GNSS Jamming & Spoofing

APANPIRG/35 Meeting

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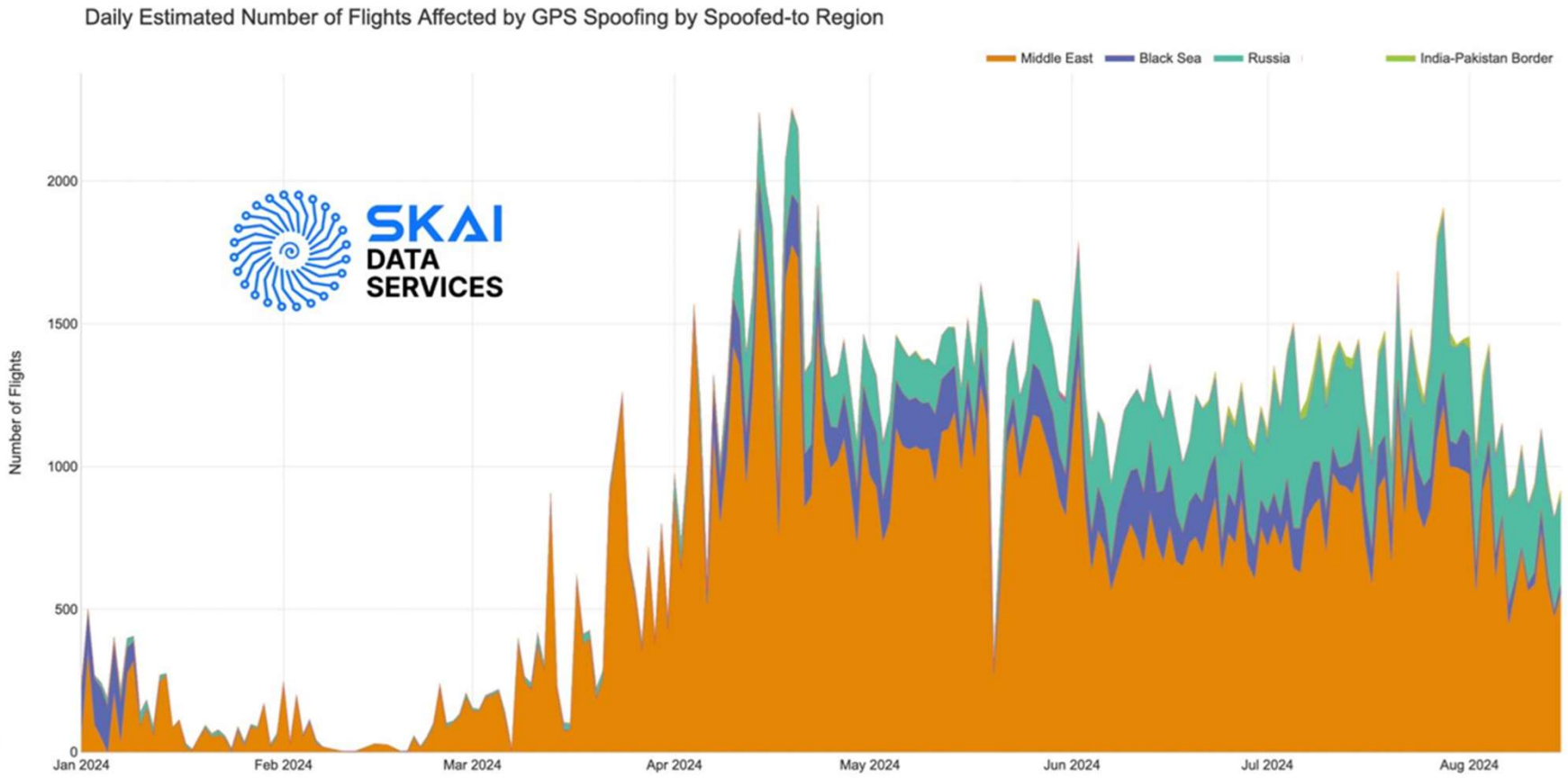
Major Increase in Spoofing in 2024



— ICAO A41 Resolution

- Resolution A41-8
  - Consolidated statement of continuing ICAO policies & practices related to global ATM system & CNS/ATM systems
- Appendix C
  - Ensuring resilience of ICAO CNS/ATM systems & services
- ICAO policy on GNSS resilience
  - and more generally CNS systems
  - directly addresses jamming & spoofing

ITU-ICAO Cooperation

- Aviation experts supported by ICAO expert groups developed draft Resolution
  - due to escalation of GNSS jamming & spoofing
- Resulted in approval of new ITU Resolution
  - [RESOLUTION 676] (WRC-23)
- “Prevention and mitigation of harmful interference to the radionavigation-satellite service (RNSS) in the frequency bands 1 164 – 1 215 MHz and 1 559 – 1 610 MHz”
- RES refers to ICAO and relevant ICAO activities
  - including reference to RES A41-8

ITU-ICAO Cooperation (2)

- Resolution urges administrations to apply necessary measures
  - to avoid proliferation, circulation and ops of unauthorized transmitters
  - that cause or have potential to cause harmful interference to RNSS systems
- to encourage cooperation
  - between aeronautical, maritime and security authorities + spectrum regulators
- to address interference risks to RNSS systems
  - that may stem from activities of these security authorities
- to report cases of harmful interference to RNSS

Regional Support Activities

- ICAO EUR/MID Radio Navigation Symposium
  - Antalyia, Turkey, 6 - 8 February 2024
- Theme ”Towards Safe, Reliable and Resilient Air Navigation”
  - focus on GNSS RFI
  - for ICAO EUR & MID Regions
- SL dated 30 April 2024 circulated outcome of symposium
  - requested States to disseminate guidance material
  - and implement recommendations, as applicable
- Link to Symposium Website
- Regional Navigation Workshops & 2nd ICAO Radio Navigation Symposium in 2025

AN-Conf/14 Recommendation

- Addresses GNSS interference & contingency planning
- Calls for States to ensure
  - that effective GNSS RFI mitigation measures are implemented
  - based on measures developed by ICAO & industry
  - including need to maintain sufficient network of conventional NAV aids
  - to ensure ops safety & sufficient airspace capacity during GNSS interference
- Calls for States (via PIRGs)
  - to develop regional GNSS reporting mechanisms
  - to raise ops awareness of affected geographical areas
  - as described in GNSS Manual (Doc 9849)

AN-Conf/14 Recommendation (2)

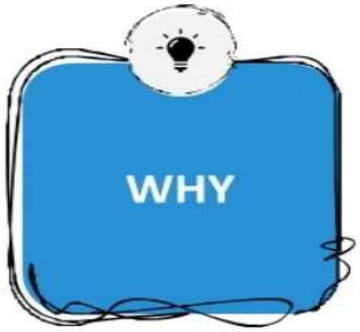
- Calls for States to work with industry to
  - identify means to make A/C systems more resilient to RFI events
  - provide guidance on
    - detecting GNSS jamming or spoofing
    - maintaining safe & efficient aircraft ops in case of GNSS anomalies
- States to review A/C minimum equipage lists
  - to ensure compatibility with States' implemented min operational networks
- ICAO to continue to assess impact of GNSS interference
  - on aviation safety & continuity of civil aviation ops
  - define adequate mitigation measures
    - while reminding States of their obligations

AN-Conf/14 Recommendation (3)

- ICAO to develop standardized implementation package
  - to assist and guide States
  - in implementing effective GNSS RFI mitigation measures
- ICAO to develop guidance on GNSS interference information exchange & civil-military coordination
  - in relation to harmful interference GNSS
  - originated or detected by military authorities
- ICAO to develop RECs for globally harmonized min A/C equipage lists
  - to ensure that provided NAV infrastructure can be used by airspace users
  - in line with available ATS

iPack for Mitigation of GNSS RFI

To develop standardized implementation package (iPack) for mitigation of GNSS RFI



To support States in managing GNSS RFI incidents and to ensure the continuous provision of safe and efficient air navigation services

ICAO and Pool of subject matter experts from relevant Experts group

By assisting States in implementing necessary preventive and reactive mitigation measures to reduce the likelihood and impact of GNSS RFI

Thank You!

ICAO