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ADS-B Data as a source for analytical solutions of traffic behaviour in terminal airspace

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Summary

The availability of automatic dependent surveillance broadcast (ADS-B) data presents a useful source for analytical efforts on effective and efficient airspace and navigation procedure usage.

The sufficient availability of such data depends in-part, on a network of ground based receivers. Presently the ICAO SAM region does not have adequate coverage of these receivers for meaningful analysis. This paper provides an overview on technical requirements for this type of analysis and illustrates possible solutions for the SAM regions, once appropriate coverage is established.



Intent

- Recommend the concept of ADS-B bases analysis to GREPECAS to promote the installation of ground based receivers
- Raise awareness of present and future ADS-B based analysis capabilities





FlightAware – Radar Coverage



With permission of FlightAware



FlightAware – Surveillance Coverage

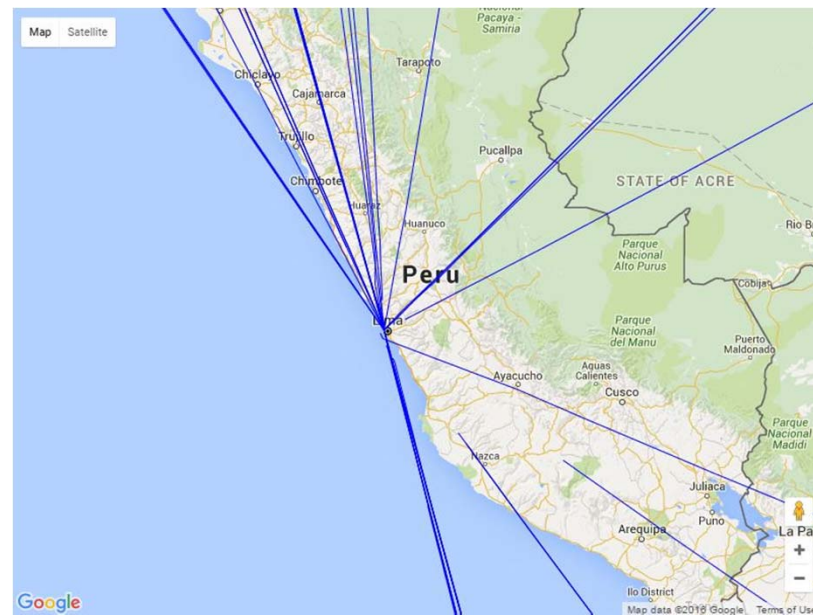
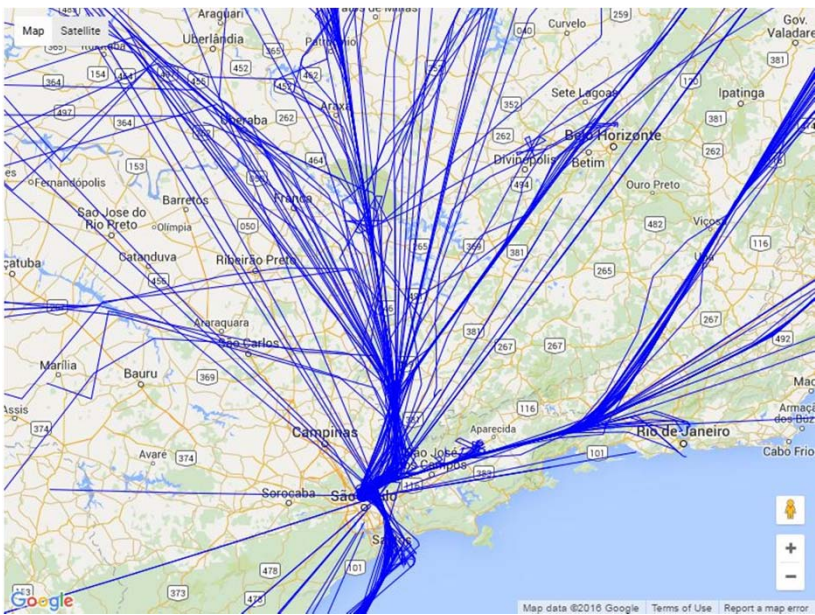


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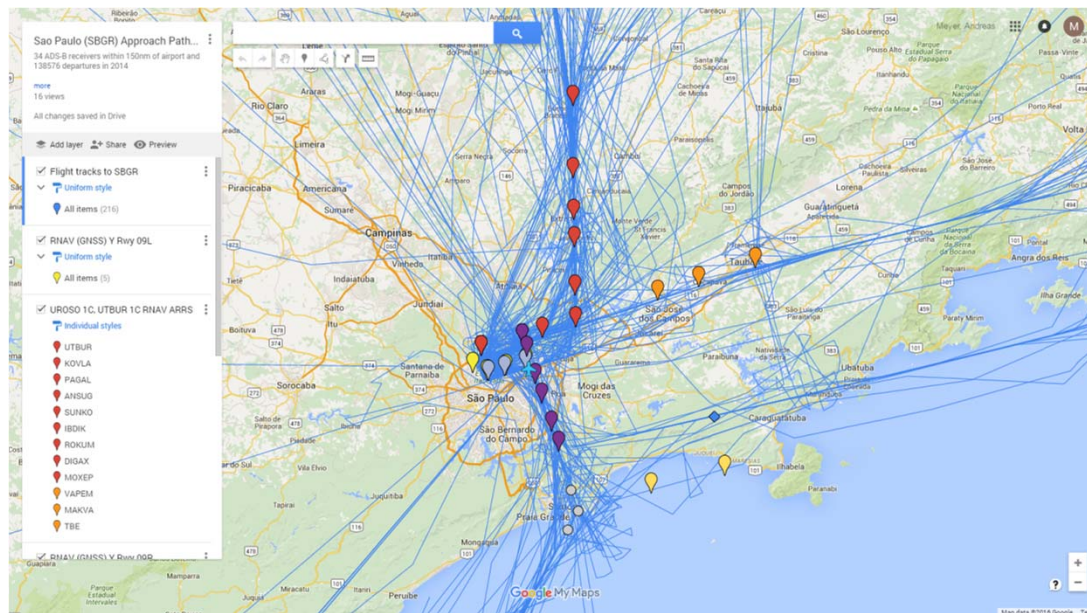


Coverage vs. Non-Coverage





Procedures Overlay Solution



- Qualified visualization
- Exact paths
- Any available procedure
- Terminal and Enroute airspace
- Quantified analysis of rate and numbers for each available procedure

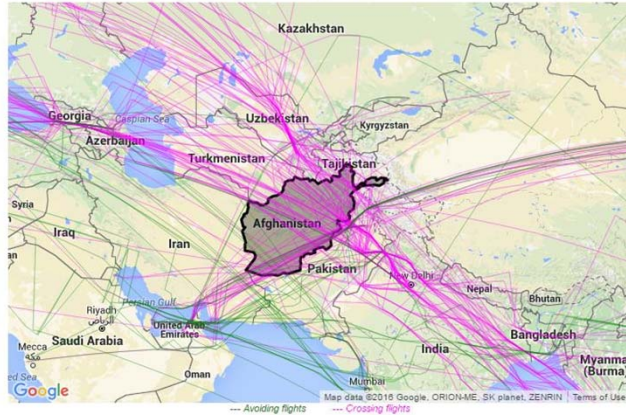


Conflict Zones Overlay Solution

General Information

The Afghanistan conflict zone covers 644484 square kilometers in Afghanistan. An average of 161 flights cross that zone every day. An average of 48 flights are rerouted every day to avoid that zone which represents 22.91% of the traffic.

The rerouting creates an 20.05% increase of the distance flown, causing an additional fuel cost of around 44124 US\$ per day

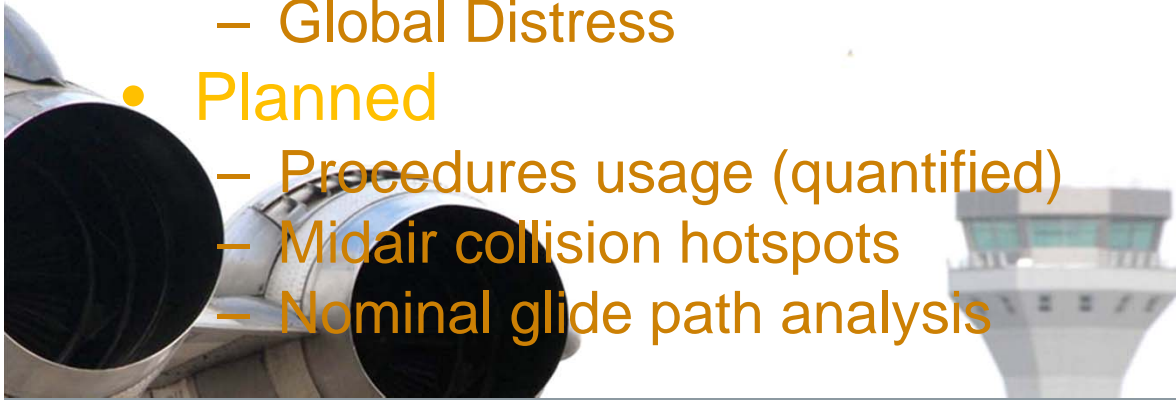


- Number of affected flights
- Number of rerouted flights
- Average route length increase
- Additional fuel cost
- Number of affected States of Operators



Solutions

- Available
 - Approach path (procedures usage qualified)
 - Conflict Zones
 - Global Distress
- Planned
 - Procedures usage (quantified)
 - Midair collision hotspots
 - Nominal glide path analysis





Requirements

- Promote the installation of ADS-B receivers (at no cost)
- Promote the cooperation of ANSP to provide radar data in exchange for ADS-B infrastructure





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THANK YOU