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International cooperation in the peaceful uses of outer space: activities of Member States

The present conference room paper contains a submission received by the Secretariat from Japan on 23 January 2014. The document is issued without formal editing.

Replies received from Member States

Japan

1. Participation in the International Space Station Programme

The International Space Station (ISS) programme is the largest international science and technology programme ever attempted in the new frontier of space. The ISS programme has been pursuing the further utilization of outer space and will continue to improve the quality of our lives. Japan has been participating in this iconic international cooperation programme for the peaceful use of outer space from the beginning. The notable elements are the Japanese Experiment Module “Kibo”, which has been utilized to conduct various on-orbit experiments, and the H-II Transfer Vehicle (HTV), which transfers cargos to the ISS. In September 2013, HTV4 (“KOUNOTORI4”) successfully completed its mission.

In November 2013, Japanese astronaut Koichi Wakata has begun his long-duration stay as the 38th/39th Expedition crewmember. He is designated to become the ISS commander of 39th Expedition as the first Asian astronaut. Kimiya Yui has been assigned for the 44th/45th Expedition Mission crewmember, and Takuya Onishi will follow them as for the 48th/49th Expedition Mission crewmember as the Japan Aerospace Exploration Agency (JAXA) recently announced.



In addition, the Kibo Utilization Office for Asia (KUOA) promotes Space Seeds for Asian Future (SSAF) 2013, aiming to spread the space education in Asia-Pacific region to deepen the understanding of space.

2. Space Transportation

The first Epsilon Launch Vehicle (Epsilon-1) with the Spectroscopic Planet Observatory for the Recognition of Interaction of Atmosphere (SPRINT-A) on board was launched in September this year.

3. Remote Sensing

Japan has been intensively promoting international cooperation through international frameworks such as Group on Earth Observations (GEO) and the Committee on Earth Observation Satellites (CEOS). The first GEOSS Joint Asia-Africa Water Cycle Symposium organized by the University of Tokyo (UT) and the GEO was held in Japan in November this year. The Symposium built the commonalities of approach by both the Asian Water Cycle Initiative (AWCI) and the Africa Water Cycle Coordination Initiative (AfWCCI) towards addressing integrated water resource management in the context of climate change.

The “Global Change Observing Mission”, called GCOM, allows long term and ongoing observations that are essential to understanding the effects of climate change over many years. The GCOM mission consists of two series of satellites, GCOM-W for observing water circulation changes and GCOM-C for observing climate changes. JAXA successfully launched GCOM-W, namely “Shizuku” in May 2012. GCOM-W observes water cycle mechanisms, such as water vapour and liquid, ocean wind velocity, sea surface temperature, snow extent and depth. As the name implies, GCOM contributes to monitoring climate changes around the world. For example, in September 2012, “SHIZUKU” observation data showed that sea ice extent in the Arctic Ocean has become the smallest in observation history. GCOM-C will observe surface and atmospheric parameters related to the carbon cycle and radiation budget, such as clouds, aerosol, seawater colour, vegetation, snow and ice.

The Global Precipitation Measurement (GPM) mission is an international constellation of satellites that aims to achieve highly accurate and frequent global rainfall observation. The mission was initiated by JAXA and the National Aeronautics and Space Administration (NASA), and comprises a consortium of international space agencies. The GPM core observatory, scheduled to be launched in 2014, will carry the Dual-frequency Precipitation Radar (DPR), which was developed by JAXA and the National Institute of Information and Communications Technology (NICT), and the GPM Microwave Imager (GMI) provided by NASA. GPM data will be distributed to user organizations at near-real time. It is expected to be of use in operational fields and hydro-meteorological disaster mitigation, such as the prediction of flood and improvement in the accuracy of numerical weather and typhoon forecasting, as well as in research fields such as the elucidation of climate and water cycle variations.

Under the item of the “Greenhouse Gases Monitoring from Space”, the Greenhouse Gases Observing Satellite, GOSAT or “IBUKI”, the joint mission of Ministry of Environment (MOE), the National Institute for Environmental Studies (NIES) and JAXA, launched January 2009, can accurately observe the concentration

distribution of global greenhouse gases in the atmosphere. In October 2011, for the first time in the world, MOE, NIES and JAXA quantitatively demonstrated the effectiveness of satellite data application to the greenhouse gasses observation. We are developing a GOSAT-2 satellite.

With regards to forest and carbon tracking, following the successful “DAICHI” Phased Array type L-band Synthetic Aperture Radar (PALSAR) observation, which can detect forest/non-forest areas and measure the amount of aboveground forest biomass, the next generation satellite ALOS-2, which will also carry L-band SAR (PALSAR-2) is scheduled to be launched in 2014. ALOS-2 enables wide-swath and high-resolution observation comparing with “DAICHI”, so it will further contribute to global forest monitoring, as well as disaster, land, agricultural monitoring and so on.

4. International Committee on Global Navigation Satellite Systems (ICG)

Japan has continuously and actively participated in ICG relative activities. Especially, Japan is contributing to promote utilization of multiple GNSS constellations by supporting MGA (Multi-GNSS Asia) which was established in September 2011. Also, Japan has been promoting the Quasi-Zenith Satellite System (QZSS) and MTSAT Satellite-based Augmentation System (MSAS).

5. Asia-Pacific Regional Space Agency Forum (APRSAF)

The Asia-Pacific Regional Space Agency Forum (APRSAF) was established in 1993 to enhance space activities in the Asia-Pacific region. Space agencies, governmental bodies, and international organizations, such as the United Nations, as well as companies, universities and research institutes, from over 30 regional participants take part in APRSAF, which is the largest space-related conference in the Asia-Pacific region. With the increasing attendance of high-ranking officials, APRSAF offers a unique opportunity to discuss international cooperation for space activities in concrete terms. APRSAF currently organizes four working groups in the following areas, Earth Observation (EO), Communication Satellite Applications (CSA), Space Education and Awareness (SEA), and Space Environment Utilization (SEU), to share information about the activities and the future plans of each country and region in the respective areas. APRSAF also supports the establishment of international projects as solutions for issues such as disasters and environmental protection so that the participating parties can realize cooperation.

The nineteenth session of APRSAF (APRSAF-19) was convened from 11 to 14 December 2012 in Kuala Lumpur, Malaysia under the main theme entitled “Enriching The Quality of Life Through Innovative Space Programs”. APRSAF-19 was attended by approximately 380 participants from 33 countries and regions and 14 international organizations.

APRSAF commemorated its 20th anniversary at the APRSAF-20 session, held in Hanoi, Viet Nam from 3 to 6 December 2013 under the theme entitled “Values From Space: 20 Years of Asia-Pacific Experiences”, jointly organized by the Viet Nam Academy of Science and Technology (VAST), Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan and JAXA.

6. APRSAF-20 Initiatives and Supporting Programmes/Activities

The plenary sessions featured reports by the Sentinel Asia (disaster management support system in the Asia-Pacific Region), Space Applications For Environment (SAFE), Regional Readiness Review for Key Climate Missions (Climate R3), and Asian Beneficial collaboration through Kibo/International Space Station (ISS) Utilization (Kibo-ABC). During the plenary sessions, there also was a report on progress made in University International Formation Mission (UNIFORM). A summary of the “5th Asia Oceania Regional Workshop on GNSS” also was presented.
