

CHARTER

IAA STUDY GROUP ON SMALL SATELLITE MISSIONS FOR EARTH OBSERVATION

within the Academy Commission IV

Chairpersons: Dr. Rainer Sandau (Germany), Dr. Arnaldo Valenzuela (Italy)
Secretary: Dr. Larry Paxton (USA)

SCOPE

It is the intention of the IAA Study Group on Small Satellite Missions for Earth Observation to bring within the reach of every country the opportunity to operate small satellite Earth observation missions and utilize the data effectively at low costs, as well as to develop and built application-driven missions. In this context the study group supports all activities to develop and promote concepts and processes by various user communities to conduct or participate in Earth observation missions using small, economical satellites, and associated launches, ground stations, data distributions structures, and space system management approaches.

Small satellite missions for Earth observation can easily be tailored to the particular solutions of a country or a group of countries concerning the geography, economical and environmental needs. Novel types of constellations of small satellites are currently being designed that could serve the application needs and economical possibilities of countries and user communities by sharing the contributions and the costs. The use of low-cost satellite missions for educational purposes will also be considered.

The IAA Study Group on Small Satellite Missions for Earth Observation have the following general goals which are partially adopted from the Terms of References of the former Committee on Small Satellite Missions:

- 1) Organizing symposia at the International Astronautical Congresses, COSPAR and stand-alone symposia in Berlin.
- 2) Organize a study on “Cost-Effective Earth Observation Missions”.
- 3) Making presentations to countries and organizations throughout the world.
- 4) Working together with other professional society groups to expand our knowledge base and contacts, e. g. COSPAR and IAF.
- 5) Searching for ways to cooperate with other international organizations having similar goals, e. g., the United Nations and the International Space University.
- 6) Prepare a White Paper “Small Satellite Missions for Earth Observation” in order to provide information for decision makers, scientists, engineers, and managers about the general situation in the field of small satellite missions for Earth observation and possibilities to generate optimized/improved system designs.

In order to further the study group’s Objectives it is intended to pursue also the following specific goals:

- 1 Continue the series of bi-annual Symposia on Small Satellites for Earth Observation in Berlin
 - Bringing together users, provider, educators, specialists, and decision makers
 - Addressing the transition to the “past 2000” era regarding
 - user requirements
 - technology basis

according to the needs and future development.

- 2 Organize session on the upcoming IACs on Small Satellites for Earth Observation with special topics, supporting the planned White Paper on “Small Satellite Missions for Earth Observation”.
- 3 Promote the development and use of new ideas for cost-effective Earth Observation Missions, e. g.,
 - new EO concepts
 - technologies of the new millennium
 - micro and nano satellite constellation concepts
in order to achieve EO solutions with the potential of sharing contributions and making use of
 - national and/or international cost distribution
 - national and/or international data interpretation distribution.
- 4 Create and propose ideas for commercialization of EO missions.

SYMPOSIA AND OTHER PROGRAMS

Actually, the following symposia were organized:

- 1 1st IAA International Symposium on Small Satellites for Earth Observation, Berlin, Germany, November 1996
- 2 2nd IAA International Symposium on Small Satellites for Earth Observation, Berlin, Germany, April 1999
- 3 3rd IAA International Symposium on Small Satellites for Earth Observation, Berlin, Germany, April 2001
- 4 IAA on the IACs 1999, 2000, 2001 on Small Satellites for Earth Observation: Lessons Learned and New Generation Missions

The following symposia are planned:

- 5 IAA session on the World Space Congress on Small Satellites for Earth Observation, Lessons Learned and New Generation Missions for Houston, 2002
- 6 Joint session with COSPAR on the World Space Congress in Houston, 2002, on Low-Cost Satellite Missions for Observation of the Earth and the Near Earth Environment
- 7 4th IAA International Symposium on Small Satellites for Earth Observation. Next symposium to take place in Berlin, Germany, April 7-11 2003
- 8 IAA session on the 54th IAC
“Cost-Effective Missions” for Bremen 2003

- 9 IAA session on the 55th IAC (2004)
- 10 5th IAA Symposium on Small Satellites for Earth Observation, Berlin, April 2005
- 11 IAA session on the 56th IAC (2005)

PUBLICATIONS

Actually, the following publications are issued:

- 1 H. P. Röser, R. Sandau, A. Valenzuela (Eds.), Small Satellites for Earth Observation, Digest of the International Symposium of the International Academy of Astronautics (IAA), Berlin, November 4-8, 1996, Walter de Gruyter, Berlin, New York
- 2 Special Issue of Acta Astronautica, Selected Proceedings of the IAA International Symposium on Small Satellites for Earth Observation, Berlin, Germany, 4-8 November 1996, Vol. 39, No. 9-12, 1996, Elsevier Science Ltd.
- 3 H. P. Röser, R. Sandau, A. Valenzuela (Eds.), Small Satellites for Earth Observation, Digest of the 2nd International Symposium of the International Academy of Astronautics (IAA), Berlin, April 12-16, 1999, Wissenschaft & Technik Verlag
- 4 Special Issue of Acta Astronautica, Selected Proceedings of the IAA International Symposium on Small Satellites for Earth Observation, Berlin, Germany, 12-16 April 1999, Vol. 46, No. 2-6, 2000, Elsevier Science Ltd.
- 5 H. P. Röser, R. Sandau, A. Valenzuela (Eds.), Small Satellites for Earth Observation, Digest of the 3rd International Symposium of the International Academy of Astronautics (IAA), Berlin, April 2-6, 2001, Wissenschaft & Technik Verlag

Position Paper on Cost-effective Satellites for Earth Observation Missions (planning phase)

The following publications are expected:

- 6 Special Issue of Acta Astronautica, Selected Proceedings of the 3rd IAA International Symposium on Small Satellites for Earth Observation, April 2-6, 2001, Berlin, Germany
- 7 1st Draft of the Position Paper "Cost-Effective Earth Observation Missions", October 2002
- 8 Digest of the 4th IAA Symposium on Small Satellites for Earth Observation, April 7-11, 2003, Berlin, Germany
- 9 2nd Draft of the Position Paper "Cost-Effective Earth Observation Missions", April 2003
- 10 Special Issue of Acta Astronautica, Selected Proceedings of the 4th IAA Symposium on Small Satellites for Earth Observation, April 7-11, 2003, Berlin, Germany
- 11 Position Paper "Cost-Effective Earth Observation Missions", October 2003
- 12 Digest of the 5th IAA Symposium on Small Satellites for Earth Observation, April 2005, Berlin
- 13 Special Issue of Acta Astronautica, Selected Proceedings of the 5th IAA Symposium on Small Satellites for Earth Observation, April 2003, Berlin
- 14 Final and approved by IAA Version of Position Paper "Cost-Effective Earth Observation Missions", October 2004
- 15 White Paper on "Small Satellites for Earth Observation", October 2005