

Japan's International Cooperation in the Field of Space

Committee on the Peaceful Uses of Outer Space
56th Session
Vienna, 13 June 2013

Ministry of Education, Culture, Sports,
Science and Technology (MEXT)

Japan's leading-edge technology cultivated through international cooperation

Frontier of Asia

ex: **ISS**

A-Train



sharing the technology/knowledge

Contribution to Asia

ex: **APRSAF**



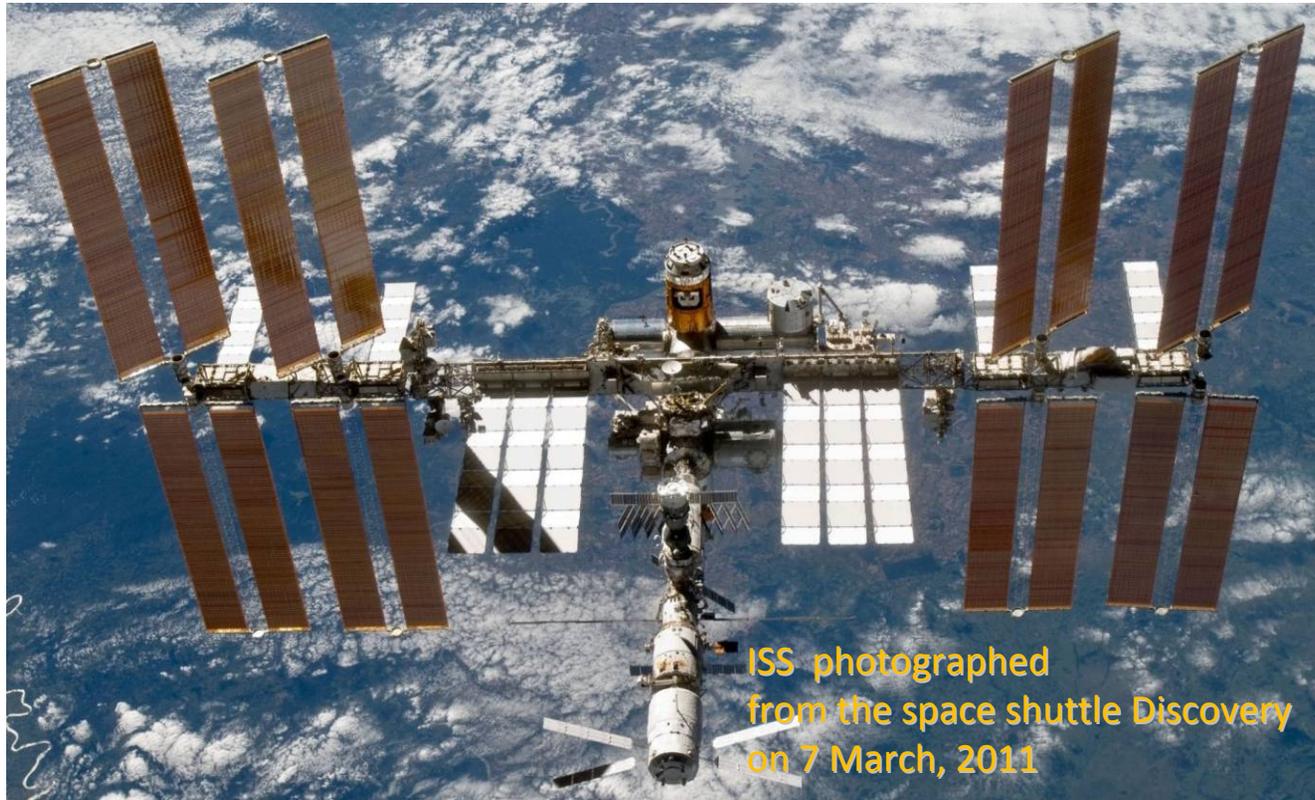
Contribution to regions outside of Asia

ex: **Turkey**
Africa





International Space Station Program



- Manned orbital facility for cutting-edge research and development, only for peaceful purposes.
- The largest international program in history, with the participation of **15 countries**.
- **Japan is the only nation** participating in ISS program from Asia.

Heads of Agencies



(yr. 2010, Tokyo, Japan)



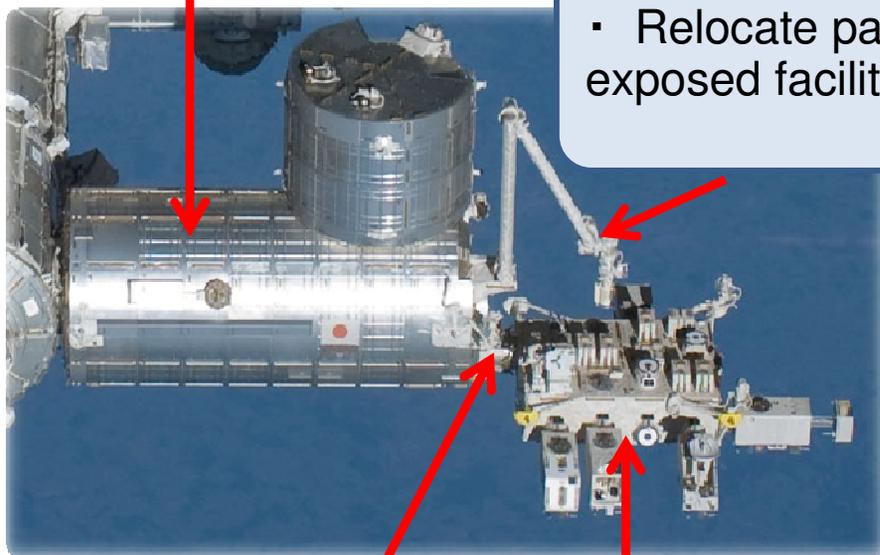
Japan's Contribution to the ISS Program : Japanese Experiment Module and H-II Transfer Vehicle

Pressurized Module

- The largest pressurized module on ISS
- 10 payload racks can be installed

JEM Remote Manipulator System (JEM RMS)

- Relocate payloads on the exposed facility without EVA



Japanese Experiment Module: Kibo

JEM Airlock

- Transfers equipment to/from exposed area

Exposed Facility

- Only full-scale external experiment area on ISS

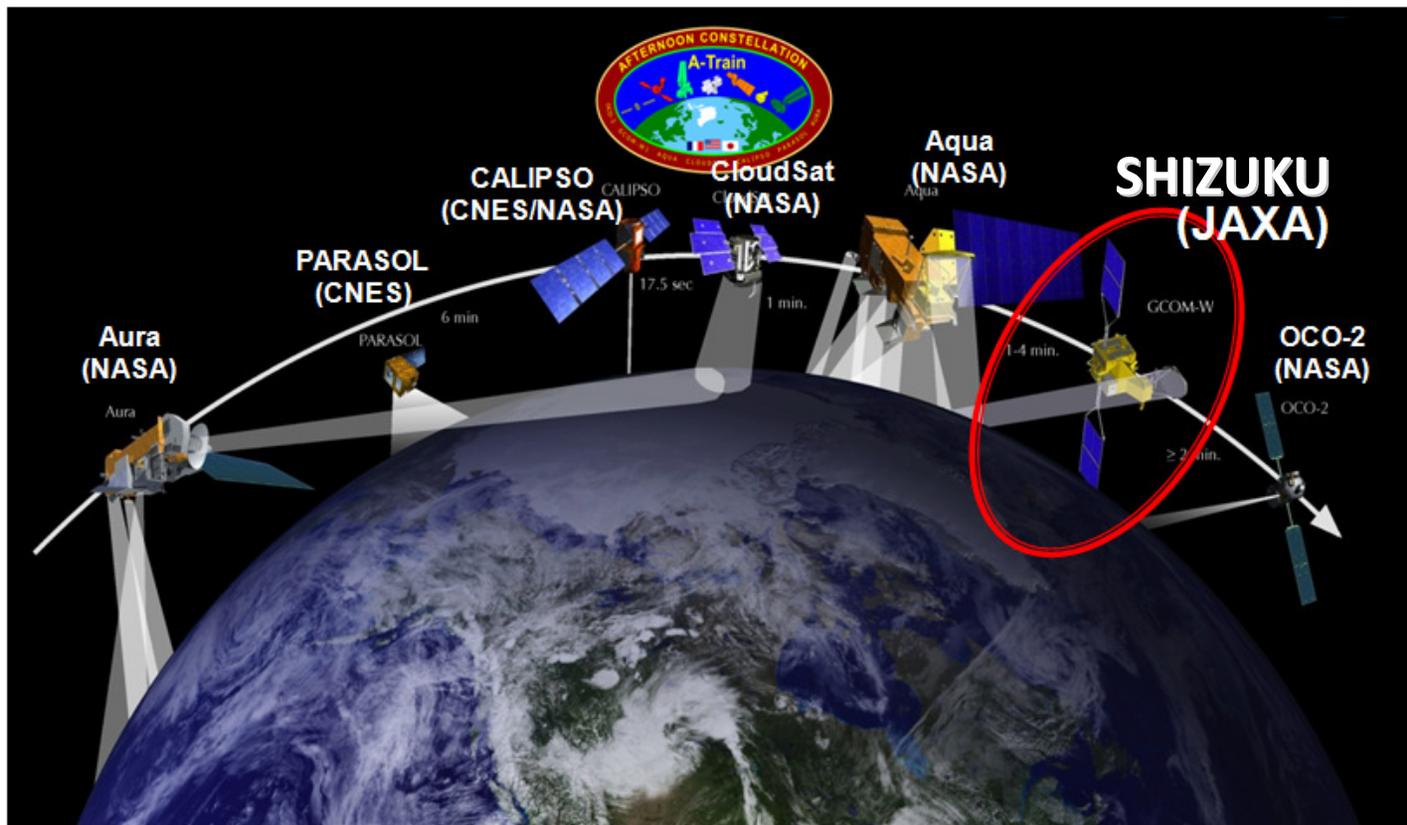


H-II Transfer Vehicle: HTV

- ① The sole transportation vehicle that can transfer large pressurized experiment rack to the ISS.
- ② Delivered total 6 tons of pressurized and unpressurized cargo to the ISS.
- ③ 7 HTVs launched in total (3 have been launched)

Japan's contribution in A-Train

- A-Train is an earth observation satellite constellation run by NASA.
- Multiple satellites enable countries to cooperate in earth observation by sharing data.
- Participants: NASA, CNES and JAXA
- Japan is contributing to an international cooperation in earth observation.



Japan's contribution to Asia

- APRSAF : Asia-Pacific Regional Space Agency Forum

Participation

- Space agencies
- Governmental bodies
- International organizations
- Universities
- Research institutions
- Private entities
involved in space activities.

Organizers

- MEXT, JAXA
- Local host organizations.

**Presently the largest space community
in the Asia-Pacific region.**

Established in 1993 after the Asia-Pacific
International Space Year Conference (APIC)
in 1992.

APRSAF-19 (2012): in Malaysia



Features of APRSAF

Goal

- To promote and expand space activities through the development of space technologies and its applications for socio-economic development in Asia and the Pacific.

Objectives

- Provide a forum where agencies and international organizations in the Asia-Pacific region gather to exchange views, opinions and information on space activities.

- Identify and undertake measures to contribute to the sustainable development in the region.

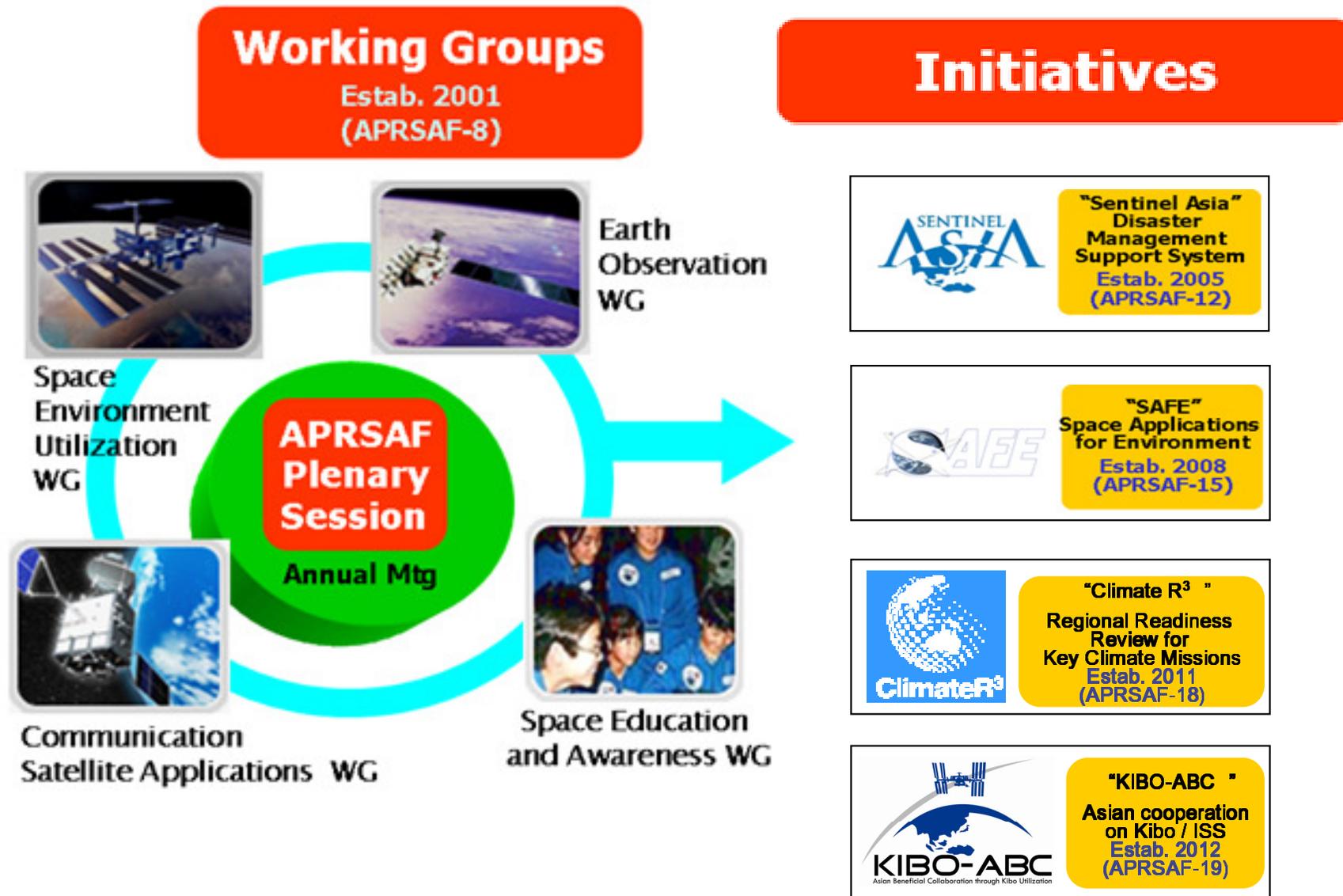
- Promote and expand mutually beneficial cooperation in the region.

Approach

- Open and flexible framework for cooperation.

- Participation on a voluntary basis

Structure of APRSAF



Examples of Regional Cooperation through the use of ISS in Asia

Bilateral Cooperation

➤ Cooperation between Malaysia

Malaysia (ANGKASA) has been conducted its high quality protein crystallization experiments 6 time so far in the cooperation with JAXA

The experiments in Kibo are implemented through the cooperation between JAXA and FSA(Russia)



Malaysia

Multilateral Cooperation

➤ Cooperation among 9 countries

Through the Kibo-ABC initiative, which is a framework to promote the international cooperation in the use of Kibo, JAXA is cooperating with 8 countries in Asia-Pacific region,



Japan's contribution to countries outside of Asia

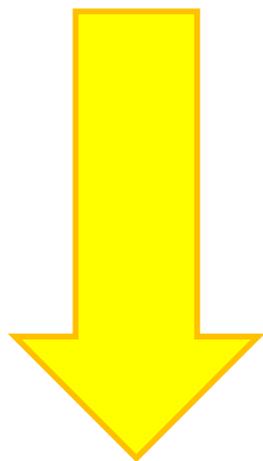
- Taking advantage of Japan's accumulated space technology

- Methods of concrete contribution
 - Establishing space agencies
 - Enhancing human resources in the field of space

Example 1: Japan's contribution to Turkey

Concern of Turkey

- ◆ Establishment of a space agency in Turkey
- ◆ Enhancement of human resources in the field of space
- ◆ Promote strategic cooperation between Turkey and Japan



- ✓ Japan's plentiful experience in establishing a space agency (JAXA) and in capacity building in the field of space

Japan's contribution

- Establish a space agency in Turkey
- Provide a training course

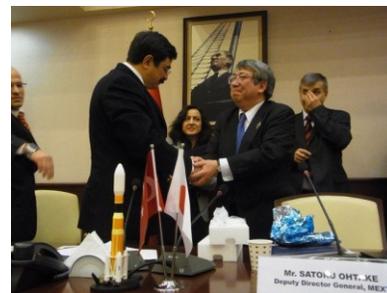
Scheme of contribution

1. Share our experience to contribute to establish Turkey's space agency



➤ Workshop in Turkey

Japan initiated a workshop mainly on capacity building of satellites and space activities in Turkey.



2. Provide the training course in response to Turkey's request



➤ Training in Japan

Japan held a training program in Japan on our country's structure/framework of space related agencies and the technology of remote sensing satellites.



We will continue to strengthen Japan-Turkey space cooperation for mutual benefit.



Example 2: Japan's contribution to Africa

Situation in Africa

- ◆ Large and broad land
- ◆ Rapid development socially and economically



- ✓ The use of remote sensing satellites will be beneficial for development.
- ✓ Enhancing human resource in the field of space will be further effective.



Japan's contribution

MEXT/JAXA will initiate a new 3-step program to contribute to capacity building in remote sensing using satellites in African countries.



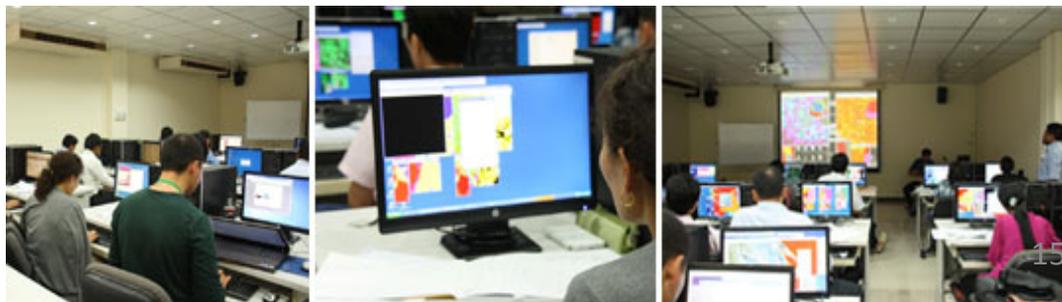
Step 1: Seminar and technical tour on remote sensing

- Target: African embassy attaches in Japan
[around 20 to 30 persons]
- Content: Introduction of fundamental principles and examples of application of remote sensing technology
(Technical tours to JAXA's Tsukuba Space Center, etc.)
- Schedule: Autumn 2013 or later [will be held twice]



Step 2: Basic workshop on the use of remote sensing

- Target: Engineers from African countries
[about 2 persons per country (20 to 30 persons in total)]
- Content: 3- to 4- day workshop at a host country in Africa
Participants will be able to understand the overall system, types, use of remote sensing, etc., and will learn the basic technology on how to process and analyze data from earth observation satellites.
- Example: Basic technology training on application of remote sensing data using archive data of ALOS
- Schedule: 2014(TBD)



Step 3: Technical training for remote sensing engineers

- Target: Engineers from countries that participated the Basic Workshop
[1 person per country (around 10 persons in total)]
- Content: 2 week training in Japan
Participants will learn specific methods on how to use remote sensing data to solve their issues in their space application field of interest.
The training aims to enhance human resources so that they can expand the technology acquired through this technical training in their home country.
- Schedule: 2014(TBD)

Conclusion

- ◆ **Space technology is beneficial to enhancing people's lives.**
- ◆ **Japan is ready to cooperate with countries around the world to let people enjoy a rich life, using space technology.**