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**RUNNING A SPACE WEATHER CENTER TO BENEFIT INTERNATIONAL AIR
NAVIGATION: IMPROVEMENTS, CONSOLIDATION**

The Space Weather Center at Fedorov Institute of Applied Geophysics established its full-time service two years ago. Since then the operational capabilities and decision-making algorithms have changed several times. Heeding METP's SWXCCG meetings we've been able to adjust the setpoint of the development process to facilitate consistency in the future. Along with working with pioneering global centers, we work on integrating with National Space Weather Center CMA.

Action/Recommendation proposed: none

RUNNING A SPACE WEATHER CENTER TO BENEFIT INTERNATIONAL AIR NAVIGATION: IMPROVEMENTS, CONSOLIDATION

1 INTRODUCTION

The Fedorov Institute of Allied Geophysics (IAG) has been appointed by ROSHYDROMET to fulfill the role of the space weather center as per ICAO Meteorological Service for International Air Navigation specification in 2018. At that time the agency already performed a similar task but was less constrained by international regulations. New requirements put a new target for both software engineering and methodological support. Since then, we have been constantly improving all aspects of the space weather center: raw data processing, decision-making, and communications.

2 DATA SOURCES

2.1 Overview

Our team constantly monitors all data-sharing efforts of space weather-related agencies. While there are multiple sources of publicly available data many agencies (including ours) use in-house data that is not cleared for sharing by authorities. We work closely on this issue of our sources and participate in similar international efforts.

2.2 GNSS

Our center utilizes both our own network of GNSS ground receivers and those of the International GNSS Service. For connectivity reasons we are unable to reliably utilize the whole IAG network of more than 200 stations across Russia so we use around 100 in real time.

2.3 Particles and X-ray

The center utilizes data from Electro and GOES-series SVs. We are anticipating Electro-L N3 operational state as well as working with FY-series data to incorporate it into our operations.

2.4 Polar Cap Absorption

The Arctic and Antarctic Research Institute provides us with riometer data. This data due to its nature is quite sensitive to the artificial influence thus we have decided to improve the coverage and establish more instrument posts at the polar circle.

2.5 Planetary geomagnetic index

While pioneering global centers utilize NOAA K-index for methodological reasons we use GFZ Potsdam Kp for the same purpose.

3 CHINA-RUSSIAN CONSORTIUM

With ANC approval of CRC as the 4th global space-weather center, we are anticipating new opportunities to establish a converged infrastructure for both participating nations. Among the first goals is introduction of Electro and FY-series SV data into processing chains of both space weather centers.

4 CONCLUSION

The Fedorov Institute of Applied Geophysics ROSHYDROMET, part of China-Russian Consortium, is constantly evolving. New data from both ground and space make predictions come sooner and become more accurate. As the data become key to accuracy and low latency we seek more ways to improve its availability for both CRC and global community.