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UPDATE ON IGEOLAB HEO PROJECT

Since the initial proposal to discuss cooperation on Highly Elliptical Orbits (HEO) in the framework of IGeoLab, advances have been made by both Canada on the Polar Communications and Weather Satellite (PCW or PolarSat) project and the Russian Federation on the Arktica project. An international workshop, hosted by the Canadian Space Agency and Environment Canada on Satellite Imaging in the Arctic, took place on 14-15 September in Montreal, Canada. The intent of the Workshop was to better coordinate requirements for satellite observations for both the Arctic and Antarctic. As indicated by WMO at this workshop, these planned HEO missions provide multiple opportunities for cooperation.

Action/Recommendation proposed:

Recommendation: CGMS Members are invited to further collaborate on requirements gathering, mission planning and product generation for the planned HEO missions.

UPDATE ON IGEOLAB HEO PROJECT

1 INTRODUCTION

The IGeoLab concept was developed as a mechanism to share resources for demonstration flights of advanced payload on geostationary missions known to be particularly expensive. The concept was later expanded to include the possibility of international cooperation on missions in Molniya or Highly Elliptical Orbits (HEOs). Both Canada, through the efforts of the Canadian Space Agency (CSA) and the Russian Federation, through the efforts of ROSCOSMOS and ROSHYDROMET have plans for missions in such orbit. Other, primarily northern latitude countries, have expressed interest in these planned missions. Efforts resulting from the International Polar Year (IPY) and its Space Task Group (STG) have also served to raise awareness and interest in HEOs with the hopes of paving the way for long-term sustained missions providing quasi-permanent coverage of the Polar Regions. The ninth session of the WMO Consultative Meetings on High-level Policy on Satellite Matters (CM-9), Port of Spain, Trinidad and Tobago, 23-24 January 2009 reiterated its strong support for the IGeoLab project on HEOs.

2 ONGOING HEO PROJECTS

Plans from ROSCOMOS and ROSHYDROMET for their Arctica project involve two satellites in highly elliptical orbit with an inclination of 63° and an orbital period of 12 hours. This configuration would allow quasi permanent coverage of high-latitude areas for weather, ice and snow monitoring as well as for telecommunications and data collection. An IGeoLab HEO Focus Group (formerly named HEO Task Force) meeting was held in Moscow in April 2007 with participation of CSA, Nansen Centre (Norway), NOAA, ROSCOSMOS, ROSHYDROMET, the Russian Academy of Sciences, several Russian Federation technical and scientific institutions, and WMO. A second meeting of this Group was held in Geneva in October 2007. The Focus Group recommended Arctica as a basis for further discussions as a matter of urgency, in the framework of IGeoLab. The meeting reviewed proposals by ROSCOSMOS and ROSHYDROMET to use modules for orbital platform, payload, space craft control and ground processing. It was acknowledged that the use of these modules, subject to successful testing in the Elektro and Spectr programmes, would allow the implementation of Arctica at minimum cost and risk. The Task Force considered that the Arctica project had the potential to allow further progress in NWP, with better forecasting of dangerous weather and climatic anomalies for northern countries and worldwide. The Focus Group also recommended further discussions on possible international cooperation in joint production and use of the hardware and software resources of the Arctica space system. Lastly, the Focus Group noted a Finnish proposal to complement the Arctica payload by means of the UV Auroral Imager and to take advantage of a ground station in Finland.

Plans from CSA for their Polar Communications and Weather Satellite (PCW) or PolarSat project are currently in Phase A. CSA is moving ahead with consultations with the international science and user community and prospective participants to

define requirements and potential contributions before proceeding to the next phase of development.

3 OPPORTUNITIES FOR INTERNATIONAL COOPERATION

An international workshop, hosted by CSA and Environment Canada on Satellite Imaging in the Arctic took place on 14-15 September 2009 in Montreal in order to better coordinate requirements for satellite observations of both the Arctic and Antarctic regions. Representatives from several northern-latitude countries attended this workshop. Results of the workshop will be presented at CM-10 scheduled for 28-29 January 2010.

At this workshop, the WMO representative recalled that imagery missions in HEO were recommended, at least as operational pathfinders, in the Vision of the GOS for 2025. WMO has further advocated international cooperation on such missions, bearing in mind that multiple opportunities for cooperation exist:

- Joint science activities and algorithm development;
- Product specification and validation;
- Data sharing;
- Instrument inter-calibration;
- Coordination of operations (towards a HEO Constellation).

4 CONCLUSIONS

Given the need to optimize financial investments and to best exploit available expertise, space agencies should be strongly encouraged to join their efforts and openly cooperate in the framework of WMO in order to bring these mission concepts to fruition and to expand their benefits to a wide user community. CGMS Members are invited to note the progress of these planned HEO missions, and encourage further collaboration on requirements gathering, mission planning and product generation.