Agenda Item 2 – Radio Frequency Interference on GNSS Signal- An Eurocontrol Study

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An Eurocontrol Paper about RFI on Satellite navigation focusses on the following questions:

- What lies behind the massive rise in RFI reported across the European network?
- Where are the majority of RFI incidents occurring?
- What needs to be done to mitigate the problem?
- Link: EUROCONTROL Think Paper #9 - Radio Frequency Interference to satellite navigation: An active threat for aviation? | EUROCONTROL

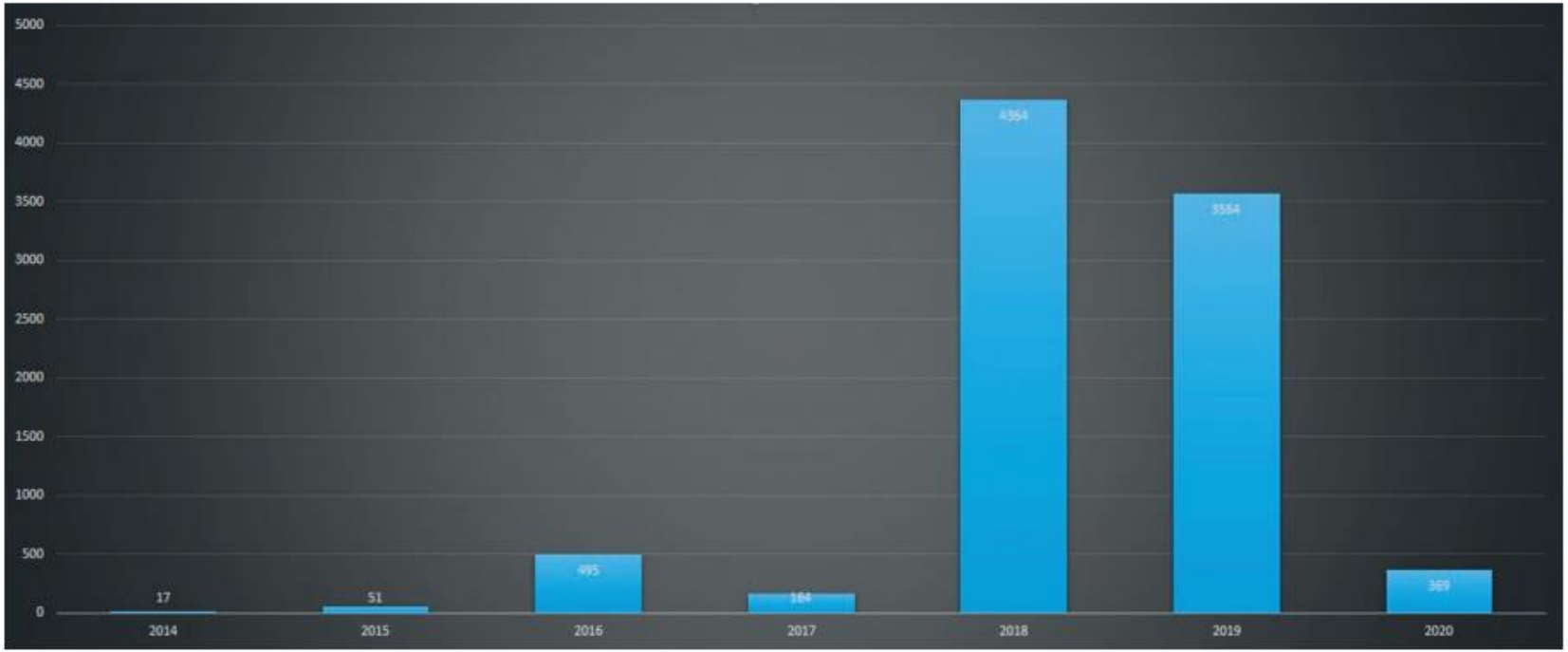
Main Findings

- A massive rise in GNSS Radio Frequency Interference (RFI) incidents in 2018.
- 38.5% of European en-route traffic operates through regions regularly affected by RFI.
- 5% of traffic in these disruption zones could need special assistance, increasing pilot and controller workload as well as the overall safety risk.

Main Findings

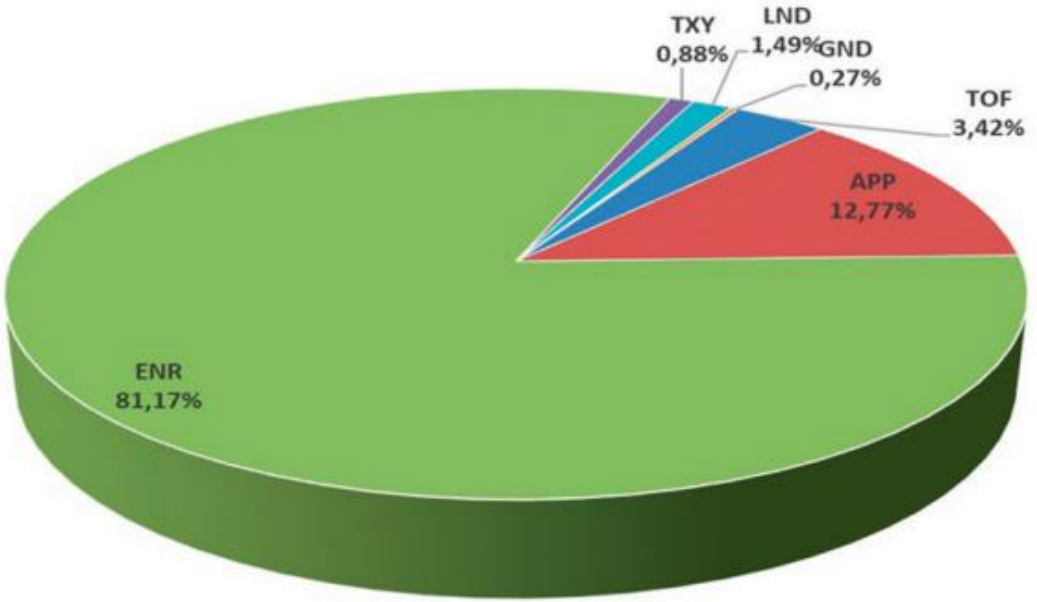
- Additional requirements on complementary CNS infrastructure.
- RFI jamming by state or proxy actors damages network efficiency and risks undermining safety.
- RFI jamming is disproportionate: while the majority of RFI hotspots appear related to conflict zones, they affect civil aviation at distances of up to 300km from these zones.

FIGURE 1: GNSS OUTAGES REPORTED BY PILOTS, 2014-2020



(Source: EUROCONTROL EVAIR)

FIGURE 2: EVAIR ANALYSIS OF GPS OUTAGES IN FLIGHT PHASES



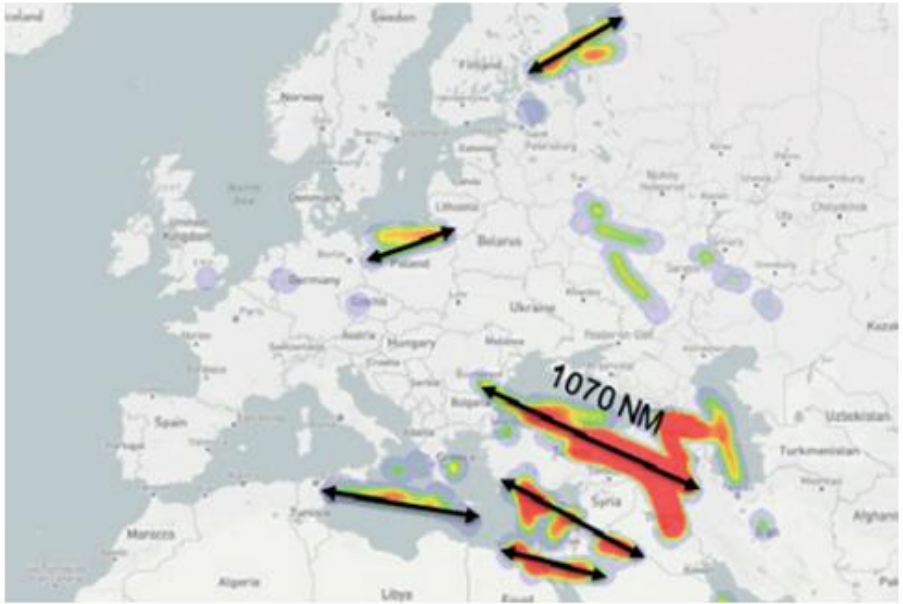
(Source: EUROCONTROL)

FIGURE 3: GLOBAL RFI HOTSPOTS DETECTED BY AIRBUS AIRCRAFT, 2H2020

Note: *This information is indicative and should not be used for flight planning purposes.*

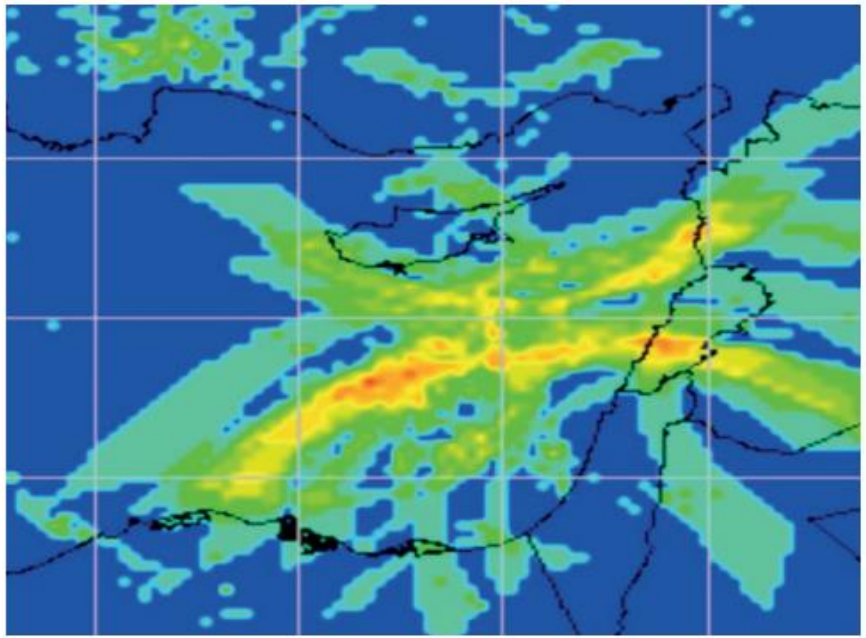
(Source: AIRBUS)

FIGURE 5: LONGEST FLIGHT TRAJECTORY CROSSING RFI ZONES



(Source: AIRBUS & EUROCONTROL)

FIGURE 7: PROBABLE RFI SOURCE LOCATION HEATMAP, DLR CYPRUS FLIGHT, USING ADS-B DATA



(Source: EUROCONTROL)

Conclusions:

- Aviation can operate safely if GNSS is unavailable for a short duration, but increasing RFI reduces the efficiency and cost-effectiveness of the system by requiring complementary CNS services to be maintained.
- Jamming undermines confidence and trust in Satellite navigation and increases the cost of anti-jamming mechanisms.
- States should identify the RFI zones through reporting by pilots & ATC etc.
- Awareness and actions need to be taken at State level in line with international treaties.
- States need to be aware of the problem and increase internal cooperation between their civil and military aviation bodies.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THANK YOU!