Supporting European Aviation

EUROCONTROL

GNSS Resilience for PBN and New GNSS Short-Medium Term Requirements

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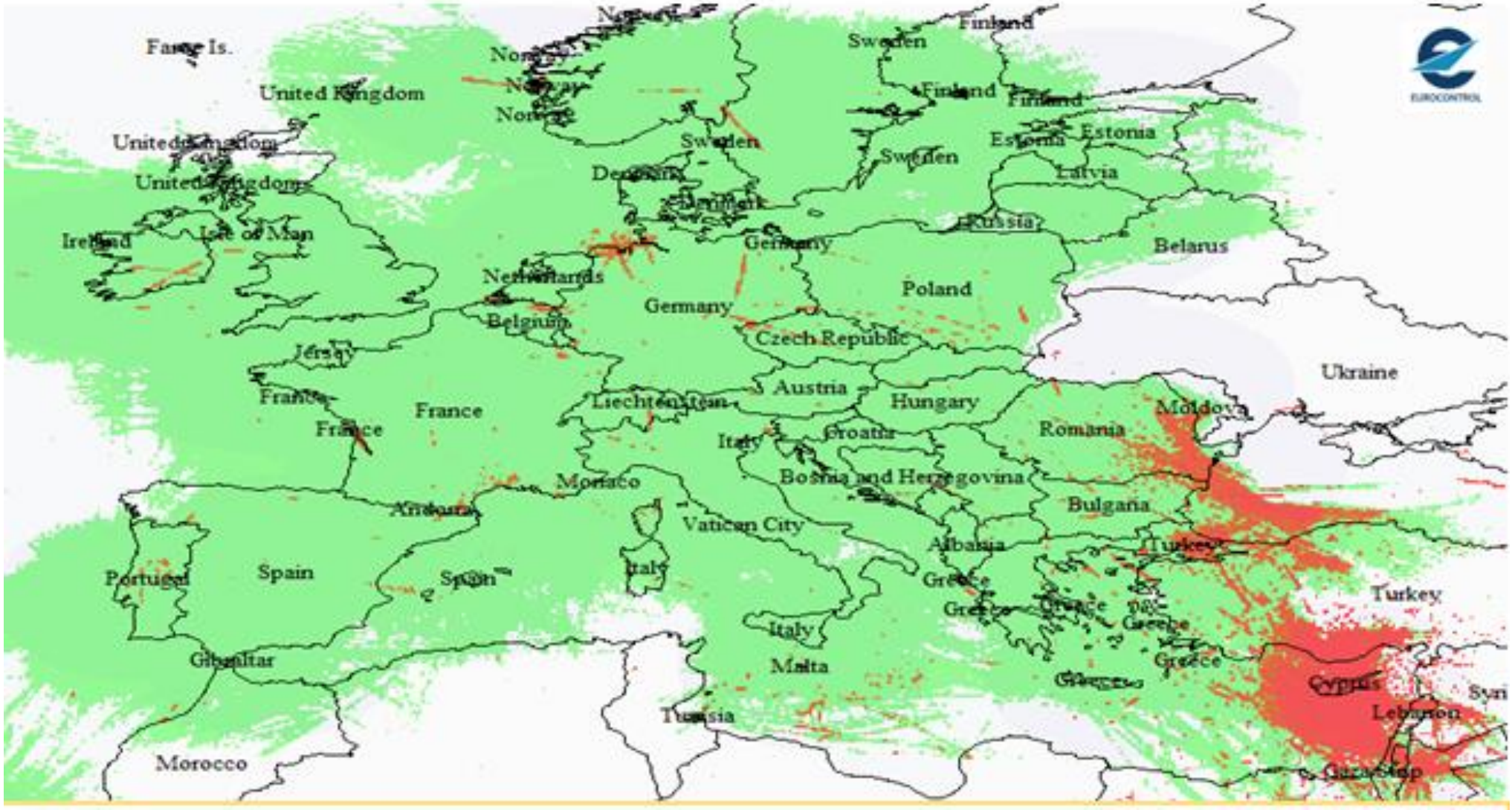
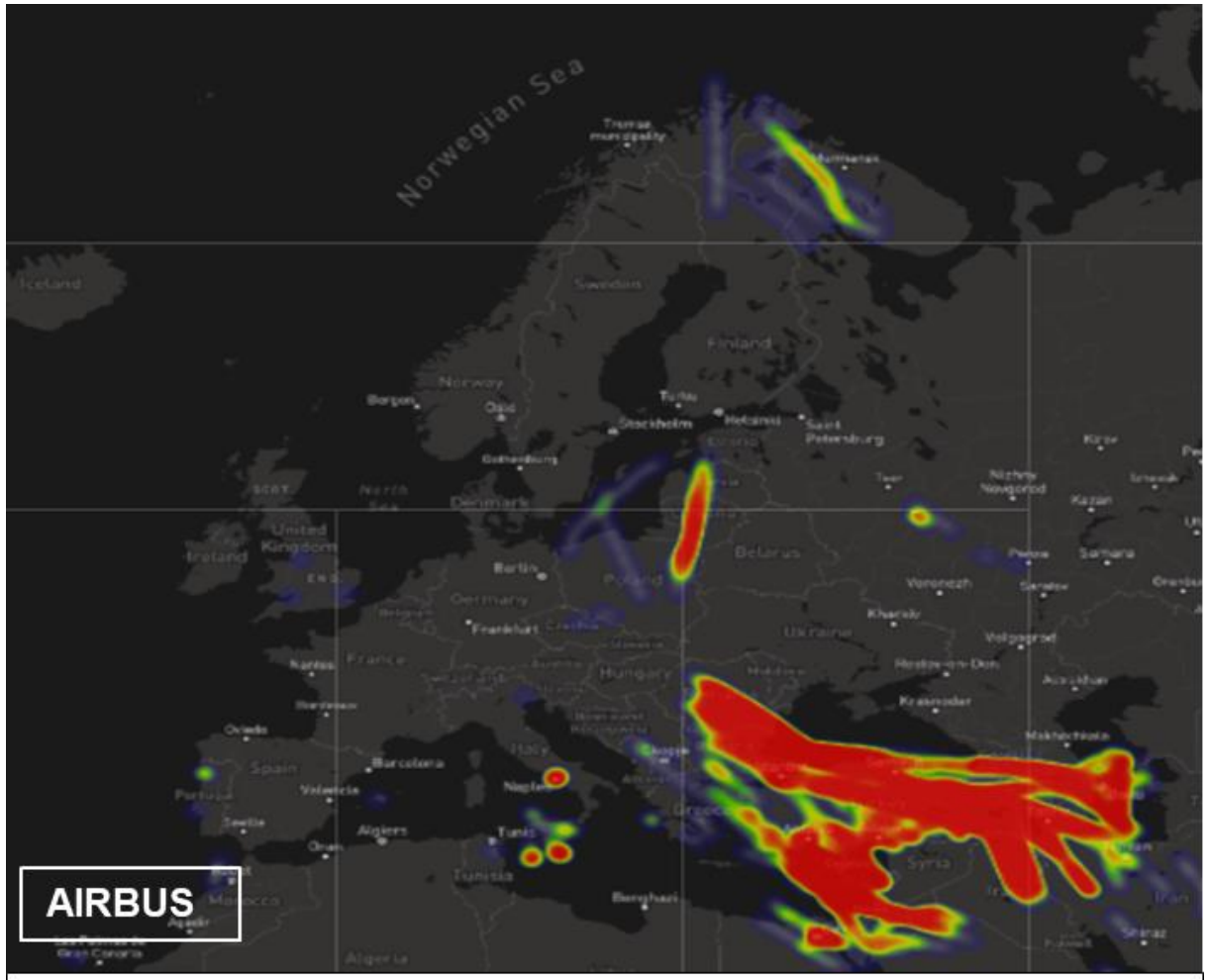
GNSS Quality Indicators from ADS-B – June to August 2022



GNSS RFI as detected by Airbus Aircraft

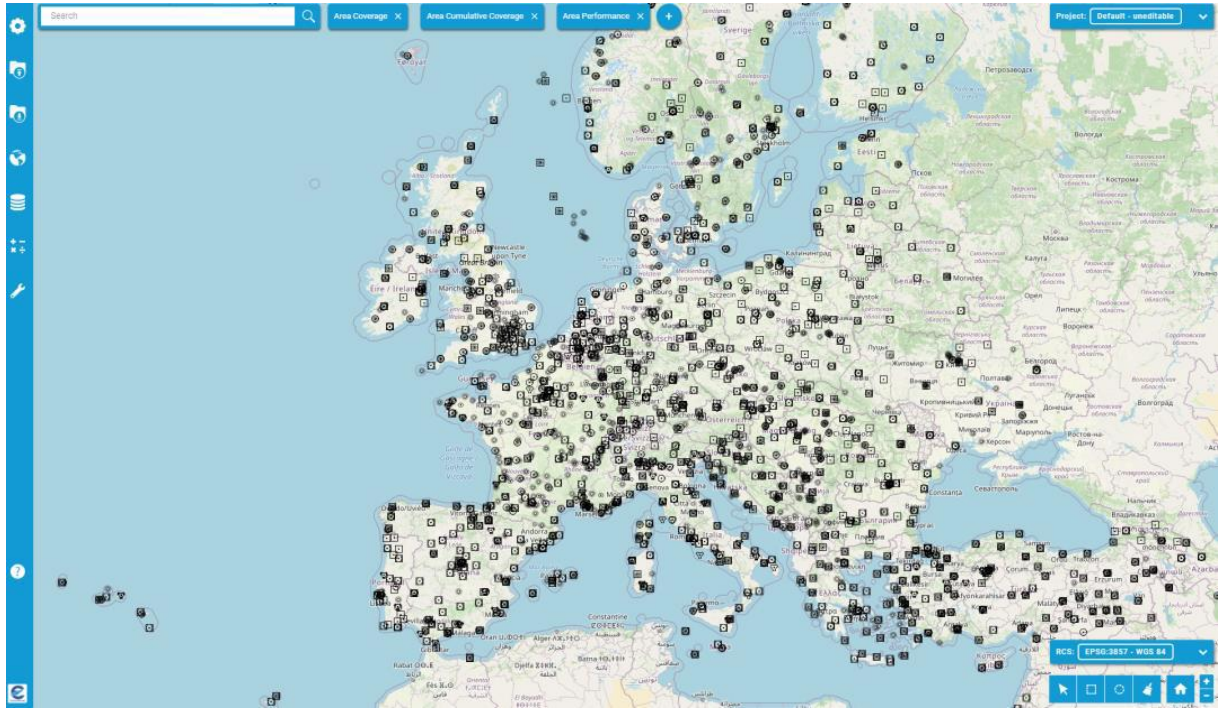


GNSS interference - From 01/03/2022 to 23/08/2022

Post-OPS Monitoring from participating aircraft operators

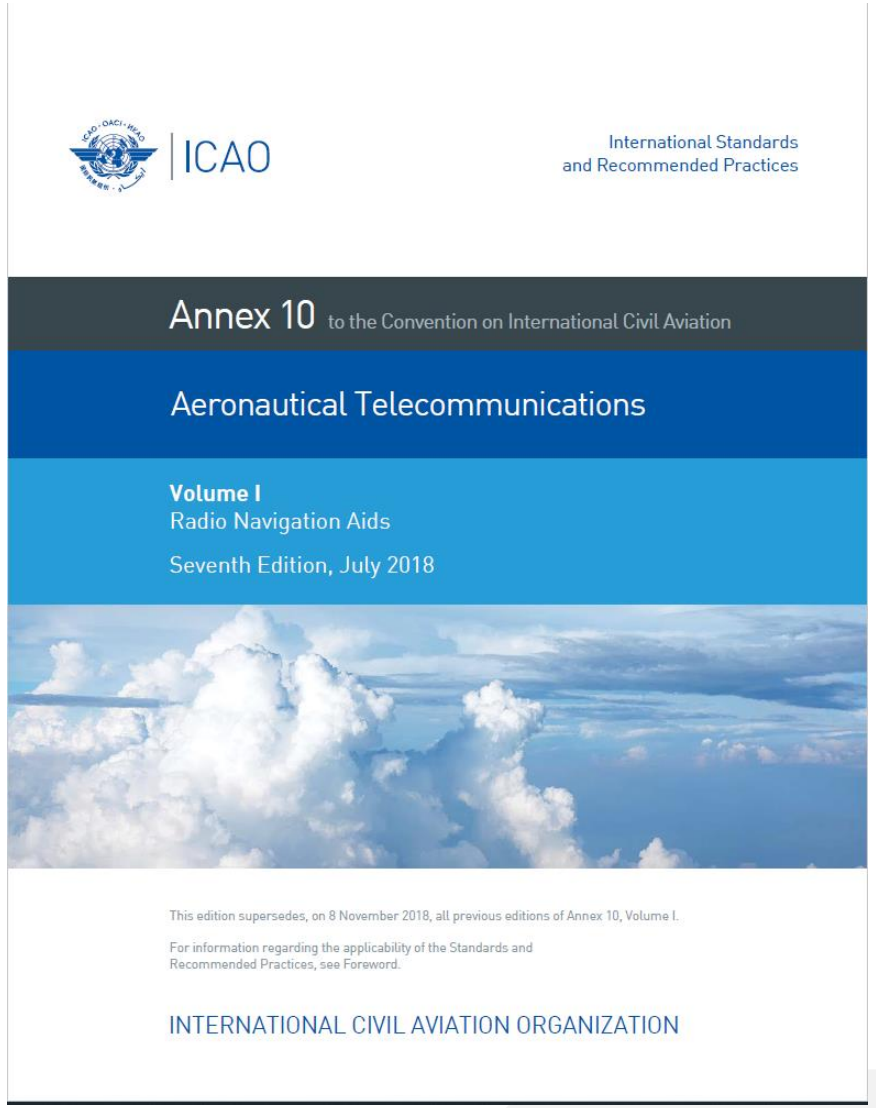
GNSS Resilience

- Aviation relies more and more on GNSS especially in the context of the PBN regulation.
- GNSS signals are inherently weak and therefore susceptible to interference
- Receiving equipment can be made more robust – but only in a limited way.
- Multiple Frequencies will help – but not for deliberate jamming
- An alternative needs to be kept to cover GNSS outages
- However Conventional Infrastructure can still be rationalised.



Future Aviation GNSS Requirements

- Mature Requirements exist for current systems
  - (GPS, GLONASS, SBAS, GBAS)
- Galileo and dual frequency SBAS Requirements recently developed.
  - DFMC standards are under development by both RTCA and Eurocae
- Current GNSS services support aviation operations from En-Route to Precision Approach and Landing.
- DFMC will provide robustness and should allow some rationalisation of the conventional navigation infrastructure.
- The Minimal operational Network (MON) that will be required to support PBN contingencies is under development.



New and Future Aviation GNSS Requirements

- There are not really any new requirements for current aviation applications
- New requirements will come from new applications and new users such as drones.
- Higher availability and improved continuity of service will come with DFMC along with more robustness against unintentional interference.
- User equipage may be a challenge