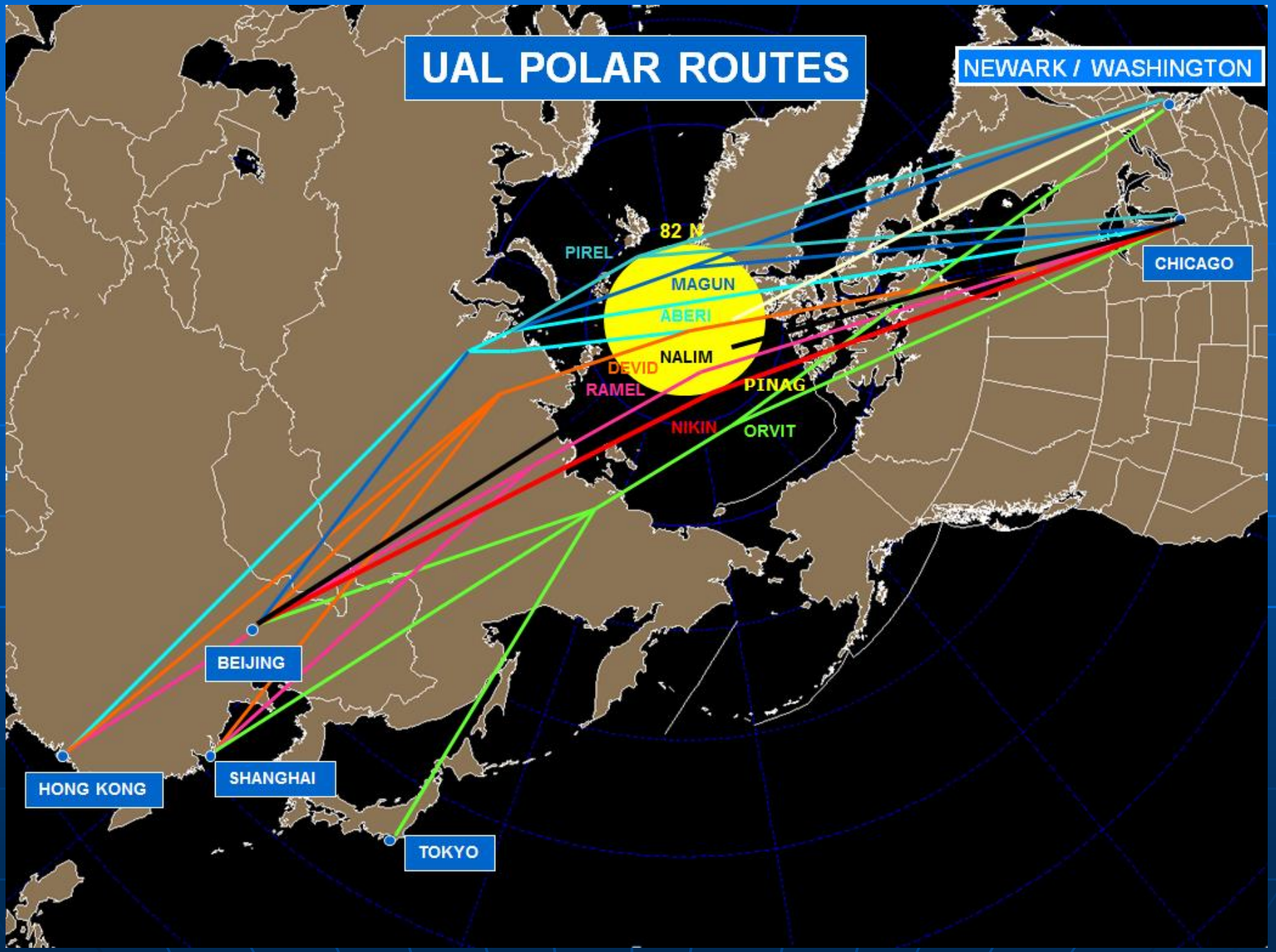
FLIGHT OPERATIONS AND SPACE WEATHER

MIKE STILLS
FORMER DIRECTOR-FLIGHT DISPATCH
UAL
16JUN20


UAL POLAR ROUTES
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BEIJING
HONG KONG
SHANGHAI
TOKYO

BOEING 777

BOEING 787

CODE OF FEDERAL REGULATIONS

- **121.595 DISPATCHING AUTHORITY: FLAG OPERATIONS.**
- (A) NO PERSON MAY START A FLIGHT UNLESS AN AIRCRAFT DISPATCHER SPECIFICALLY AUTHORIZES THAT FLIGHT.

CODE OF FEDERAL REGULATIONS

- **121.599 FAMILIARITY WITH WEATHER CONDITIONS.**
- **(A) DOMESTIC AND FLAG OPERATIONS. NO AIRCRAFT DISPATCHER MAY RELEASE A FLIGHT UNLESS HE IS THOROUGHLY FAMILIAR WITH REPORTED AND FORECAST WEATHER CONDITIONS ON THE ROUTE TO BE FLOWN.**

CODE OF FEDERAL REGULATIONS

121.601 AIRCRAFT DISPATCHER INFORMATION TO PILOT IN COMMAND: DOMESTIC AND FLAG OPERATIONS.

(C) DURING A FLIGHT, THE AIRCRAFT DISPATCHER SHALL PROVIDE THE PILOT IN COMMAND ANY ADDITIONAL AVAILABLE INFORMATION OF METEOROLOGICAL CONDITIONS (INCLUDING ADVERSE WEATHER PHENOMENA, SUCH AS CLEAR AIR TURBULENCE, THUNDERSTORMS, AND LOW ALTITUDE WIND SHEAR), AND IRREGULARITIES OF FACILITIES AND SERVICES THAT MAY AFFECT THE SAFETY OF THE FLIGHT.

CODE OF FEDERAL REGULATIONS

- **121.99 COMMUNICATIONS FACILITIES—DOMESTIC AND FLAG OPERATIONS.**
- (a) **EACH CERTIFICATE HOLDER CONDUCTING DOMESTIC OR FLAG OPERATIONS MUST SHOW THAT A TWO-WAY COMMUNICATION SYSTEM, OR OTHER MEANS OF COMMUNICATION APPROVED BY THE RESPONSIBLE FLIGHT STANDARDS OFFICE, IS AVAILABLE OVER THE ENTIRE ROUTE.**

REQUIREMENTS FOR ETOPS AND POLAR OPERATIONS

(1) THE DESIGNATION OF AIRPORTS THAT MAY BE USED FOR EN-ROUTE DIVERSIONS AND THE REQUIREMENTS THE AIRPORTS MUST MEET AT THE TIME OF DIVERSION.

(2) EXCEPT FOR SUPPLEMENTAL ALL-CARGO OPERATIONS, A RECOVERY PLAN FOR PASSENGERS AT DESIGNATED DIVERSION AIRPORTS.

(3) FUEL-FREEZE STRATEGY AND PROCEDURES FOR MONITORING FUEL FREEZING.

(4) PLAN TO ENSURE COMMUNICATION CAPABILITY FOR THESE OPERATIONS.

(5) AN MEL FOR THESE OPERATIONS.

(6) TRAINING PLAN FOR OPERATIONS IN THESE AREAS.

(7) PLAN FOR SOLAR ACTIVITY.

(8) PLAN FOR PROVIDING AT LEAST TWO COLD WEATHER ANTI-EXPOSURE SUITS IN THE AIRCRAFT, TO PROTECT CREWMEMBERS DURING OUTSIDE ACTIVITY AT A DIVERSION AIRPORT WITH EXTREME CLIMATIC CONDITIONS.

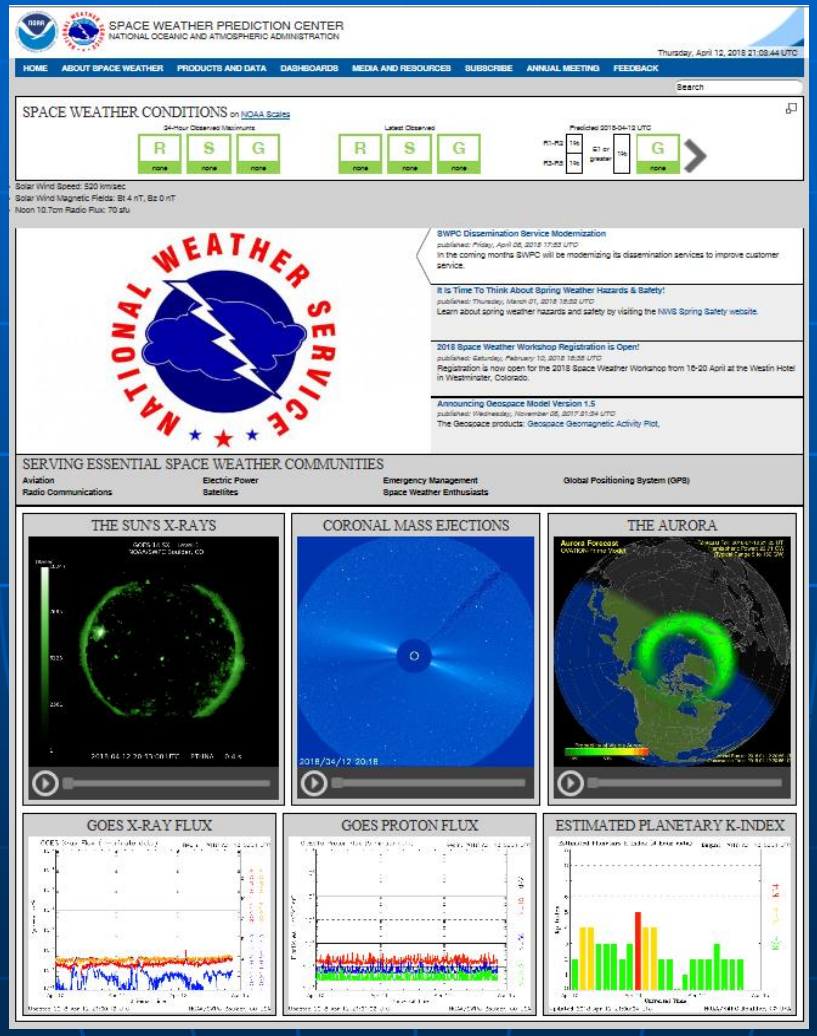
DURING ADVERSE SOLAR ACTIVITY, AIRLINE POLICY WILL RESTRICT FLIGHTS TO SPECIFIC ROUTES AND ALTITUDES

HISTORICALLY AIRLINE POLICY HAS RELIED SIGNIFICANTLY ON INFORMATION PROVIDED BY NOAA AND SPACE WEATHER SCALES

AIRLINES WILL NOW MONITOR ALERTS PROVIDED BY THE NEWLY FORMED CONSORTIUM DEVELOPED BY THE INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO). AIRLINE POLICIES WILL BE BASED ON THE NEW FORMATTING AND EXPOSURE THRESHOLDS

MOST U.S. CARRIERS HAVE ON SITE METEOROLOGICAL SUPPORT WHICH PROVIDES A VEHICLE BY WHICH SPACE WEATHER CAN BE MONITORED, INTERPRETED AND MANAGED

SWPC SPACE WEATHER FOR AVIATION SERVICE PROVIDERS WILL CONTINUE TO PLAY A SIGNIFICANT ROLE IN U.S. AIRLINE POLICY



ADVISORY OUTLOOK STILL AN IMPORTANT TOOL FOR ADVANCE PLANNING CONSIDERATIONS

Official Space Weather Advisory issued by NOAA Space Weather Prediction Center
Boulder, Colorado, USA

SPACE WEATHER ADVISORY OUTLOOK #18-16
2018 April 15 at 7:30 p.m. MDT (2018 April 16 0130 UTC)

**** SPACE WEATHER OUTLOOK ****

Summary For April 9-15

G1 (Minor) geomagnetic storm conditions were met early on 11 April due to effects from a negative polarity coronal hole high speed stream.

No other significant space weather was observed.

Outlook For April 16-22

No significant space weather is expected during the outlook period.

Data used to provide space weather services are contributed by NOAA,
USAF, NASA, NSF, USGS, the International Space Environment Services
and other observatories, universities, and institutions. More
information is available at SWPC's Web site http://swpc.noaa.gov

PROCEDURAL AND OBSERVATIONAL CONSIDERATIONS FOR AIRLINES

- GOES MONITORING
- D REGION ABSORPTION
- POLAR CAP ABSORPTION
- AURORAL ABSORPTION
- PARTICLE ENERGY LEVELS
- X RAY FLUX
- K INDEX
- PROTON FLUX

POLAR TRAFFIC INCREASED STEADILY SINCE THE FIRST TEST FLIGHTS IN 1999. NORMAL TRAFFIC LEVELS IN RECENT YEARS AVERAGE MORE THAN15,000 MOVEMENTS

TODAY, AIRLINES CLOSELY MONITOR SPACE WEATHER AND ENHANCE PROCEDURES TO MEET CRITERIA THAT RECENT RESEARCH AND DATA MANDATE

THANK YOU !