SECOND ANNOUNCEMENT

The 18th Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-18)

“A regional collaboration for tomorrow’s environment”

6-9 December 2011, Singapore

Dear Sir / Madam,

With reference to the 18th session of the Asia-Pacific Regional Space Agency Forum (APRSAF-18), the holding of which was communicated to you in its First Announcement distributed earlier, we are pleased to forward to you the Second Announcement as enclosed. As you will note, this Announcement contains further details of the scheduled meetings, including those of the four working groups, updated schedule of events and other important information for the participants, such as the registration, accommodation and visa requirements.

On behalf of the co-organizers, we should like to stress that your participation is very important for the success of the APRSAF-18. With your profound experiences as well as your valuable thoughts and insights, we believe that the APRSAF-18 should be able to yield tangible results. We count on your support also to ensure the good representation of your organization, with many experts and managers of your organization to join us at the APRSAF-18.

In order to make all necessary arrangements in time for the APRSAF-18, we would be grateful if you could register your participation **no later than 31 October 2011** through the following web site: “https://www.prime-pco.com/aprsaf18/registration.html”
Any additional information concerning the APRSAF-18 will be directly sent in due course to those who have registered and will be made available on our APRSAF website, “http://www.aprsaf.org/”.

We look forward to meeting you in Singapore.

With warmest regards,

On behalf of the co-organizers of the APRSAF-18,

Jonathan Hung  
President  
Singapore Space and Technology Association

Kwoh Leong Keong  
Director  
Centre for Remote Imaging, Sensing and Processing  
National University of Singapore

Tetsuhiko Ikegami  
Chair  
Space Activities Commission  
Ministry of Education, Culture, Sports, Science and Technology

Keiji Tachikawa  
President  
Japan Aerospace Exploration Agency
The 18th Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-18)
“A regional collaboration for tomorrow’s environment”
6-9 December 2011, Singapore

Organizers
The 18th session of the Asia-Pacific Regional Space Agency Forum (APRSAF-18) will be co-organized by the following organizations:
Singapore: Singapore Space and Technology Association (SSTA)
Centre for Remote Imaging, Sensing and Processing (CRISP) of the National University of Singapore
Japan: Ministry of Education, Culture, Sports, Science and Technology (MEXT)
Japan Aerospace Exploration Agency (JAXA)

APRSAF-18 will be also supported by the following organizations:
Singapore: Science Centre Singapore (SCS)
Japan: Strategic Headquarters for Space Policy, Cabinet Office
Ministry of Foreign Affairs

Dates and Venue
Date: 6-9 December 2011
Venue: Marina Mandarin Singapore
Marina Square 6 Raffles Blvd, Singapore 039594

Registration
Please visit the following registration site and complete your registration online no later than 31 October 2011:
https://www.prime-pco.com/aprsaf18/registration.html

Participation in the APRSAF-18 is free of charge, and there is no registration fee.
Overall Schedule of APRSAF-18 & Relevant Events

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Venue</th>
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<tr>
<td>3-4 Dec. 2011</td>
<td>Water Rocket Event</td>
<td>Saints Hilda’s Secondary School</td>
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<td></td>
<td></td>
<td>(tentative)</td>
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<tr>
<td>5 Dec. 2011</td>
<td>SAFE Workshop</td>
<td>Marina Mandarin Singapore</td>
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<tr>
<td>6-9 Dec. 2011</td>
<td>APRSAF-18</td>
<td>Marina Mandarin Singapore</td>
</tr>
<tr>
<td>6-9 Dec. 2011</td>
<td>Poster Contest</td>
<td>Marina Mandarin Singapore</td>
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Tentative Program
The working group sessions will take place on 6 and 7 December 2011. Proposed outlines for the working groups as well as initiatives are contained in Appendix-A.

As for the overall program, please refer to Appendix-B.

Welcome Reception
A reception will be organized on Wednesday evening, on 7 December 2011, to be jointly hosted by SSTA, CRISP and MEXT to welcome the participants of the APRSAF-18. The exact time and venue of the reception will be announced in due course:

Technical and Cultural Tours
Technical and cultural tours would be organized by SSTA and CRISP for interested participants. Further details of the tours, including the information on registration for participation in the tours, will be provided to the registered participants in due course.

Date and time: Friday, 9 December 2011, from 16:00 hrs. (exact starting time to be confirmed)
Destinations: Tour 1: Centre for Remote Imaging, Sensing and Processing (CRISP) of the National University of Singapore
Tour 2: Singapore Technology Electronics – Satcom & Sensors
**Visa**
It is important for those participants from countries other than Singapore to check their visa requirements for entry into Singapore. The list of countries requiring visa is provided on the website of the Immigration & Checkpoints Authority of Singapore Government at the following URL address: [http://www.ica.gov.sg/services_centre_overview.aspx?pageid=252](http://www.ica.gov.sg/services_centre_overview.aspx?pageid=252)

However, in case of doubt, it is strongly recommended that you contact, as soon as you can, the Embassy or Consulate of Singapore in your country to ascertain whether or not you require a visa and to confirm details of visa requirements, if any. Please note that it may take a few weeks to obtain a visa following the submission of visa application.

We should like to note that any cost involved in obtaining the visa should be borne by the participant concerned.

Any participant who requires an invitation letter from the local organization in Singapore for visa application purposes should contact the following person in charge of the matter:

Ms. KOH Poh Loo  
Centre for Remote Imaging, Sensing and Processing, National University of Singapore  
TEL: +65-6516-5171, FAX: +65-6775-7717  
E-mail: crskpl@nus.edu.sg

**Accommodation**
As we announced through the APRSAF web site and news mail in early September, we have made arrangements with the following 5 hotels for the participants of the APRSAF-18 to receive special, discounted rates:

1. Marina Mandarin Singapore  
2. Carlton Hotel Singapore  
3. Rendezvous Hotel Singapore  
4. Peninsula. Excelsior Hotel  
5. Hotel Grand Pacific Singapore

Details of these hotels and the special rates are provided in Appendix-C.
To receive the special rate, please use the reservation form for APRSAF-18, which can be downloaded from the following web site: [https://www.prime-pco.com/aprsaf18/registration.html](https://www.prime-pco.com/aprsaf18/registration.html)

Please note that the special rates will be applied to APRSAF-18 attendees only if the APRSAF-18 reservation form is used and submitted directly to the hotel. We should like to urge you to submit the form as soon as possible, as only a limited number of rooms have been secured at the special rate at each hotel, and rooms are reserved on a first come first served basis.

In case you need to cancel your reservation, you are requested to directly contact the hotel to do so. We advise you to consult the cancellation policy of the hotel concerned in advance.

**International and Local Transportation**
Please note that the participants are responsible for making arrangements and covering the cost for the international travel to and from Singapore as well as for the local transportation, including the one between the airport and the hotel and between the venue of the APRSAF-18, Marina Mandarin Singapore, and any other hotel. **Local transportation will not be provided by the co-organizers.**

Information on the access to and from the Singapore Changi Airport is available on the following website: [http://www.changiairport.com/getting-around](http://www.changiairport.com/getting-around)

**Insurance**
Participants are highly recommended to arrange for their own overseas travel insurance. The organizers of the APRSAF-18 are unable to take any responsibility for making arrangements or covering the cost that might be incurred in association with any possible accident, injury and illness.

**Points of Contact for APRSAF-18**
Participants from Singapore should contact the local point of contact mentioned below to obtain more information concerning their participation.
For Participants from Singapore:
If you have any inquiries concerning the APRSAF-18, please contact:

Ms. KOH Poh Loo
Centre for Remote Imaging, Sensing and Processing
National University of Singapore
Blk S17, 10 Lower Kent Ridge Road, Level 2
Singapore 119076
TEL: +65-6516-5171, FAX: +65-6775-7717, E-mail: cskpl@nus.edu.sg

For Participants from other countries:
If you have any inquiries concerning the APRSAF-18, please contact:

Ms. Azusa Sakamoto, APRSAF-18 Secretariat
Marunouchi Kitaguchi building,
1-6-5 Marunouchi, Chiyoda-ku, Tokyo, 100-8260, JAPAN
E-mail: aprsa18@aprsaf.org or FAX:+81-3-6266-6908

APRSAF-18 Side Events and other relevant meeting

■ SAFE Workshop
Date: 5 December 2011
Venue: Marina Mandarin Singapore
Level 1, Rooms “Capricorn” & “Leo” (tentative)
Reference: http://www.eorc.jaxa.jp/SAFE/

Contact for further information on the Workshop
Mr. Tomoyuki Nukui
TEL: +81-50-3362-4116
FAX: +81-29-868-2961
Email: nukui.tomoyuki@jaxa.jp
■ APRSAF-18 Poster Contest
Theme: “The Next 50 Years in Space”
Co-organizers: SSTA, CRISP and JAXA
Date: 6-9 December 2011
Venue: Marina Mandarin Singapore
Reference:

■ APRSAF-18 Water Rocket Event
Co-organizers: SSTA, CRISP and JAXA
Local organizer: SpeedB Pte Ltd.
Date: 3-4 December 2011
Venue: Saints Hilda’s Secondary School (tentative)
Reference:
Outline:
Rules for Launch Competition:

Contact for further information on the Poster Contest and the Water Rocket Event:
Ms. Yayoi Miyagawa, JAXA Space Education Center
Tel: +81-50-3362-7590
Fax: +81-42-759-8612
E-mail: aprsa18@edu.jaxa.jp

More information on the APRSAF-18 Poster Contest and the Water Rocket Event will be made available in due course. Please check the APRSAF website (http://www.aprsaf.org) for any updates.

Other matters
Further details concerning the program, registration and logistics of the APRSAF-18 will be made available in due course. Please check the updates to be made available on the APRSAF website at:
Attachments
Appendix A ............. Proposed outlines of the APRSAF working groups and initiatives
Appendix B ............. Tentative program
Appendix C ............. List of hotels
Appendix D ............. Recommendations adopted at APRSAF-17
Eighteenth Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-18)

**EO**(Earth Observation)**WG activities**

**Proposed Outline**

1. The Scope/Objectives of EO WG activities

   The EOWG has been exploring opportunities to expand the potential use of EO satellite data for disaster applications (Sentinel Asia) and the environment (SAFE: Space Application for Environment and Climate **R³** pilot project). The upcoming EOWG will focus on consulting the Climate **R³** workshop result and way forward, monitoring the progress of SAFE, and stimulating discussion to start up new activities that respond to a wider spectrum of user requirements.

   1) SAFE

   SAFE workshop will be held on Day-0 of EO working group, on 5 December 2011. New proposal of SAFE prototype will be presented, reviewed by SAFE review board members and approved by SAFE workshop participants. SAFE on-going prototype activities will be also reported.

   2) APRSAF Regional Readiness Review for Key Climate Missions (**Climate R³**)  

   The participants of APRSAF-17 welcomed and encouraged Australia to pursue the proposal for a new APRSAF initiative, “Climate **R³**.” Following the overview of the Climate **R³** such as background and objectives, emerging themes from the Pilot Phase Workshop, which was held in Australia in July, will be discussed in this session. The themes include the type and use for specific data with focus on the three priority ideas identified, capabilities within the Asia-Pacific region, and emerging links to existing activities. At the end of this session, the way forward including actions from workshop and next step will be outlined.
3) Joint session with CSA: "Share the information of technical trend for ship monitoring in the Pacific region"
The aim of this session is information sharing of sea-ship monitoring activities in the Pacific region. After the introduction of sea-ship monitoring in Europe and America cases, several activities related to sea-ship monitoring will be reported from Asian countries. The report of commercial case will be also provided.

4) Joint session with SEUWG and SEAWG
EOWG, SEUWG and SEAWG are planning a joint session focusing the Earth view from space by the Astronauts.

5) Contribution of satellites to Great East Japan Earthquake (Sentinel Asia JPTM report)

6) Country Reports and Private Sectors
In this session, participating countries, private sectors and international organizations are kindly invited to contribute Country Reports about satellite data utilization to food security by using earth observation satellite data. Of course, we welcome the presenters to include proposals for new activities for EO working group in the report.

*Please understand that we cannot provide time slots for all member countries because of the schedule. The co-chairs will lead the arrangements with the APRSAF secretariat.

2. The Results of EOWG Activities at APRSAF-17

See attached: APRSAF-17 adopted recommendations.

3. The Draft of the Agenda

1) Opening Session
2) Review of the Last EOWG in Melbourne, Australia
3) EOWG Focus & Agenda Adoption
4) SAFE Initiative (Wrap-up Report, Progress Report, and New proposal briefing)
5) Climate R³ Report
6) Private Sector Initiatives (Agriculture and Food Security)
7) Joint session with CSA for AIS
8) Joint session with SEUWG and SEAWG
9) Contribution of satellites to Great East Japan Earthquake
10) Country Reports (Agriculture and Food Security)
11) Overall Discussions and the Way Forward
12) Conclusions of EOWG and Wrap-up
1. The scope /objectives of CSA WG activities

The CSA WG has been discussing many topics on satellite communication matters and has been providing good opportunities to exchange each country’s status report on, in particular, digital divide issues as well as the broadband service in the Asia-Pacific region. The CSA WG should share the experiences for realizing cooperation among countries in the region, regarding applications of satellite communication for tele-education, tele-medicine and disaster management, taking into account the needs to resolve the digital divide in the region. Especially, the satellite communication played an indispensable and important role after March 11 Great East Japan Earthquake.

In consideration of the above situation and previous APRSAF-17 discussion, the outline of the CSA WG in the APRSAF-18 is as follows:

1) Sharing experiences and opportunities of the satellite communication for tele-education, tele-medicine, disaster management and mitigation in the Asia-Pacific region

Great East Japan Earthquake caused a catastrophic damage to the ground communication networks in a disaster-stricken area. On the other hand, the satellite communication networks played a major role in the restoration after the earthquake. The CSA WG should share how the satellite communication was used in the disaster scene, and the knowledge on what satellite communication is demanded in the future as lessons learned from the restoration support activities.
2) New applications or concepts of the satellite communication in the Asia-Pacific region

Until the previous meetings, many discussions have been made and useful information has been exchanged. Some applications were planned, demonstrated and organized to demonstrate in each country. The WINDS satellite communications experiments, which were proposed in the APRSAF, are conducting. Since the participants of APRSAF-17 agreed to discuss mechanisms for technology transfer with the aim of not only demonstration but also continuous use, the CSA WG will have more meaningful discussion about this issue. The CSA WG should continue these activities under the regional cooperation and aim to promote new applications or concepts of the satellite communication in the Asia-Pacific region with an active participation of satellite operators.

In addition, the CSA WG plans a joint session titled “Share the information of technical trend for ship monitoring in the Pacific region” with the Earth Observation (EO) WG. The ship monitoring is recently paid to attention as a global maritime awareness. A space-based automatic identification system (AIS), which is a new application of satellite communication, is reported from the CSA WG side and discussed.

3) Promotion for the activities on the Global Navigation Satellite System (GNSS) in the Asia-Pacific region

The satellite-based Positioning, Navigation and Timing (PNT) are one of the important satellite applications and become widely used in the Asia-Pacific countries. According to the recommendation of the APRSAF-15, the Asia Oceania regional workshop on Global Navigation Satellite Systems (GNSS) has been continuously held and the “Asia Oceania Multi-GNSS Demonstration Campaign” was successfully established. The summary of the 3rd Asia Oceania Regional Workshop on the GNSS held in November will be reported, and the CSA WG will support relevant activities..
2. The result of CSA WG activities in APRSAF-17
   See the attached APRSAF-17 adopted recommendations.

3. The Draft of Agenda

1) Opening of the session
2) Adoption of the agenda
3) General introduction and guidance of CSAWG
4) Presentations of communications satellite systems and applications
   a. Communications Satellite Systems
   b. Current Status in Asia Pacific Region
5) Activity reports in the field of tele-education, tele-medicine and disaster management
   a. Study report
   b. Country report
   c. General Discussion
6) Joint session with EO WG titled “Share the information of technical trend for ship monitoring in the Pacific region”
7) Report on the Multi GNSS Workshop
8) Other matters
9) Closing of the session
Eighteenth Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-18)

SEA (Space Education and Awareness) WG Activities

Proposed Outline

1. Background and Objectives of SEA WG activities

Space has been an important part of human civilization. Throughout the human history, the quest for knowledge of the universe has led humankind to learn more about where they have come from, where they stand and to expand their imagination about where they are going.

Activities in space have increasingly become an essential, integral part of our human life. Benefits derived from space applications have transformed the way we look at our environment and our planet, the way we communicate and interact with each other and the way we move from one place to another, dramatically increasing the safety, security, accuracy, predictability and convenience in our daily lives.

In spite of the growing evidences of the usefulness of space science and technology for society, the appreciation by the general public of their importance is still limited. Efforts should continue to increase public awareness of the usefulness and importance of space science and technology. Applications of space science enhance the quality of our lives and support sustainable development of our society.

For young people, space activities provide a source of interest, imagination and inspiration. Attractive space educational materials can spark intellectual flames in the minds of young people not only in science and technology but also in many other aspects of human activities. Effectively used, examples of the past achievements and efforts to overcome challenges in the use and exploration of outer space can motivate young people to pursue excellence in whatever they do and help them understand how important, and how rewarding, it is to work together with many others to serve the society.
It is with such conviction that the SEA WG was established at the 8th session of APRSAF, in July 2001, with the aim of: i) effectively using space materials to enhance education for young people; ii) providing education and training opportunities for young people in space science and technology; iii) contributing to enhancing mutual understanding among countries in the region through exchange opportunities for young people; and iv) increasing public awareness of the societal benefits and importance of space activities.

2. The Results of SEA WG Activities at APRSAF-17

See the attached APRSAF-17 adopted recommendations.

3. The Draft of the Agenda¹

   (1) Opening of the session
   (2) Adoption of the agenda
   (3) General exchange of views on space education and raising awareness
   (4) Overview of Space Education initiatives in Singapore that we can collaborate with the region on:
   (5) Joint educational activities for primary, secondary and tertiary school students and teachers
       a. Water rocket activities
       b. Poster contest
       c. Space education forum and seminar
       d. Effective uses of satellite images for schools
       e. Other activities
   (6) Ways and means to exchange space education materials effectively
   (7) Cooperation with international science community network

¹ For more details of the work to be conducted during APRSAF-18, please refer to “Provisional Agenda” of the Working Group (document APRSAF18/SEA-WG/2011/1) to be issued.
(8) Other matters
   a. Review of the outcomes of the work of the Working Group and
certain possibilities of revising its terms of reference and developing a plan of
action
   b. SEUWG, EOWG and SEAWG are planning a joint session focusing
the Earth view from space by the Astronauts
   c. Other matters
 proposed outline

1. The scope/objectives of Space Environment utilization WG activities

Space environment utilization is rather a new field of space activities with great potential. It requires a large variety of scientific and technological expertise, which have to be synchronized. Therefore, International Space Station (ISS) utilization is not only for space development, but involves every field of human activities including science, technology, education and culture. The purpose of this Working Group is to develop ways of sharing these potential values of the ISS with Asian countries through the cooperation on ISS utilization.

The assembly of the entire ISS has been completed and the Japanese Experiment Module “Kibo” of ISS is now fully operational. Furthermore, the Japanese government and other ISS Partners have decided to continue the operation and utilization of the ISS beyond 2015. The space environment utilization activities have entered a new stage, and further cooperation among Asia-Pacific countries in this area is becoming increasingly important.

Kibo is open for collaboration between Asian countries and several collaborative activities have started. A series of protein crystallization experiments conducted by Malaysia (ANGKASA) since 2009 is a good example of the collaborations. Two feasibility studies on future space experiments in Kibo, one between Korea (KARI) and Japan (JAXA), and another between Indonesia (LAPAN) and Japan (JAXA) are making good progress. It is expected that such activities will expand through regional cooperation.

Careful step-by-step approaches are very important to gain the basic experience required for space environment utilization; therefore promoting basic activities are also in the scope of this WG. “Space Seed for Asian Future 2010”, a new
project proposed by Asian space agencies in the past APRSAF is an example. In this project, the plant seeds provided by Asian Space agencies were transported by JAXA to ISS/Kibo and retrieved from Kibo by Space Shuttle. These seeds are being utilized for education and outreach in respective countries. Another example is micro-gravity experiment through parabolic air flight in Japan. It started in 2006 and has been providing opportunities for Asian students to participate in these experiments. These opportunities not only help them to learn about microgravity science but also motivate them to develop their own scientific capabilities. The sixth series of parabolic flights is scheduled in March, 2012.

In this WG, we will discuss how we can promote and improve these activities and how we can enhance its effectiveness, etc. A main subject for discussion during this WG of APRSAF-18 will be the possibility of launching a new initiative for ISS/Kibo utilization cooperation. In addition, SEUWG, EOWG and SEAWG are planning a joint session focusing the Earth view from space by the Astronauts.

2. The results of Space Environment Utilization WG activities in APRSAF-17
   See the attached APRSAF-17 adopted recommendations.

3. The Draft Agenda
   1) Status report on the APRSAF-17 recommendations and actions.
   2) Status report related to ISS program
   3) Status of WG activities
      a) Feasibility Study
      b) Protein Crystal Growth Experiment
      c) Status of “Space Seed for Asian Future 2010”
      d) Status of Student Parabolic Flight Experiment
      e) lesson learned
   4) Joint session with EOWG and SEAWG
   5) Launch of a new initiative for Kibo utilization cooperation
   6) Others
Eighteenth Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-18)

Sentinel Asia activities

Proposed Outline

1. The scope /objectives of Sentinel Asia

The Sentinel Asia (SA) was established in 2005 as a collaboration between space agencies and disaster management agencies under the APRSAF initiative, applying remote sensing and Web-GIS technology to assist disaster management in the Asia-Pacific region. A step-by-step approach for implementation of this dissemination system was adopted, and SA Step1 (2006-2007) has achieved its overall goals, demonstrating recent advancement in web-mapping technology and the ICT system. At APRSAF-14 held in Bangalore, India, in November, 2007, the recommendation on SA Step2 was adopted, and the new JPT meeting was held in Kobe, Japan, in June, 2008. Thus the Sentinel Asia Step2 (2008-2012) was initiated. Now the Joint Project Team (JPT) consists of 77 organizations.

At APRSAF-18, it will be provided with STEP2 activity report.

2. The result of Sentinel Asia activities at APRSAF-17

See the attached APRSAF-17 adopted recommendations.

3. The Draft of the Agenda

1) STEP2 activity report including results of last JPTM such as ideas for STEP3 and new Tsunami Working Group
2) Emergency observation report including the Great East Japan Earthquake
3) Data analysis node report
4) Evolution of wildfire monitoring using new satellites
SAFE (Space Applications For Environment)

Proposed Outline

1. The Scope/Objectives of SAFE activities

SAFE (Space Applications For Environment) is a voluntary initiative for environmental monitoring, endorsed at APRSAF-15. This session aims to report the current activities of SAFE, including the discussion of the EOWG.

1) SAFE Workshop

SAFE workshop will be held on Day-0 of EOWG, on 5 December 2011. New proposal of SAFE prototype will be presented, reviewed by SAFE review board members and approved by SAFE workshop participants. SAFE members also will report on the status of SAFE prototype activities in various phases. Some of them are finishing their prototype activities, and others have just started.

2) SAFE Initiative Report in EOWG

The SAFE secretariat will report on current SAFE updates on Day 1 of EOWG; on 6 December 2011, in particular, new SAFE prototype activities, ongoing SAFE prototype activities, and successful story of SAFE prototype activities, and will ask participants of the EOWG to discuss about the promotion of SAFE prototype activities and its successful results to participating entities through knowledge transfer and capacity building.

3) Announcement of the Fourth SAFE Workshop

The SAFE secretariat will announce the next SAFE event, called “the Fourth SAFE Workshop”.
2. The result of SAFE activities in APRSAF-17

See attached: APRSAF-17 adopted recommendations.

3. The Draft of the Agenda

[SAFE Workshop]
1) Review of the 3rd SAFE Workshop Outcomes
2) Presentation on new prototype proposals
3) Contribution from On-going Prototypes
   a. Sea Level Rise on Coastal Zone (Sri Lanka)
   b. Potential Drought Monitoring (Indonesia)
   c. Water resource management (Pakistan)
   d. Fishery monitoring (Sri Lanka)
   e. Fishery management (Thailand)
   f. Forest change assessment (Vietnam)

4) Post prototyping activities report.
   g. Water Cycle and Agricultural Activities (Cambodia)
   h. Forest monitoring and management (Lao PDR)

5) Review Board Meeting Report

[SAFE Initiative Report in EOWG]
1) SAFE Progress Report including Review of 3rd SAFE Workshop
2) Wrap-up Report from Lao PDR and Cambodia
3) On-going Report
4) New Proposal Briefing
5) Review Board Results

[SAFE Initiative Report in Plenary Session]
1) Summary of the 3rd SAFE Work Shop
2) SAFE WS Summary, Conclusion and Recommendation
3) Announcement of the Next workshop
1. The scope /objectives of the STAR / UNIFORM Program activities

The STAR program provides the opportunities to develop human resources for the space agency staff in the Asia-Pacific region. It was proposed by JAXA at APRSAF-14, Bangalore, India. It is technical training through development of a micro satellite and system study of Earth observation satellites. Since the STAR Program started in June 2009, 16 participants from 6 organizations joined it and worked with JAXA engineers at the JAXA Sagamihara campus. They have studied conceptual design of the satellites and made prototype of some circuits, eagerly. Some of them teach basic space technology to others and discuss technical issues each other.

The UNIFORM program, which is an alliance among Japanese universities, has started its activities in 2010 to develop micro satellite constellation for practical use. This program will provide technical training opportunities for researchers and engineers in emerging countries.

At the APRSAF-17, Melbourne Australia, it was recognized that STAR program participants will join UNIFORM’s On-The-Job training to realize micro-satellites early. After APRSAF-17 STAR program participants and UNIFORM members work together for conceptual design of UNIFORM-1 satellite and its ground system, component tests and table-sat assembly.

STAR: Satellite Technology for the Asia-Pacific Region
UNIFORM: UNiversity International FORmation Mission

2. The result of STAR / UNIFORM Program activities in APRSAF-17

See the attached APRSAF-17 adopted recommendations.
3. The Draft of Agenda
   1) Report on STAR program (Tsuji, JAXA)
   2) Report on UNIFORM program (TBD, Wakayama univ.)
   3) Future plan (TBD)
Tentative Program
The 18th Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-18)
~A regional collaboration for tomorrow’s environment ~
6-9 December, 2011
Marina Mandarin Singapore

<Date 0> 5 December, Monday

Workshop : 13:00-18:00

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<td>13:00-15:00</td>
<td>SAFE Workshop (A. Earth Observation Working Group)</td>
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<td>Co-chairs:</td>
<td>Dr. Shinichi Sobue</td>
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<td>Manager, Earth Observation Research Center, JAXA</td>
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<td>Mr. Kwoh Leong Keong</td>
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<td>Director, Centre for Remote Imaging, Sensing and Processing (CRISP), National University of Singapore (NUS)</td>
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<td>15:00-15:15</td>
<td>Coffee/Tea Break</td>
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<tr>
<td>15:15-18:00</td>
<td>SAFE Workshop (A. Earth Observation Working Group)</td>
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### Tentative Program

The 18th Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-18)  

*A regional collaboration for tomorrow’s environment*  

6-9 December, 2011  
Marina Mandarin Singapore

#### <Day 1>  6 December, Tuesday

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<tr>
<td>Working Group Session</td>
<td>9:00-17:00</td>
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<tr>
<td><strong>9:00-11:00</strong></td>
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</tbody>
</table>
| A. Earth Observation Working Group                                      | 9:00-11:00 | Co-chairs: Mr. Kwoh Leong Keong  
Director, Centre for Remote Imaging, Sensing and Processing (CRISP), NUS  
Dr. Shinichi Sobue  
Manager, Earth Observation Research Center, JAXA  
Dr. Hiroki Kohhata  
Manager, Space Applications Program Systems Engineering Office, JAXA  
Mr. Jonathan Hung  
President, Singapore Space and Technology Association (SSTA)  
Dr. Peter Dröge  
Associate Professor  
Head, Division of Genomics and Genetics  
School of Biological Sciences  
Nanyang Technological University  
Mr. Shigeki Kamigaichi  
Director, Kibo Utilization Office for Asia (KUOA), Space Environment Utilization Center, JAXA  
Dr. Takashi Kubota  
Professor, Department of Spacecraft Engineering, Institute of Space and Astronautical Science(ISAS)/Space Education Office, JAXA |
| B. Communication Satellite Applications Working Group                   | 9:00-11:00 | Co-chairs:  
Prof. Ong Jin Teong  
Division of Communication Engineering  
School of Electrical & Electronic Engineering  
Nanyang Technological University  
Mr. Hiroki Kohhata  
Manager, Space Applications Program Systems Engineering Office, JAXA  
Mr. Jonathan Hung  
President, Singapore Space and Technology Association (SSTA)  
Dr. Peter Dröge  
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Mr. Shigeki Kamigaichi  
Director, Kibo Utilization Office for Asia (KUOA), Space Environment Utilization Center, JAXA  
Dr. Takashi Kubota  
Professor, Department of Spacecraft Engineering, Institute of Space and Astronautical Science(ISAS)/Space Education Office, JAXA |
| C. Space Education & Awareness Working Group                            | 9:00-11:00 | Co-chairs:  
Mr. Jonathan Hung  
President, Singapore Space and Technology Association (SSTA)  
Dr. Peter Dröge  
Associate Professor  
Head, Division of Genomics and Genetics  
School of Biological Sciences  
Nanyang Technological University  
Mr. Shigeki Kamigaichi  
Director, Kibo Utilization Office for Asia (KUOA), Space Environment Utilization Center, JAXA  
Dr. Takashi Kubota  
Professor, Department of Spacecraft Engineering, Institute of Space and Astronautical Science(ISAS)/Space Education Office, JAXA |
| D. Space Environment Utilization Working Group                          | 9:00-11:00 | Co-chairs:  
Mr. Jonathan Hung  
President, Singapore Space and Technology Association (SSTA)  
Dr. Peter Dröge  
Associate Professor  
Head, Division of Genomics and Genetics  
School of Biological Sciences  
Nanyang Technological University  
Mr. Shigeki Kamigaichi  
Director, Kibo Utilization Office for Asia (KUOA), Space Environment Utilization Center, JAXA  
Dr. Takashi Kubota  
Professor, Department of Spacecraft Engineering, Institute of Space and Astronautical Science(ISAS)/Space Education Office, JAXA |
| **11:00-11:15**                                                        |            | Coffee/Tea Break                                                            |
| **11:15-12:30**                                                        |            |                                                                             |
| A. Earth Observation Working Group                                      | 11:15-12:30|                                                                             |
| B. Communication Satellite Applications Working Group                   | 11:15-12:30|                                                                             |
| C. Space Education & Awareness Working Group                            | 11:15-12:30|                                                                             |
| D. Space Environment Utilization Working Group                          | 11:15-12:30|                                                                             |
| **12:30-13:30**                                                        |            | Lunch                                                                      |
| **13:30-15:00**                                                        |            |                                                                             |
| A. Earth Observation Working Group                                      | 13:30-15:00|                                                                             |
| B. Communication Satellite Applications Working Group                   | 13:30-15:00|                                                                             |
| C. Space Education & Awareness Working Group                            | 13:30-15:00|                                                                             |
| D. Space Environment Utilization Working Group                          | 13:30-15:00|                                                                             |
| **15:00-15:15**                                                        |            | Coffee/Tea Break                                                            |
| **15:15-17:00**                                                        |            |                                                                             |
| A. Earth Observation Working Group                                      | 15:15-17:00|                                                                             |
| B. Communication Satellite Applications Working Group                   | 15:15-17:00|                                                                             |
| C. Space Education & Awareness Working Group                            | 15:15-17:00|                                                                             |
| D. Space Environment Utilization Working Group                          | 15:15-17:00|                                                                             |
### Tentative Program

The 18th Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-18)

~A regional collaboration for tomorrow’s environment~

6-9 December, 2011

Marina Mandarin Singapore

<Day 2>  7 December, Wednesday

### Working Group Session : 9:00-17:00

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<td>10:45-11:00</td>
<td>Coffee/Tea Break</td>
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<tr>
<td>11:00-12:30</td>
<td>A. Earth Observation Working Group</td>
<td>B. Communication Satellite Applications Working Group</td>
<td>C. Space Education &amp; Awareness Working Group</td>
<td>D. Space Environment Utilization Working Group</td>
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<tr>
<td>12:30-13:30</td>
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<td>14:30-14:45</td>
<td>Coffee/Tea Break</td>
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<tr>
<td>14:45-17:00</td>
<td>A. Earth Observation Working Group</td>
<td>B. Communication Satellite Applications Working Group</td>
<td>C. Space Education &amp; Awareness Working Group</td>
<td>D. Space Environment Utilization Working Group</td>
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TBD | RECEPTION
**Tentative Program**

The 18th Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-18)

~A regional collaboration for tomorrow’s environment ~

6-9 December, 2011

Marina Mandarin Singapore

<Day 3> 8 December, Thursday

General Co-Chairs

**Singapore:** Mr. Joseph Hui  
Deputy Chief Executive  
Technology & Corporate Development  
National Environment Agency

**Japan:** Dr. Tetsuhiko Ikegami  
Chairman  
Space Activities Commission (SAC)  
Ministry of Education, Culture, Sports, Science and Technology

Registration: 8:00-8:45

Plenary Morning Session: 9:00-12:00

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>9:00-9:15</td>
<td>Opening remarks by General Co-chairs</td>
<td>SINGAPORE</td>
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<td></td>
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<td>JAPAN</td>
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<tr>
<td>9:15-9:30</td>
<td></td>
<td>Photo Session</td>
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<tr>
<td>9:30-9:45</td>
<td>Key note addresses by Co-Organizers</td>
<td>SINGAPORE</td>
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<tr>
<td>9:45-10:00</td>
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<td>JAPAN</td>
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<tr>
<td>10:00-10:15</td>
<td>Summary of APRSAF-17</td>
<td>AUSTRALIA</td>
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<tr>
<td>10:15-10:30</td>
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<td>Coffee Break</td>
</tr>
<tr>
<td>10:30-10:45</td>
<td>Country report</td>
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<td>10:45-11:00</td>
<td>Country report</td>
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<tr>
<td>11:00-11:15</td>
<td>Country report</td>
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<td>11:15-11:30</td>
<td>Country report</td>
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<td>11:30-11:45</td>
<td>Country report</td>
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<td>11:45-12:00</td>
<td>Country report</td>
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<tr>
<td>12:00-13:00</td>
<td>Lunch</td>
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Tentative Program
The 18th Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-18)
~A regional collaboration for tomorrow’s environment ~
6-9 December, 2011
Marina Mandarin Singapore

<Day 3> 8 December, Thursday

General Co-Chairs
Singapore: Mr. Joseph Hui
Deputy Chief Executive
Technology & Corporate Development
National Environment Agency

Japan: Dr. Tetsuhiko Ikegami
Chairman
Space Activities Commission (SAC)
Ministry of Education, Culture, Sports, Science and Technology

Plenary Afternoon Session: 13:00-17:00

<table>
<thead>
<tr>
<th>Time</th>
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<th>Speaker</th>
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<tbody>
<tr>
<td>13:00-13:15</td>
<td>Country report</td>
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<tr>
<td>13:45-14:00</td>
<td>Country report</td>
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<tr>
<td>14:00-14:15</td>
<td>Country report</td>
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<tr>
<td>14:15-14:30</td>
<td>Country report</td>
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<tr>
<td>14:30-14:45</td>
<td>Special Presentation</td>
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<tr>
<td>14:45-15:00</td>
<td>Coffee Break</td>
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<tr>
<td>15:00-15:15</td>
<td>Presentation by International Organization</td>
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<tr>
<td>15:15-15:30</td>
<td>Presentation by International Organization</td>
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<tr>
<td>15:30-15:45</td>
<td>Presentation by International Organization</td>
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<tr>
<td>15:45-16:00</td>
<td>Presentation by International Organization</td>
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<tr>
<td>16:00-16:15</td>
<td>Presentation by International Organization</td>
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<tr>
<td>16:15-16:30</td>
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<tr>
<td>16:30-16:45</td>
<td>Special Presentation</td>
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<tr>
<td>16:45-17:00</td>
<td>Special Presentation</td>
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<tr>
<td>TBD</td>
<td>Special Event: 50th Anniversary of Human Spaceflight for Asia and the Pacific (TBD)</td>
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## Tentative Program

The 18th Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-18)  
~*A regional collaboration for tomorrow’s environment*~  
6-9 December, 2011  
Marina Mandarin Singapore

### <Day 4>  9 December, Friday

**General Co-Chairs**  
**Singapore:** Mr. Joseph Hui  
Deputy Chief Executive  
Technology & Corporate Development  
National Environment Agency  

**Japan:** Dr. Tetsuhiko Ikegami  
Chairman  
Space Activities Commission (SAC)  
Ministry of Education, Culture, Sports, Science and Technology

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
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</thead>
<tbody>
<tr>
<td>9:00-10:15</td>
<td><strong>Report on Initiative</strong></td>
<td>Sentinel Asia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Including Lessons Learned from Emergency Operations for the Great East Japan Earthquake</td>
</tr>
<tr>
<td>10:15-10:30</td>
<td><strong>Coffee/Tea Break</strong></td>
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<tr>
<td>10:30-11:15</td>
<td><strong>Reports on Initiatives</strong></td>
<td>Joint Report by STAR and UNIFORM</td>
</tr>
<tr>
<td>11:15-11:45</td>
<td><strong>SAFE</strong></td>
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<tr>
<td>11:45-12:00</td>
<td><strong>Summary of the 3rd Asia Oceania Regional Workshop on the Global Navigation Satellite Systems(GNSS)</strong></td>
<td></td>
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<tr>
<td>12:00-13:00</td>
<td><strong>Lunch</strong></td>
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<tr>
<td>13:00-13:30</td>
<td><strong>Summary Reports by Working Groups</strong></td>
<td>Earth Observation Working Group (including report on Climate R³)</td>
</tr>
<tr>
<td>13:30-13:45</td>
<td><strong>Communication Satellite Applications Working Group</strong></td>
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<tr>
<td>13:45-14:00</td>
<td><strong>Space Education &amp; Awareness Working Group</strong></td>
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<tr>
<td>14:00-14:30</td>
<td><strong>Space Environment Utilization Working Group (including time for a possible initiative)</strong></td>
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<tr>
<td>14:30-14:45</td>
<td><strong>Coffee/Tea Break</strong></td>
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<tr>
<td>14:45-15:15</td>
<td><strong>Adoption of Recommendations of APRSAF-18</strong></td>
<td></td>
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<tr>
<td>15:15-15:25</td>
<td><strong>Announcement of APRSAF-19</strong></td>
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<tr>
<td>15:25-15:35</td>
<td><strong>Closing remarks</strong></td>
<td>SINGAPORE</td>
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<tr>
<td>16:00</td>
<td><strong>Technical Tours</strong></td>
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## Hotels

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<tr>
<th>No</th>
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<th>Room Type</th>
<th>Room Rate</th>
<th>Service Charge</th>
<th>Tax</th>
<th>Breakfast</th>
<th>Internet</th>
<th>Homepage</th>
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<tbody>
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<td>Marina Mandarin Hotel</td>
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<td>S$290</td>
<td>10%</td>
<td>7%</td>
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<td>included</td>
<td><a href="http://www.meritushotels.com/en/hotelinformation/marina-mandarin-singapore/about">http://www.meritushotels.com/en/hotelinformation/marina-mandarin-singapore/about</a></td>
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<td>Carlton Hotel Singapore</td>
<td>walking distance 10 min</td>
<td>Deluxe Room</td>
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<td>7%</td>
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<td><a href="http://www.rendezvoushotels.com">www.rendezvoushotels.com</a></td>
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<td>Peninsula Excelsior Hotel</td>
<td>10 min by subway</td>
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<td>7%</td>
<td>S$20</td>
<td>S$5++ per hour</td>
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<td>⑤</td>
<td>Grand Pacific Hotel</td>
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<td>Executive Room</td>
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<td>included</td>
<td>included</td>
<td><a href="http://www.hotelgrandpacific.com.sg">www.hotelgrandpacific.com.sg</a></td>
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</table>

*Room rates are single occupancy. For double/twin occupancy, please ask the hotel directly.
Appendix-D

Recommendations of the Seventeenth Session of
The Asia-Pacific Regional Space Agency Forum (APRSAF-17)
“The role of space technology and industry in addressing climate change”
23-26 November 2010 in Melbourne, Australia

Recognizing the role of space technology and industry in addressing climate change as the overall theme of APRSAF-17,

Recognizing the importance of regional cooperation to cope with disaster management, environmental issues, capacity building, quality of human life, health, and other regional issues on the basis of utilization needs,

Hereby affirm that we, the participants of APRSAF-17,

[Sentinel Asia]
1. Welcome the new STEP2 system successfully started from April 2010, and steadily achieving satisfactory results concerning the issues to be addressed such as increasing the number of participant satellites and agencies, delivering value added data, increasing the kind of disasters to respond and improving the information access environment.

2. Welcome that National Applied Research Laboratories (NARL) initiated to provide image of Formosat-2 as a new data provider node and the number of Data Provider Node (DPN) increased to 5 organizations, and also 11 organizations started the activities as Data Analysis Node (DAN).

3. Confirm that providing images from regional servers were started in Mongolia, Nepal, Philippines, Taiwan, and Thailand. Additionally the rapid transferring of satellite data via WINDS is also confirmed.

4. Acknowledge that Sentinel Asia system operation trainings were held in Sri Lanka in February 2010 and in Thailand in July 2010.
5. Acknowledge that Asia Disaster Reduction Center (ADRC) is working well for a point of contact for emergency observation of Sentinel Asia and bridging with UNSPIDER as a Regional Support Office (RSO).

6. Acknowledge that the cooperation with the International Disaster Charter has been started and Sentinel Asia requested emergency observation to the International Disaster Charter for Indonesia Tsunami and Thailand flood and large number of analysis results were provided under the International Disaster Charter.

7. Welcome the reference of the promotion of utilization of Space Technology in the Road Map of “the 4th Asian Ministerial Conference on Disaster Risk Reduction” in October 2010 in Incheon.

8. Confirm that engineers and researchers from 6 organizations (ANGKASA, GISTDA, ISRO, KARI, LAPAN, and VAST/STI) in Asia-Pacific Region participated in the STAR program which is hosted by JAXA, and is designing MicroSTAR and studying EO-STAR.

9. Confirm that the 2nd STAR Program Coordination Group meeting was held in Jakarta to review the results of conceptual designs of MicroSTAR.

10. Recognize that MEXT of Japan has launched a new enterprise for research on Earth observation and capacity building by micro-satellites, in cooperation with emerging countries in Asia-Pacific region. University International Formation Mission (UNIFORM), alliance of Japanese universities, was selected for the above enterprise.

11. Recognize that STAR program participants will join UNIFORM’s OJT to realize micro-satellites early.

12. Confirm the completion of two successful Vietnamese prototypings for forest and integrated water management, six ongoing prototypings and two new prototypings.

13. Recommend to expand SAFE prototypings including multiple country projects (regional projects) in addressing climate change issues.

14. Promote successful SAFE prototyping results with practical, operational users and the
importance of knowledge sharing

15. Exploring the opportunity to find international and/or regional funds to encourage the SAFE prototyping efforts - bridging to practical, operational uses in implementing countries.

[Earth Observation]
16. 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).

17. Encourage Australia and interested APRSAF participants to assemble a focus team to undertake Pilot Phase activities in 2011 and to bring a report on the way forward to APRSAF-18.

18. Confirm the role of satellite remote sensing for Measurement, Reporting and Verification (MRV) and current contributions by space agencies.

19. Recommend exploring opportunities for APRSAF participating countries to contribute earth observation payloads as technical demonstrators for Kibo/ISS.

20. Continue close communication between Space Environment Utilization WG and EO WG, including joint sessions, to create new ideas for ISS EO applications.

21. Endorse not-for-profit collaboration between APRSAF governmental agencies and private sector to promote disaster monitoring and outreach & educational activities.

[Communication Satellite Applications]
22. 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.

23. 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.

24. Recognize achievements of the WINDS satellite experiments promoted with the Asia-Pacific regional cooperation through the APRSAF.
25. 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]

26. 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.

27. Encourage further development of space education activities by analyzing and sharing results of activities, and by enhancing through cooperation with the Asia-Pacific and world science centre community, other international organizations, etc.

28. 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.

[Space Environment Utilization]

29. Welcome the continued operation of Kibo/ISS beyond 2015 for full utilization of this unique facility with infinite potential.

30. 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.

31. 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.

32. Recommend implementing joint activities with SEAWG and EOWG to increase space environment utilization based on the success of the joint sessions with those two working groups.
33. Recognize that Asian Development Bank (ADB) plays a key role in the sustainable development of Asian region and welcome opportunity of cooperation with ADB in applying space technologies for that purpose, including disaster management, urban development, agriculture, environment, water resource management, forest and transportation and infrastructure.

34. Welcome “The International Workshop on GIS and Space Technology for Sustainable Development of Asia” proposed by ADB to be held in the ADB Headquarters, Manila, the Republic of Philippines on February 21st through 22nd, 2011, and actively participate in the workshop and strongly encourage users, including potential ones, in countries to actively participate in the workshop.

35. Recommend ADB, through the workshop in collaboration with APRSAF members, to promote discussion and compile participants’ requests on their focus areas and activities in using space technologies as well as specific requirements for space technologies.

36. 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.

37. 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 study.

38. 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.

39. Welcome the establishment of UNIFORM and encourage young researchers and engineers of space organizations in Asia-Pacific region, to participate in the new framework in cooperation of STAR program and UNIFORM.
40. Welcome ISRO’s present activities concerning CSSTEAP.

[International Organizations]
41. Welcome presentations from ADB, APSCO and UNCOPUOS for information sharing among APRSAF participants.

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

[Reporting to UNCOPUOS]
43. Wish that the outcomes of APRSAF-17 be presented by the Chairman of UNCOPUOS at the meetings of the UNCOPUOS in 2011.

44. 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.