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 Agenda

(1) Opening of the session
(2) Adoption of the agenda
(3) General exchange of views on space education and raising awareness
(4) 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. Try Zero G Report
(5) Educational initiatives for university level
(6) Cooperation with international science community network (ASPAC)
(7) Overview of Space Education initiatives in Singapore that we can collaborate with the region on:

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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.
i) Space Academy Singapore programme for youth
ii) Singapore Space Challenge Design Competitions
iii) National Engineers Day – Annual Space Pavilion
iv) Nanosatellite developments in Singapore universities; open platforms for younger kids to get involved as well
v) Space Academy Youth Alumni Society – a national space society for motivated and passionate youth supported by the SSTA

(8) Ways and means to exchange space education materials effectively
(9) Other matters
   a. Other presentations
   b. Review of the outcomes of the work of the Working Group and possibilities of revising its terms of reference and developing a plan of action
   c. Other matters to discuss
   d. Joint session with SEUWG, and EOWG focusing the Earth view from space by the Astronauts
APRSAF18/SEA-WG/2011

The Eighteenth Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-18)
Space Education and Awareness Working Group
(6 – 7 December 2011, Singapore)

PROVISIONAL AGENDA

1. Opening of the session

2. Adoption of the agenda

3. General exchange of views on space education and raising awareness

4. Joint educational activities for primary and secondary 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. Try Zero G

5. Educational initiatives for university level

6. Coordination with international science community network (ASPAC)

7. Overview of Space Education initiatives in Singapore that we can collaborate with the region on:
   i) Space Academy Singapore programme for youth
   ii) Singapore Space Challenge Design Competitions
   iii) National Engineers Day – Annual Space Pavilion
   iv) Nanosatellite developments in Singapore universities: open platforms for younger kids to get involved as well
   v) Space Academy Youth Alumni Society – a national space society for motivated and passionate youth supported by the SSTA

8. Ways and means to exchange space education materials effectively
9. **Other matters**
   a. Other presentations
   b. Review of the outcomes of the work of the Working Group and possibilities of revising its terms of reference and developing a plan of action
   c. Other matters to discuss
   d. SEU WG, EO WG, and SEAWG are planning a joint session focusing the Earth view from space by the Astronauts
Appendix: Indicative schedule of work

ANNOTATIONS

1. Opening of the session

Following the customary practice, the Space Education and Awareness Working Group during the eighteenth session of the Asia-Pacific Regional Space Agency Forum (APRSAF-18) would be co-chaired by Jonathan Hung – President of Singapore Space and Technology Association (SSTA), representing of Singapore, and Prof. Takashi Kubota of Japan Aerospace Exploration Agency (JAXA), representing the Japanese co-organizers of APRSAF. The co-chairs may make opening remarks, outlining the work of the Working Group.

2. Adoption of the agenda

The Working Group will review the provisional agenda for its adoption.

3. General exchange of views on space education and raising awareness

The members of the Working Group are invited to submit reports containing information on: i) highlights of formal and informal education relating to space activities in the past year; ii) future plans for educational initiatives relating to space activities; and iii) proposals, if any, for activities to be undertaken by the Working Group. Anyone who gives presentation should submit own presentation to SEA WG Secretariat so that SEA WG Secretariat may able to post it on the website.

Each member of the Working Group or his/her alternate attending APRSAF-18 would be invited to orally report on the major developments and activities carried out in his/her country or by his/her international organization in the past year to promote space education and to increase public awareness of the benefits of space activities. The maximum of 5 minutes each would be allocated.

(See the APRSAF-17 Minutes #7)

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i The annotations are not part of the agenda to be adopted by the APRSAF Space Education and Awareness Working Group.
4. Joint educational activities for primary and secondary school students and teachers

a. Water rocket event

Pursuant to the agreement by the Working Group, the 7th APRSAF Water Rocket Event will be held with the participation of students from 12 to 16 years old from countries in Asia and the Pacific.ii The outline of the Water Rocket Event and the rules for the launch competition were circulated to the Working Group members on 19 August 2011.iii The Event will be hosted by Singapore Space and Technology Association (SSTA) of Singapore and Centre for Remote Imaging, Sensing and Processing (CRISP), and facilitated by SpeedB Pte Ltd will take place from 3 and 4 of December at Saints Hilda’s Secondary School in Singapore. Members of the Working Group are encouraged to attend the Event. The Working Group will also hear the results of the Event.

At its last sessions, held during APRSAF-16 and 17, the Working Group agreed to work toward establishing an advanced category of the water rocket competition for high-school or pre-college students, on the assumption that APRSAF Water Rocket Event would continue. The Working Group should formally decide whether to continue APRSAF Water Rocket Event and agree on the schedule of work to prepare for the next Event. As agreed by the Working Group, participating countries of the above Water Rocket Event were invited to present and demonstrate advanced types of water rocket launch for competition. Based on such presentations and demonstrations to be made, the Working Group should select one advanced type of water rocket launch competition to be organized within the framework of the APRSAF Water Rocket Event, should the decision be made to continue holding the Event.

(See the APRSAF-17 Minutes #8~19)

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ii At its last meeting, the Working Group agreed that it was important to promote inter-regional cooperation by, among other things, sharing concrete examples of the successful joint regional initiatives in the area of space education. As the implementation of that agreement, teams from Latin America have been invited to participate APRSAF-18 Water Rocket Event as same as APRSAF-17 of which was held in November 2010 in Australia.

iii Per Coordinated Universal Time (UTC).
b. **Poster contest**

Pursuant to the agreement of the Working Group, the Poster Contest is being held under the theme “The next 50 years in Space” for participation by students from 8 to 11 years old from countries in Asia and the Pacific. The rules for the Poster Contest were distributed to the Working Group members on 14 July 2011\(^{iv}\).

The final selection of the winners of APRSAF Best Poster Award and APRSAF Special Poster Awards will take place during APRSAF-18. Prior to APRSAF-18, the members of the Working Group will be informed of the submitted posters and of the methods and schedule for the final selection.

The Working Group should determine whether to continue APRSAF Poster Contest and, if so, agree on a theme for the next Contest and the schedule of work.

As agreed by the Working Group at its last session, the Secretariat had developed and distributed to Working Group members, with funding support by JAXA, the calendar covering the period from April 2011 to March 2012 and using all the submitted posters for APRSAF-17 Poster Contest. The Working Group should examine whether it would be feasible to continue publishing the calendar in the following years using posters submitted for APRSAF Poster Contests, based on the experiences with the development of the calendar since 2009 to celebrate International Year of Astronomy (IYA).

(See the APRSAF-17 Minutes #20~24)

c. **Space education forum and seminar**

Following the agreement by the Working Group, the Space Education Seminar on “Space Science and Technology and their Applications into Classrooms” was organized by the Bangladesh Astronomical Society (BAS) and JAXA within the framework of APRSAF, and hosted by BAS, for the benefit of local teachers. The Working Group will provide with the report on the Seminar.

\(^{iv}\) Per Coordinated Universal Time (UTC).
The Working Group may wish to consider any proposals submitted by its members to organize future space education forums and seminars.

(See the APRSAF·17 Minutes #29～30)

d. Effective uses of satellite images for schools

At its last sessions, held during APRSAF·17, the Working Group expressed its appreciation to GISTDA for its project proposal on “GIS Toolkit for Schools”, and for further elaborating the proposal of which was circulated at the meeting as document APRSAF/SEA-WG/2010/8. Based on experiences of GISTDA using GIS to train educators, the project focuses on the transfer of knowledge by ensuring that the result of outputs in the forms of data and tools to their students in long term. The project consists of following stages: i) space youth camp; ii) selection of project proposals submitted by schools; iii) training of the selected schools; iv) execution of the selected projects; v) producing project outputs; vi) development of toolkits; vii) testing of the toolkits; and viii) organization of a toolkit competition. To implement the project, GISTDA hosted Two·days Technical Workshop in Thailand in May 2011 within the framework of APRSAF.

The Working Group will be provided report on the Workshop.

Members of the Working Group may wish to present any projects or initiatives undertaken by their organizations and/or in their countries to promote effective usage of satellite images for school support.
(See the APRSAF·16 Minutes #31～32)

e. Try Zero G

JAXA will report on Try Zero G using Japanese experimental module, KIBO, and its possibility of the next Try Zero G.

f. Other activities

The Working Group may wish to consider any proposals for other activities that might be undertaken within the framework of APRSAF for primary and secondary school students and teachers in Asia and the Pacific.
5. **Educational initiatives for university level**
   At this time, Ministry of National Education in Indonesia will report on their Space Education activities on KOMURINDO.

6. **Cooperation with international science community network**
   At its last session, professor Graham Durant, Co-Chair of Space Education Awareness Working Group of Australia, introduces the world science center community and possible partnership activities. During the session, he has recommended the cooperation with ASPAC to promote and enhance space education in the world. The Working Group agreed that efforts should be strengthened to collaborate with the world science center community.

   The Working Group members may wish to present any experiences to share useful information on the collaborative space education activities, to create a list.

   In addition, working group may discuss possible collaboration with the science community (ASPAC) members.

   (See the APRSAF-17 Minutes #51)

7. **Overview of Space Education initiatives in Singapore that we can collaborate with the region on:**
   i) Space Academy Singapore programme for youth
   ii) Singapore Space Challenge Design Competitions
   iii) National Engineers Day – Annual Space Pavilion
   iv) Nanosatellite developments in Singapore universities: open platforms for younger kids to get involved as well
   v) Space Academy Youth Alumni Society – a national space society for motivated and passionate youth supported by the SSTA

   Jonathan Hung, President of SSTA, will report on the collaborative activities held in Singapore.
8. Ways and means to exchange space education materials effectively

As a result of the APRSAF International Water Rocket Education Workshop held in Melbourne, Australia, from 30 June to 3 July 2008, hosted by the Victorian Space Science Education Centre (VSSEC), an Internet-based Wiki site was established and hosted by VSSEC to provide an on-line forum to exchange information, views and education materials relating to water rockets. The Wiki has relaunched with new designs and features by VSSEC since August 2010.

The above Wiki site presents one of many examples of on-line space education and training resources that are freely available through the Internet services. Members of the Working Group are encouraged to identify other useful on-line space education and training materials and share information on those materials, including the URL addresses for the relevant web sites and experiences in using those materials.

While an increasing number of education and training materials are being made available through the Internet-based services, the importance of disseminating paper-based materials should not be undermined in view of those teachers and educators who may not have easy access to the Internet services, particularly in rural areas. In this regard, members of the Working Group are encouraged to share education and training materials in the forms of books, brochures, leaflets and other paper-based publication materials. It is also encouraged to suggest ways and means to facilitate the exchange of such materials and to propose any initiative to jointly develop and disseminate such materials through international collaborations.

Even the web-base sharing information is critical, at the same time, APRSAF is the best place to show actual materials to others. Anyone who is interested in showing your own educational materials to share ideas, bring the actual materials to the working group. There is a time to demonstrate your educational material(s).

(See the APRSAF-17 Minutes #43, 46)

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9. Other matters

a. Other presentations

Those who wish to present in SEA WG but not under any of the categories may present in this section. The presenter is asked to bring own presentation in USB, and must limit presentation in 5 minutes. They are welcome to bring about 30 copies of hand out to cover own presentation.

b. Review of the outcomes of the work of the Working Group and possibilities of revising its terms of reference and developing a plan of action

The Working Group was originally 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.

The Working Group agreed to conduct a survey among the organizations represented by its members to review the effectiveness of its work in achieving the objectives listed as the above.

In order to pursue additional objective jointly by the participating countries of the Working Group, the Working Group will also use the survey results to proceed with our activities more actively.

(See the APRSAF-17 Minutes #52)

c. Other matters to discuss

Additional matters that may come to the attention of the Working Group will be discussed.
d. **SEU WG, EO WG, and SEAWG are planning a joint session focusing the Earth view from space by the Astronauts**

APRSAF SEU WG, EO WG and SEA WG will jointly organize a session with astronauts. The astronaut Noguchi from Japan will present and talk about the world view from ISS during the joint session.

(See the APRSAF-17 Minutes #44, 47)
Appendix : Indicative schedule of work of the Space Education and Awareness Working Group (6 – 7 December 2011, Singapore)

Co-Chairs: Jonathan Hung (Singapore Space and Technology Association, Singapore)  
Takashi Kubota (Japan Aerospace Exploration Agency, Japan)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Agenda Item(s)</th>
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</table>
| <Day 1>    | 09:00-09:15 | 1. Opening of the session  
• Remarks by the Co-Chairs  
• Self-introduction |
| 6 December, Tuesday | 09:15-09:20 | 2. Adoption of the agenda  
• APRSAF18/SEA-WG/2010/1/Rev.1 |
|            | 09:20-10:30 | 3. General exchange of views (5min. per one presentation)  
• N. Mathers (Australia)  
  “Australian Country Report”  
• F. R. Sarker (Bangladesh)  
  “Celebration of WSW-2011 with UNOOSA/UNESCO”  
• C. Chin (Cambodia)  
  “TBD”  
• S. Prabotosari (Indonesia) (LAPAN)  
  “Space Education Activities in Indonesia”  
• E. Hirohama (Japan)  
  “Space Education Activities in Japan”  
• G. Omarova (Kazakhstan)  
  “Problems of Space Education”  
• K. Adhikary (Nepal)  
  “Space education Activities for the school children in Nepal”  
• S. Ahmed (Pakistan)  
  “Satellite Remote Sensing Applications and Education in Pakistan”  
• A. Cortez (Philippines)  
  “Promoting Space Education in the Regions”  
• I. Medagangoda (Sri Lanka)  
  “Space and Astronomy Education ‘2011”  
• S. Polngam(Thailand)  
  “GISTDA role on space and geo-informatics Education and Awareness increase”  
• D. M. Chung (Vietnam)  
  “Space week in Hochiminh city · Vietnam 2011 |
<p>|            | 10:30- | Coffee Break |</p>
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<td>10:45</td>
<td>4.</td>
<td>Joint educational activities for primary and secondary school students and teachers</td>
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<td>10:45-</td>
<td>12:30 Water rocket event</td>
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<td>4-a.</td>
<td>• Briefing by the Secretariat of the Working Group</td>
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<td>• Results of APRSAF-18 Water Rocket Event</td>
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<td>➢ J. Hung/S. Matthews (Singapore) TBC</td>
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<td>4-b.</td>
<td>• Discussion</td>
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<td>➢ Advanced category of water rocket competition</td>
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<td>✚ Briefing by the Secretariat</td>
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<td>➢ Next APRSAF Water Rocket Event</td>
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<td>12:30-13:30</td>
<td>Lunch</td>
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<Day 1>

6 December, Tuesday

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<tr>
<td>13:30-</td>
<td>4.    Joint educational activities for primary and secondary school students and teachers</td>
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<td>15:00</td>
<td>4-b.  Poster contest</td>
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<td>• Briefing by the Secretariat of the Working Group</td>
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<td>• Preparations for the APRSAF Poster Contest</td>
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<td>➢ Secretariat/Y. Miyagawa (Japan)</td>
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<td>4-c.</td>
<td>Space education forum and seminar</td>
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<td>➢ “APRSAF Space Education Seminar in Bangladesh”</td>
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<td>➢ F. R. Sarker (Bangladesh)</td>
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<td>• Discussion</td>
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<td>4-d.</td>
<td>Effective uses of satellite images for schools</td>
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<td>• “GIS Tool Kit for Schools” project</td>
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<td>➢ S. Polngam (Thailand)</td>
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<td>• Discussion</td>
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<td>Try Zero G Report</td>
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<td>➢ E. Hirohama (Japan)</td>
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<td>5.</td>
<td>Educational initiatives for university level (5-10min. per one presentation)</td>
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<td>• “Indonesia Space Education Program and Activity (KOMURINDO: Payload Rocket Competition)”</td>
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<td>➢ S. Utomo (Indonesia)</td>
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<td>6.</td>
<td>Coordination with international science community network (ASPACE)</td>
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<td>• “TBA” (10min)</td>
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<td>➢ TBD (Singapore)</td>
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<td>7.</td>
<td>Overview of Space Education initiatives in Singapore that we can collaborate with the region on:</td>
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<td>i) Space Academy Singapore programme for youth</td>
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<td>ii) Singapore Space Challenge Design Competitions</td>
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<td>iii) National Engineers Day – Annual Space Pavilion</td>
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<td>iv) Nanosatellite developments in Singapore universities: open platforms</td>
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<td>for younger kids to get involved as well</td>
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<td>v) Space Academy Youth Alumni Society – a national space society for</td>
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<td>➢ J. Hung (Singapore)</td>
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<tr>
<td>&lt;Day 1&gt;</td>
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| 6 December, Tuesday | 15:15 – 17:00 | Ways and means to exchange space education materials effectively  
|                 |            | - Wiki Demonstration  
|                 |            | - Examples of education materials  
|                 |            | - Discussion                                                     |
|                 |            | 9. Other matters                                        |
|                 |            | 9*a. Other presentations: (5min. per one presentation)  
<p>|                 |            | TBD                                                    |</p>
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<td>7 December,</td>
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<td>9-b Review of the outcomes of the Working Group's work</td>
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<tr>
<td>Wednesday</td>
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<td>• Survey</td>
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<td>• Discussion</td>
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<td>9-c Other matters to discuss</td>
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<td>10:45-11:00</td>
<td>Coffee/tea break</td>
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<td>11:00-12:30</td>
<td>4-b Poster contest</td>
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<td>• Next APRSAF Poster Contest: Theme</td>
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<td>13:30-14:30</td>
<td>Observations and recommendations</td>
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<td>• Review of the draft and discussion</td>
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<td>Adoption of the conclusions and recommendations of the Working Group</td>
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<td>14:30-14:45</td>
<td>Coffee Break</td>
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<td>15:00-17:00</td>
<td>9-d SEU WG, EO WG, and SEAWG joint session</td>
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<td>“The Earth View from Space” by Astronaut Noguchi</td>
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