IAA Commission 1 'Space Physical Sciences' Meeting
26 March (Wednesday) 08h30-11h00, 6 rue Galilee (Metro Boissière)
Members-1 room, Paris, France

Minutes of the meeting

Meeting Attendance:
Nickolay Smirnov (secretary), Stamatios Krimigis, Bernard Foing, Susan McKenna-Lawlor, Claudio Maccone, Peter Wenzel, Antonio Viviani, Greg Vane, Yaroslav Yatskiv, David Kendall, Michel Combes.

Agenda:
1. Welcome and adoption of agenda
2. Minutes from the meeting on 23 September 2007 at the Hyderabad International Convention Center, India.
3. Action items from the Paris meeting (20 March 2007)
    1. Susan McKenna-Lawlor will present an interim report to the Commission 1 in one year by the next Commission 1 meeting in Paris in March 2008.
    2. Bob Farquhar will organize at 59-th IAC in Glasgow, 2008 a technical session based on the results of SG 1.4 efforts: "The Next Steps for Human Space Exploration: What are the Alternatives?"
4. Study Group activities
    (a) Revision of SETI Position Paper of 1996 approval. Seth Shostak
    (b) Update on status of "Next Steps for Human Expl Bob Farquhar
    (c) Update on status of "Radiation Hazards en route.." S. McKenna-Lawlor
    (d) New: Protected Antipode Circle Farside Protection Claudio Maccone
    (e) Any new proposal (Active SETI, Post Detection Sci and Tech, etc.)?
5. Preview of Commision 1 relevant events at the 59th IAC at Glasgow
6. Ideas for the 60-th IAC at Daejeon
7. A review of the plans for the COSPAR meeting in Montreal. (David Kendall is Co-Convener with Gregg Vane (JPL) of the IAA Academy Day on 12. 07. 2008 and, if present, can report about the program.) Optional date for a short Commission 1 meeting in Montreal could be Thursday, 17. 07. 2008.
8. Any other business

1. Welcome
Nickolay Smirnov, Commission 1 Secretary, was chairing the meeting. He warmly welcomed the attendees. Participants introduced themselves.
2. Minutes from Hyderabad meeting in September 2007
These were approved.

3. Action items from the Paris meeting (20 March 2007)
A. Susan McKenna-Lawlor presented an interim report to the Commission 1
SG-1.5. **Particle Radiation Hazards en route to and in orbit about Mars.**
Overall Goal: To provide an up-to-date assessment, based on modeling and on *in-situ* measurements, of the particle radiation hazard *en route* to and at Mars against the background of global aspirations to send various unmanned, and ultimately manned, missions to the planet
Seven subtasks were distinguished and several subgroups of researchers formed:
Group 1. Provide an assessment of the particle radiation to be expected while en route to Mars(in orbit about Mars) during Solar Cycle based on flare associated records.

Group 2. Test the success of the predictions through comparing them with in situ measurements recorded aboard Mars Express (ASPERA-3). Determine how solar related disturbances can also disturb Martian environment.
Group 3. (Modelling) Provide an estimate of the particle radiation to be expected at the surface and within the subsurface of the planet based on modeling.
Group 3. (Rover data) Provide an estimate of the particle radiation to be expected at the surface of the planet based on measured data.
Group 4. Determine the consequences of the radiation hazard en route to/at Mars for spacecraft design and component selection.
Group 5. To determine radiation dosage and medical hazards pertaining to astronauts/cosmonauts en route to/at Mars.
Group 6. To develop strategies for mitigation based on increased knowledge of the particle radiation hazard en route to/at Mars for Spacecraft systems and for astronauts/cosmonauts.
It is expected that the individual groups will each ultimately provide one or more chapters for what will be an academy sponsored book (refereed within the Academy) concerning contemporary knowledge of the radiation hazard.

Action items: 1. The group reports would be incorporated into the Academy report. First drafts will be presented during Glasgow meeting. 2. Nickolay Smirnov will contact Gerda Horneck and Inessa Kozlovskaya to provide support to the ongoing study.

B. Bob Farquhar was not present at the meeting. Nickolay Smirnov informed the attendees that Bob Farquhar organized at 59-th IAC in Glasgow, 2008 a technical session based on the results of SG 1.4 efforts: "**The Next Steps for Human Space Exploration: What are the Alternatives?**"

4. Study Group activities
(1) Revision of SETI Position Paper of 1996 approval. Claudio Maccone.
First of all Claudio Maccone informed the attendees on the main changes in the position paper, which was refuse of forbidding active SETI – sending a response signal in case of any detection of one. Commenting the questions on natural radio signal leakage due to radio and TV activity of mankind he informed that it cannot be detected at a distance larger than 30 light years.
Second, he informed of a meeting on SETI to be held a week prior to Glasgo Congress in Paris.
Third, Claudio Maccone reported on the current status of SETI permanent study group. It contains several subgroups each having its own timeline.
1.a – Lunar far side laboratory. The activity is finished in 2005 after having published a paper by Claudio Maccone in Acta Astronautica No 56, 2005, pp. 629-639.
1.b – SETI post detection science and technology. Paul Davis responsible for the activities of this sub group. There was a suggestion from the commission 1 members, that the tasks of the sub group fit more the title: SETI post detection policy.
1.c – Communication with extraterrestrial intelligence. Study group lead by Jill Tarter. She could provide a report in detail on coming in September 2008 to SETI meeting.
1.d – Active SETI (lead by Seth Shostak and Dug Vakoch). Wide spectrum study subgroup, beyond mathematics. Action item: It is necessary to submit official proposal following Academy guidelines by September 2008.
1.e – Protection of Far side of the Moon for scientific purposes(Claudio Maccone, new proposal Protected Antipode Circle Farside Protection). The major item of concern was the "Lunar Embassy" – organization having empowered itself to cell pieces of land on the Moon. IISL has already informed the World community of illeagal character of the activities of this organization. However, additional steps should be undertaken.

(2) Update on status of "Next Steps for Human Exploration". Bob Farquhar was not present at the meeting. However, he submitted a report, which was discussed.
Short Study Description:
To compare two different approaches for human exploration beyond low Earth orbit leading ultimately to the human exploration of Mars. Both concepts utilize evolutionary architectures to achieve the Mars goal. One concept, proposed by U.S. President George W. Bush in January 2004, and subsequently adopted by NASA, would utilize the Moon for testing operational techniques and the demonstration of technologies needed for Mars. An alternative concept, described in an IAA Cosmic Study entitled, "The Next Steps in Exploring Deep Space", would use the Sun-Earth L2 Libration Point and near-Earth asteroids as stepping stones to Mars. The primary factors that are used to evaluate the two concepts are:
1. Science value
2. Cost effectiveness
3. Mission risk
4. Flexibility
5. Sustainability
6. Extension to other exploration destinations (especially Mars)
Progress in past six months:
A meeting of the Study Group was scheduled for the IAC in Hyderabad on September 26, 2007. Unfortunately, the only person at this meeting was the Deputy Study Chair, Dr. Ralph McNutt. The main reason for the poor attendance was that, a few weeks before the IAC, several members decided not to attend the Conference due to security concerns. The few members who did attend the Conference had other conflicts. Nevertheless, we have scheduled another meeting of the Study Group for March 25, 2008 in Paris, and expect to have a much better turnout of members at this time. Moreover, we are still planning to present our preliminary findings in Session A5.3 at the IAC in Glasgow.
The following members have been withdrawn (due to inactivity)
Benton Clark
Thomas Jones
Douglas O'Handley
Jozef van der Ha
Interim results of study will be presented at IAC 2008 in Glasgow, Scotland
Plan to submit Final Report to IAA in Fall 2009
The report was approved.

(3) Update on status of "Radiation Hazards en route to/at Mars" S. McKenna-Lawlor has presented the status in discussing the action items (3.A).

(4) New: Protected Antipode Circle Farside Protection. – Reported byClaudio Maccone and described in item 4.1.e of the present minutes.

(5) Any new proposals – None was suggested. It was recommended to clearly state in the minutes that SETI is a permanent study group of the Commission 1, which could incorporate different sub-groups.

5. Preview of Commision 1 relevant events at the 59th IAC at Glasgow
The following Symposia are relevant: A1 Space life Science. A.2 – Microgravity Science and processes. A.3 – Space exploration. A.5 – Human exploration of the Moon and Mars.

6. Ideas for the 60-th IAC at Daejeon
Suggestion: 3 Messenger flight-by's near Mercury will take place by that time. Photoes will be made. It would be good to have a plenary event on the topic.

7. A review of the plans for the COSPAR meeting in Montreal.

50-th anniversary of the IAA will be celebrated at COSPAR meeting in Montreal, July 2008. Academy day focused on Science will be held. There will be 6 invited lectures.

David Kendall is Co-Convener with Gregg Vane (JPL) of the IAA Academy Day on 12. 07. 2008. Optional date for a short Commission 1 meeting in Montreal could be Thursday, 17. 07. 2008.

8. Any other business

IAA standing committee on scientific activities (SAC) meeting was to be held on 26 march 2008 just after the Commission 1 meeting. Nickolay Smirnov could not attend it, as he had the IAC Steering Group meeting with IPC Co-chairs at that time. Peter Wenzel agreed to attend SAC and present the Report of Commission 1 activities.