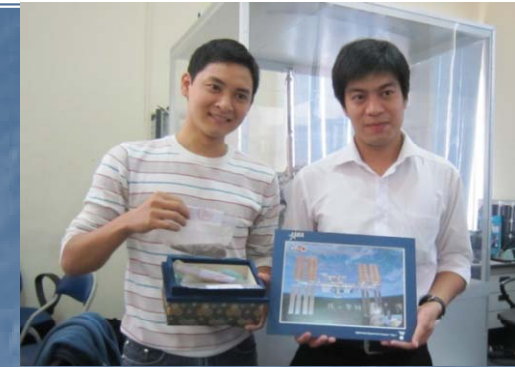
Space Seeds for Asian Future(1/2)



Space Seeds for Asian Future(2/2)



Asian seeds in Kibo



Seeds returned to Vietnam



HTV-II



Seeds distribution in Indonesia



Ceremony in Malaysia

Returned to Thailand¹⁵

Expanded Kibo Utilization in Asia-Pacific Region

Scientific demonstration proposed by children in Asia-Pacific countries.



Real time communication between Fiji and Kibo



Fiji



Bangladesh



Malaysia



Australia



Joint Sessions with EOWG and SEAWG

- Astronaut NOGUCHI of JAXA gave a key note speech under the title of “Earth View from ISS”.
- The understanding: the Earth view from ISS would be effective for the observation of natural disasters and environment, was shared in the joint session.

Common Understandings

- The Space Seeds for Asian Future (SSAF) 2010-2011, which started last year, is in progress. It is important to continue the efforts to complete the project by making the best use of the seeds returned from space.
- KARI/JAXA and LAPAN/JAXA feasibility studies made progress, and should proceed to the next step.
- The cooperation on the Protein Crystallization Experiment between ANGKASA and JAXA is going on successfully.
- The parabolic flight in 2010 was successfully conducted and should be continued. The lessons learned through the experiments should be applied to the coming parabolic flight micro-gravity experiments.
- Educational activities, such as the Hi-Vision Earth View, HANA-DENSETSU etc, should be enhanced.
- The examples of Kibo utilization introduced by Japan, such as events on space seeds, commercial utilization etc, give good references for Asian countries as various kinds of Kibo utilizations.
- Practical information of preparation and operational procedure of experiment in Kibo provided by Japan is useful.

Action Items

- Terms of Reference (TOR) of the initiative should be discussed and completed by the end of next March.
- Each participating agency in the SSAF submit the official status report (by the end of 2011) and final report of the project (when it is finished).
- JAXA provides participants with the information on themes done in Try zero G up to now in order to avoid the duplication.
- JAXA put the information and the Video of the Drop tower demonstration on the KUOA website.

Conclusion and Recommendations of SEU Working Group (1/2)

Conclusion:

- SEUWG agreed to launch the new initiative (PACK-I) to promote utilization of Kibo, recognizing the importance of participating members' further efforts towards producing new collaborative projects on Kibo/ISS in the Asia-pacific region.

Conclusion and Recommendations of SEU Working Group (2/2)

Recommendations:

- enhance efforts to create new cooperative projects through new initiative in science, education and outreach of the space environment utilization, taking into account the progress of cooperative activities, such as
 - the protein crystallization experiment,
 - the Space Seeds for Asian Future(SSAF) 2010-2011,
 - the parabolic flight micro-gravity experiments,
 - the bilateral feasibility studies, and
 - the Try Zero G experimental demonstrations.
- agencies which participated in the SSAF project started last year are strongly encouraged to continue their efforts to complete the project by making the best use of the seeds returned from space.
- enhance Earth observation of natural disasters and environment from ISS, sharing its importance through the joint session held by SEUWG, SEAWG and EOWG.