Space Weather:

Impacts on Airlines

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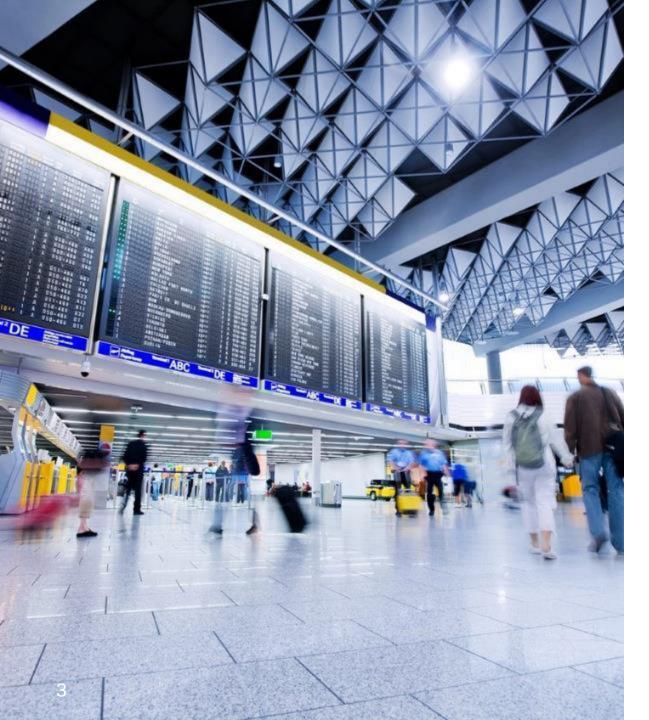




Recent Impacts

- Impact on satellites was minimal.
- It is acknowledged that short outages may have gone unreported.
- HF issues were widespread on the day side of the earth.
- This may have more to do with one of the several R3's that were occurring at the same time as the G5
- Conclusion to this theory remains elusive as G5 events may equally cause HF blackouts





Recent Impacts

- Airlines needed to adjust original flight routes and use lower latitudes
- Airlines avoided Polar operations resulting in longer distances
- Overall higher fuel carriage
- This meant less favourable conditions for FPLs (eg: head winds) so reduced payloads.



Airline Reports

Impact	Location	Other Information
HF loss & 1 CPDCL loss with Gander (DL205 ARN-JFK	NAT Gander	CPDLC except 1 flt unaffected
The geomatic storm on 11/12 May affected HF on a		SATCOM clarification requested once
few flights, as described below. There were no		and okay.
reports of GPS issues.		No GPS loss reported.
 Loss of HF. Also stated no flights were able to 	• CDG-ATL 55N30W	
contact Gander via voice. CPDLC and SATCOM		
were unaffected.		
 Loss of HF. Also reported other a/c experiencing 	 MXP-JFK 56N30W 	
the same problem. CPDLC and SATCOM were		
unaffected.		
 HF issues. CPDLC unaffected 	 CDG-JFK 	
 Reported unable HF with Gander. CPDLC ok 	 AMS-MSP 	
 Reported unable HF or CPDLC. 	 ARN-JFK 	
 Reported unable HF with Gander. CPDLC ok but 	 FRA-DTW 	
requested a SATCOM phone patch with Gander		
radio to clarify.		
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Airline Reports

Impact	Location	Other Information
HF Loss	NAT – Nth Canada	CPDLC/ADS-C unaffected. Sent
	limited to 82N	out Radiation alert to aircraft.
HF Loss	NAT, Iceland,	CPDLC/ADS-S unaffected.
Pacific – a few flights planned at lower FL and	Gander and South	SATCOM a rqmt outside VHF for
20mins additional fuel.	Pacific (AKL Radio	non Satcom aircraft.
Latin America NY Oceanic probs with ARINC	lower freqs working	Impact on satellites was
comms. Airline avoided where reported. 10-15	with fade out), SFO	minimal.
mins additional flight time.	intermittent.	ViaSat and Panasonic saw no
		impact from solar storm.
20 flights unable to uplink wind/NOTAM		
updates		
3 flts lost HF comms and entered BIRD FIR	NATS and Japan-	No info for GNSS. Waiting on
without clearance. Most lost HF on NATS but	Paris	more info from the pilot group.
CPDLC okay. 2 flights reduced FL .		
HF Comms loss on the NAT. Much longer flight	NAT/Asia	
times to/from Asia		



Preventative Action

- Not a lot reported
- Amended routes and altitudes in FPLs
- Warnings in briefings to pilots on potential outages
- Monitoring own flights and reports from other airlines and ATC



Thank you

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