8th APRSAF Water Rocket Event and Educators Workshop
8rd – 9th December, 2012
SMK Putrajaya Presint 18(1) (Malaysia)
Participants

56 students and 31 educators from 16 countries
Australia, Cambodia, China, Columbia, India, Indonesia, Japan, Malaysia, Nepal, Pakistan, Philippines, Singapore, South Korea, Sri Lanka, Thailand, Vietnam
Programs

• Student Presentations
• Special Lecture on Astronaut Training
• Student Program
  – Science Center and KLCC Tour
• Educator Program
  – Sharing on Regional Water Rocket Activities (8th Dec.)
  – Telescope, Starchart, 3D Model Making Activities (9th Dec.)
• Rocket building and Launch Competition
Advanced Water Rocket Demonstration

The WG approved the proposal given by the Advanced Water Rocket Committee to hold the Advanced Water Rocket Demonstration during the Water Rocket Event.
APRSAF-19 Water Rocket Competition

• 8th Water Rocket Competition for school children between the ages of 12 and 16 years

• 1st, 2nd, 3rd place winners were selected by the closest distance of two trials. In the case of a tie in distance, the 2nd trial launch is considered between the target point and the landing point of the water rocket.
Launch competition
Building
Launch competition
Tan Yong Hua
Singapore
42cm from Target
2nd Place
Kenta Takeuchi
Japan
50cm from Target

3rd Place
Aow Wei Yang Alain
Singapore
96cm from Target
APRSAF-19 WATER ROCKET EVENT: OUTLINE
(Draft Version)

1. Date: 8 – 9 December 2012 (Saturday - Sunday)
   (NB: Excluding arrival and departure dates.)

2. Venue: National Planetarium
   Lot 53, Jalan Perdana
   50480 Kuala Lumpur, Malaysia
   Tel: +603-2273 4303; Fax: +603-2273 5488
   Website: www.angkasa.gov.my/planetarium

   Water Rocket Event Launch Site:
   SMK Putrajaya Presint 18(1)
   Jalan P18, Presint 18, 62150 Putrajaya, Malaysia
   Tel: +603-8890 5420; Fax: +603-8890 5421

3. Lodging: Institut Latihan Kehakiman Dan Perundangan (ILKAP)
   Jabatan Perdana Menteri
   Lot 5, Persiaran Universiti, Seksyen 15
   43650 Bandar Baru Bangi
   Selangor Darul Ehsan, Malaysia
   Tel: +603-89243400; Fax: +603-89261231
   Website: http://www.ilkap.gov.my

4. Official Language: English

5. Tentative Schedule:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>7th December</td>
<td>8:00</td>
<td>Arrive in Malaysia: transportation to accommodation</td>
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<tr>
<td>(Friday)</td>
<td></td>
<td>Participants will be met at the airport and transportation will be provided. Upload Power Point slides (for Student Session and Teacher Program) upon check-in at ILKAP.</td>
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<tr>
<td></td>
<td>8:30</td>
<td>Registration &amp; Breakfast</td>
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<td></td>
<td>9:00</td>
<td>Opening Ceremony</td>
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<td>8th December</td>
<td>9:20</td>
<td>Student Session</td>
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<tr>
<td>(Saturday)</td>
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<td>Students introduce their team and country. Max 5 min per country.</td>
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<td>Power Point slides should be uploaded at registration.</td>
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<td></td>
<td>10:45</td>
<td>Morning tea</td>
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<td></td>
<td>11:00</td>
<td>Special lectures on space activities by Mejar (Dr) Faiz Khaleed, Angkasawan Malaysia. (lecture topic to be confirmed)</td>
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<td></td>
<td>11:45</td>
<td>Planetarium Show “Journey to the Stars”</td>
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<td></td>
<td>12:15</td>
<td>Briefing on the Water Rocket Launch Competition: Schedule of events and rules of the competition and demonstration</td>
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<tr>
<td></td>
<td>12:45</td>
<td>Lunch</td>
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<tr>
<td>Time</td>
<td>Teacher Program</td>
<td>Student Program</td>
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<td>--------</td>
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<tr>
<td>14:00</td>
<td><strong>Teacher Program</strong>&lt;br&gt;Workshop&lt;br&gt;Teaching Techniques and Regional Water Rocket Activities Sharing Session. PowerPoint slides should be uploaded at registration.</td>
<td><strong>Student Program</strong>&lt;br&gt;Activities&lt;br&gt;Visit to the National Science Centre (about 10km from National Planetarium, 2 hours visit including travelling time, buses will be provided).</td>
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<td>16:15</td>
<td>Tea Break</td>
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<td>16:30</td>
<td>Visit to the Suria KLCC (about 6km from National Planetarium, 2½ hours visit including travelling time, buses will be provided)</td>
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<td>19:00</td>
<td>Break Time&lt;br&gt;Visit to National Planetarium exhibition gallery.</td>
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<td>19:30</td>
<td>Welcome Reception, hosted by ANGKASA at National Planetarium</td>
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<td>22:00</td>
<td>Dismiss, bus transport to accommodation</td>
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<tr>
<td>8:00</td>
<td>Bus transport to SMK Putrajaya Presint 18(1), Putrajaya</td>
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<tr>
<td>8:30</td>
<td>Breakfast</td>
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<tr>
<td>9:00</td>
<td><strong>Teacher Program</strong>&lt;br&gt;Workshop&lt;br&gt;Introduction to telescope, star chart and 3D Sun model (if time permits).</td>
<td><strong>Student Program</strong>&lt;br&gt;Activities&lt;br&gt;Making of water rockets, test launching of rockets.</td>
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<tr>
<td>12:00</td>
<td>Lunch&lt;br&gt;Demonstration of Advanced Water Rockets to be carried out during lunch hour.</td>
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<tr>
<td>12:45</td>
<td>Group photo</td>
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<tr>
<td>13:00</td>
<td>Launch competition</td>
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<tr>
<td>16:30</td>
<td>Award ceremony</td>
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<td>17:30</td>
<td>Bus transport to dinner venue</td>
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<td>18:00</td>
<td>Friendship Party, hosted by JAXA at MAEPS Bistro</td>
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<td>20:50</td>
<td>Departure, bus transport to airport</td>
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<tr>
<td>22:00</td>
<td>Dismiss, bus transport to accommodation</td>
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<td>9th December (Sunday)</td>
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<td></td>
<td>10th December (Monday)</td>
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**6. Participants:**

i. Competitors: School students at age between 12 and 16 years old from countries in the region of Asia and the Pacific.

ii. Selection: A participating country should hold its national water rocket competition to select competitors.<br>(NB: It is suggested that the competitors be selected based on not only their performance in launching water rockets but also their interest in space activities and in friendship and cultural exchange. The selected students should preferably have adequate English language proficiency.)

iii. Teachers/Leaders: The students shall be accompanied by teachers or leaders of youth activities to travel to Malaysia. The accompanying
teachers or leaders must be interested in space and science education, willing to engage in the exchange of knowledge, experience and skills with water rocket and other educational activities with those from other countries and committed to promoting space and science education activities among young people in their home countries.

(NB: In view of the limited capacity of the venue and accommodation, each participating country should limit the number of students to 6 and accompanying teachers/leaders to 2 to participate.)

7. **Application Deadline:** The final list of all participants must be communicated to ANGKASA and JAXA, no later than **Monday 15 October, 2012**. For application received by this date ANGKASA will issue a letter of invitation and assist with visa application.

8. **Local Organizer:** National Space Agency (ANGKASA) of Malaysia  
   Local Contact: Mr. Jong Tze Kian  
   Tel: +603 2273 4303  
   Fax: +603 2273 5488  
   E-mail: tkjong@angkasa.gov.my

APRSAF-19 is hosted by the National Space Agency (ANGKASA) of Malaysia.

**Co-Organizer:** Japan Aerospace Exploration Agency (JAXA)  
Contact point: Ms. Yayoi Miyagawa  
APRSAF Water Rocket Event Secretariat  
Tel: +81 50 3362 7590  
Fax: +81 42 759 8612  
E-mail: miyagawa.yayoi@jaxa.jp
APRSAF-19 Water Rocket Event – Rules for Launch Competition

1. APRSAF-19 Water Rocket Launch Competition will be held at SMK Putrajaya Presint 18(1), Putrajaya, Malaysia on Sunday 9th December 2012. All competitors will make their water rockets at the same location.

![Figure 1: SMK Putrajaya Presint 18(1), Putrajaya, Malaysia. (GPS coordinates: latitude 2.92246, longitude 101.694496)](image-url)

2. All materials to make and launch water rockets, including launcher and hand pump (see Figure 3 in page 2), will be provided by the organizer. Pre-made materials or launchers brought in by participants will not be allowed for the competition.

3. Each competitor should make two (2) rockets. Each student will receive:
   a. Six (6) 1.5 litre PET bottles  
   b. Plastic sheets (see Figure 2 below)  
   c. Card  
   d. Tape  
   e. Scissors  
   f. Penknife  
   g. Ruler  
   h. Plasticine

![Figure 2: Students will receive three different types of plastic sheets for their water rocket making. (all in A4 size, 210 x 297 mm)](image-url)
4. The competitors are encouraged to be creative in the design of the nose cones and fins of their water rockets.

5. The launch aims at precision flight of the rocket. A target will be placed with the centre 80m from the launcher (see Figure 4 below).

6. The distance will be measured from the centre of target to the point of impact. The rocket that lands closest to the target centre get the best score.

7. At the time of launch, each competitor may adjust the volume of water, air pressure, launch angle and launch direction. There is no limit on water volume but air pressure must not exceed 80 psi (5.516 bar).
8. Each competitor will be given an opportunity to conduct a few test launches prior to the competition.

9. During the competition, each competitor will be given opportunities to conduct two (2) launches. Exact distance from the point of impact and the centre of target will be measured. The result of the best launch will be recorded.

10. There will be three (3) launchers, and the competitor will launch one (1) rocket at a time. The other 2 competitors can prepare their rockets and wait for their turns. The organizer will provide the launchers for the competitors for each of their launches.

11. In order to reduce the possibility of error. The competitors will draw lots of their launching sequence and assigned with the respective launchers. In this way, they can practice with the assigned launchers during the trial launching.

12. The competitor who achieves the best score, i.e. the best score of the 2 launches as stated in item 9, will be declared the winner of the Launch Competition.

13. In case of a draw, the second launch will be taken into consideration to determine the winner between the competitors.

**Figure 5:** Water rocket launch site setup plan.