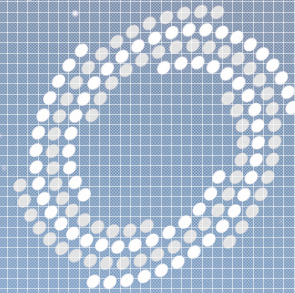


**48th COPUOS-STSC  
Vienna, Austria**



**APRSAF**

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# **Summary of APRSAF-17**

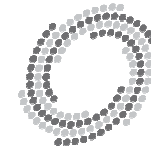
***" The role of space technology and  
industry in addressing climate change "***

**7 February 2011**

**Yasushi Horikawa**  
**Technical Counselor**  
**Japan Aerospace Exploration Agency (JAXA)**



# APRSAF-17: Overview



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## ■ Date/Place:

23-26 November 2010, Melbourne, Australia

## ■ Theme:

“The role of space technology and industry in addressing climate change”

## ■ Organized by:

### Australia:

- Department of Innovation, Industry, Science and Research (DIISR)

### Japan:

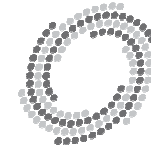
- Ministry of Education, Culture, Sports, Science and Technology (MEXT)
- Japan Aerospace Exploration Agency (JAXA)

## ■ Participants:

Approximately 230 from 23 countries/region and 11 int'l rganizations



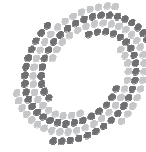
# APRSAF-17: Activities



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- 
- **1<sup>st</sup> & 2<sup>nd</sup> Day:** Working Groups meetings.
  - **3<sup>rd</sup> & 4<sup>th</sup> Day:** Plenary sessions, incl.:
    - Reports by 9 countries
    - Speeches by representatives of the int'l organizations: UN COPUOS, APSCO and ADB
    - Special Session "Regional Capacity Building Programs"  
Speakers: MEXT, JAXA/AIT, RESTEC, ISRO etc
    - Panel Discussion "The role of space technology in addressing climate change"  
Panelists: JAXA/UN COPUOS, ADB (Asian Development Bank), UNSGAB (UN Secretary General's Advisory board on Water and Sanitation) etc
    - Recommendations adopted by APRSAF participants
  - **Side Events:** SAFE Workshop, GNSS Workshop, Poster Contest, Water Rocket Event

# APRSAF-17: Highlights (1)



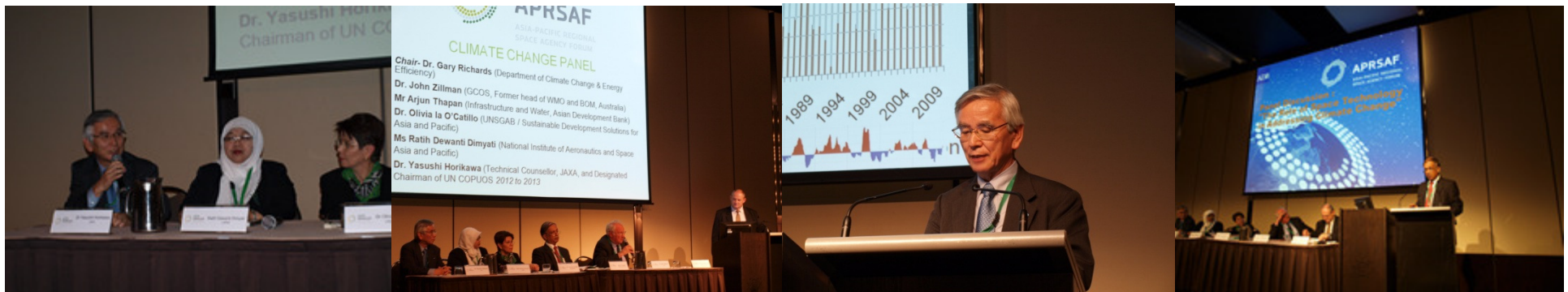
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## New Initiative

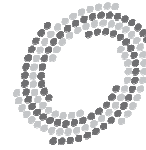
- Recognize the challenges and needs in connecting space technologies with in-country applications and systems, and in coordinating efforts on application activities among member agencies, recommending that this be a consideration of the Climate R3 (APRSAF Regional Readiness Review for Key Climate Missions) study.

## Climate Change Panel

- Appreciate the insightful Climate Change Panel discussion which emphasized importance of space technologies, international cooperation, data and information sharing, capacity building, continuity of observation systems and information, etc in addressing climate change issues.



# APRSAF-17: Highlights (2)



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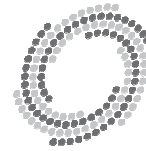
## Regional Capacity Building Programs

- Recommend that APRSAF secretariat build a portal site for capacity building programs on the APRSAF website to ensure easy access to menu, providers, and schedule of capacity building programs, and invite organizations which are also providing capacity building programs. to provide their information such as URL to APRSAF secretariat.
- Welcome the establishment of UNIFORM and encourage young researchers and engineers of space organizations in Asia-Pacific region, to participate in the new frame work in cooperation of STAR program and UNIFORM.





# APRSAF-17: Highlights (3)



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## International Organizations

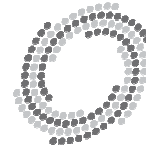
- Welcome presentations from UNCOPUOS, ADB and APSCO and for information sharing among APRSAF participants.

## Expand Asian-Pacific Participation

- Encourage the participation of the China National Space Agency (CNSA) in APRSAF continuously, and ask the APRSAF Secretariat to invite CNSA to attend APRSAF-18.



# APRSAF-17: Highlights (4)



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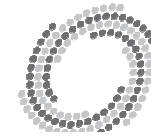
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## Reporting to UNCOPUOS

- Wish that the outcomes of APRSAF-17 be presented by the Chairman of UNCOPUOS at the meetings of the UNCOPUOS in 2011.
- Recommend the Chairman of UNCOPUOS to present the outcomes of APRSAF-17 as regional cooperative structures to other regions such as via 'The Space Conference of the Americas' and African Leadership Conference on Space Science and Technology for Sustainable Development in order to promote inter-regional cooperation as mandated by UN General Assembly.

# APRSAF

## Asia-Pacific Regional Space Agency Forum



APRSAF

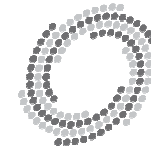
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- **Establishment:** 1993, following International Space Year (1992).
- **Goal:** to promote regional cooperation in space development and applications.
- **Participating entities:** space agencies, government entities, user agencies, and international organizations (regional & global).
- **Objectives**
  - to contribute to (i) the socio-economic development in the region, and (ii) the preservation of the global environment using space technology and its applications.
  - in order to increase benefits for all countries in the region, (i) to explore possibilities for future cooperation among developers and users of space technologies, and (ii) identify areas of common interest and assign priorities for action.

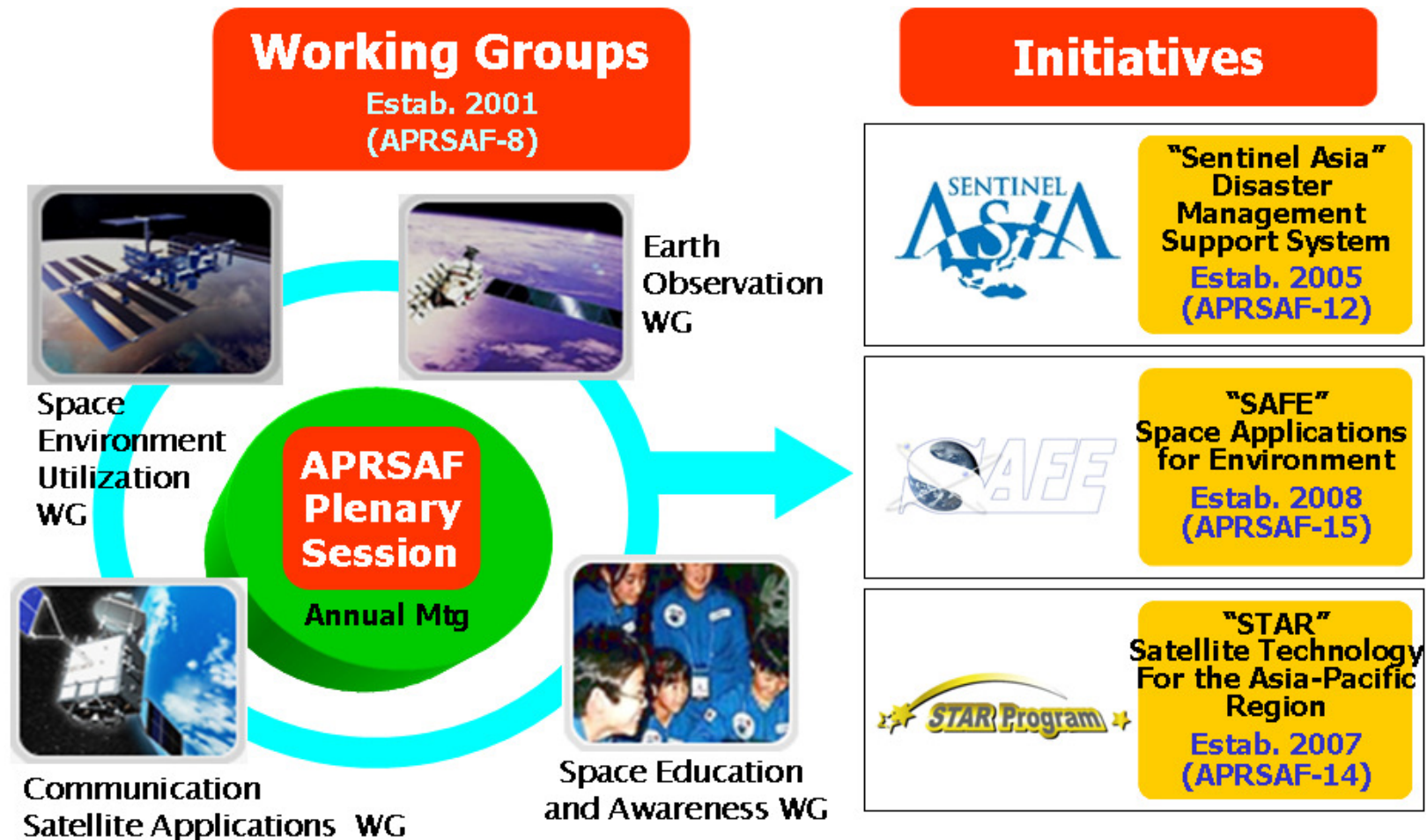
The above are to be pursued while cooperating with space agencies and other relevant entities outside the region that support APRSAF objectives.



# Framework of APRSAF:



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# Recent activities of Sentinel Asia

Utilization of space technology in the field of disaster management

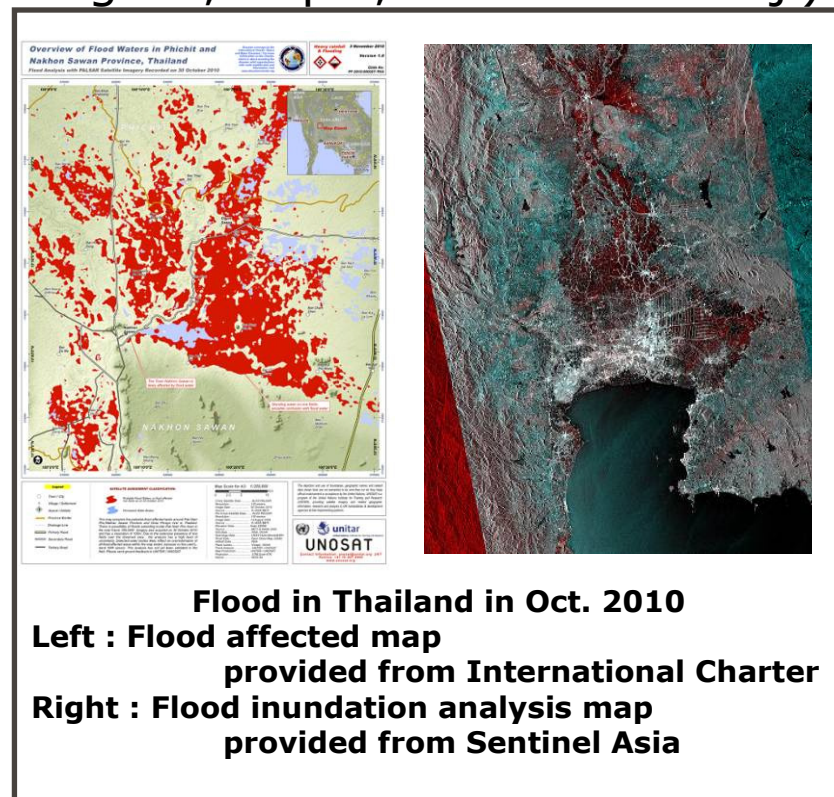
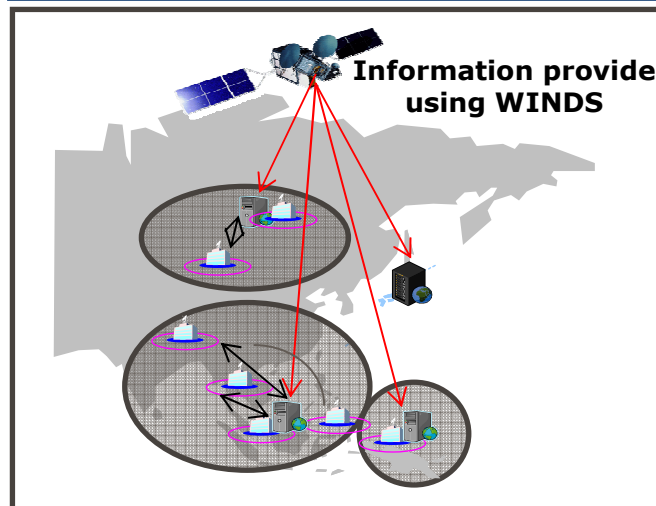
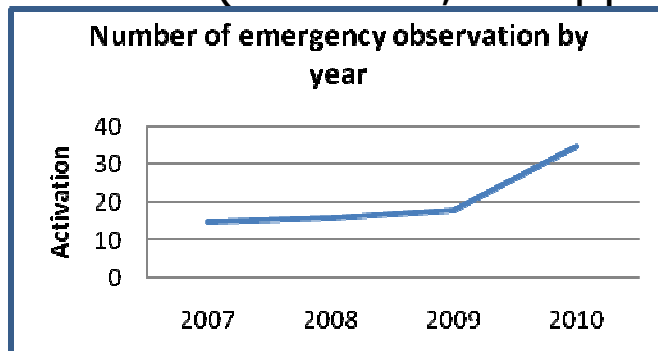


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- Total of 35 emergency observations in 2010.
- First activation of International Disaster Charter from Sentinel Asia in October, 2010
- For prompt provision of information, installed high speed communication satellite 'WINDS' system in six countries.

(Thailand, Philippines, Mongolia, Nepal, Vietnam and Fiji)



# Recent activities of STAR program

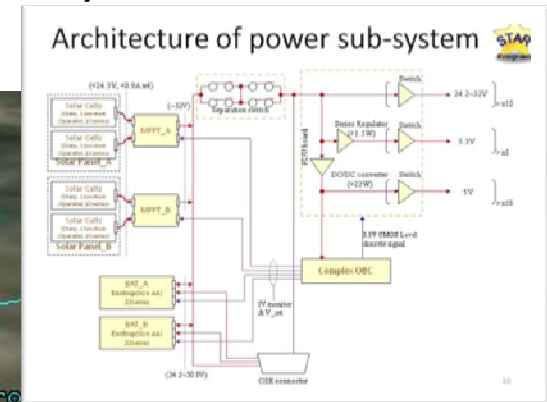
Satellite Technology for the Asia Pacific Region



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- Total of 14 engineers from 6 countries participated STAR program (from June 2009 to January 2011)
- STAR program plans to collaborate with University International Formation Mission (UNIFORM)



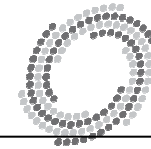
**EO-STAR System Study**

Performances and characteristics	
Mission	Pan/Full: 1ch/3ch
Optical Sensor	Aperture: 4.8m Focal length: 11.1m
GPS/RO	2 GPS Antennas Impedance Probe
Date Transmission	Electron temperature probe X-Band: 180AM, App. 8000bps
Altitude Control	3-axis attitude control
Coverage	±45deg ± 45deg (Cross/Along track)
Agility	45deg/Sec. (Average 1deg/sec)
Orbit	LED Polar Orbit Inclination: Sun Synchronous Local Time of Descending Node: AM10:30
Design Life	3 years
Spacecraft Mass	Bus: 250kg (without Propellant) Mission: 150kg
Propellant	40kg
Power	<Total> App. 450kg
Size	1.4 x 0.8 x 3.0m (in orbit)
Electrical Power	SAP Power: App. 1370 W (at EOL) (for Mission: 400W)
BUS	Advanced Small Standard BUS



# Recent activities of SAFE

Space Applications For Environment



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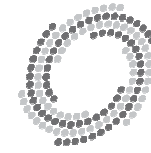
■ The status of SAFE prototypes is as follows

Status	Country	Theme
Success Story	VIETNAM	Integrated water resource management
	VIETNAM	Forest monitoring
On Going	CAMBODIA	Water Cycle and Agricultural Activities
	LAO PDR	Forest monitoring and management
	INDONESIA	Potential Drought Monitoring
	SRI LANKA	Risk of Sea Level Rise on Coastal Zone
	PAKISTAN	Monitoring Water Cycle Variations & Assessing Climate Change Impacts
	SRI LANKA	Modeling ocean frontal zones using high resolution satellite and float data to locate tuna fish aggregations
Newly Approved	THAILAND	Economic Fish Larvae Mapping and Monitoring
	VIETNAM	Mangrove Forest Mapping and Carbon Stock Estimation



Photo : The SAFE workshop in APRSAF-17

# Earth Observation (EO) WG



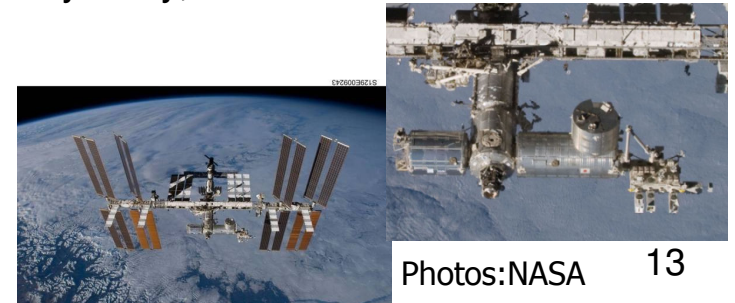
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- Welcome, endorse, and encourage Australia to **pursue the proposal for a significant new APRSAF initiative** in support of regional climate information needs - the APRSAF Regional Readiness Review for Key Climate Missions (Climate R3).
- **Confirm the role of satellite remote sensing for Measurement, Reporting and Verification (MRV)** and current contributions by space agencies.
- **Recommend exploring opportunities** for APRSAF participating countries to contribute earth observation payloads as **technical demonstrators for Kibo/ISS**.
- Endorse not-for-profit **collaboration between APRSAF governmental agencies and private sector** to promote disaster monitoring and outreach & educational activities.

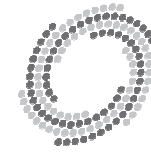
# Space Environment Utilization (SEU) WG

- **Welcome the continued operation of Kibo/ISS** beyond 2015 for full utilization of this unique facility with infinite potential.
- **Recommend to enhance Kibo/ISS utilization opportunities** through the SEU WG task force, in science, education and outreach of space environment utilization, such as Asian Seed project, small payload, and “Try Zero G” activities in recognition of the successful cooperation activities including protein crystallization experiment and progress of bilateral feasibility study, which demonstrate the significance and potential of further Kibo/ISS cooperation.
- **Recommend to enhance ground-based microgravity activities** such as drop tower experiments and parabolic flight, as these have relatively low thresholds to participation, in order to build capacity and prepare to develop on-orbit experiments.



Photos:NASA

# Communication Satellite Applications (CSA) WG



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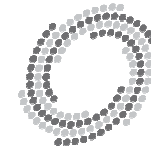
- Agree to share the experiences and opportunities in order to expand the use of applications regarding tele-education, tele-medicine, disaster management and mitigation in the Asia-Pacific region.
- Agree to discuss mechanisms for technology transfer with the aim of not only demonstration but also continuous use including possibilities for hosted payloads with appropriate planning with the active participation of private sector.

## 2nd Asia Oceania Regional Workshop on GNSS (21 & 22 Nov. 2010, Melbourne, Australia)

- **Participants:** 101 people from 67 organizations from 11 countries, including GNSS providers, universities, research institutes and agencies.
- **Result of discussions at the APRSAF-17**  
Welcome the successful launch of the QZS-1 satellite and the establishment of the Multi GNSS demonstration campaign in the second Asia Oceania regional workshop on GNSS, and recommend the promotion of the Multi GNSS applications through the campaign with support of APRSAF.

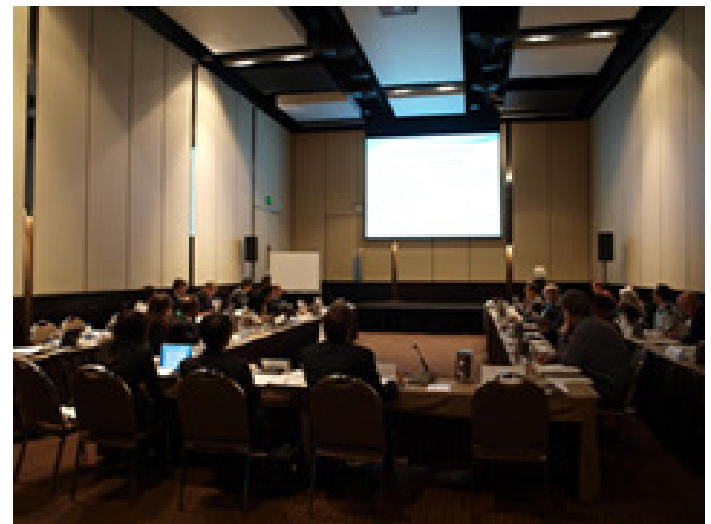


# Space Education and Awareness (SEA) WG

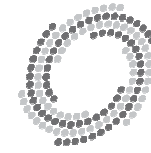


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- Call upon APRSAF participating countries and international organizations to support space education activities to enrich youth development, and to take a leading role in activities on space education and awareness including educators' training and development and distribution of educational materials.
- Recommend that the advanced educational activities should be developed by sharing resources with other WGs, such as astronauts, ISS, satellite imagery, for the enhancement of educational opportunities and the improvement of quality.



# APRSAF-17: Side Events



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## Poster Contest

### Special Poster Awards



Indonesia



Japan



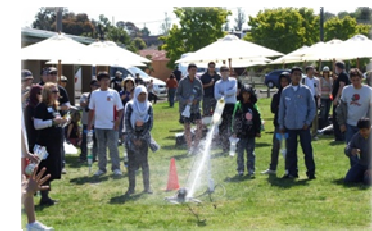
Indonesia

### Best Award

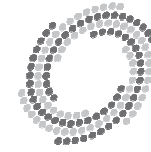
- Organized annually since 2006
- For students 8 - 11 years old
- Theme for 5th Poster contest: "Space Technology to Help the Earth"
- 23 posters submitted from 9 countries

## Water Rocket Event (20-21 Nov. 2010)

- Organized annually since 2005
- For students 12 - 16 years old
- Co-organizers: Department of Innovation, Industry, Science and Research (DIISR) and Japan Aerospace Exploration Agency (JAXA)
- Local organizer: Victorian Space Science Education Centre (VSSEC) of Australia
- Teachers & Student Program on Nov20
- Launch Competition on Nov 21
- Participants: 33 students and 34 educators from 12 countries
- 6th Water Rocket Event and 5th Poster Contest (theme "Space Technology to Help the Earth") will be held in conjunction with APRSAF-17



# Welcome to APRSAF-18!!



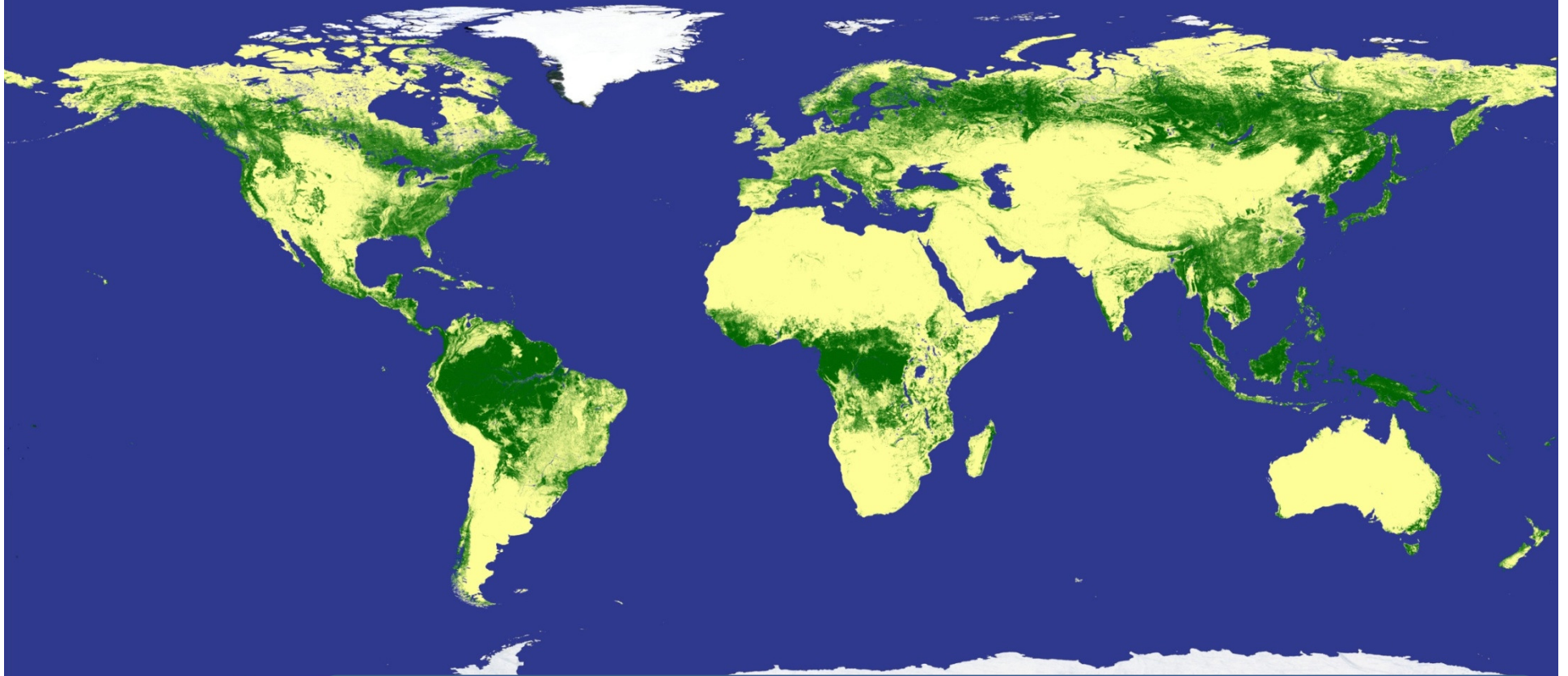
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- **Date/Place:** 6-9 December 2011, Republic of Singapore
- **Venue:** Marina Mandarin Hotel  
6 Raffles Boulevard, Marina Square, Singapore 039594
- **Co-hosts:**
  - Singapore:**
    - Singapore Space and Technology Association (SSTA)
    - Centre of Remote Imaging, Sensing and Processing (CRISP) of National University of Singapore
  - Japan:**
    - Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT)
    - Japan Aerospace Exploration Agency (JAXA)





# ALOS 10m Global Forest/Non-Forest Map 2009



©JAXA, METI Analyzed by JAXA

-  **Forest**
-  **Non forest**
-  **WATER**

Green color indicates forests, which are defined as the area of biomass higher than 100 ton/hectar, and yellow indicates non-forest areas.  
This Figure is compiled by processing images acquired by the PALSAR during the dry season between June and September 2009 .



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**Thank you for your attention.  
[www.aprsaf.org](http://www.aprsaf.org)**