

# ICAO Space Weather Advisories for Aviation

In November, 2018, ICAO - International Civil Aviation Organization - launched its real-time worldwide space weather advisory service. Today, four global Space Weather Centers (SWXC) generate and share space weather advisories using aviation weather information distribution networks. The advisories can also reach aircraft throughout the flight!

The introduction of space weather in the ICAO framework has been a great achievement. What is still pending is the development of procedures that are globally standardized on the application of the advisories, as well as the provision of adequate space weather knowledge to pilots, controllers and other aviation personnel.

## Further reading:

European Cockpit Association:  
<https://bit.ly/2VBT4zW>

Australian Bureau of Meteorology  
 (click to the advisories):  
<http://www.bom.gov.au/aviation/space-weather-advisories/>

PECASUS - A Global Space Weather Advisory Center  
<https://pecasus.eu/>

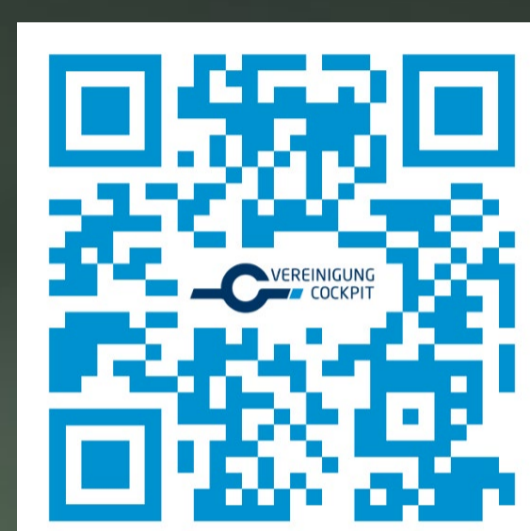
IFALPA Safety Bulletin  
<https://ifalpa.org/publications/library/space-weather-advisories-3595>

### NOAA Space Weather Scales vs. ICAO Space Weather Advisory Thresholds

> No directly comparable, NOAA equivalents for ICAO Swx advisories for GNSS and Radiation

> ICAO Swx advisories for HF: more comprehensive and detailed

	MOD	SEV		
Auroral Absorption (Kp)	8	9	R 4	Extreme
PCA (dB from 30MHz Riometer data)	2	5	R 3	Strong
Solar X-rays (0.1 - 0.8 nm)(W-m <sup>-2</sup> )	1X10 <sup>-4</sup> (X1)	1X10 <sup>-3</sup> (X10)	R 4	Severe
Post-Storm Depression (MUF)**	30%	50%		



### Space Weather Advisories



letzte Aktualisierung: 03.04.2022 07:56 UTC

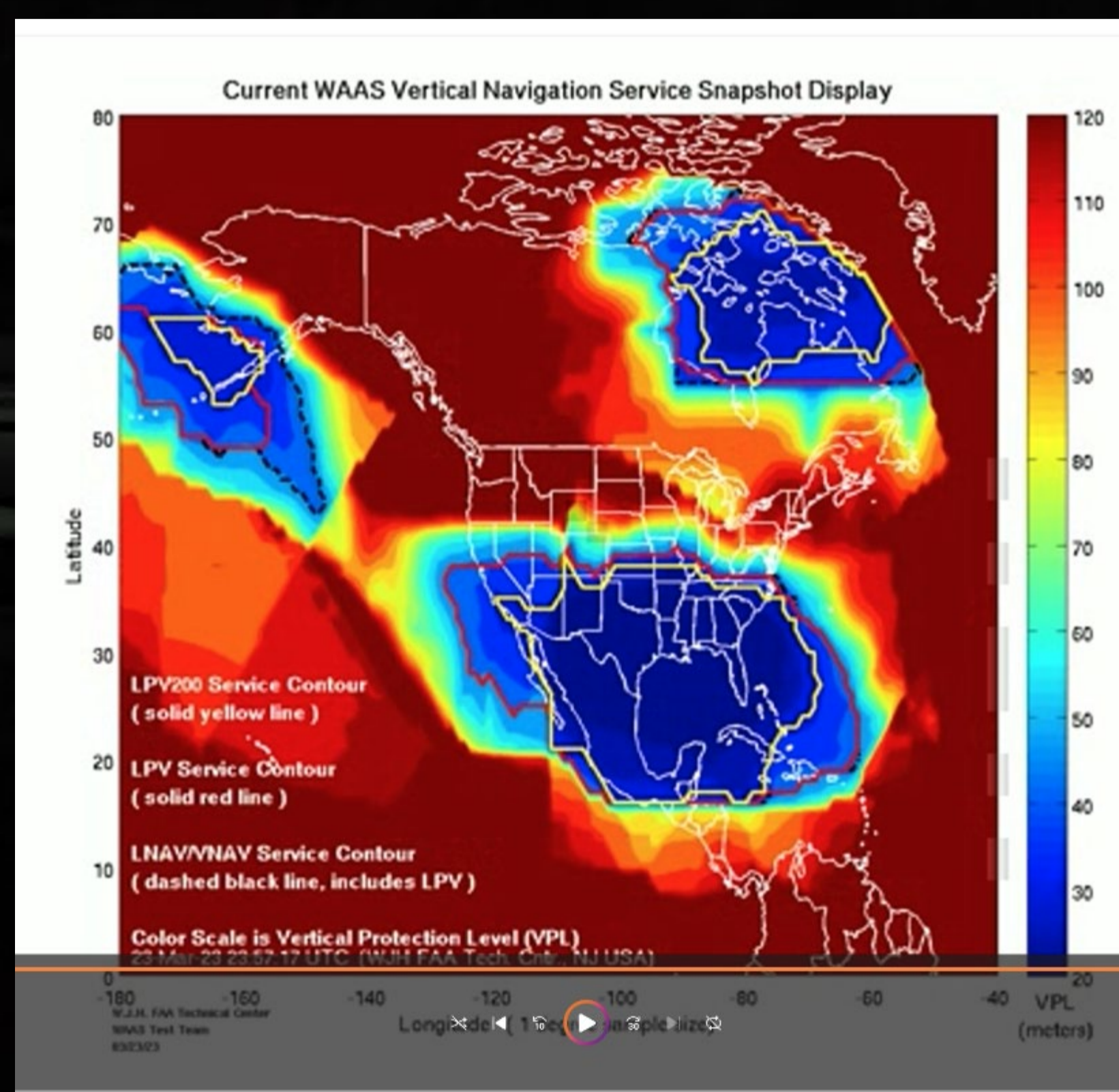
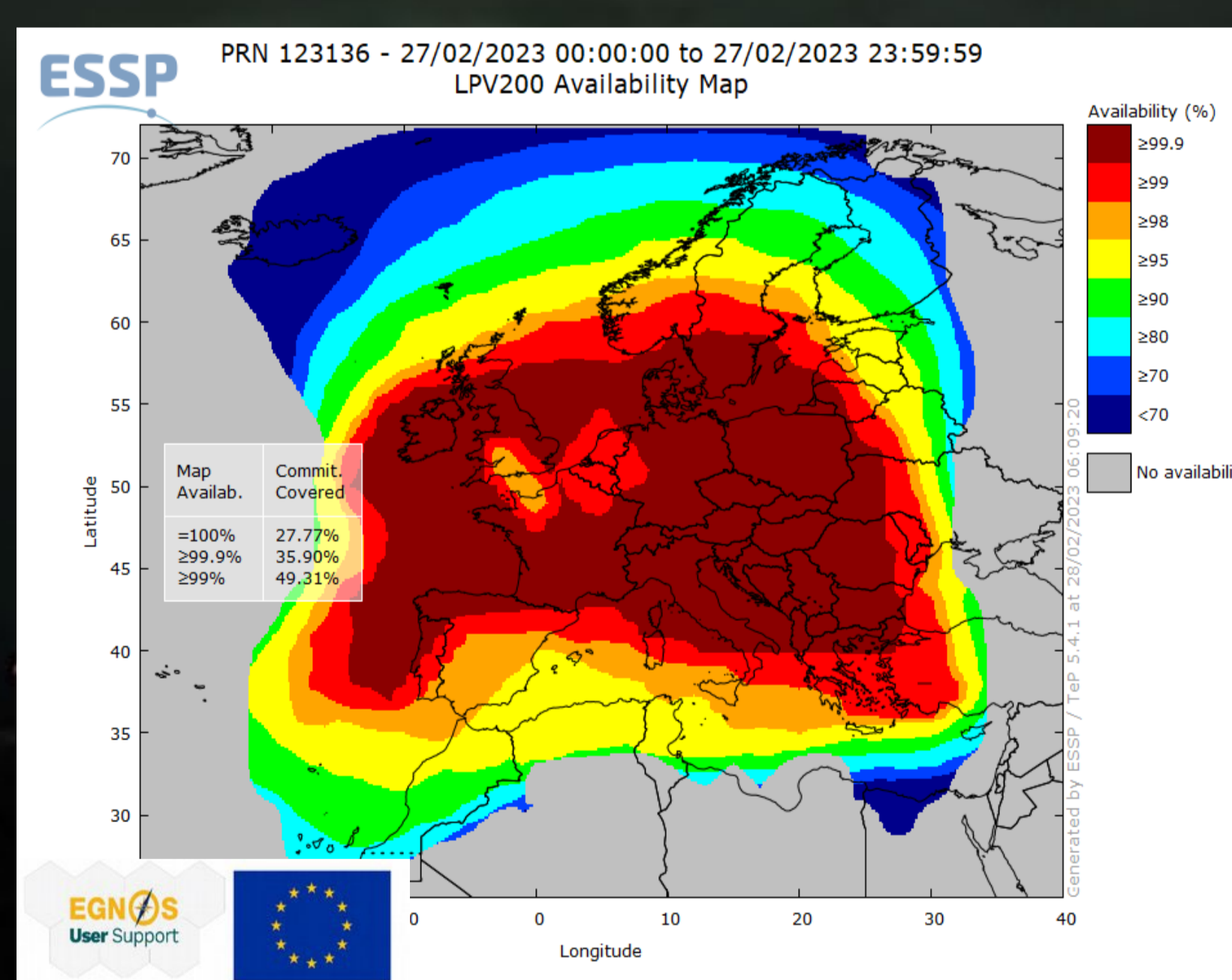
632  
 FNXX02 EFKL 021607  
 SWX ADVISORY  
 DTG: 20220402/1608Z  
 SWXC: PECASUS  
 ADVISORY NR: 2022/33  
 SWX EFFECT: HF COM MOD  
 OBS SWX: 02/1601Z HNH HSH W180 - E180  
 FCST SWX +6 HR: 02/2300Z HNH HSH W180 - E180  
 FCST SWX +12 HR: 03/0500Z HNH HSH W180 - E180  
 FCST SWX +18 HR: 03/1100Z HNH HSH W180 - E180  
 FCST SWX +24 HR: 03/1700Z HNH HSH W180 - E180  
 RMK: SPACE WEATHER EVENT (HF COM POLAR CAP ABSORPTION) IN PROGRESS. IMPACT ON LOWER HF COM FREQUENCY BANDS EXPECTED AT HIGH LATITUDES. HIGHER FREQUENCY BANDS MAY BE LESS IMPACTED. SOUTHERN HEMISPHERE LESS IMPACTED  
 NXT ADVISORY: WILL BE ISSUED BY 20220402/2201Z=

EASA Safety Information Bulletin  
<https://ad.easa.europa.eu/ad/2012-09R1>



## Which impacts do SBAS (WAAS & EGNOS) degradations have in real life?

Verification of ICAO SWX advisories in real airplanes needs to begin - NOW!  
 Start your test program!



MODERATE CONFIRMED?

FNXX01 LFP 200053  
 SWX ADVISORY SIMULATED  
 DTG: 20220220/0049Z  
 SWXC: ACFJ  
 ADVISORY NR: 2023/45  
 SWX EFFECT: RADMOD  
 OBS SWX: 20/0015Z EQN EQS W105 - W000  
 FCST SWX +6 HR: 20/0700Z NOT AVBL  
 FCST SWX +12 HR: 20/1300Z NOT AVBL  
 FCST SWX +18 HR: 20/1900Z NOT AVBL  
 FCST SWX +24 HR: 21/0100Z NOT AVBL  
 RMK: SWX EVENT GENERALLY STRONGER ON THE NIGHTSIDE.  
 NXT ADVISORY: WILL BE ISSUED BY 20230220/0649Z=  
 No warnings

© 2022-11-07 18:47:00  
 FNXX01 EFLK 071851  
 SWX ADVISORY  
 DTG: 20221107/1847Z  
 SWXC: PECASUS  
 ADVISORY NR: 2022/58  
 NR RPLC: 2022/57  
 SWX EFFECT: GNSS SEV  
 OBS SWX: 07/1844Z HNH HSH W105 - E180  
 FCST SWX +6 HR: 08/0100Z NOT AVBL  
 FCST SWX +12 HR: 08/0700Z NOT AVBL  
 FCST SWX +18 HR: 08/1300Z FNXX02 ZBBB 190043  
 FCST SWX +24 HR: 08/1900Z  
 RMK: SPACE WEATHER EVENT (GNSS DISTURBANCE) IN PROGRESS.

SEVERE CONFIRMED?

MODERATE CONFIRMED?

No warnings

Report Impacts - Help Aviation!