

Minutes of the Meeting of IAA Commission 1 on 'Space Physical Sciences'

10 October (Saturday) 13.00-16.00

Congress Centre, Jerusalem, Israel

1.*Welcome: (Prof. S. McKenna-Lawlor, V. Chair)*

SMcKL conveyed to those present the regrets of outgoing Chair Prof. Goswami and incoming Chair Prof. Smirnov that they could not be present. Also, their individual good wishes for a fruitful meeting were relayed.

SMcKL noted that she would both Chair the meeting and act as Secretary.

There were seven attendees: two from the Academy (S. McKenna-Lawlor and A. Viviani) and five from the study groups (Y. Yatskiv, X. Shen, H. Jianping, W. Jian and W. Lin).

It was noted by Prof. Viviani that this would be his last attendance at a meeting of Commission 1 due to a new appointment he had accepted within the Academy.

2.*Agenda*

The agenda of the meeting is contained in Appendix A

This agenda was adopted and the minutes of the Meeting are as follows

3. Minutes of the Paris Meeting (Prof. S. McKenna-Lawlor) ***

Detailed Minutes of the Commission I Meeting held on 23 March 2015 at IAA Headquarters in Paris, France were presented by S.McKL. (Appendix B).

4**. **Adoption of the Minutes

It was noted by Prof. Viviani that his name had not been included in the attendance list and, when that correction had been made, the Minutes were adopted.

5.Study Group Activities

SG1.6 Protected Antipode Circle on the Lunar Farside (Leader Dr. C. Maccone)

At the Paris Meeting Commission 1 recommended that SG 1.6 be closed and that new activities described as ongoing in a presentation made by C. Maccone be made the topic of a follow-up Cosmic

Study. No information in that regard was received from Dr. Maccone and he did not attend the Jerusalem meeting.

SG 1.8 Global Satellite System for Monitoring and Forecasting the Earth's seismic activity (Leader Prof. Degtyarev)

No report was received from Prof. Degtyarev and he did not attend the meeting. Since this was also the case at the previous Paris meeting (March 2015). SMcKL undertook to ask the Academy to contact this study group leader to ascertain if his team wishes to continue or to withdraw from the study.

*SG 1.9**Satellite remote sensing of Aerosols in the Earth atmosphere (Leader Y. Yatskiv).*

Dr. Yatskiv presented an oral report at the meeting.

Since SG 1.9 was considered by Commission 1 to be finished at the previous Paris meeting and a final report was expected to, thereafter, be submitted to the Academy, SMcKL asked why work was continuing. Dr. Yatskiv explained that his group requires a further year of activity in order to provide, through testing, proof of concept of the methodology adopted in their study. He explained in some detail what his group still wants to achieve and SMcKL undertook to present his arguments to the IAA SAC and request permission for SG 1.9 to continue for one more year.

*SG 1.10 Terrestrial Analog Comparison of Terrestrial and Planetary Geology (Leader Prof. Coradini).

No report on SG 1.10 was received from Prof. Coradini and he did not attend the meeting

SG 1.11 Comparative Climatology.Studying planetary climates to understand our planet.

A report on SG 1.11 and an overview of related activities (Appendix C1 and Appendix C2) were forwarded by Dr. R. Ramachandran on this activity.

SG 1.12 Virtual Exploration: Telepresence Exploration (Leader Prof. Coradini)

No report on SG 1.12 was received from Prof. Coradini and he did not attend the meeting

SG 1.13 Planetary Science Enabled by the New Generation of Cube-Sats and Miniaturized Scientific Instruments (Leader Dr. G. Vane).

A report (Attachment D) was received from G. Vane showing that SG 1.13 is in a good state.

SG 1.15 Integrated Precursor Distinguish in Multi-Geophysical Fields around Global Earthquake Events with Magnitude Larger than 7 in Recent Ten Years (Leader Prof. Weimin).

A report (Attachment E) was received in advance of the meeting and also an oral presentation was made. It was noted that this study had formally kicked off just a few days before and the goals and procedures adopted by the Group were described.

***6.The 11th IAA Conference on Low Cost Planetary Missions ***

This meeting took place in Berlin from 9-11 June 2015 (T. Spohn and G. Vane acted as Chairmen). Since G. Vane was not present to describe this event, SMcKL undertook to ask him to provide an account of what happened at the forthcoming Paris meeting (2016).

7.Second IAA Symposium on Space Flight Safety

The second IAA Symposium on Space Flight Safety was held in St. Petersburg from 29 June-2 July, 2015. See the account in Attachment F provided by Prof. Smirnov.

8. Any Other Business

At the request of Prof. Goswami, SMcKL recalled the tradition of Commission 1 to provide a program on the first day of COSPAR meetings. In the context that the next (41 st) COSPAR Scientific Assembly will be organized in Istanbul from 30 July - 7 August 2016, Prof. Goswami noted that he would address this topic and how it might be handled by Commission 1 at the Spring Meeting of the Academy in Paris (2016).

APPENDIX A

Agenda of Meeting of IAA Commission 1 on ‘Space Physical Sciences’

10 October (Saturday) 13.00-16.00

Congress Centre, Jerusalem, Israel

1. Welcome: (Prof. S.McKenna-Lawlor, V. Chair)

2. Self-introduction

(i) Commission-1 Members; (ii) All other attendees

3. Minutes of the Paris Meeting (Prof. S. McKenna-Lawlor)

4 Adoption of the Minutes

5. Status of Study Group Activities: (Oral and written accounts)

5 (a): Status of follow-on study

Protected antipode circle on Lunar farside (Cl. Maccone)

Presentation Cl. Maccone

5 (b): Status of Study Group 1.9;

Satellite remote sensing of Aerosols in the Earth atmosphere

Presentation Y. Yatskiv

Final report to be forwarded to the Sec. General.

5 (f) Status of Study Group 1.11

Comparative climatology; studying planetary climates to understand our planet

Written reports received from Dr. R. Ramachandran (presented by SMcKLawlor)

5(g) Status of Study Group 1.14

The integrated precursor distinguish in multi-geophysical fields around global earthquake events with magnitude larger than seven in recent ten years

Written report received from Dr. Weimin Bao (presented by SMcKLawlor)

6. LCPM - 11

A report on this meeting to be sent by Dr.G. Vane and
presented in absentia by S.McKLawlor

7. Second IAA Symposium on Space Flight Safety

A report on the second IAA Symposium on Space Flight Safety has been
received from Prof. N. Smirnov'

Presented in absentia by S.McKLawlor

8. Any Other Business

General enquiry regarding new study group proposals.

APPENDIX B

Minutes of the Meeting of IAA Commission 1 on 'Space Physical Sciences'

23 March, 2015, (Monday 14:00-16:00)

IAA Head Quarters,

Paris, France

1. Agenda

2. The agenda of the meeting is contained in **Appendix 1**
3. This agenda was adopted and the minutes of the meeting are as follows:

4. 1.Welcome

5. The Chairman of Commission-1, Prof. J. N. Goswami, welcomed Commission-1 executives, members of Commission 1 and study group representatives.
6. Commission executives included: The Commission Chair: J. N. Goswami (India), The immediate Past Commission Chair: G. Vane (USA), Commission Secretary: S. McKenna-Lawlor (Ireland).
7. Commission Members; G. Schwehm (Germany); S. Ulamec (Germany); Cl. Maccone (Italy); A. Viviani (Italy); T. Krimigis, (USA);
8. Prof. Y. Yatskiv (Ukraine) represented Study Group 1.9.
9. Prof. B. Weimin (China) attended the discussion and presentation of his new study group proposal (Section 5).
10. Dr. R. Lopez who was scheduled to be elected an Associate Member of the Academy on that evening, attended as an Observer.

2. Self Introduction

All of those present introduced themselves and described their scientific areas of interest. Breaking news concerning the Rosetta Lander Philae on the surface of comet 67P/Churyumov Gerasimenko was provided by G. Schwehm, S. Ulamec and S. McKenna-Lawlor.

3. Minutes of the Toronto Meeting

The minutes of the Toronto Meeting (including a small addition made earlier by the Academy) were presented by SMcKL and accepted without change. ([Appendix 2](#)).

4. Study Group Activities

There are currently 6 active study groups under the aegis of Commission 1 (1.6, 1.8, 1.9, 1.10, 1.12 and 1.13.

SG 1.6 Protected antipode Circle on the Lunar Farside. Presentation by Cl. Maccone.

The most recent version of this study proposes the creation of PAC (Protected Antipode Circle), an area on the lunar far-side, centred at the antipode and spanning an angle of 30° in longitude, latitude and all radial directions from the antipode. In view of its unique features PAC is proposed in the study to be officially recognized by the UN as an International Protected Area where 'no radio communication by humans will take place now and in the future for the benefit of all humankind'. New initiatives in progress within the study were also outlined.

Prof. Goswami commented that UN recognition of such a site as a "Protected Area" through IAA effort is unlikely based on experience thus far. He also noted that, before Study 1.6 could be considered closed, a refereed paper on the outcome should be published in Acta Astronautica. Dr. Maccone referred to his existing paper "Protected antipode circle on the Farside of the Moon (Acta Astronautica 63, 110-118, 2008)".

It was then recommended that the present study be considered closed and that new activities described as ongoing in the presentation be now made the topic of a follow up Cosmic Study.

SG 1.8 Global Satellite System for Monitoring and Forecasting the Earth's seismic activity..

No report was received from the study group leader Prof. Degtyarev, and no representative of his group was present.

SG 1.9 Satellite Remote Sensing of aerosols in the Earth's atmosphere

A report on this study was presented by the study group leader Dr. Y. Yatskiv.

This study was deemed by Commission 1 to be complete and that a final report should next be submitted to the Chair of Study Group Activities within the Academy.

SG 1.10. Terrestrial Analogue Comparison of Terrestrial and Planetary Geology.

The study group leader Prof. M. Coradini forwarded a report on this study to Commission 1 (**Appendix 3**). It was noted therein that one of the main goals is to investigate existing laboratory and university capacities and solicit interest in the topic from developing and emerging countries with interest in space sciences and exploration. A particular focus involves offering affordable access for space exploration personnel in Latin America and Africa to using the IAA network.

Progress made within the last six months was deemed by the Commission to be satisfactory.

SG 1.12. Virtual Exploration (Telepresence Exploration)

The study group leader, again Prof. M. Coradini, forwarded a report on this study to the Commission (**Appendix 4**).

It is noted therein that virtual reality applications primarily comprise visual experiences. A further virtual reality technique (Tele-robotic) is described which would allow, for instance, a robotic arm controlled by an operator on Earth wearing a special robotic data glove to perform tasks such as : picking up rock samples on the Moon or on a near earth object (NEO); performing operations in a lunar lava tube. The concept of “Telepresence” is also proposed to be introduced to enlarge the scope of this study.

Progress within this study group was deemed by Commission 1 to be satisfactory.

SG 1.13 Planetary Science Enabled by the New Generation of Cube-Sats and Miniaturized Scientific Instruments.

G. Vane presented progress made in this study and also provided a written report (**Appendix 5**).

The focus of this study group is on planetary science activities that are presently realizable using Cube-sats and miniaturized scientific instruments. Detailed outlines of the science, instrument, spacecraft, and mission design sections of this study are already available.

The status and progress of SG-13 were deemed to be satisfactory by the Commission. The Commission also noted that an earlier debate as to whether this study should be carried out in Commission IV rather than in Commission 1 had resulted in retaining this study group in Commission 1.

5. Proposal for a new study group

A proposal for a new study group entitled “*Integrated Precursor Distinguish in Multi-Geophysical Fields around Global Earthquake Events with Magnitude larger than 7 in Recent 10 Years*” was received by the Chairman of Commission 1 from Prof. Bao Weimin of the IAA Studies Centre in China.

Since the Academy advised that it is necessary for new studies to be endorsed by a relevant Commission before they are considered for acceptance within the Academy, Prof. Weimin was invited by the Chair to present his study proposal (**Appendix 6**) to **Commission 1**.

The presentation was made in the presence of Prof. Weimin by a member of his study group. Comments and suggestions were put forward by several Commission members and the presenter indicated that these will now be taken into account. The Commission in principle

considered the proposal to be suitable for consideration by the Chair of 'Study Group Activities' who will take the final decision as to its acceptance.

6. The 11th IAA Conference on Low Cost Planetary Missions.

It was reported by G. Vane that the next (11th) LCPM Conference will be held in the 'Einstein Saal' at the Archenhold Sternwarte in Berlin, Germany from 9-11 June 2015 (hosted by the DLR). Tilman Spohn and G.Vane will act as co-chairmen during this event. The heads of at least five major space agency planetary programs have committed to be present in Session 1 with another such acceptance pending. Further details are contained in **Appendix 7**.

7. The Second IAA Symposium on Spacecraft Safety.

SMcKL reported on a communication to Commission 1 from Prof. N. Smirnov concerning his organization of a second IAA Symposium on Spacecraft Safety, to be held in St. Petersburg, Russia (29 June - 2 July 2015).

The proposed sessions are:

1. Fire safety of Space vehicles.
2. Protection of Space structures from space debris collisions and micrometeoroids.
3. Safety at launch place and during takeoff.
4. Propulsion systems.
5. Radiation hazards and safety.
- 6 Supercomputer predictive modeling for ensuring Space program safety.

Session Chairs from Commission 1 will include N. Smirnov (topic 2) and Susan McKenna-Lawlor (topic 5). Plans are in place to publish (refereed) contributions to the Symposium in a Special Issue of Acta Astronautica.

A more detailed account of this Symposium is contained in **Appendix 8**.

8. Any Other Business

Study Group 1.11: In view of lack of progress in assembling a study group team as proposed originally, and also lack of response from the prospective study group leader, the **Commission decided that this study should be cancelled and that this decision should be reflected in the IAA website.**

A discussion aimed at strengthening study group activities through the making of direct contact with individual members by a commission representative requesting the submission of new study group proposals, was initiated. An e-mail list of members should be provided to each Commission to support this process. The discussion, however, was curtailed due to lack of time. The Commission Chair indicated that he would mention this proposed action at a

meeting of SAC and the topic will also again be tabled at the Commission I meeting in Jerusalem.

Susan McKenna-Lawlor (Sec. Commission 1).

APPENDIX C

The status of activities as of September 30, 2015 on the study group 1.11 on Comparative Climatology:

1. Form and support an ad hoc International steering committee for CCTP (Comparative Climatology of Terrestrial Planets) Conference in NASA Ames Research Center, Mofett Field, CA, during Sept 8-11, 2015. **COMPLETED VIA THE CCTP2 Science Organising Committee (SOC)**
2. CCTP steering committee will work with NASA Analysis Groups (AGs), COSPAR, and IAA organizational elements. **ON-GOING**
3. A key recommendation relevant to meeting the IAA objectives from the international assembly of scientists at the CCTP1 conference was that there is a need for a long-term, continuous, observation/measurement of the solar system's terrestrial planets. Climate is a planetary-wide phenomenon, and a deeper understanding is possible by continuously observing the other examples in the solar system. CCTP can move forward with NASA's continuing support for planetary observations using orbiting telescopes, high altitude balloons, and sounding rockets. **STRATEGIC DIALOGUES REQUIRED BETWEEN RESEARCH INSTITUTIONS AND ALSO SPACE AGENCIES, IN COSPAR, IAA CLIMATE CONFERENCE AND OTHER VENUES(INITIATED)**
4. Following CCTP2 conference , in NASA Ames Research Center, Mofett Field, CA, during Sept 8-11, 2015, the outcome of the conference will be absorbed in the activity as soon as the report of the conference is received.(**REPORT AWAITED**)

Study group 1.11 : Comparative Climatology-Studying Planetary Climates to understand our Planet

**Co-chairs: Adriana Ocampo (USA)
Radhika Ramachandran(India)**

Members :

Bonnet -Roger-Maurice(France)
Limaye Sanjay (USA)
Hollingsworth Jeffery L (USA)- Invited
Domagal -Goldman , Shawn(USA)- Invited
Nizy Mathew (India)- Invited
Manoj Kumar Misra (India)- Invited
Rajesh V J(India) -Invited

Over view:

The study proposes to develop an understanding of the fundamental rules that govern planetary climates. One of the main objectives is to develop a general theory of planetary climate so as to accurately envision and model the atmospheres of terrestrial planets.

The subtopics that are relevant to this are:

Develop climatology of Earth, Mars, Venus and Titan through studies on

- Climate Change on Earth and other Terrestrial planets
- Geology and Climate of terrestrial planets
- Extra Solar Planetary atmosphere- Chemistry and Observations
- Solar- Atmosphere Interactions

The outcome from already established Workshops and /or Conferences will also be utilised for deriving major conclusions in the report.

Current Status

Detailed proposal is under preparation. Experts have been indentified under each sub - topic .

(Status in attached report)

Schedule:

Definition of the objectives - Finalised

Detailed Proposal with recommendations- March 2016

Report after detailed investigations- April 2017

Draft report after peer-review- July 2017

Final report- October 2017

APPENDIX D

IAA Study Group Status Report 9 October ~~2015~~

Responsible Commission: Commission 1

Study Number and Title: Planetary Science Enabled by the New Generation of Cube-Sats and Small-Sats, and Miniaturized Scientific Instruments, 1.13

Short Study Description (repeat from Study Group Proposal):

In light of recent advances in science instruments and spacecraft technologies that have emerged in just the past couple of years, Cube-Sats and other very small spacecraft can now be considered for use in planetary exploration, either as adjuncts to larger missions on which they could “catch a ride” to the most remote and challenging destinations in the solar system, or in some cases, as stand-alone missions of their own.

The new generation of Cube-Sats that is emerging is also compatible with capabilities that exist within many universities. This enables students to gain first-hand experience in the design and development of spaceflight hardware, and hence provides an opportunity to further expand the workforce in space sciences and aerospace. If Cube-Sats are launched “piggy back” on larger missions, they also provide a low-cost opportunity for emerging nations to develop and test their capabilities in an endeavor that is currently a very expensive enterprise that requires decades of dedicated capacity building.

In this study we will focus first on the planetary science that can now be considered using these emerging capabilities. The assessment of science opportunities will be anchored in the planetary science priorities of those nations that already have long-term plans and priorities. A key element of the study will be identification of current capabilities and future trends in science instrumentation that are compatible with Cube-Sats and other very small platforms such as micro-rovers, balloon-borne planetary atmosphere probes, etc. A brief survey of emerging capabilities in spacecraft platforms, namely Cube-Sats, miniature rovers, etc, also will be completed in order to, finally, explore example mission concepts where all key elements come together in the pursuit of new scientific knowledge of the solar system.

Progress in past six months:

The study team, now comprised of three sub-teams, (1) Science Team led by Dr. Julie Castillo (JPL, USA), (2) Instruments Team led by Dr. Carol Raymond (JPL, USA) and (3) Mission Architecture and Spacecraft Team led by Dr. Pierre Bousquet (CNES, FR). The team has created a first complete draft

of the study report and is preparing to send it to the full team for comment by the end of October, 2015. Further, papers were presented by members of the study team at the IAA Low-Cost Planetary Missions Conference (LCPM-11) in Berlin, this past summer. We benefited greatly from interactions with our colleagues at LCPM-11 and new ideas and information are now being incorporated into the final study report accordingly.

Perhaps the most significant modification to the study resulting from the knowledge we gained at LCPM-11, was the decision to include spacecraft up to but not exceeding 100 kg in mass, the definition for “Small-Sat” that is widely accepted in the world today. The Study now addresses scientific applications that would make the most of the novel architectures enabled by Small-Sats, as defined by those less than 100 kg in mass, but we continue to place particular emphasis on Cube-Sats in the 10s of kg mass range. The scientific applications for Cube-Sats and Small-Sats in this study are those that are aligned with the priorities and strategic goals of international space agencies.

The study report leads off with a synopsis of the high priority planetary science goals and objectives that could be amenable to the use of Small-Sats and Cube-Sats. We have used the published agency scientific goals documents to formulate the synopsis in order to cast a wide net of possible scientific applications. The science goals have been translated into classes of scientific measurements that are required to obtain the data necessary for the addressing of the goals. The next chapter in the draft report is devoted to an assessment of the current state of art of Cube-Sat and Small-Sat compatible scientific instruments that are currently flight-ready. We also look at the requirements and constraints that must be considered as we extend the number of instruments in the future.

In terms of mission implementation architectures, a subdivision into three categories has been adopted: (1) *in situ* spacecraft (orbiters, landers, rovers, penetrators, etc), (2) deep space probes with no fixed-point final destination (such as probes to conduct *in situ* magnetic field observations), and (3) Earth orbiters with relevance to planetary science (such as asteroid finders or technology demonstrators). Spacecraft in categories (1) and (2) can be free-fliers that make their way alone to their distant destinations in the solar system from, say Geosynchronous transfer orbits to which they might be delivered as a secondary payload on a host launch, and those carried to a distant destination on a “mother spacecraft” bound for that destination as its primary target.

Website Study Information up to date? (Study Group Membership, Study Plan and Schedule): under development

Issues requiring resolution? (recommend approach): None

Product Deliveries on Schedule? (If modified explain rationale):

.

The complete draft report is expected in late November or early December 2015. This represents a schedule slip of about five months due primarily to the fact that the leaders of two of our sub-teams, instruments and spacecraft, were consumed by numerous mission-critical commitments. (The leader of the instruments sub-team is Deputy Principal Investigator on the Dawn Mission at Ceres, and the leader of the mission architectures and spacecraft sub-team is the leader of the CNES group that is building the major instrument for the InSight Mars Mission.) Their commitments are tapering off in the coming months and that will enable us to make up for some of the schedule loss.

Study Team Member Changes? No changes

Name of person providing Study Group Status (Study Group Chair or Co-Chair):

Gregg Vane and John Baker

Status Report Date:

9 October 2015

Study Team Membership Changes

9 October 2015: No changes since last report

APPENDIX E

IAA Study Group Status Report

Responsible Commission: Commission 1 - Space Physical Sciences

Study Number and Title: SG1.14 - Title: Integrated Precursor Distinguish in Multi-Geophysical Fields around Global Earthquake Events with Magnitude larger than 7 in Recent 10 Years

Short Study Description (repeat from Study Group Proposal):

Earthquake anomaly distinguishing and determination is one of the most difficulties in the area of natural sciences in the world. Space observation have been showing strong capability to monitoring global seismicity and acquires ten`s times of case study than ground-based observation. This proposal mainly focus on the case study of global strong earthquake during last 10 years to draw out the statistical characteristics of space-based precursors, including Ionospheric disturbances, Geomagnetic and geo-electrical fields, gravity field, infrared, remote sensing as well as crustal deformation by GNSS and InSAR, making connections among them in temporal and spatial distribution to ensure the reliability of anomaly and improve the distinguishing probability related to earthquakes, and try to make a proposal on global virtual system on earthquake monitoring from space by integrate different satellite resources with multi geophysical and geochemical parameters. Developing and exploring the new way for earthquake monitoring and prediction, as well as the reliability analysis on anomalies in multi geophysical and geochemical parameters around same earthquakes. Advancing the establishment of the global virtual satellite constellation on earthquake monitoring, including electromagnetic, meteorological, infrared RS and hyper spectral satellites etc.

Progress in past six months:

Under the support of China Aerospace Science & Industry Corp., the project secretary Prof. Xuemin Zhang contacted with the IAA office and commission 1 secretary to confirm the project of “Integrated precursor distinguish in multi-geophysical fields around global earthquake events with magnitude larger than 7 in recent 10 years” . Then the IAA office make this project into the formal study group list as SG1.14, and then sent appointment letters to all the group members, and the pages with signatures have been scanned and fed back to IAA office from the chair and some members continuously.

On Sep. 22, 2015, we have the Kick-Off meeting in the Institute of Crustal Dynamics, CEA. Prof. Xuhui Shen hosted the meeting. Four international members of Prof. Dimitar Ouzounov, Michel Parrot, Katsumi Hattori, and Valerio Tramutoli attended this meeting with Chinese team. The proposal’s goal, methodology and timeline were introduced by Prof. Xuemin Zhang, the secretary of this proposal. The international scientists reported their new achievements in earthquake research in the different aspects, including electromagnetic field, infrared, geomagnetic field, GPS TEC and so on. Some presentations were also exhibited by Chinese members from Wuhan University and Institute of Earthquake Science, CEA, about the earthquake precursors distinguishing and spheres coupling mechanism. Finally the meeting plan related to this proposal was made in next year and 2017.

Website Study Information update: (please give any update regarding Study Group Membership, documents, Study Plan and Schedule):

Some members will send back their signatures for appointment, please update it in time.

Issues requiring resolution? (recommend approach):

Nothing.

Product Deliveries on Schedule? (If modified explain rationale):

Yes. Our study group was approved by the IAA in June 2015. We will complete the task in 3 years.

Study Team Member Changes? (List any Study Team Members that you wish to discontinue, and provide names plus contact coordinates of any Members you wish to add on the second page of this Study Update form.) Note: Complete contact information including email, tel. and fax must be provided for all additions. Only Members with complete contact information will be listed and receive formal appointment letters from the IAA Secretariat.)

Yes.

All the members whose names were not found in the membership list of IAA website about SG1.14 were asked to submit their appointment approval to IAA office as soon as possible.

We recommend new international members to participate into this proposal.

In the meantime, the most recent list of study group members includes:

Chair: Bao Weimin

Co-Chair: Contant Jean-Michel

Co-Chair: Kuznetsov Vladimir

Secretary: Xuemin Zhang

Membership:

Cao Jinbin

Du Jianguo

He Liming

Ouzounov Dimitar

Shen Xuhui

Name of person providing Study Group Status (Study Group Chair or Co-Chair):

Dr. Weimin Bao (Study Group Chair)

Status Report Date: September 24, 2015

Study Team Membership Changes

Add:

Name: Jann-Yenq Liu

E-mail: tigerjyliu@gmail.com

Phone: +886-3-4227151 ext. 65763/Fax: +886-3-4224394

Mailing address: Institute of Space science, National Central University, Chung-Li 320, Taiwan

Name: Tetsuya Kodama

Current email address: kodama.tetsuya@jaxa.jp

Tel./Fax:

Mailing address: Satellite Operation Engineering Department, Office of Satellite Application, JAXA, 2-1-1, Sengen, Tsukuba, Ibaraki 305-8505, Japan

Name: Piergiorgio Picozza

Current email address: picozza@roma2.infn.it; Piergiorgio.Picozza@roma2.infn.it

Tel./Fax:

Mailing address: Università degli Studi di Roma Tor Vergata, Via Orazio Raimondo,18 - 00173 Roma, Italia

APPENDIX F

Report on the IAA event

2-nd International IAA Symposium on

***SPACE FLIGHT
SAFETY***



International Symposium

June 29 – July 3, 2015

Saint Petersburg, Russian Federation

SPACE FLIGHT SAFETY

The Space Flights Safety symposium — the international action consolidating the international efforts on safety of space flights at new technological and technological level.

Symposium language — English, Russian.

It was held in St. Petersburg in the period since June 29 till July 3. Venue — the congress-hall and Proving ground «Special Materials Corp».

TOPICS

1. Fire safety of Space vehicles.
2. Protection of Space structures from space debris collisions and micrometeoroids.
3. Safety at launch place and during takeoff.
4. Radiation hazards and safety.
5. Supercomputer predictive modeling for ensuring Space program safety.
6. Power propellants.

SFS-2015 SYMPOSIUM DAY BY DAY

June 29

Registration, accommodation	10.00–17.00
Pre-Symposium meetings of the sections	15.00–17.00

June 30

Technical Tour to innovative proving ground «Special Materials Corp.»	10.00–13.00
Discovering products on blast suppression «Fountain»	13.00–14.00
Break	14.00–15.00
Technical Tour to Museum of Pioneers of Cosmonautics	16.00–18.00

July 1

Plenary reports	10.00–12.45
Lunch	12.45–13.15
Plenary reports	13.30–17.15
Summing up the first day	17.30

July 2

Plenary reports	10.00–12.45
-----------------	-------------

Lunch	12.45–13.15
Plenary reports	13.30–17.15
Summing up the second day	17.30

July 3

Roundtable discussions	10.00–11.00
Visit branch corporations	11.15–14.00
Summing up the conference results	14.15–15.00

Symposium events

Venue of plenary sessions July 1 till July 3, 2015 — Scientific and production association of special materials (St. Petersburg, Sampsonievsky pr. 28a), meeting hall.

During the Symposium **23 technical lectures** were delivered. Timing for the lectures: totally 30 min, including 20 min oral presentation, 5 min questions and answers, 5 min discussion.

The **G.A.Tyulin medals** of the Russian Federation of Cosmonautics were awarded to **Mikhail Silnikov and Vitaliy Adushkin**.

The **A.Ya.Sagomonyan medals** of the Moscow M.V.Lomonosov State University, Mechanics and Mathematics were awarded to **Grunde Jomaas and Jaye Koo**.

SCIENTIFIC ORGANIZING COMMITTEE

Program Chair:

Nickolay Smirnov — Prof., Dr.Sc.-Hab., IAA Vice Chair

Moscow M.V. Lomonosov State University & Scientific Research
Institute for System Studies Russian Academy of Sciences (NIISI RAS)

Country: Russia

Co-chair:

Mikhail Silnikov — corresponding member of RAS, academician of RARAN, Prof., D.Sc.-Hab., General Director of «Special Materials Corp.», Director of Institute of Military Engineering and Safety Research

Country: Russia

Vitaliy Adushkin — Academician RAS, Institute of Geosphere Dynamics

Country: Russia

Vladimir Betelin — Academician RAS, Director of Scientific Research Institute for System Studies

Country: Russia

K. Takayama — Prof., corr. Tohoku University

Country: Japan

Christophe Bonnal — CNES, Paris

Country: France

Grunde Jomaas — Technical University of Denmark, Kgs. Lyngby

Country: Denmark

Dmitrii Panov — General Director «NPO «Technomash»

Country: Russia

Igor Rubtsov — Director of scientific Analytic Centre «NPO «Technomash», Russian Space Agency

Country: Russia

Jean Michel Contant — IAA Secretary General

Country: France

Jaye Koo — Korean Space University, Prof.

Country: Korea

Aleksey Shalkovskiy — vice director, Measurements equipment

Country: Russia

LOCAL ORGANIZING COMMITTEE

Mikhailin Andrei — vice director, corresponding member of RARAN, doctor of technical sciences, General Director Deputy in charge for science and development «Special Materials Corp.»

Sazykin Andrei — chief of Scientific and Methodical Center «Special Materials Corp.», PhD

PHOTO-REPORT



Nickolay Smirnov delivering award to Grunde Jomaas.



Nickolay Smirnov delivering award to Mikhail Silnikov



Nickolay Smirnov delivering award to Vitaliy Adushkin



Session chairs Mikhail Silnikov, Nickolay Smirnov and Vitaliy Adushkin



Symposium session





Discussions



Vitaliy Adushkin delivering plenary lecture