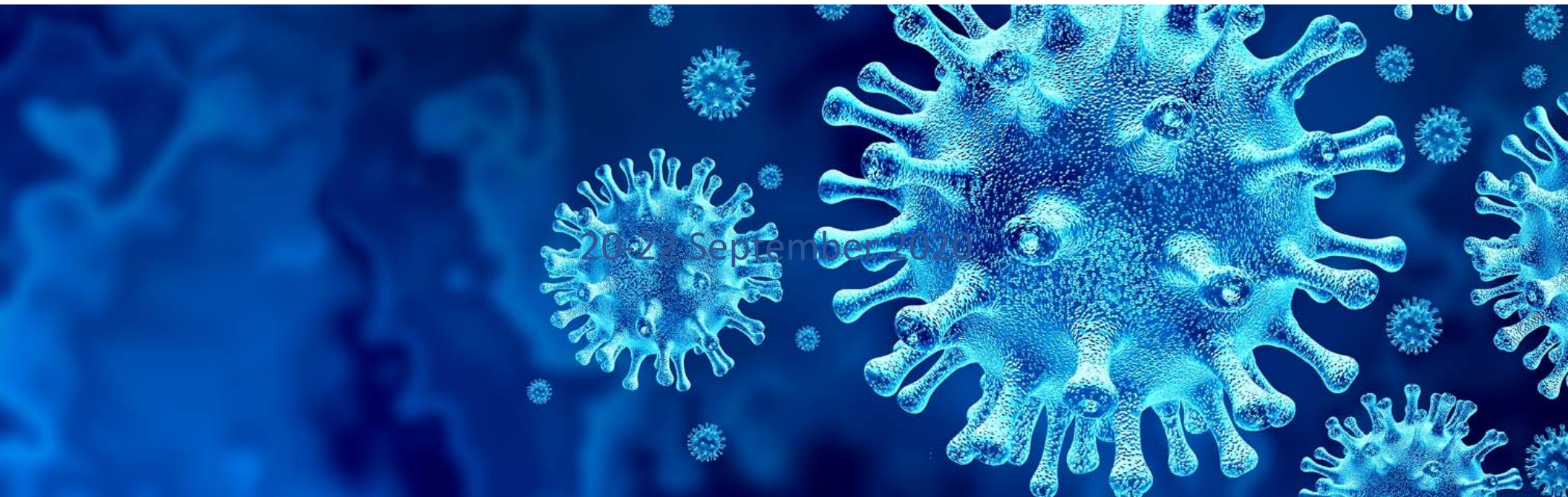
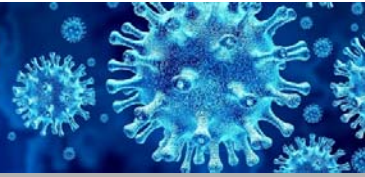




ICAO MID

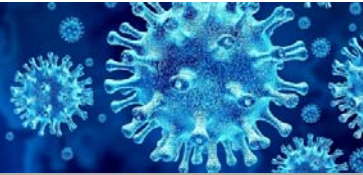
**SPACE WEATHER ADVISORY INFORMATION DISSEMINATION
WEBINAR
3 - 4 March 2021**





ICAO MID SWX Advisory Information Dissemination PROVISIONAL AGENDA

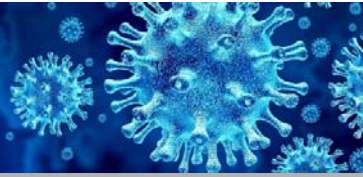
Agenda Item 4: Dissemination of Space Weather Advisory Information



ICAO PROVISIONS ON SPACE WEATHER

Global Services – Space weather centres (SWXC):

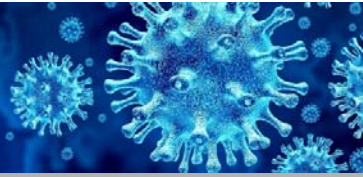
- A Contracting State, having accepted the responsibility for providing a SWXC, shall arrange for that centre to monitor and provide advisory information on space weather phenomena in its area of responsibility by arranging for that centre to: ...
- *Ref: Annex 3, 3.8.1*



DISSEMINATION OF SPACE WEATHER ADVISORY INFORMATION

Global Services – Space weather centres (SWXC):

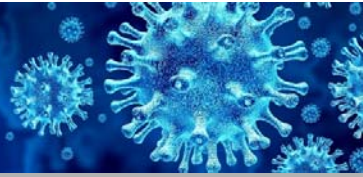
- ...
- a) monitor relevant ground based, airborne and space-based observations to detect, and predict when possible, the existence of space weather phenomena that have an impact in the following areas: **high frequency (HF) radio communications; communications via satellite; GNSS-based navigation and surveillance; and radiation exposure at flight levels.**



DISSEMINATION OF SPACE WEATHER ADVISORY INFORMATION

Global Services – Space weather centres (SWXC):

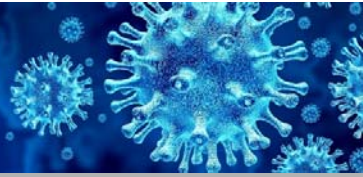
- ...
- b) issue advisory information regarding the extent, severity and duration of the space weather phenomena that have an impact referred to in a);
- c) supply the advisory information referred to in b) to: **area control centres; flight information centres and aerodrome meteorological offices in its area of responsibility which may be affected; other SWXCs and international OPMET databanks, international NOTAM offices and aeronautical fixed service Internet-based services.**
- *Ref: Annex 3, 3.8.1*



DISSEMINATION OF SPACE WEATHER ADVISORY INFORMATION

Service for Operators and Flight Crew Members – General Provisions:

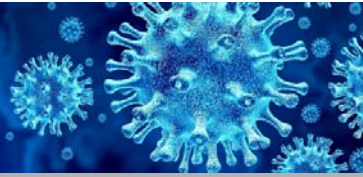
- Meteorological information supplied to operators and flight crew members shall be up to date and include the following information, as agreed between the meteorological authority and the operators concerned: ...
- k) space weather advisory information relevant to the whole route.
- *Ref: Annex 3, 9.1.3*



DISSEMINATION OF SPACE WEATHER ADVISORY INFORMATION

Technical Specifications Related to Service for Operators and Flight Crew Members (Specifications related to Flight documentation):

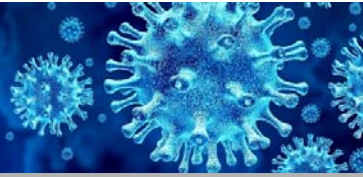
- METAR and SPECI (including trend forecasts as issued in accordance with regional air navigation agreement), TAF, GAMET, SIGMET and AIRMET, volcanic ash, tropical cyclone and **space weather advisory information** shall be presented in accordance with the templates in Appendices 1, 2, 3, 5 and 6. Such meteorological information received from other meteorological offices shall be included in flight documentation without change.
- *Ref: Annex 3, App 8, 4.1.3*



DISSEMINATION OF SPACE WEATHER ADVISORY INFORMATION

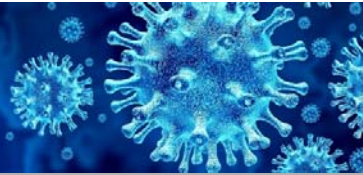
Space Weather – NOTAM

- A NOTAM shall be originated and issued concerning the following information:
- v) observations or forecasts of space weather phenomena, the date and time of their occurrence, the flight levels where provided and portions of the airspace which may be affected by the phenomena;
- *Ref: Annex 15, 6.3.2.3*



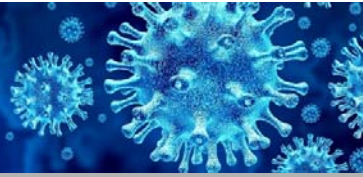
DISSEMINATION OF SPACE WEATHER ADVISORY INFORMATION

- **Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444)**
- Information on space weather phenomena that have an impact on high frequency radio communications, communications via satellite, GNSS-based navigation and surveillance systems, and/or pose a radiation risk to aircraft occupants at flight levels within the area of responsibility of the ATS unit, shall be transmitted to the affect aircraft by one or more of the means specified in 9.1.3.1.1 [*a) the preferred method of directed transmission on the initiative of the appropriate ATS unit to an aircraft, ensuring the receipt is acknowledged; or b) a general call, unacknowledged transmission to all aircraft concerned; or c) broadcast; or d) data link*].
- *Ref: Doc 4444, 9.1.3.8*



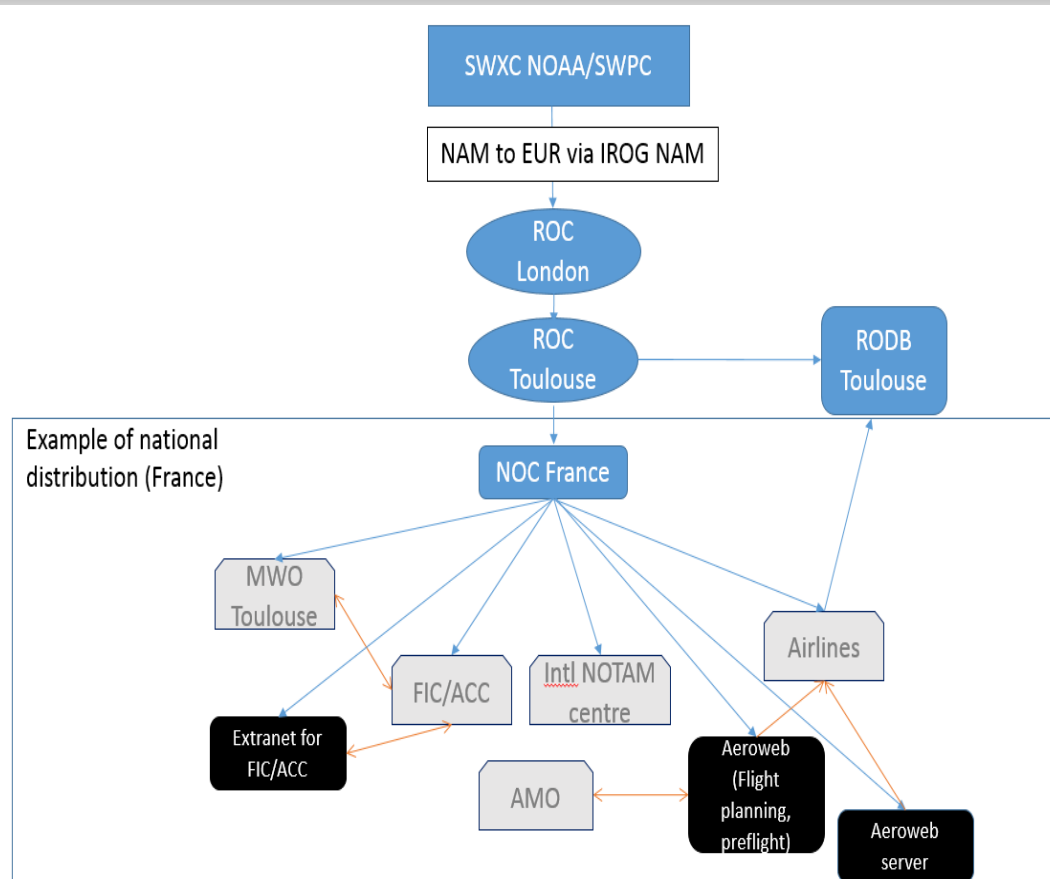
DISSEMINATION OF SPACE WEATHER ADVISORY INFORMATION

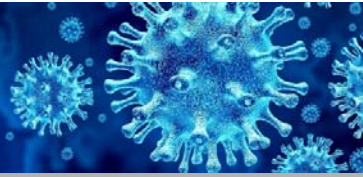
- **Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444)**
- Air traffic control units should be prepared for the possibility that aircraft may, on rare occasions, experience a rise in solar radiation which requires them to descend to lower levels. When such a situation is known or suspected, air traffic control units should take all possible action to safeguard all aircraft concerned, including any aircraft affected by the descent...
- *Ref: Doc 4444, 15.5.5*



DISSEMINATION OF SPACE WEATHER ADVISORY INFORMATION

- **Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444)**
- ...All aircraft in a particular portion of airspace and above a certain altitude may be affected at the same time, and the event may be accompanied by a deterioration or loss of air ground communications. It is expected that the aircraft will alert air traffic control units before the radiation reaches a critical level and will request a descent clearance when the critical level is reached. However, situations may occur in which the aircraft will need to descend without waiting for a clearance. In such cases, the aircraft are expected to advise air traffic control units, as soon as possible, of the emergency action taken.
- *Ref: Doc 4444, 15.5.5 note*





ACTION BY THE MEETING

The meeting is invited to :

- a) Note the information in this presentation;
- b) Discuss implementation experiences by States that have at least begun implementation;
and
- c) Identify challenges and potential solutions associated with the implementation of space weather advisory information nationally.



North American
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and Caribbean
(NACC) Office
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Lima

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Montréal

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Central African
(WACAF) Office
Dakar

European and
North Atlantic
(EUR/NAT) Office
Paris

Middle East
(MID) Office
Cairo

Eastern and
Southern African
(ESAF) Office
Nairobi

Asia and Pacific
(APAC) Sub-office
Beijing

Asia and Pacific
(APAC) Office
Bangkok



THANK YOU