



ASSEMBLY — 40TH SESSION

TECHNICAL COMMISSION

Agenda Item 30: Other issues to be considered by the Technical Commission

**THE ESTABLISHMENT OF CHINA/RUSSIAN FEDERATION CONSORTIUM
FOR ICAO DESIGNATED SPACE WEATHER CENTER**

(Presented by China)

EXECUTIVE SUMMARY

This paper presents the timeline of key events in the establishment of China/Russian Federation consortium for ICAO designated space weather center. After the audit of space weather service ability by WMO and ICAO in 2018, China and Russia decided to combine the efforts of two space weather services to establish a consortium for aviation space weather information provider. Then China/Russian Federation consortium was selected to become one of two ICAO-designated regional space weather centres. China/Russian Federation consortium is thus well positioned provide space weather services in support of global civil aviation.

<i>Strategic Objectives:</i>	Air Navigation Capacity and Efficiency
<i>Financial implications:</i>	/
<i>References:</i>	/

1. INTRODUCTION

1.1 Space weather events are a known risk to aviation and other technological systems. China fully recognizes the needs of providing information for international air navigation.

1.2 The National Center for Space Weather (NCSW) was established in 2002 by China Meteorological Administration (CMA) and began to provide space weather operational service in 2004. CMA/NCSW is the nation's official source of space weather forecasts. Based on the operational space weather observation system, CMA/NCSW could give real-time observations and reliable forecasts for those space weather phenomena which pose potential risks to the international aircraft flight operations.

2. TIMELINE OF KEY EVENTS

2.1 In 2011, the Federal Aviation Administration (FAA) began to draft a Concept of Operations for International Space Weather Information in Support of International Air Navigation (ConOps). This ConOps would describe the functional and performance requirements for services needed, and serve as the basis for the requirements of services referred to in the ICAO Standard and Recommended Procedures (SARPs).

2.2 In support of ICAO's initiative, since Jun.1 2012, the routine space weather products based on domestic and international data using the NOAA scales (radio blackouts, solar radiation storm, and geomagnetic storm) have been provided to aviation industry via the Aviation Meteorological Centre (AMC) of the Civil Aviation Administration of China (CAAC). These space weather products have been integrated into aviation weather products and issued routinely via aviation meteorological service platform of CAAC.

2.3 In the last few years, the inter-programme coordination team on space weather (ICTSW, 2010-2016) and inter-programme team on space weather information, systems and services (IPT-SWeISS, 2016-now) have been working closely with ICAO on the development of space weather service requirements for aviation and on recommendations for how the provision of these services should be organized globally. They provided extensive comments and suggested revisions for the ConOps, as well as comments and suggested revisions for the space weather Standards and Recommended Practices (SARPs) proposed for Amendment 77 to Annex 3 — *Meteorological Service for International Air Navigation*. Dr. Xiaoxin Zhang is the co-chair of ICTSW and IPT-SWeISS.

2.4 In Oct. 2016, according to the ANC approval, ICAO Meteorology Panel Working Group on Meteorological Information and Service Development (METP WG-MISD) began to review the draft SARPs for the provision of space weather information in Amendment 78 to Annex 3. Dr. Xiaoxin Zhang was chosen as the space weather expert and Dr. Zhongfeng Zhang was chosen the member of WG-MISD.

2.5 At the tenth meeting of its 204th Session on 9 March 2017, the ANC confirmed the considered proposals which were developed by the second meeting of the Meteorology Panel (METP/2) to amend Annex 3, to introduce a space weather information service to support international air navigation, which is intended for implementation in November 2018. The ANC also approved the guidance on criteria for space weather information providers, and the schedule for establishing space weather information capabilities.

2.6 On 9 June 2017, Dr. Fang Liu, the Secretary General of ICAO, issued an invitation letter to request for interest in providing a space weather information service. A formal expression of interest in providing a space weather information services, would be dispatched to reach ICAO, not later than 8 September 2017. WMO had also been invited to assess each potential candidate state through site visits

and audits. And it should also be noted that the candidate could be a single entity or a consortium of multiple space weather information providers with appropriate arrangements for coordination and harmonization.

2.7 On September 2017, China, through the National Satellite Meteorological Center/ (NSMC/NCSW, CMA) with the CAAC/AMC, and Russia, through the Institute of Applied Geophysics, Russian Federal Service for Hydrometeorology and Environmental Monitoring (IAG, Roshydromet), individually submitted nominations as potential ICAO space weather information providers.

2.8 In early 2018, in subsequent on-site audits conducted on behalf of ICAO by WMO, the two organizations independently achieved an overall Compliant rating against ICAO requirements for space weather service providers. The WMO and ICAO experts gave suggestions for a prospective collaboration between the China and Russia in the provision of services to aviation.

2.9 On 18 May 2018, the head of Roshydromet wrote a formal letter to the administrator of CMA which gave the suggestion to unite the national space weather service into consortia to become a regional space weather center. The establishment of a consortium would significantly raise the chances to be designated as regional space weather information provider for aviation needs. NCSW and IAG recognized that the two organizations had a number of common interests and objectives. China is bounded on the north by Russia and there is a 5-hour time difference between the two organizations. The prospective collaboration between China and Russia would be better to support the regional aviation of space weather service. Therefore, NCSW and IAG had agreed to work collaboratively to provide space weather services to aviation, pending selection as ICAO space weather centers.

2.10 On June 2018, the mutual cooperation agreement between NCSW and IAG was formalized through an exchange of letters respectively, establishing the framework for cooperation in the following areas:

- a) monitoring space weather hazards
- b) forecasting space weather
- c) tailored space weather products in support of aviation
- d) sharing and of dissemination information for aviation space weather service
- e) verification and validation for aviation space weather service
- f) quality management system for aviation space weather service
- g) providing mutual backup capability

The ANC chair was noted the information that the consortium combining the capabilities of Chinese and Russian space weather services would share responsibilities for the provision of services for the key space

weather domains, leverage the complementary capabilities of each country, and quality of space weather services.

2.11 In its 215th Session (29 Oct – 16 Nov, 2018) the Council of ICAO had designated three global space weather service centers to be operated by the PECASUS consortium, by United States and by the consortium of Australia, Canada, France and Japan and two regional space weather centers to be operated by the China/Russian Federation consortium and South Africa.

2.12 In 2019, China and Russia established a working group to deal with the ICAO space weather service. And two specialists of IAG have the plan to visit CMA/NCSW for exchanging the procedures and protocols of space weather information on May.

3. CONCLUSION

3.1 China and Russia have both been successfully audited with the criteria under Institutional, Operational, Technical and Communication/Dissemination categories for the global aviation space weather service. China/Russian Federation consortium is thus well positioned to provide the space weather information in support of international civil aviation.

— END —