



UNITED NATIONS
Office for Outer Space Affairs

INFORMATION NOTE

United Nations/South Africa Symposium on Basic Space Technology "Small satellite missions for scientific and technological advancement"

Stellenbosch University, South Africa

11-14 December 2017

Co-organized by the United Nations Office for Outer Space Affairs and
the Government of the Republic of South Africa

1. Introduction

Space technology and its wide range of applications contribute essential information and services to many aspects of sustainable development, that is, economic and social development and environmental conservation and protection. Small satellite missions are becoming increasingly important in supporting these roles of space technology, as well as in the advancement of basic space science and technology, notably through capacity building. In 2009, the United Nations Programme on Space Applications, implemented by the Office for Outer Space Affairs, launched the Basic Space Technology Initiative (BSTI, <http://www.unoosa.org/oosa/en/ourwork/psa/bsti/index.html>) in support of capacity-building for the development of basic space technology.

From 2009 to 2011 a series of three United Nations/Austria/European Space Agency Symposiums on Small Satellite Programmes for Sustainable Development were held in Graz, Austria. Since 2012, BSTI has been organizing international symposiums on basic space technology in the regions that correspond to the United Nations Economic Commissions for Africa, Asia and the Pacific, Latin America and the Caribbean, and Western Asia.

The first Symposium was held as the United Nations/Japan Nano-Satellite Symposium, hosted by the University of Tokyo and the University Space Engineering Consortium (UNISEC) in Nagoya, Japan, from 10-13 October 2012. The second Symposium was held as the United Nations/United Arab Emirates Symposium on Basic Space Technology, hosted by the Emirates Institution for Advanced Science and Technology (EIAST) in Dubai, United Arab Emirates, from 20-23 October 2013. The third Symposium was held as the United Nations/Mexico Symposium on Basic Space Technology hosted by the Center for Scientific Research and Higher Education (CICESE) and the Mexican Space Agency in Ensenada, Baja California, Mexico, from 20-23 October 2014.

The present and fourth Symposium will be held as the United Nations/South Africa Symposium on Basic Space Technology at the University of Stellenbosch and will focus on the African region. It is organized by the United Nations Office for Outer Space Affairs in cooperation with the Department of Science and Technology and the Stellenbosch University, on behalf of the Government of the Republic of South Africa.

2. Symposium Objectives

The objectives of the UN/South Africa Symposium will be to:

1. Review the status of capacity-building in basic space technology for small satellites including lessons learned from the past and on-going development activities with a focus on regional and international collaboration opportunities, in particular for countries in Africa;
2. Examine issues relevant to the implementation of small satellite programmes, such as organizational capacity-building, development and testing infrastructure and launch opportunities;
3. Review state-of-the-art scientific applications of small satellite programmes and their associated supporting technological developments, in particular with focus on applications for agriculture, environment and city monitoring, and education to promote a sustainable growth, in line with the 2030 Agenda for Sustainable Development;
4. Elaborate on regulatory issues of space technology development programmes, such as frequency allocation and space debris mitigation measures for enhancing the long-term sustainability of outer space activities as well as import/export controls;
5. Elaborate on legal issues and responsibilities related to space technology development programmes, such as those that are raised from the relevant provisions in international space law;
6. Continue the development of an education curriculum for space engineering;
7. Discuss the way forward for the Basic Space Technology Initiative (BSTI), and its capacity-building and international cooperation activities in preparation of UNISPACE+50.

3. Expected Outcome and Contributions to UNISPACE+50

The Committee on the Peaceful Uses of Outer Space (COPUOS) endorsed at its fifty-ninth session a series of seven thematic priorities for UNISPACE+50 (see A/71/20, para.296 and http://www.unoosa.org/documents/pdf/unispace/plus50/thematic_priorities_booklet.pdf).

With the main objective of BSTI and the associated series of workshops related to “Capacity-building for the 21st century” (Thematic Priority 7), the UN/South Africa Symposium will review the different initiatives including lessons learnt of past and ongoing activities in the small satellite missions domain. The Symposium objectives reflect this approach, while focusing on capacity-building, it encompasses activities for the legal framework, agriculture, environment and city monitoring to name a few, benefiting other thematic priorities such as:

- Thematic Priority 1, related to objectives 7 and 1 listed above, by promoting international collaboration and cooperation activities
- Thematic Priorities 2 and 3, being addressed by objectives 4 and 5, by supporting and raising awareness on regulatory issues affecting as well small satellite missions involving frequency allocation, registry of space objects, space debris mitigation measures, import/export control and other legal responsibilities
- Thematic Priority 6, linked to objective 3, reviewing the role of small satellites in sustainable and resilient cities and societies, assessing their potential for Earth observation

The discussions at the Conference will inform the preparations towards UNISPACE+50, which will be held in 2018 to mark the fiftieth anniversary of the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space in 1968. The observations and recommendations of the

Conference will contribute to the UNISPACE+50 process and will be brought to the attention of relevant policy and decision making bodies.*

UNISPACE+50

The year 2018 will mark the 50th anniversary of the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space - UNISPACE+50. The Committee on the Peaceful Uses of Outer Space (COPUOS) at its fifty-eighth session in June 2015 endorsed the plan of work for UNISPACE+50. UNISPACE+50 will review the contributions that the three UNISPACE conferences (UNISPACE I, held in 1968, UNISPACE II, held in 1982, and UNISPACE III, held in 1999) have made to global space governance. In line with the 2030 Agenda for Development and sustainable development goals, UNISPACE+50 aims to chart the future role of COPUOS, its subsidiary bodies and the United Nations Office of Outer Space Affairs, at a time of an evolving and more complex space agenda when more participants, both governmental and non-governmental, are increasingly involved in ventures to explore space and carry out space activities. The activities of the United Nations Programme on Space Applications are an integral part of the UNISPACE+50 thematic cycle and are aimed at contributing to outputs under the four pillars space economy, space society, space accessibility and space diplomacy. For additional information on UNISPACE+50 see

<http://www.unoosa.org/oosa/en/ourwork/unispaceplus50/index.html>

4. Symposium Programme

The Symposium programme will be structured around a series of dedicated topical sessions. **Presentations will be solicited through a Call for Papers.** In addition, renowned experts in the field will be invited to make some of the presentations. The participants will consider specific topics and discuss observations and recommendations for consideration by COPUOS. Appropriate time will be set aside for discussions and for short presentations by the participants on their own relevant activities.

The following topics will be considered in dedicated sessions:

- **Space Technology Development and Capacity-Building in Basic Space Technology Development with a focus on Africa**
Space technology has a huge potential to contribute to Africa's development. This session will address space technology development and capacity-building activities, including know-how transfer programmes and opportunities for regional and international cooperation with a focus on, but not limited to, activities in Africa.
- **Small Satellite Missions in Support of Key Scientific Projects and Questions**
Small satellites, including CubeSat platforms, are becoming increasingly more capable to support science and application missions. The present session will address the role of small satellite platforms for science missions. For example, the possible use of small satellites in support of key scientific projects, such as the Square Kilometre Array (SKA) in South Africa, shall be discussed.
- **Applications of Small Satellite Missions**
Small satellites have been developed for a wide range of application missions, including telecommunication, navigation and Earth Observation services. They can offer cost-efficient solutions to replace or complement more expensive, larger satellite missions. This session will also consider the development of small satellite standards, and cost and reliability issues of small satellite missions in comparison to those of larger satellite platforms.

* For further and relevant information on UNISPACE+50 see also

<https://sustainabledevelopment.un.org/post2015/transformingourworld>,
<http://www.unoosa.org/oosa/en/ourwork/hlf/2017/HLF2017.html>.

- **Small Satellite Missions Ground Segment**

For many universities and research institutions, the set-up of a ground station is the first step towards further small satellite development activities. This session will consider aspects of ground segment development for small satellite missions, including ground stations, technical equipment, software tools and procedures for mission development and operations.

- **Small Satellite Projects for Engineering Education**

Over the last few years a large number of small satellite missions, by a growing number of space actors, have been launched and hundreds more are expected to be launched in the near future. This session will provide a review of small satellite projects worldwide in support of capacity building and engineering education. Challenges such as testing facilities and launching opportunities will also be discussed. The session will also include an update on the Education Curriculum on Space Engineering to be developed under the Basic Space Technology Initiative.

- **Legal and Regulatory Issues**

Legal and regulatory considerations play an important role in the conduct of outer space activities. The session will include a workshop on frequency coordination offered by the International Telecommunications Union (ITU) and presentations and discussions on relevant national and international legal and regulatory issues.

- **Long-term Sustainability of Outer Space Activities**

The international space community is discussing measures that may be necessary to assure the long-term sustainability of outer space activities. In these discussions, the growing number of small satellite missions, in particular in the context of space debris mitigation, is increasingly under scrutiny. This session will provide an update on the status of these discussions in COPUOS as well as presentations on operational and technical means in support of space debris mitigation.

In addition to the topics described above, there will be panel discussions to share experiences and lessons learned through capacity-building activities in space technology development as well as to promote opportunities for international and regional collaborations among the participants. The sessions will be supplemented by a poster session as well as by an exhibition, demonstrations of relevant software tools, technical visits and practical hands-on exercises.

The co-sponsors will also organize an attractive programme of side-events for all Symposium participants. The detailed Symposium programme will be made available on the Symposium website at http://www.unoosa.org/oosa/en/ourwork/psa/schedule/2017/symposium_southafrica_bsti.html

5. Location and Date

The Symposium will be held from 11-14 December 2017 at the Stellenbosch University, South Africa. Invited participants will receive a formal invitation letter with further information on available accommodation, logistics and other local arrangements prior to the Symposium.

6. Language of the Symposium

Applicants must have a good working knowledge of English, which will be the official working language of the Symposium.

7. Participants

Symposium participants should be involved in the planning or implementation of space technology development activities in international or national space agencies, governmental or non-governmental organizations, research institutions, industry, universities or other academic institutions. Participants are expected to have obtained university degrees in relevant fields of study or should be enrolled in relevant studies. Professional working experience in one of the fields related to the theme of the Symposium is desirable. Applications from qualified female applicants are particularly encouraged.

8. Support to Qualified Applicants

Applicants and their nominating organizations are strongly encouraged to find their own sources of sponsorship to participate in the Symposium. However, within the limited financial resources available to the co-sponsors, **a number of qualified applicants from developing and emerging economies expressing the need for financial support will be offered financial support to attend the Symposium.** This may include the provision of a round-trip air ticket between Cape Town Airport and the applicant's international airport of departure and/or room and board for the duration of the Symposium. En-route and other expenses or any changes made to an air ticket provided by the co-sponsors must be borne by the participants. Selected applicants will be notified in August-September 2017.

9. Life and Health Insurance

Life and major health insurance is the responsibility of each selected participant or his/her nominating institution or government. The co-sponsors will not assume any responsibility for life and health insurance, nor for any expenses related to medical treatment or accidents.

10. Deadline for Submission of Applications

Complete applications and abstracts shall be submitted to the Office for Outer Space Affairs through the online registration page at:

http://www.unoosa.org/oosa/en/ourwork/psa/schedule/2017/symposium_southafrica_bsti.html

Applications for participation must be received by the Office for Outer Space Affairs no later than **15 August 2017** from applicants seeking funding support and no later than **15 October 2017** from self-funded applicants. Only complete applications received by these deadlines will be considered.

11. Contact Information

For questions related to the Symposium programme in general, international applications and to co-sponsorship opportunities, please contact:

Mr. Werner Balogh and Ms. Yukiko Okumura

Office for Outer Space Affairs

Contact form: <http://www.unoosa.org/oosa/en/contact-us/index.html>

For any further questions related to the local logistics, please contact:

Mr. Kaizer Moroka

Department of Science and Technology, South African Government

E-mail: kaizer.moroka@dst.gov.za

For latest information and updates, please frequently visit the Symposium web page at:

http://www.unoosa.org/oosa/en/ourwork/psa/schedule/2017/symposium_southafrica_bsti.html