

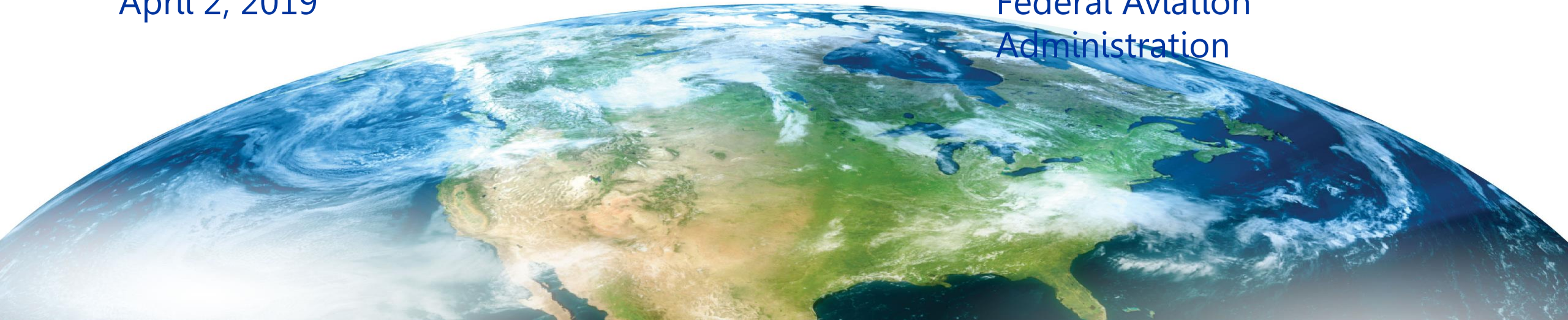


Next**GEN**

Status of ICAO Space Weather Information

Presented to 2019 Space Weather
Workshop
Boulder, Colorado
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Federal Aviation
Administration



Overview

- ICAO Meteorology Panel
- Background of ICAO Space Weather Provision
- Status of ICAO Space Weather Provision
- Designated ICAO Space Weather Centers
- Space Weather Manual
- New Regulations?
- Summary
- Point of Contact

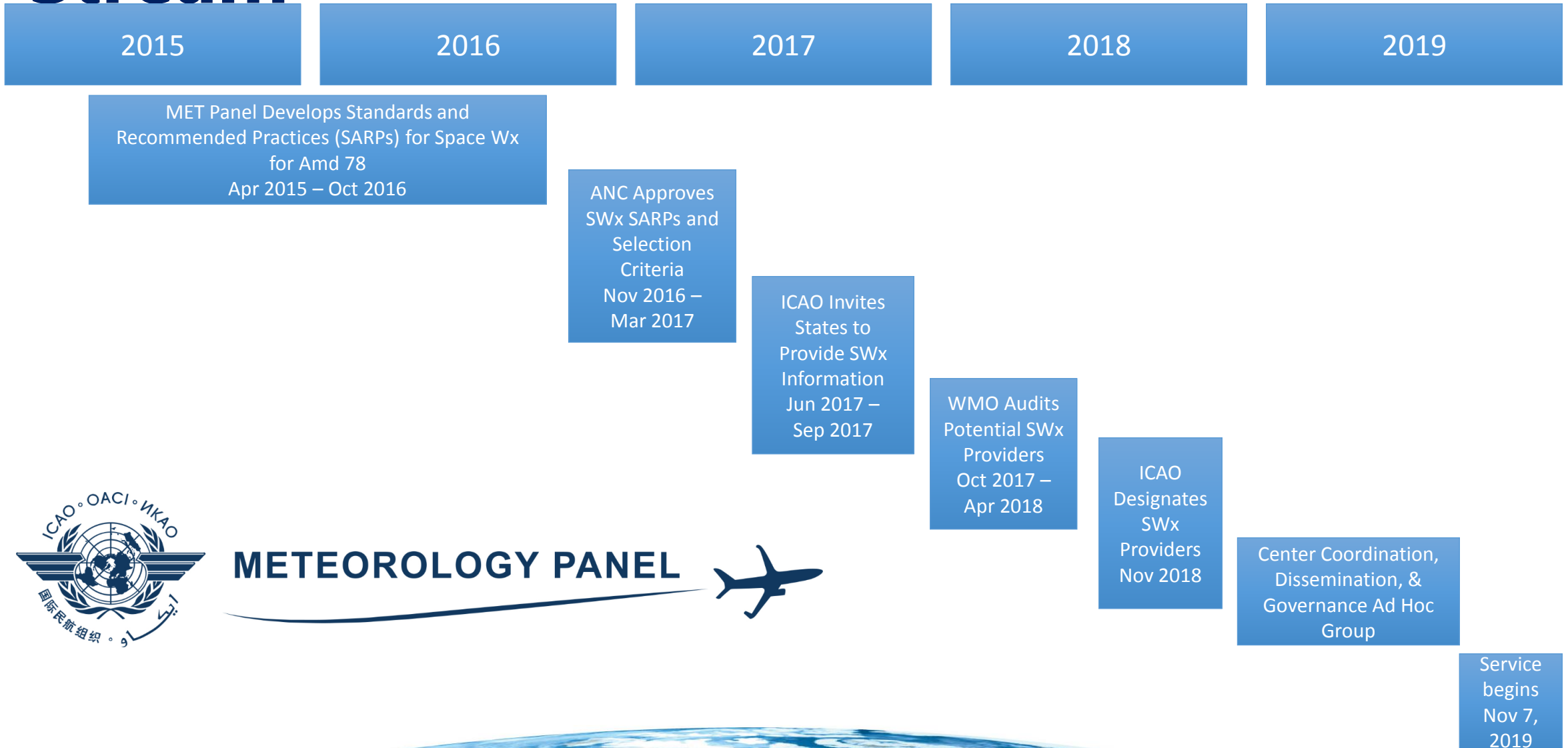


ICAO Meteorology Panel (METP)

- A technical body of qualified experts
- Established by ICAO's Air Navigation Commission (ANC)
- Responsible for development and maintenance of standards, recommended practices and procedures for meteorological service for international air navigation
- METP reports directly to the ANC
- Consistent with the work program of the METP and other ICAO Panels, METP meetings review, discuss and formulate recommendations and decisions on a broad spectrum of technical areas concerning aeronautical meteorological service provision including space weather



Background - Space Weather Work Stream



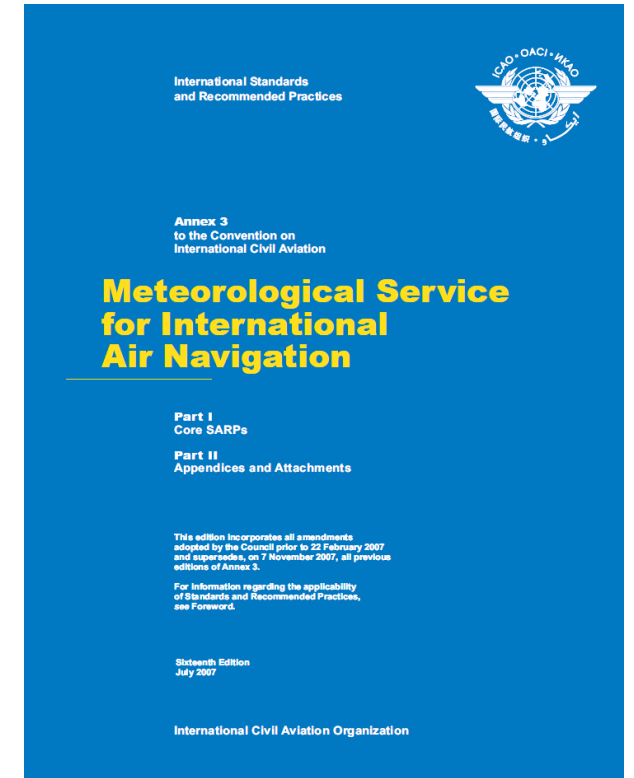
Background

- Phases to designate ICAO Space Weather Provider(s)/Center(s)
 - ICAO issued State Letter AN 10/1-IND/17/11 on Jun 9, 2017 requesting States to provide a formal expression of interest in providing the space weather information service
 - WMO conducted an audit of all States and consortia that indicated a formal interest
 - Audit against criteria developed by MET Panel (accepted by ANC)
 - Did not assess the 'quality' of meeting criteria
 - Did not make a judgment (e.g., ranking) of States - only reported results of States' meeting or not meeting the identified criteria
- ICAO Council selects/designates States to provide Space Weather Annex 3 products in Nov 2018
 - Based on 'optimum number' recommended by METP
 - Based on WMO audit results
 - Based on 'other' considerations



Status of Provision

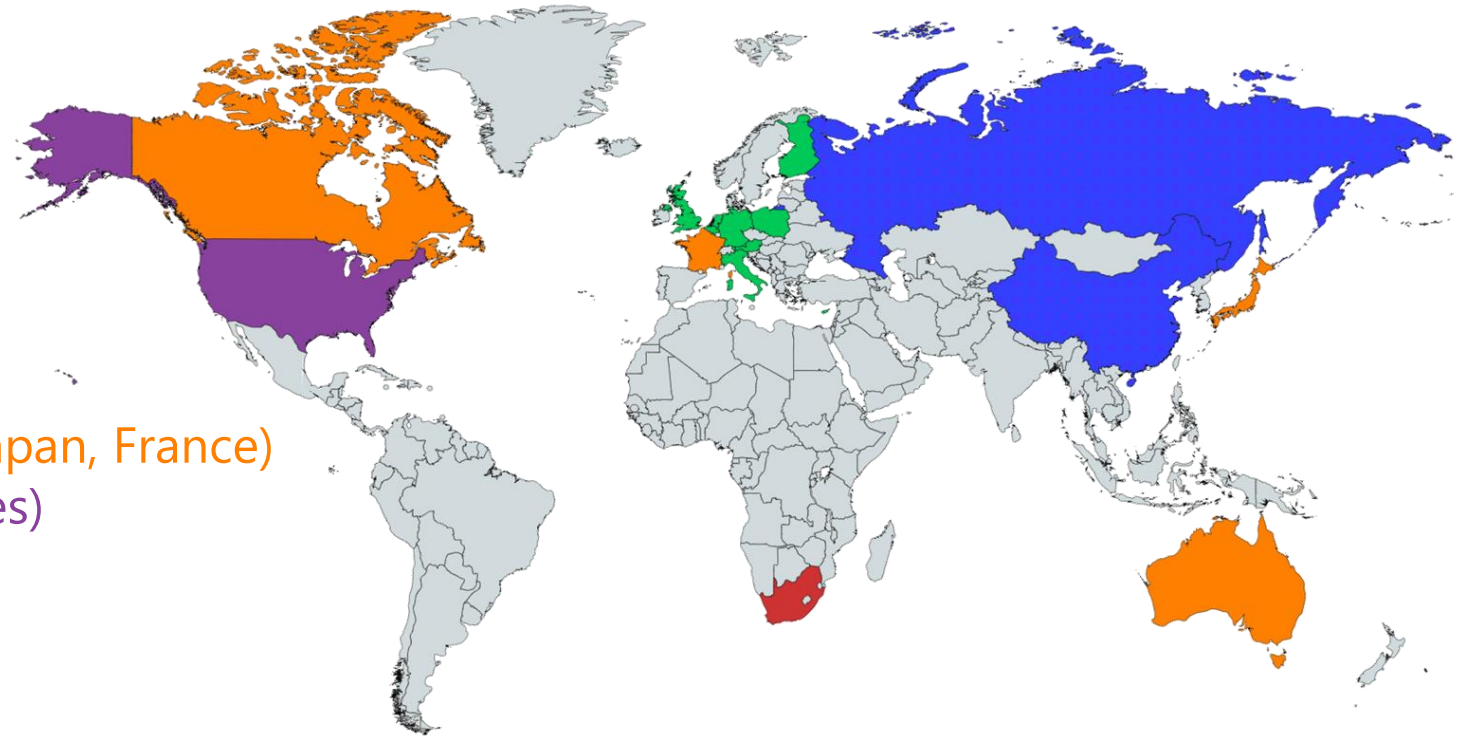
- Annex 3 to the Convention on International Civil Aviation, “Meteorological Service for International Air Navigation” Amendment 78
 - Adopted 2016
 - Effective Nov 8, 2018*
 - Issue advisories for
 - HF Voice/Data & Satellite Communications
 - Radiation Exposure to Crew & Passengers
 - GNSS Based Navigation & Surveillance



*Yes, we are technically late, but ICAO did not make center selections until Nov 2018. Implementation underway

ICAO Centers

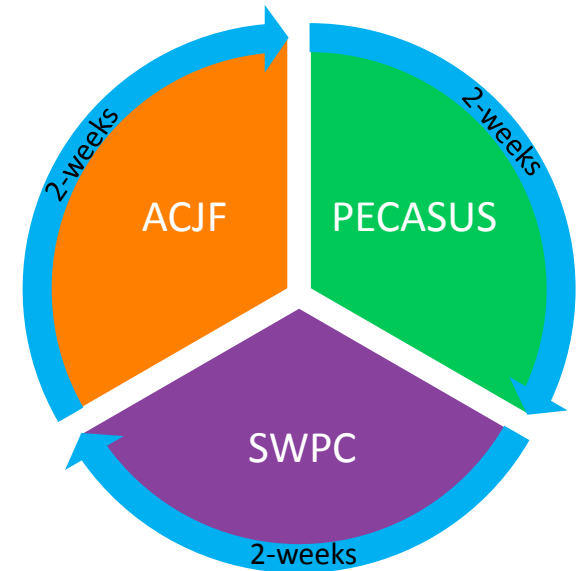
- Designated ICAO Centers
 - Three Global – Consortiums are considered one center
 - PECASUS (European consortium lead by Finland)
 - Finland
 - United Kingdom
 - Germany
 - Austria
 - Poland
 - Italy
 - Netherlands
 - Belgium
 - Cyprus
 - ACJF (Australia, Canada, Japan, France)
 - NOAA SWPC (United States)
 - Two Regional
 - China/Russia Consortium
 - South Africa



*Numbers do not reflect ranking or order
All centers equal in their designation

ICAO Centers

- Global Centers working to meet Annex 3 Global provision → operational Nov 7, 2019
- One 'On Duty' Center at any given time
 - Two-week rotation
 - 'On Duty' Center issues all advisories
 - Centers coordinate and collaborate continually
 - Other two centers ready for 1st and 2nd backup
- Regional Centers operational by 2022
 - Sooner if feasible



ICAO Centers

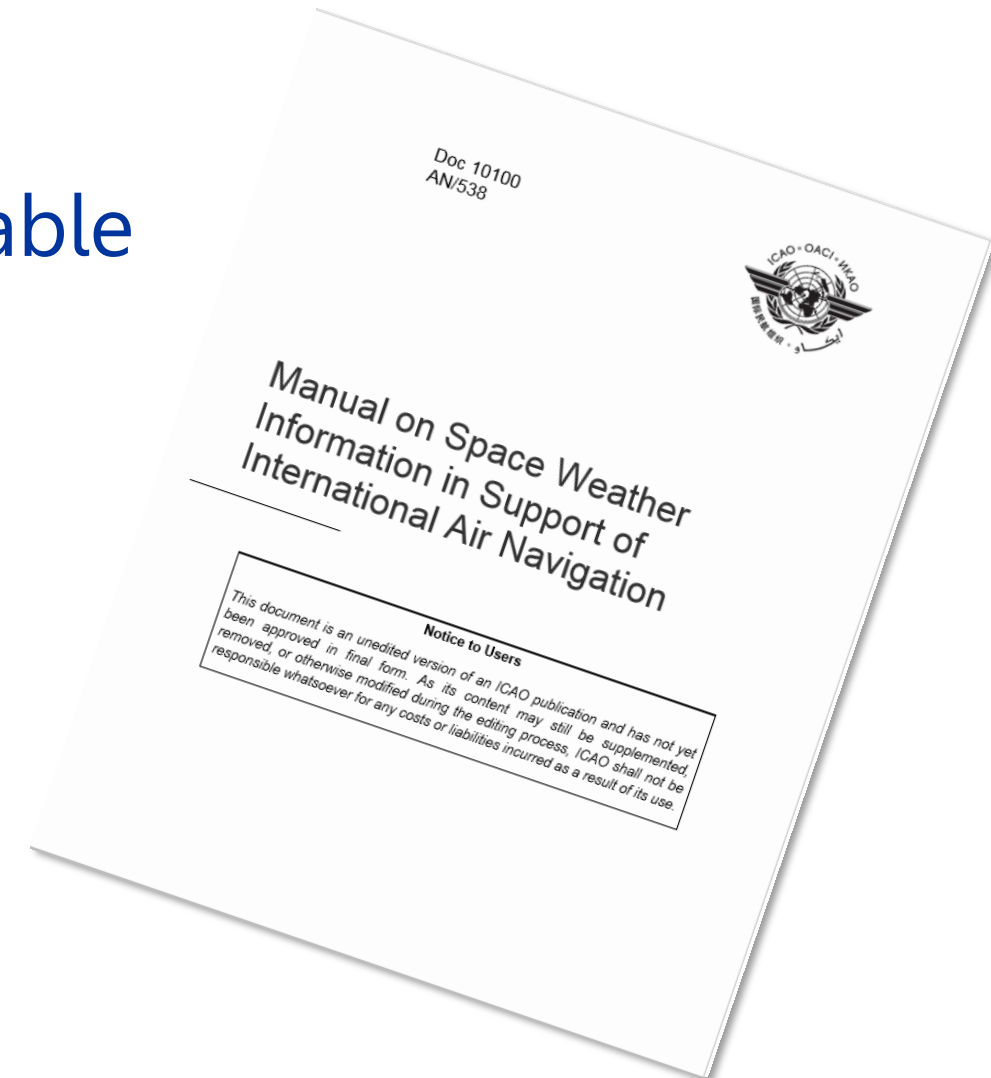
- SWPC and other countries have produced space weather information for years
 - Not necessarily specific to aviation needs and decisions
- ICAO Annex 3 Space Weather Advisories intended to meet the needs of 192 ICAO member States, and over 200 airlines globally
 - Provides a standardized product and service
 - Can be supplemented with more detailed space weather information as needed



Space Weather Manual

- Space Weather Manual V1.0 available soon
 - V2.0 Dec 2020
- Other Guidance Material
 - Center Rotation & Operations
 - Advisory Interpretation and Use

<https://www.icao.int/airnavigation/METP/Panel%20Documents/Doc.10100.Space%20Weather%20Manual%20FINAL%20DRAFT%20Version.pdf>



United States Regulations

- FAA not planning any new regulations, or changes to current regulations around ICAO Space Weather Advisories
- How individual airlines use Space Weather Information can be defined in their Operations Specifications



Summary

- Described ICAO METP function
- Discussed the background and status of the ICAO Space Weather Provision
- Reviewed and described the status of the three global and two regional ICAO Space Weather Centers
- Updated the status of the Space Weather Manual
- Noted the FAA is not planning to introduce and new regulations



For More Information

- FAA Point of Contact
 - Pat Murphy
 - michael.murphy@faa.gov
 - Manager, Policy & Requirements Branch, Aviation Weather Division, FAA, NextGen
- U.S. Member to ICAO Meteorology Panel (METP)
 - Rapporteur to METP WG-Meteorological Information Service Development
 - Coordinator for Space Weather Work Stream, METP, WG-MISD

