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AFI Regional Contingency Plan Review and Implementation Coordination -

ICAO Provisions & Requirements

Albert Aidoo Taylor & Keziah Ogutu

Regional Officer - ATM & SAR, WACAF

Regional Officer - ATM & SAR, ESAF

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Presentation Outline:

- Economic impact of Global Air Transport
- Key Definitions
- Airspace Types, Articles of the Convention & Annex 11
- Air Traffic Disruption & Contingency Arrangements
- Types of ATM Disruptions
- Status of Contingency Plans
- Delineation of responsibility for developing, promulgating and implementing contingency plans
- Contingency Planning Options
- Establishment of Contingency Coordination Team





Economic impact of Global Air Transport

Key facts outlined in **Aviation: Benefits Beyond Borders**, include:

- Air transport supports 65.5 million jobs and \$2.7 trillion in global economic
- Over 4 billion passengers and 62 million tonnes of freight
- Air travel carries 35% of world trade (\$6.0 trillion worth in 2017)
- Scope of the industry: 1,303 airlines fly 31,717 aircraft on 45,091 routes between 3,759 airports in airspace managed by 170 ANSPs
- 57% of world tourists travel to their destinations by air.
- 10 million women and men working within the industry
- 120,000 flights and 12 million passengers a day
- Aviation jobs on average 4.4 times more productive than other jobs



Key Definitions

- **Air Traffic Management:** The dynamic, integrated management of air traffic and airspace including air traffic services, airspace management and air traffic flow management — safely, economically and efficiently — through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions.
- **Air traffic management system:** A system that provides ATM through the collaborative integration of humans, information, technology, facilities and services, supported by air and ground- and/or space-based communications, navigation and surveillance.



Key Definitions

- **Air Traffic Services:** Air generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service).
- **Air Traffic Flow Management:** A service established with the objective of contributing to a safe, orderly and expeditious flow of air traffic by ensuring that ATC capacity is utilized to the maximum extent possible and that the traffic volume is compatible with the capacities declared by the appropriate ATS authority.
- **Appropriate ATS authority:** The relevant authority designated by the State responsible for providing air traffic services in the airspace concerned.



Socioeconomic impact on Air Traffic Disruptions

- Passengers
- Critical supplies
- Businesses
- Investments
- National and Global Economy
- Safety, Security
- Growth and Development programmes



Airspace Types

- Airspace of a sovereign State
- Delegated Airspace of another sovereign State
- Airspace over High Seas
- Airspace over undetermined Sovereignty



Articles of the Convention – Very briefly

- Article 1 of the Chicago Convention highlights States' sovereignty over the airspace above its territory.
- 1982 UN Convention on the Law of the Sea (UNCLOS), sovereign territory may extend up to a limit not exceeding 12 nautical miles measured from coastal baselines (Articles 2 and 3 refer).
- Article 37 calls for uniformity in standards to improve air navigation.
- Article 28 b) calls for establishment of ANS pursuant to SARPs, in which case the provisions of Annex 11 to the Convention in establishing airspaces and provision of ATS, are paramount.



ICAO Standards: Delimitation of ATS airspaces

- Annex 11, 2.1.1 to the Convention requires a Member State to determine those portions of airspace over its territory within which air traffic services will be provided and, thereafter, to arrange for such services to be established and provided.
- Approval by the Council of regional air navigation agreements relating to the provision by a State of air traffic services within airspace over the high seas does not imply recognition of sovereignty of that State over the airspace concerned.



Contingency arrangements: Annex 11; 2.32

- Air traffic services authorities shall develop and promulgate contingency plans for implementation in the event of disruption, or potential disruption, of air traffic services and related supporting services in the airspace for which they are responsible for the provision of such services.
- Such contingency plans shall be developed with the assistance of ICAO as necessary, in close coordination with the air traffic services authorities responsible for the provision of services in adjacent portions of airspace and with airspace users concerned.



Guidelines

- Note 1.— Guidance material relating to the development, promulgation and implementation of contingency plans is contained in Attachment C.
- Note 2.— Contingency Plans may constitute a temporary deviation from the approved regional air navigation plans; such deviations are approved, as necessary, by the President of the ICAO Council on behalf of the Council.
- The purpose of the guidelines is to assist in providing for the safe and orderly flow of international air traffic in the event of disruptions of air traffic services and related supporting services and in preserving the availability of major world air routes within the air transportation system in such circumstances



- **Types of ATM Disruptions**

1. Breakdown or interruption of ATS systems
(Communications, Navigation, Surveillance; ATC Operations, Human Factors)
2. Natural Acts (Volcanic Ash, Earthquake, etc.)
3. Industrial action or labour unrest affecting ATS
4. Security Situations (military conflicts or acts of unlawful interference, Conflict Zones-MH117, Sept 11)
5. Political Environment
6. Public Health Emergencies (EBOLA, COVID-19)



APIRG Conclusions

- States, which have not done so, are urged to finalize the development of their ATM Contingency Plans that fully integrate the AFI ATM VACP as an appendix, in accordance with APIRG Conclusion 19/19.
- APIRG/21 recalled that the lack, incomplete, uncoordinated, or non-publication of Contingency Plans was a long standing deficiency in the AFI Region.
- ICAO as a matter of priority should support FIRs in the AFI region to develop CPs and accelerate completion of the Regional CP, including inter-FIR Contingency Routes.



APIRG 21 Conclusions

CONCLUSION 21/05: IMPLEMENTATION OF CONTINGENCY PLANS

That,

- a) **States develop or update Contingency Plans (CPs)** that include Public Health Emergencies (**PHE**) and Volcanic Ash (**VA**) provisions and publish them as soon as practical; and
- b) ICAO provide assistance to **States** in the development and coordination of the CPs to enable their publication and completion of the Regional CP

CONCLUSION 21/33: CONDUCT OF VOLCANIC ASH EXERCISES IN AFI REGION

That, in order to practice and develop inter-agency response to volcanic activity in the AFI Region, **States** are urged to develop and conduct Volcanic Ash exercises using guidance contained in Appendix F of ICAO Doc 9766 (Handbook on the International Airways Volcano Watch (IAVW)).



Need for Air Traffic Contingency

- Disruption of services affect significantly the services in adjacent airspace.
- ICAO's role in contingency planning **is not limited** to airspace over the high seas and areas of undetermined sovereignty.
- Major world air routes within the air transportation system has to be preserved.
- IATA and IFALPA are valuable advisers on the practicability of overall plans.



Contingency Plans and Regional Air Navigation Plans

- Contingency plans provide alternative facilities & services to those in the regional air navigation plan.
- Contingency arrangements are temporary until the services and facilities of the regional air navigation plan are reactivated.
- Contingency Plans **do not** constitute **amendments** to the **regional plan** requiring temporary deviations to be approved by the President of the ICAO Council on behalf of the Council.



Responsibility for developing, promulgating and implementing CPs

- State(s) are responsible for providing ATS and for instituting measures to ensure the safety of international civil aviation operations.
- State(s) should develop, promulgate and implement appropriate contingency plans.
- Contingency Plans should be developed in consultation with other States, airspace users concerned and ICAO



Responsibility over the High Seas

- The responsibility for appropriate contingency action in respect of airspace over the high seas continues to rest with the State(s) normally responsible for providing the services until, and unless, that responsibility is temporarily reassigned by ICAO to (an)other State(s).



Delegated Airspace

- Similarly, the responsibility for appropriate contingency action in respect of airspace where the responsibility for providing the services has been delegated by another State continues to rest with the State providing the services until, and unless, the delegating State terminates temporarily the delegation.
- Upon termination, the delegating State assumes responsibility for appropriate contingency action.



ICAO Responsibilities

- ICAO will initiate and coordinate appropriate contingency action in the event of disruption of air traffic services affecting international civil aviation operations provided by a State wherein, for some reason, the authorities cannot adequately discharge the responsibility.
- ICAO will work in coordination with States responsible for airspace adjacent to that affected by the disruption and in close consultation with international organizations concerned.
- ICAO will also initiate and coordinate appropriate contingency action at the request of States.



State Responsibility and Contingency Preparation

States should take preparatory action facilitating timely introduction of contingency arrangements.

Such preparatory action should include:

- general contingency plans for foreseeable events such as industrial action or labour unrest;
- natural disasters, public health emergencies, military conflicts;
- monitoring of any developments that might lead to events requiring contingency arrangements; and
- **States should consider designating persons/administrative units to undertake such monitoring.**



Contingency Action: Central Agency & Coordination Team

- States Designate/Establish a **Central Agency** which, in the event of disruption of ATS would provide, **24 hours** up-to-date information on the situation; and
- A **Coordinating Team** should be designated within, or in association with, such a central agency for the purpose of coordinating activities during the disruption.



ICAO Responsibilities

- ICAO will be available for monitoring developments that might require contingency arrangements;
- Assist in development & application of such arrangements;
- Establish a Coordinating Team in the Regional Office(s) concerned and at ICAO Headquarters in Montreal;
- Arrange for competent staff to be available **24 hours** a day.
- Monitor continuously information from all relevant sources
- Arrange for constant supply of information received by AIS
- Liaise with international organizations & exchange up-to-date information with States



Requirement for State to advise ICAO

- States which anticipate or experience disruption of air traffic services **should advise, as early as practicable, the ICAO Regional Office** accredited to them, and **other States** whose services might be affected.
- Such advice should include information on associated contingency measures or a request for assistance in formulating contingency plans.



Responsibility over airspace

- Sovereign airspace can be used only with the consent of the authorities of the State concerned. **State Contingency Plan must include statement to confirm availability of its airspace for CP.**
- Otherwise, the contingency arrangements must involve bypassing the airspace and should be developed by adjacent States or by ICAO in cooperation with such adjacent States.
- In the case of **airspace over the high seas** or of undetermined sovereignty, development of the contingency plan might involve, depending upon circumstances, including the degree of erosion of the alternative services offered, **temporary reassignment by ICAO** of the responsibility for providing air traffic services in the airspace concerned.



Development, promulgation and application of contingency plans

Development of a contingency plan presupposes the provision of information as possible on:

- current and alternative routes,
- navigational capability of aircraft and availability of navigational guidance from ground-based aids,
- surveillance and communications capability of adjacent air traffic services units,
- volume and types of aircraft to be accommodated
- the actual status of the air traffic services,
- communications, Meteorological, and aeronautical information services.



Main elements to be considered for contingency planning

- a) **re-routing of traffic** to avoid the whole or part of the airspace concerned, normally involving establishment of additional routes or route segments with associated conditions for their use;
- b) establishment of a **simplified route network** through the airspace concerned, if it is available, together **with a flight level allocation scheme to ensure lateral and vertical separation**, and a procedure for adjacent area control centres to establish longitudinal separation at the entry point and to maintain such separation through the airspace;
- c) **reassignment of responsibility for providing air traffic services** in airspace over the high seas or in delegated airspace;



Main elements to be considered for contingency planning

- d) provision and operation of adequate air-ground communications, AFTN and ATS direct speech links, **including reassignment, to adjacent States, of the responsibility for providing meteorological information and information on status of navigation aids;**
- e) special arrangements for collecting and disseminating in-flight and post-flight reports from aircraft;
- f) **a requirement for aircraft to maintain continuous listening watch on a specified pilot-pilot VHF frequency in specified areas where air-ground communications are uncertain or non-existent and to broadcast on that frequency, preferably in English, position information and estimates, including start and completion of climb and descent;**



Main elements to be considered for contingency planning

- g) a requirement for all aircraft in specified areas to display navigation and anti-collision lights at all times;
- h) a requirement and procedures for aircraft to maintain an increased longitudinal separation that may be established between aircraft at the same cruising level;
- i) a requirement for climbing and descending well to the right of the centre line of specifically identified routes – Strategic Lateral Offset Operations (**SLOP**);
- j) establishment of arrangements for controlled access to the contingency area to prevent overloading of the contingency system; and
- k) a requirement for all operations in the contingency area to be conducted in accordance with **IFR**, including allocation of IFR flight levels, from the relevant Table of Cruising Levels in Appendix 3 of Annex 2, to ATS routes in the area.



Notification of Contingency Planning

- Notification, by NOTAM, of anticipated or actual disruption of air traffic services and/or related supporting services should be dispatched to users of air navigation services as early as practicable. The NOTAM should include the associated contingency arrangements. In the case of foreseeable disruption, **the advance notice should in any case not be less than 48 hours.**
- Notification by NOTAM of discontinuance of contingency measures and reactivation of the services set forth in the regional air navigation plan should be dispatched as early as practicable to ensure an orderly transfer from contingency conditions to normal conditions.



Contingency Planning aid for airspace closures

- As part of offering assistance, ICAO has developed this Traffic Flow App, which provides an indicative estimation of the effect on traffic flows when an FIR is closed – both graphically, and in the form of a percentage increase/decrease graph.
- This information can then be used as a basis for close coordination with ANSPs responsible for adjacent airspace, during the development of the contingency plan.
- **iSTARS Contingency website:**
<https://portal.icao.int/space/Pages/Contingency-Planning.aspx>



Traffic Flow App

Website that might help:

<http://quips.anbdata.com/project/prod/a6fee0e6f422f96963a8e11c7160e522be5fc6ba/page.html>

<https://portal.icao.int/space/Pages/Contingency-Planning.aspx>

<https://www.flightradar24.com/1.34,8.28/5>

Note: Statistics cover ADS-B equipped aircraft with antennas mounted on top of the aircraft

Daily Traffic Statistics

In 2018, FIR JOHANNESBURG (FAJA) handled approximately 337 daily flights. The largest proportion of traffic is coming from inbound/outbound flights with 73.9% of total traffic. There are around 27 overflights per day accounting for a total distance flown of 8372 nm.

0% of flights seem to avoid overflying the FIR JOHANNESBURG (FAJA), as their shortest route would normally make them overfly this zone.

Overflights

27

Avoidances

0%

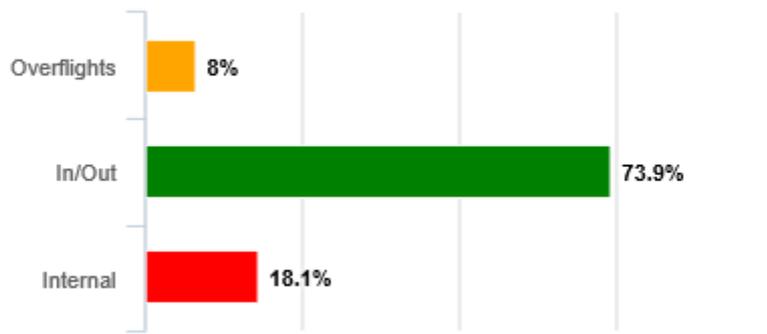
Total Flights

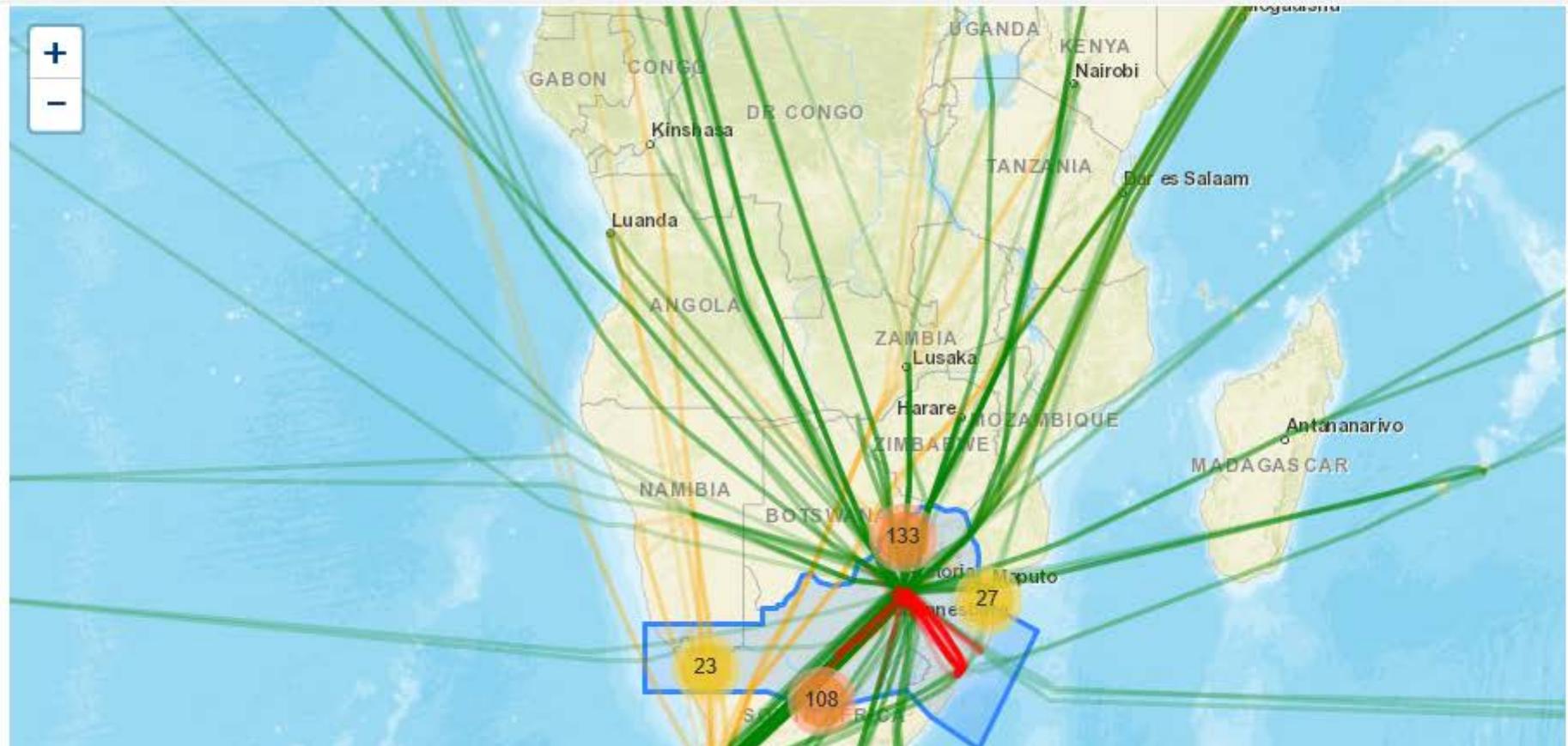
337

Overflights Length

8372 nm

Traffic Distribution

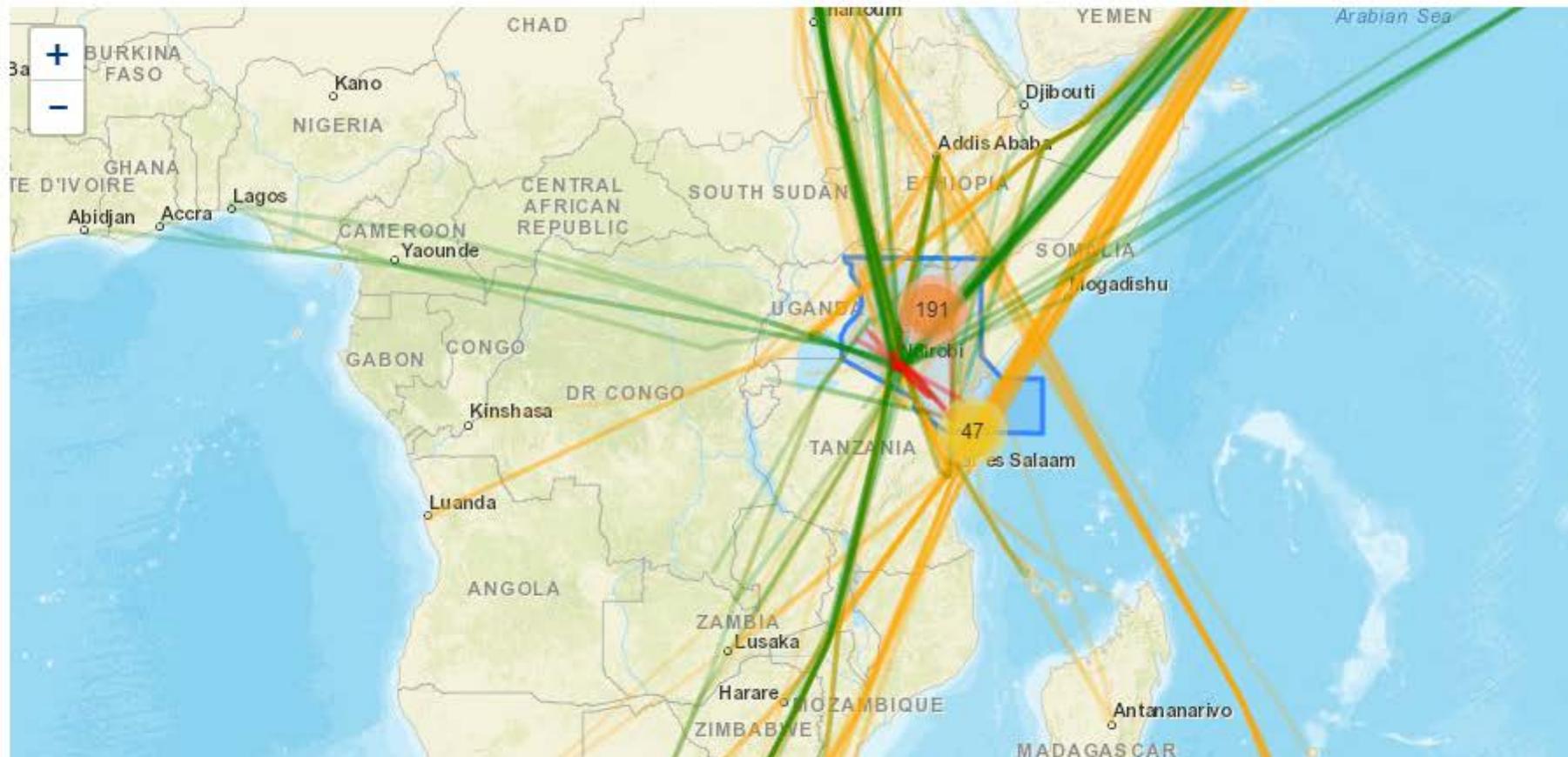




All Overflights Inbound/Outbound Internal

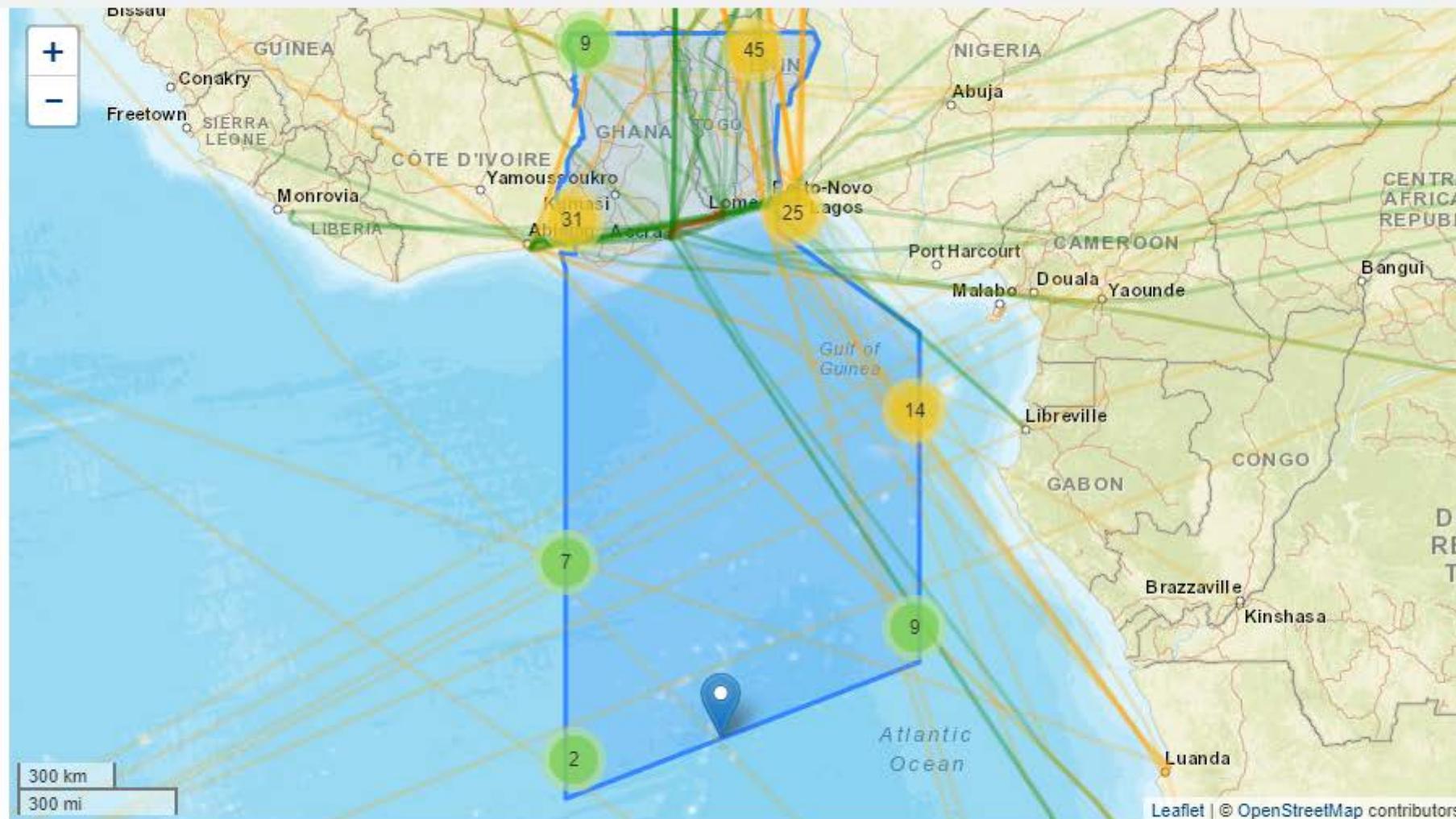
Show hotspots

Show all FIRs





Note: The trajectories are direct and not geodesic between points and may therefore not always indicate exactly the overflow zones.



Note: The trajectories are direct and not geodesic between points and may therefore not always indicate exactly the overflow zones.



USOAP CMA

PQ 7.153 Contingency Planning

Does the State ensure that contingency plans have been developed and implemented in the event of disruption or potential disruption of air traffic service (ATS) or related supporting services?

- *1) Review mechanism established to ensure effective implementation.*
- *2) Review documented evidence of the existence of contingency plans and how they are applied.*
- *3) Verify that contingency plans have been: a) developed with the assistance of ICAO (as necessary); b) coordinated with ATS authorities responsible for the provision of services in adjacent portions of airspace; and c) coordinated with airspace users.*
- *4) Ensure that contingency plans also address natural disasters and public health emergencies.*



USOAP CMA

PQ 7.158 Contingency Planning

Does the State ensure that procedures are established and implemented for air-ground radio communications failure?

- 1) Review mechanism established to ensure effective implementation.
- 2) Review documented evidence of implemented procedures related to air-ground radio communications failure.
- 3) If data link services are provided, verify that procedures are established and implemented for log on and CPDLC failures.



USOAP CMA

PQ 7.159 Contingency Planning

Does the State ensure that ATC contingency procedures are established and implemented?

- 1) Review mechanism established to ensure effective implementation.
- 2) Review documented evidence of ATC contingency procedures for: a) radio communications contingencies. b) emergency separation, and c) if applicable, for i) short-term conflict alert (STCA); ii) minimum safe altitude warning (MSAW); iii) aircraft equipped with ACAS; and iv) autonomous runway incursion warning system (ARIWS).



Type of Contingency	Type of Airspace	Re-routing and/or FLAS	SRN and/or FLAS	Reassignment of responsibility	Others
Breakdown or interruption of ATS systems (Communications, Navigation, Surveillance; ATC Operations, Human Factors)					
Natural Acts (Volcanic Ash, Earthquake, Extreme Weather)					
Industrial action or labour unrest affecting ATS					
Security Situations (military conflicts, acts of unlawful interference, Conflict Zones- MH117, Sept 11)					
Political Environment					
Public Health Emergencies (EBOLA, COVID-19, etc.)					





Summary of Contingency Options

A combination of any or all of the following:

- Re-routing
- SRN and/or FLAS
- Reassignment of responsibility
- Traffic Information Broadcast by Aircraft (TIBA)
- In Flight Broadcast Procedures (IFBP)
- Increased Longitudinal Separation



Expected Outcomes at the end of workshop

- Conversant with ICAO Contingency Plan provisions;
- ICAO, States, ANSPs, Airspace Users' roles and responsibilities understood;
- National Contingency Plans developed, completed or in respect of recent developments to ensure their completeness and operability;
- Coordinate and align Contingency Route systems in order to facilitate the functionality of national contingency plans;
- Identify elements to incorporate into regional CP network
- publish contingency plans for implementation ; and
- Reinvigorate the regional Contingency Coordination Team (CCT).
- A revised AFI region CP adopted



- Traffic is growing.
- It's set to **double** by 2030.



Air Traffic Flow Chart 2040





Contingency planning





Contingency Planning

Do it before you need it!

Please!!!!!!





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THANK YOU!



QUESTIONS?

