

H O N G
K O N G
A T C – P I L O T
S Y M P O S I U M



民航處
CIVIL AVIATION
DEPARTMENT



29 SEP 2017 AUDITORIUM, CAD HEADQUARTERS

A background map of Europe showing a network of flight paths and a grid. The map is rendered in a light gray color. The flight paths are represented by dashed lines with small triangles indicating direction. The grid consists of solid lines forming a rectangular pattern. The text "Bad Weather Procedures" is overlaid on the map in a large, bold, black font.

Bad Weather Procedures

ATC – PILOT SYMPOSIUM

Agenda

- Climatology of Hong Kong
- Concerns of ATC
- Weather effect to different sectors
 - CAPPI
 - Case Studies on 07 and 25 Operations

Climatology of Hong Kong

- Mar to Apr: Humid with fog and/or drizzle
- **May to Aug:** Moist and hot with occasional showers and thunderstorms
- **Jul to Oct:** Likely to be affected by tropical cyclone
- **Oct to Nov:** Fine and mild
- Dec to Feb: Passage of cold front may bring dry northerlies. Generally cloudier in Jan and Feb

Concerns of ATC

The background of the slide is a detailed map of East Asia, specifically focusing on the region around Hong Kong and the surrounding seas. It features a complex network of flight paths, represented by solid and dashed lines with arrows indicating direction. The map also shows various ATC sectors, some of which are outlined with dashed lines. The overall tone is light gray, providing a technical and professional appearance.

- Safety
 - Vertical & Lateral separation
- Order
 - Airspace integrity, agreement with adjacent sectors
- Efficiency
 - Departure/Arrival rate, flow control (fuel burn? Continuous climb/descent?)

Effect of Weather to ATC

- Non-standard traffic flow
- Reduced airspace capacity
- New conflict points
- Frequency occupancy time
- Extra Coordination/RT
- Limited vectoring
- Rely on 1000ft

Less time for more work!

Effect to Different Sectors

- Aerodrome
- Approach / Departure
- Terminal
- Enroute

Aerodrome

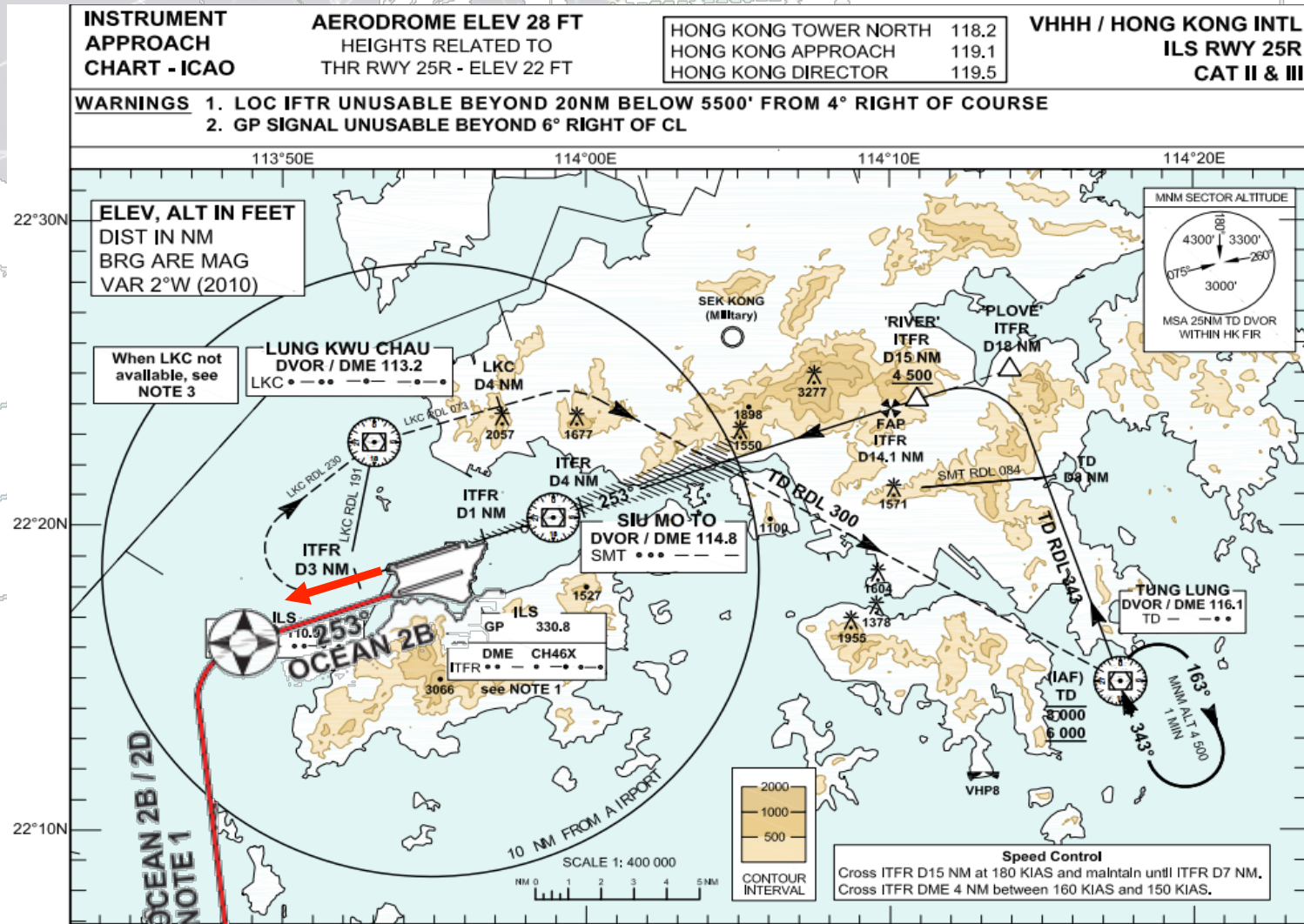
- Non-standard Missed Approach
 - SIM mode vs COOR mode
- Departure flow
 - Full apron (arrival rate > departure rate)
 - Crew hours
 - Curfew
- Sudden runway change
- Poor visibility
- Departure/Arrival Ground Holding
- Red Lightning Warning



SIM mode vs COOR mode

- 25R/07L MAP vs 25L/07R SIDs
 - Standard MAP tracks and SIDs are procedurally separated
- SIM mode
 - If MAP stay on RWY HDG, how can we separate
 - Vertical (1000ft) - either one stop at 3000ft, the other EXP thru 4000ft
 - Visual
 - Change to COOR mode
- COOR mode
 - Departure has to roll when arrival is 3NM out or has landed
 - Bigger arrival spacing, 5NM or 6NM instead of 3.5NM
 - Lower Departure rate, virtually +2 or +3

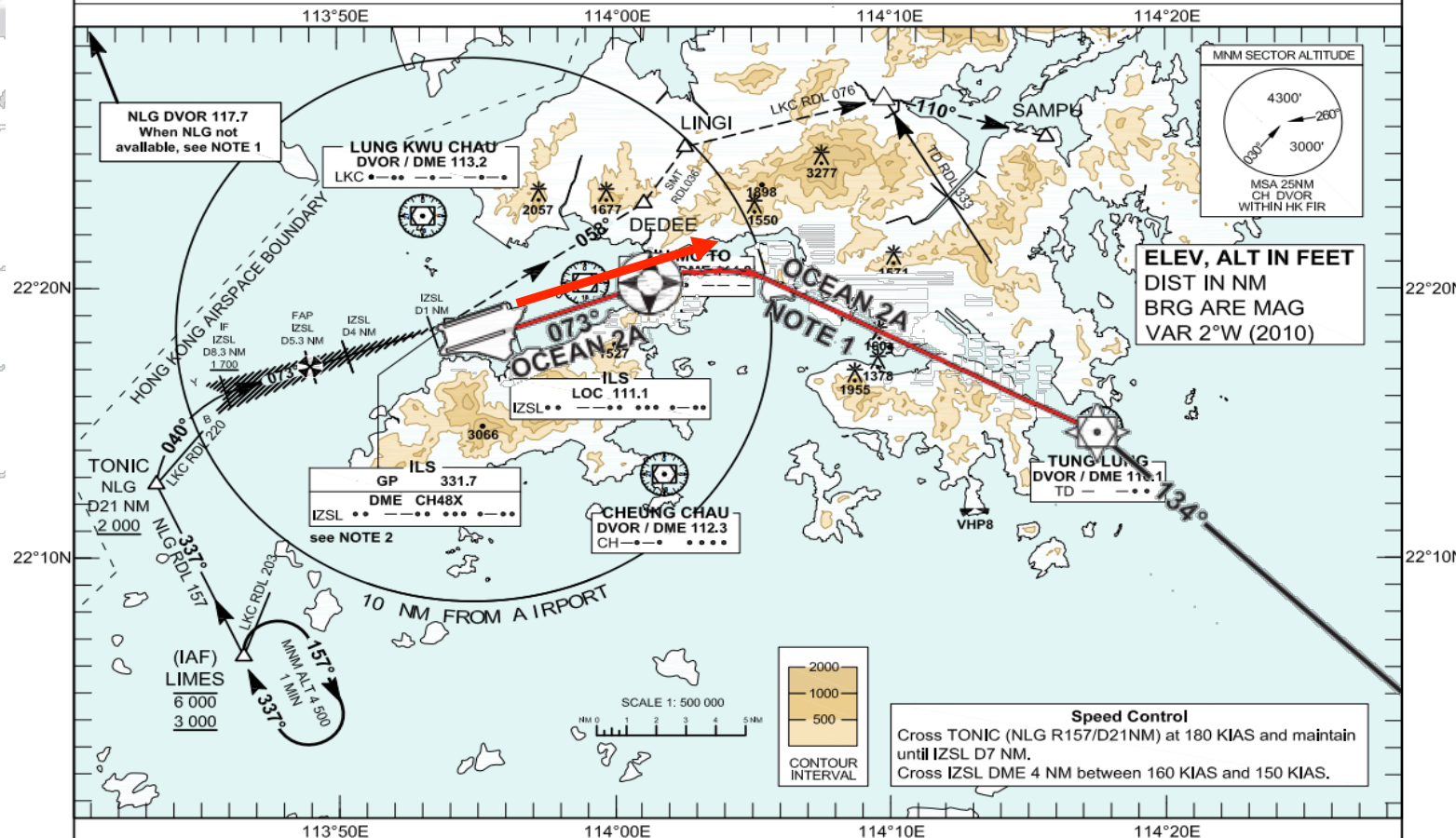
25R and 25L



07L and 07R

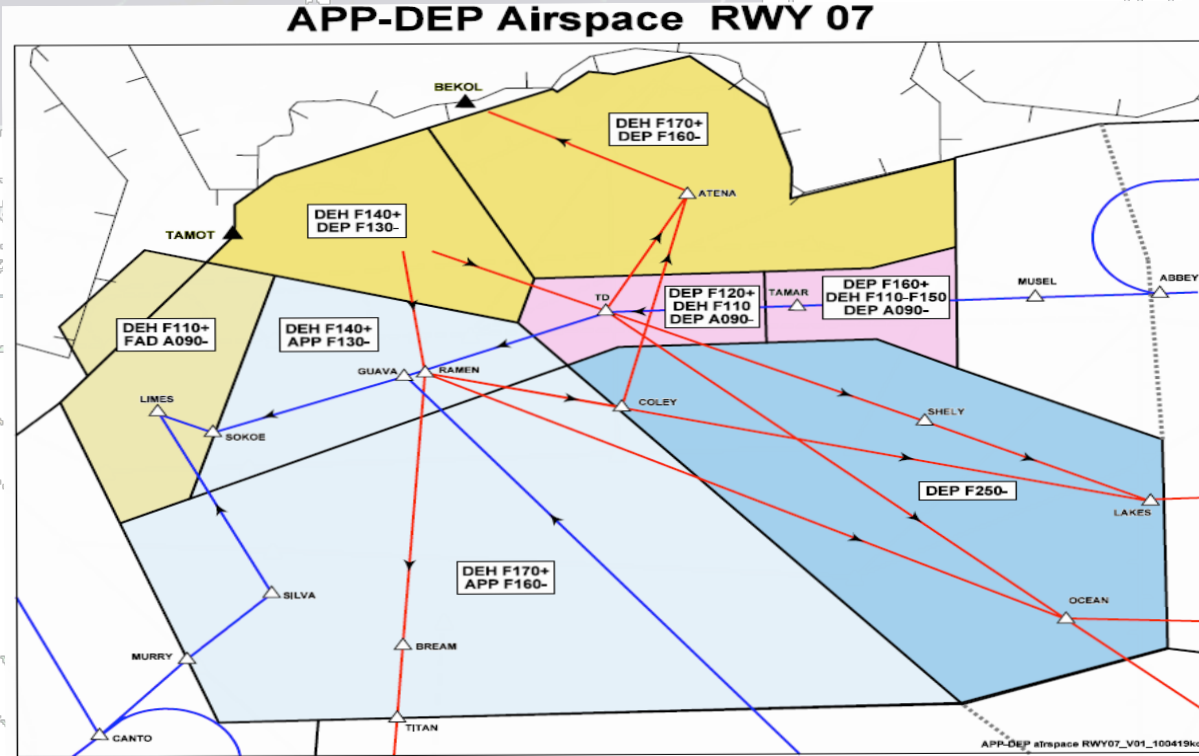
INSTRUMENT APPROACH CHART - ICAO	AERODROME ELEV 28 FT HEIGHTS RELATED TO THR RWY 07L - ELEV 22 FT	HONG KONG TOWER NORTH 118.2 HONG KONG APPROACH 119.1 HONG KONG DIRECTOR 119.5	HONG KONG / Intl (VHHH) ILS RWY 07L CAT II
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WARNING LOC IZSL UNUSABLE BEYOND 28° RIGHT OF COURSE



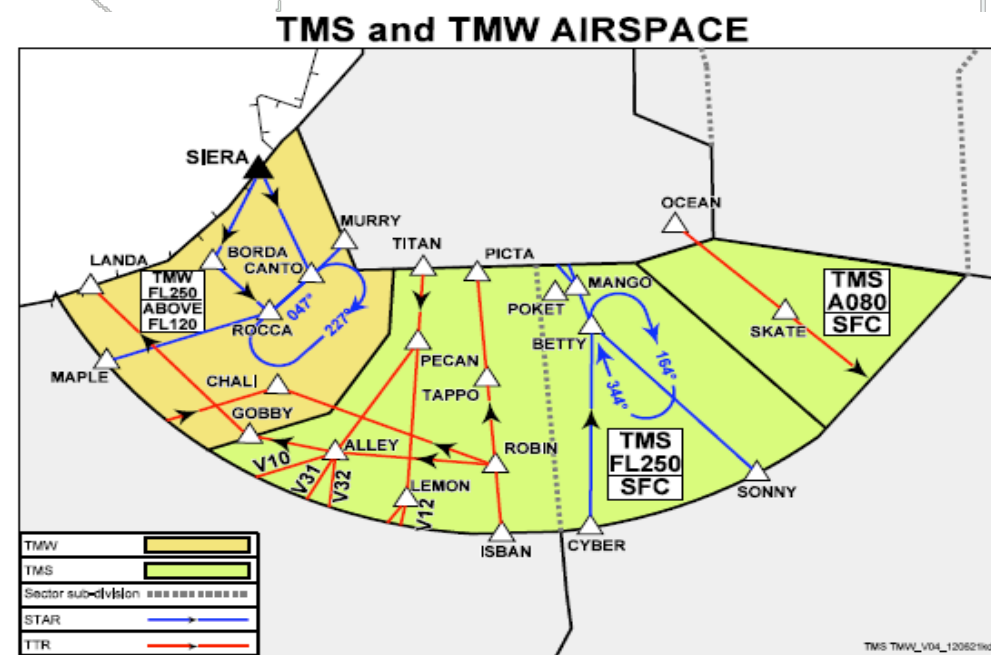
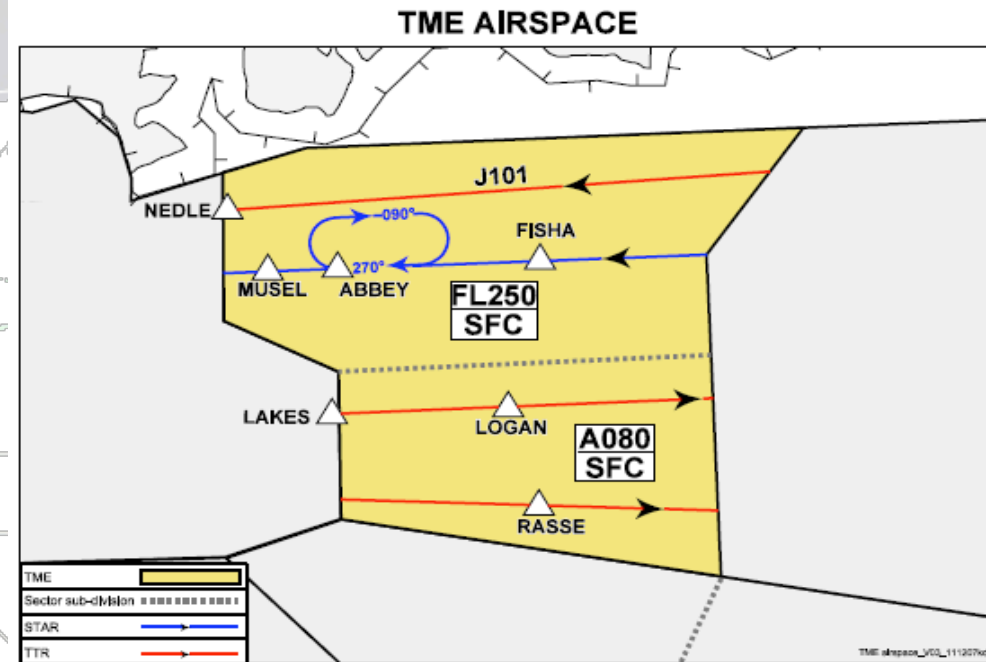
Approach / Departure

- Go-around
 - Vector to re-feed into sequence
 - Non-standard missed approaches
- Deviation from / to China airspace
- Weather on arrival / departure track vs Terrain
- Reduced track mile for descend / climb



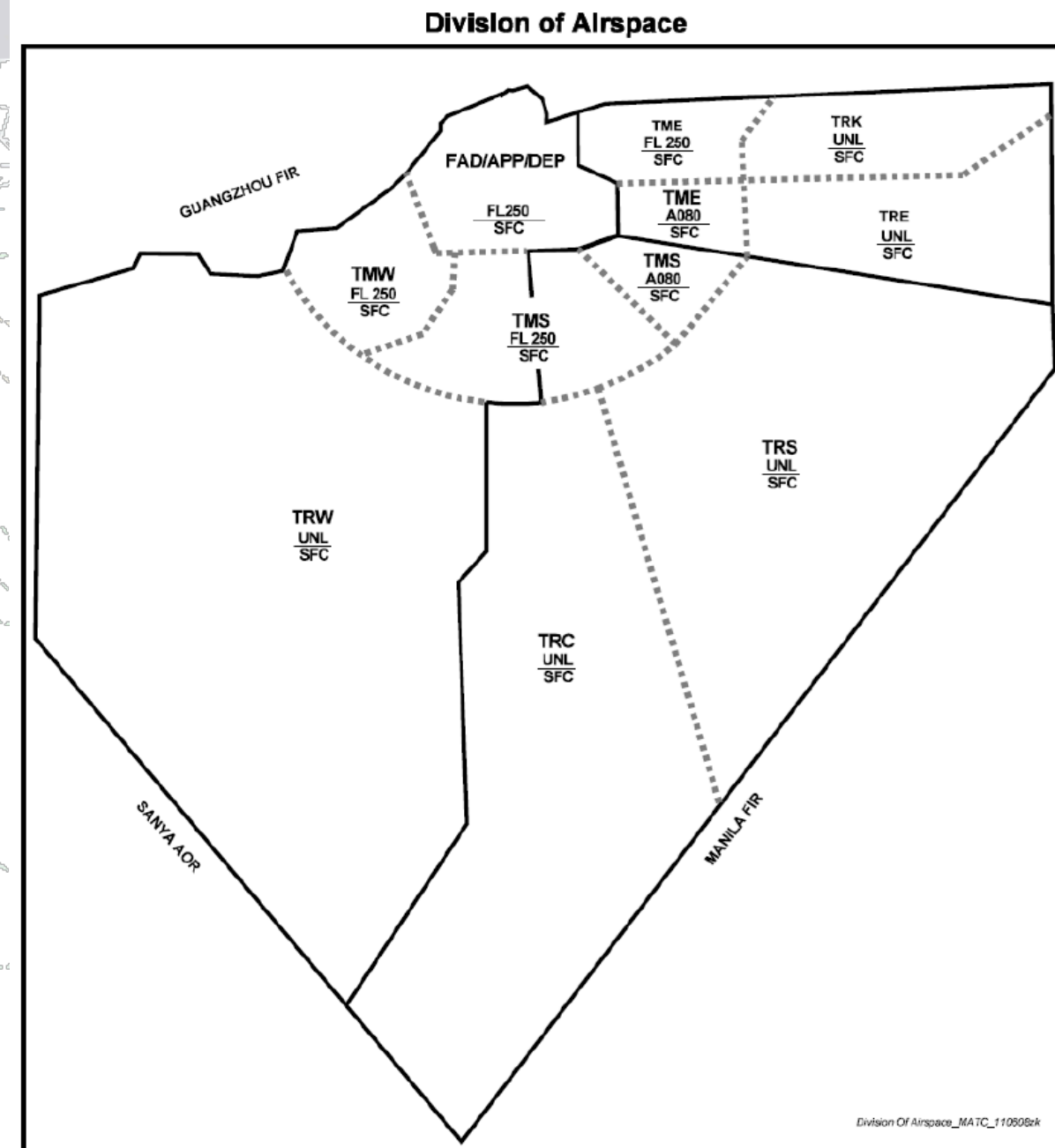
Terminal

- Delay on Onward Clearance Time (OCT)
 - Fuel status
 - Diversions
- Deviation from / to China airspace
- Full / non-standard holding stack
- Weather at holding area
- Reduced track mile for descend / climb
- Go around for VMMC arrivals
- Diversion



Enroute

- Deviation from / to adjacent sectors
- High level holding for arrivals
- Limited outbound levels
 - Large scale weather deviation
 - Expect lower cruising levels
- Flow control
- Diversion



Large Scale Weather Deviation

- FLAS
 - Flight Level Assignment Scheme

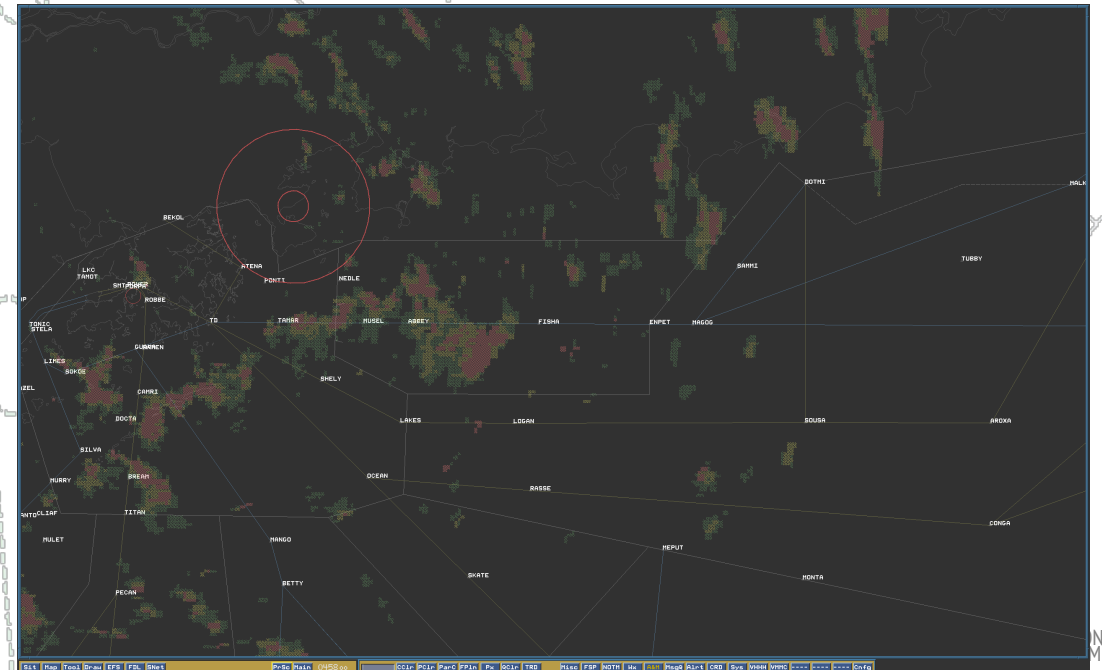
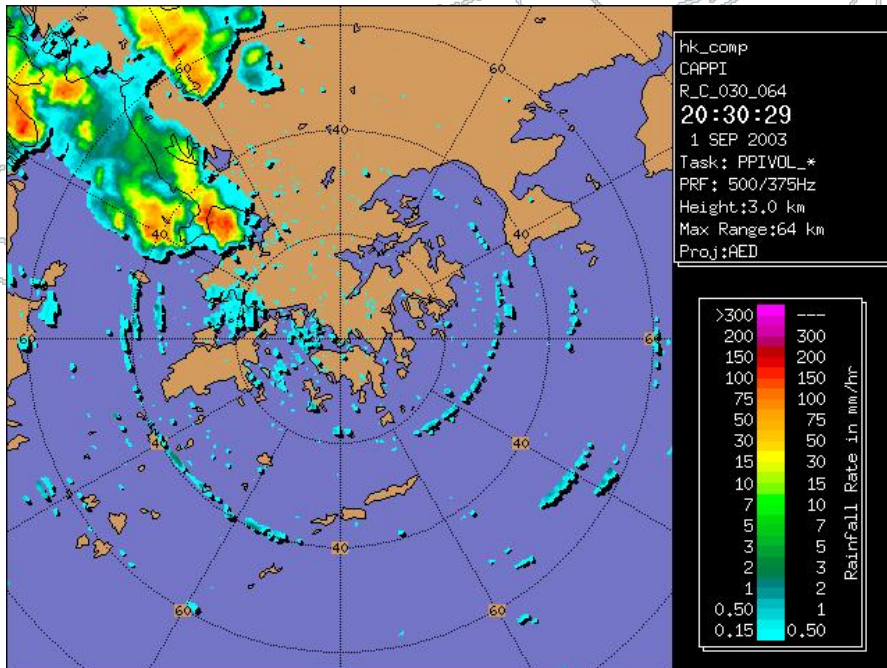
NOMAN		SABNO		DOSUT		EPKAL	
In	Out	In	Out	In	Out		
F280	F270	F280	F270	F270	F280		
F300	F290	F300	F290	F310	F310		
F340	F330	F340	F330	F320	F320		
F380	F370	F380	F370	F350	F350		
	F410		F410	F360	F360		
				F390	F390		
				F400	F400		


CAPPI

- Constant Altitude Plan Position Indicator
 - Superimposed image of rainfall on the radar
 - Update every 6 min
 - Up to 256km
 - Fixed altitude (configurable)
- Difference between cockpit weather radar and CAPPI
 - Tilt angle
 - Altitude
 - Range
 - Time lag

CAPPI

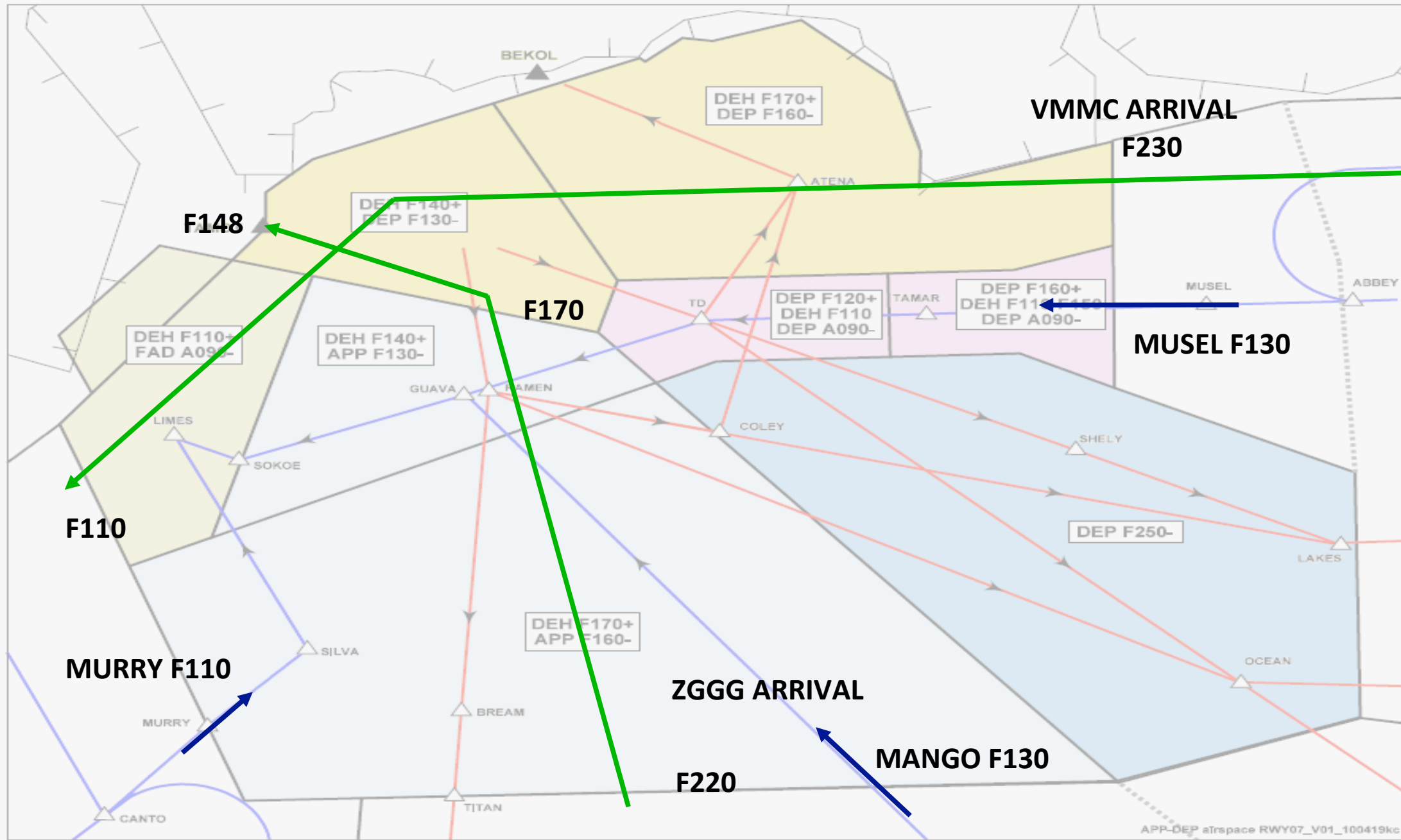
- Use of CAPPI
 - Identify potential gap of weather
 - Forecast movement of weather cells
 - Project possible missed approach (standard or non-standard)





RWY 07 Operations

APP-DEP Airspace RWY 07



SIERA INBOUND

More room for vectoring to join traffic sequence

- Involves two control airspaces
- ⇒ more coordination and conflicts
- ⇒ difficult to descend
- ⇒ no queue jumping (usually vector back to BETTY)

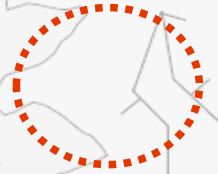
Step above PECAN departure
⇒ join traffic sequence in a more orderly way

SIKOU / IKELA INBOUND

- VMMC arrival and ZGSZ OVF below
- ⇒ unable to descend below F130
- ⇒ requires extra vectoring in APP airspace

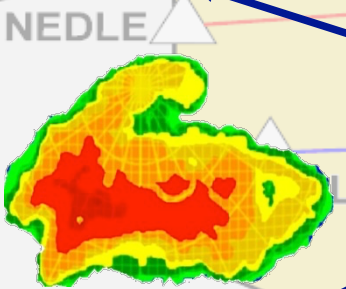
BEKOL departure. Less track miles to climb above S0480 by BEKOL

ABBEY INBOUND



DAYA BAY

- 1. Infringe Zhuhai & Guangzhou airspace
- 2. Close to DAYA Bay
- 3. In conflict with BEKOL departure



**F250
SFC**

Weather Mode

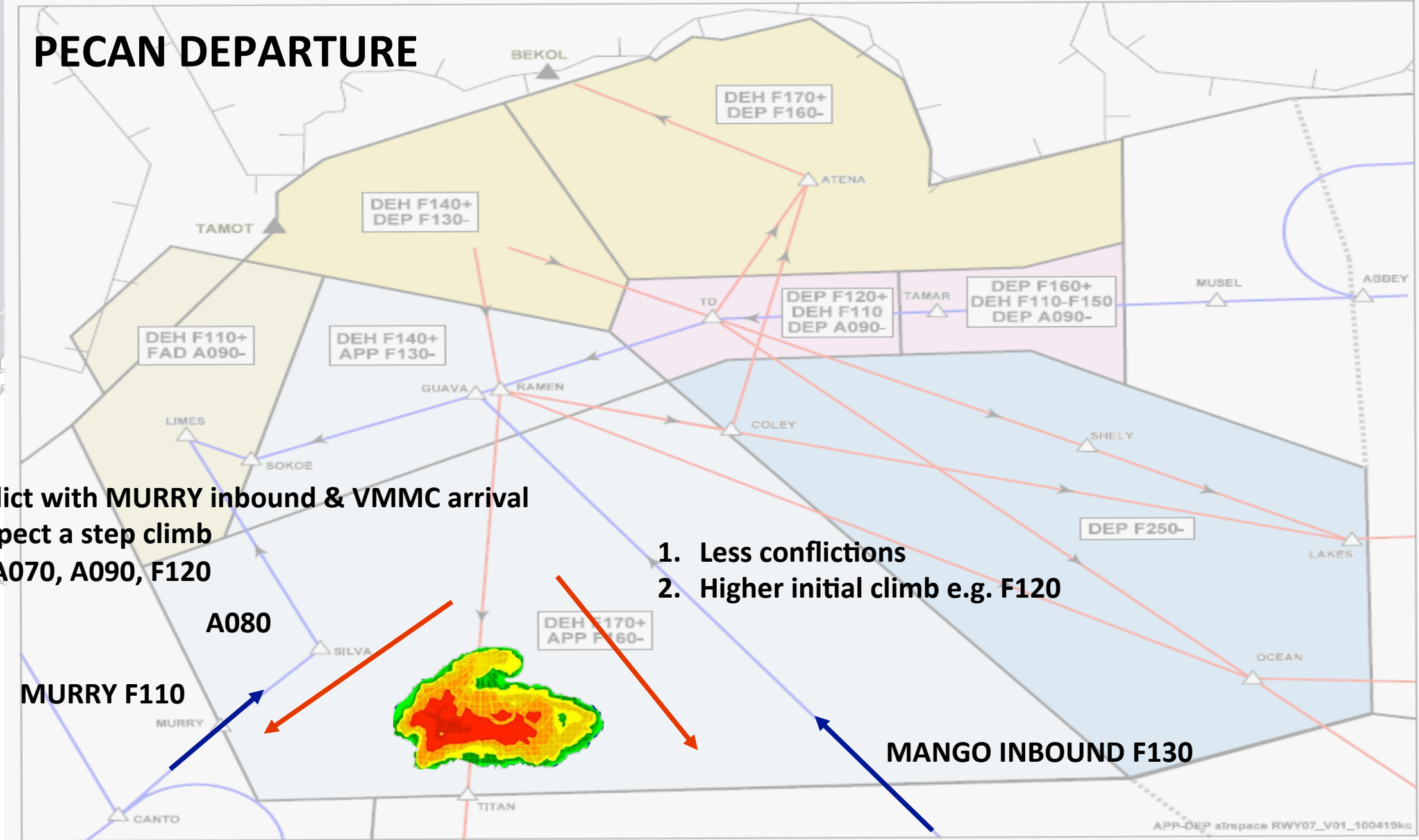
- 1. LAKES & OCEAN departures climb to F170
- 2. ABBEY arrival descend to F180

**A080
SFC**

TME	
Sector sub-division	
STAR	
TTR	

APP-DEP Airspace RWY 07

PECAN DEPARTURE

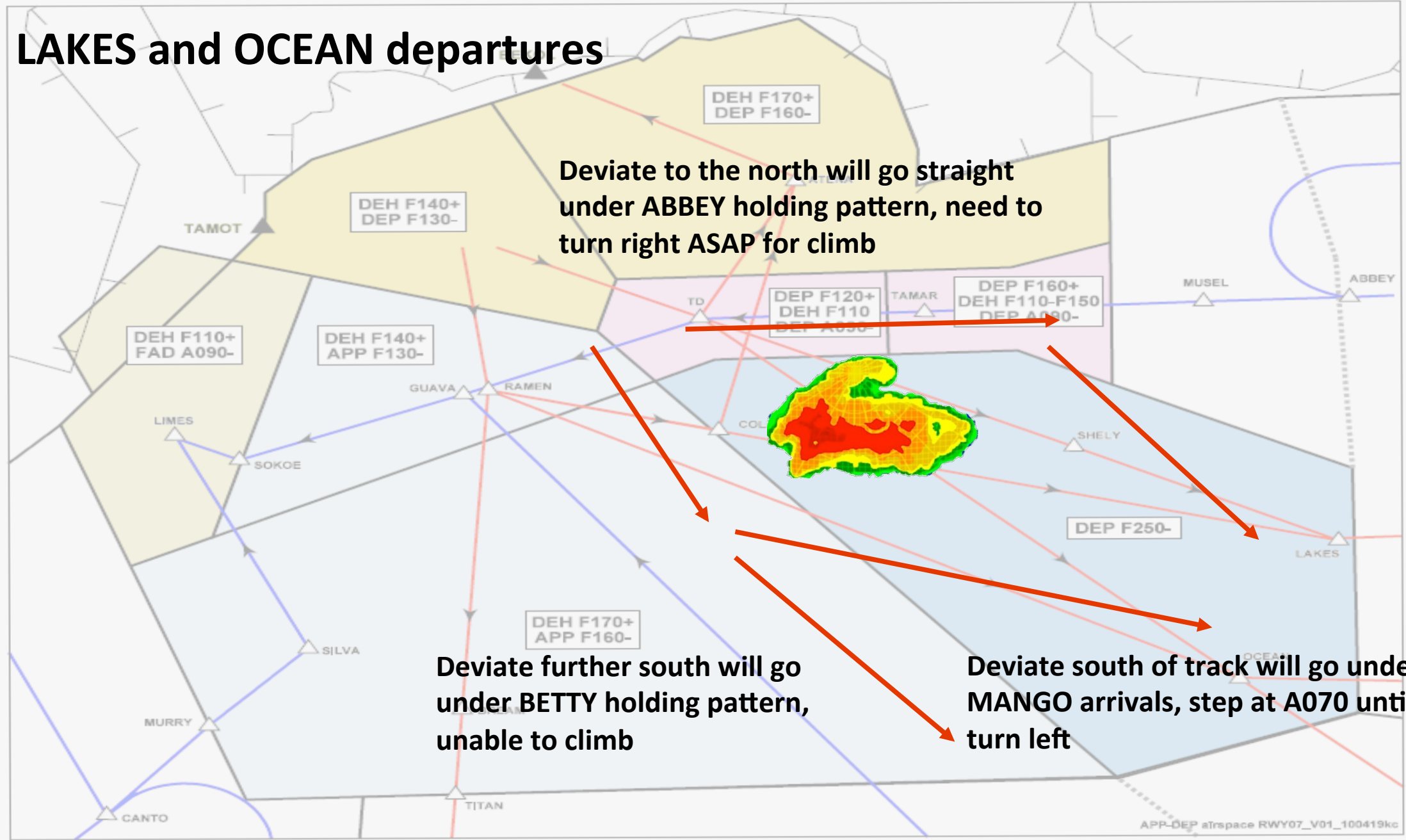


Conflict with MURRY inbound & VMMC arrival
⇒ expect a step climb
e.g. A070, A090, F120

- 1. Less conflicts
- 2. Higher initial climb e.g. F120

APP-DEP Airspace RWY 07

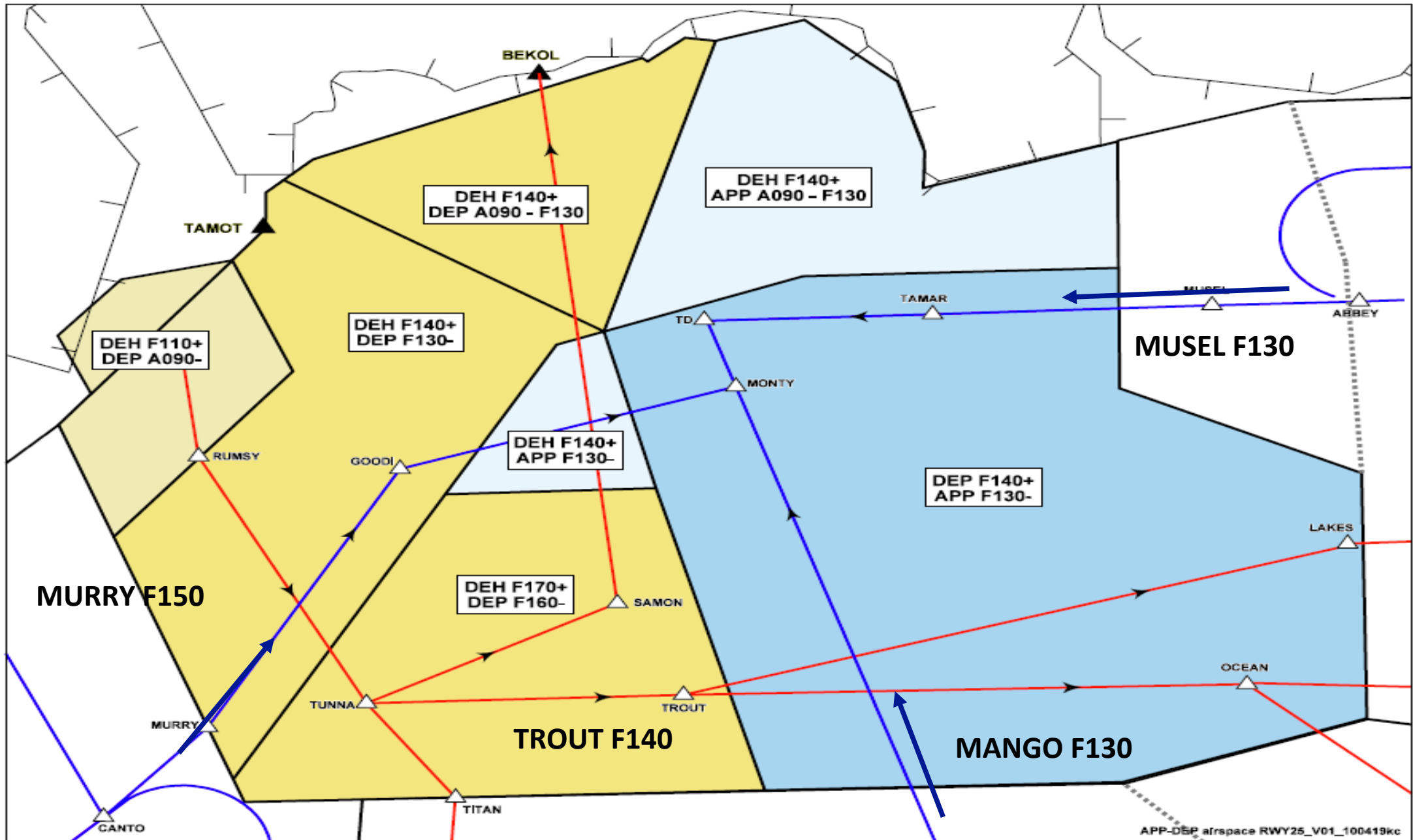
LAKES and OCEAN departures





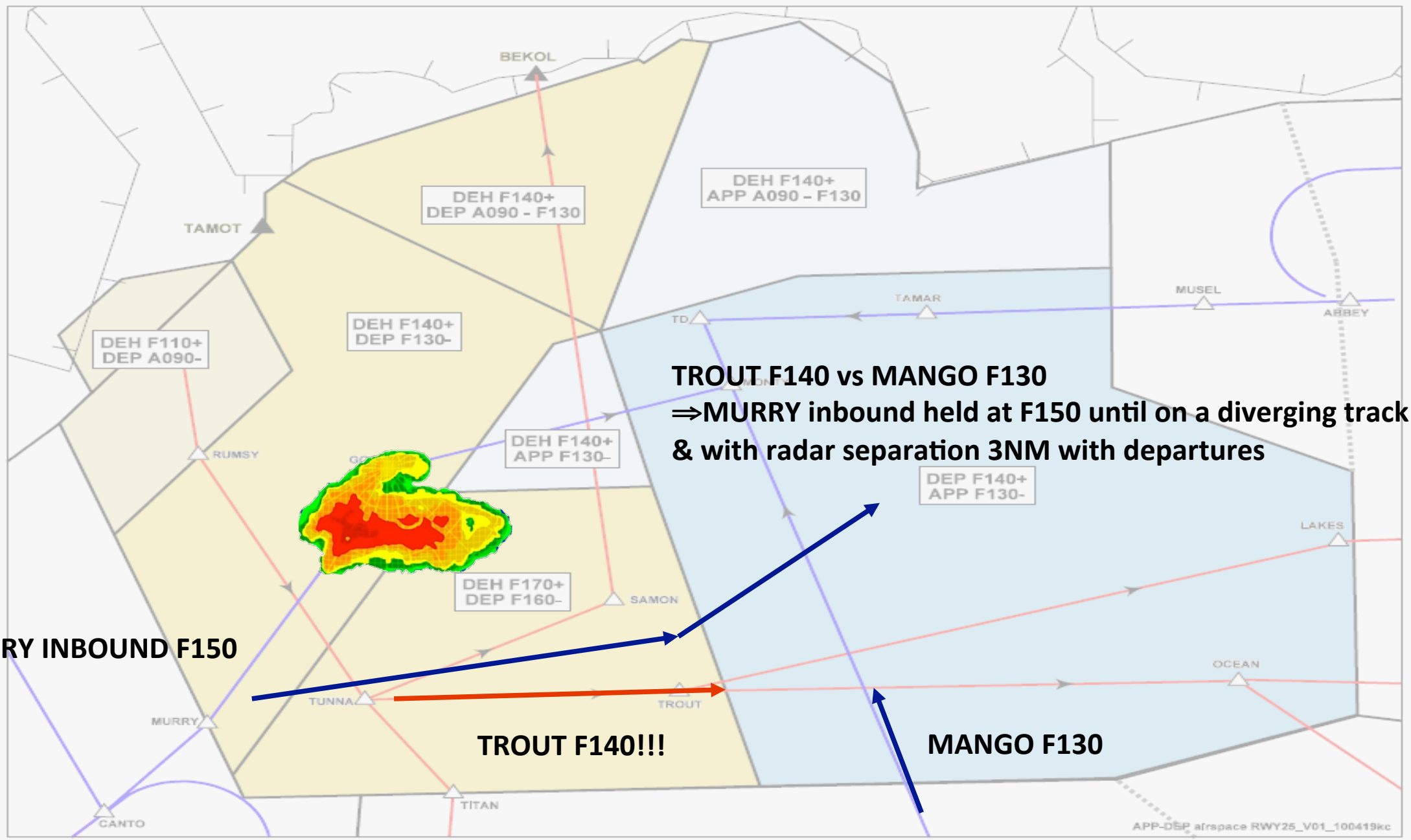
RWY25 Operations

APP-DEP Airspace RWY 25



APP-DEP airspace RWY25_V01_100419kc

APP-DEP Airspace RWY 25



**TROUT F140 vs MANGO F130
=> MURRY inbound held at F150 until on a diverging track
& with radar separation 3NM with departures**

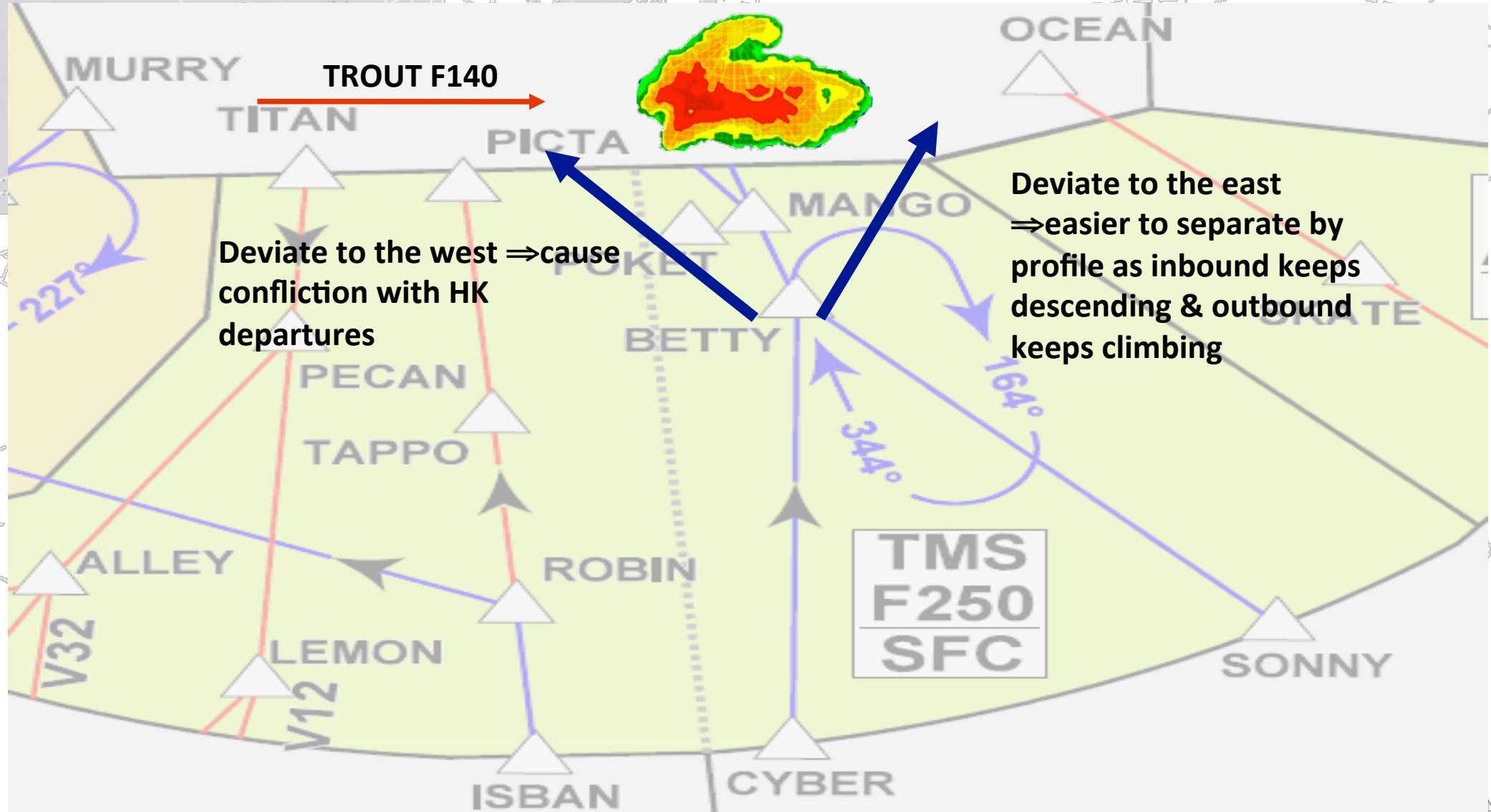
MURRY INBOUND F150

TROUT F140!!!

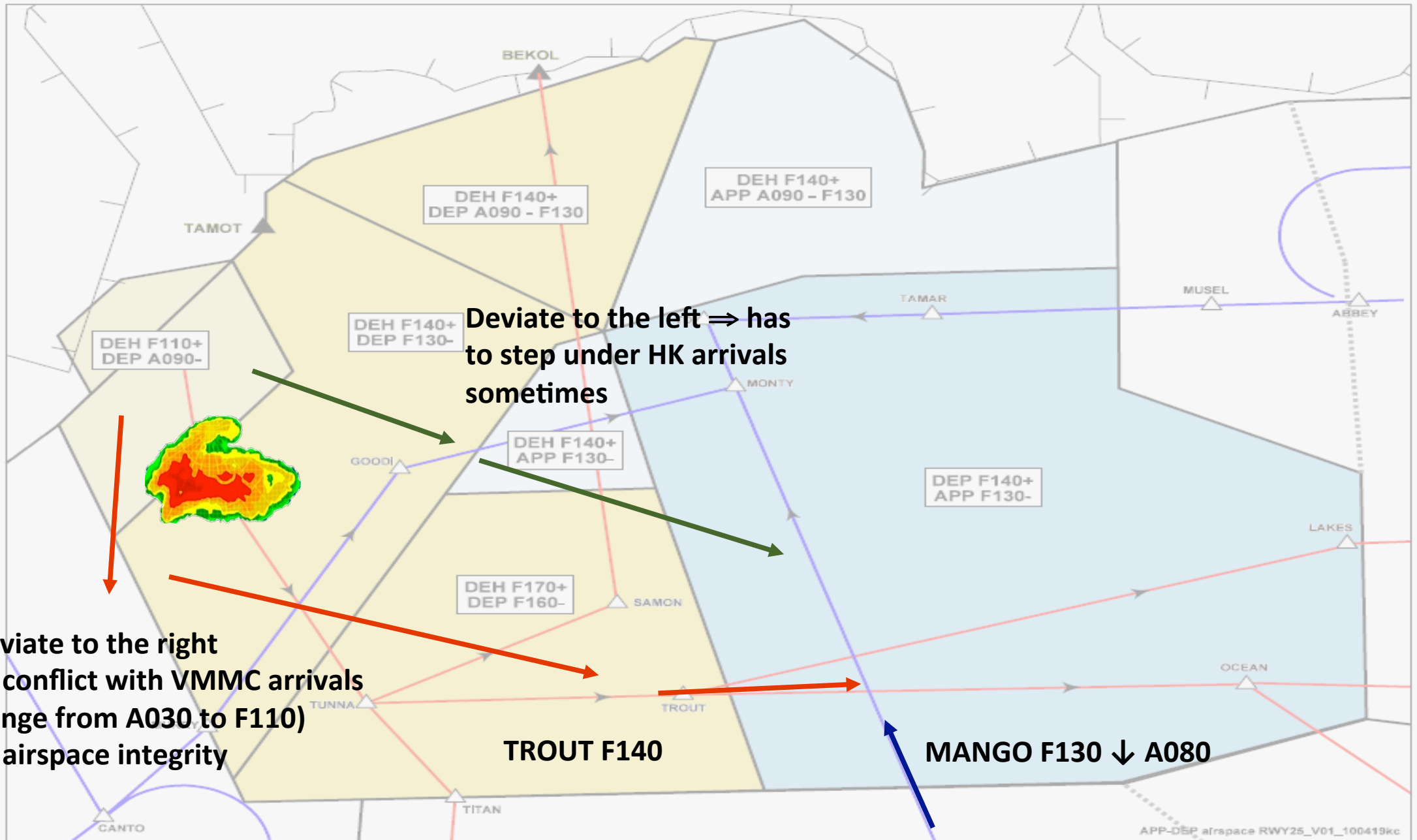
MANGO F130

APP-DEP airspace RWY25_V01_100419kc

MANGO INBOUND

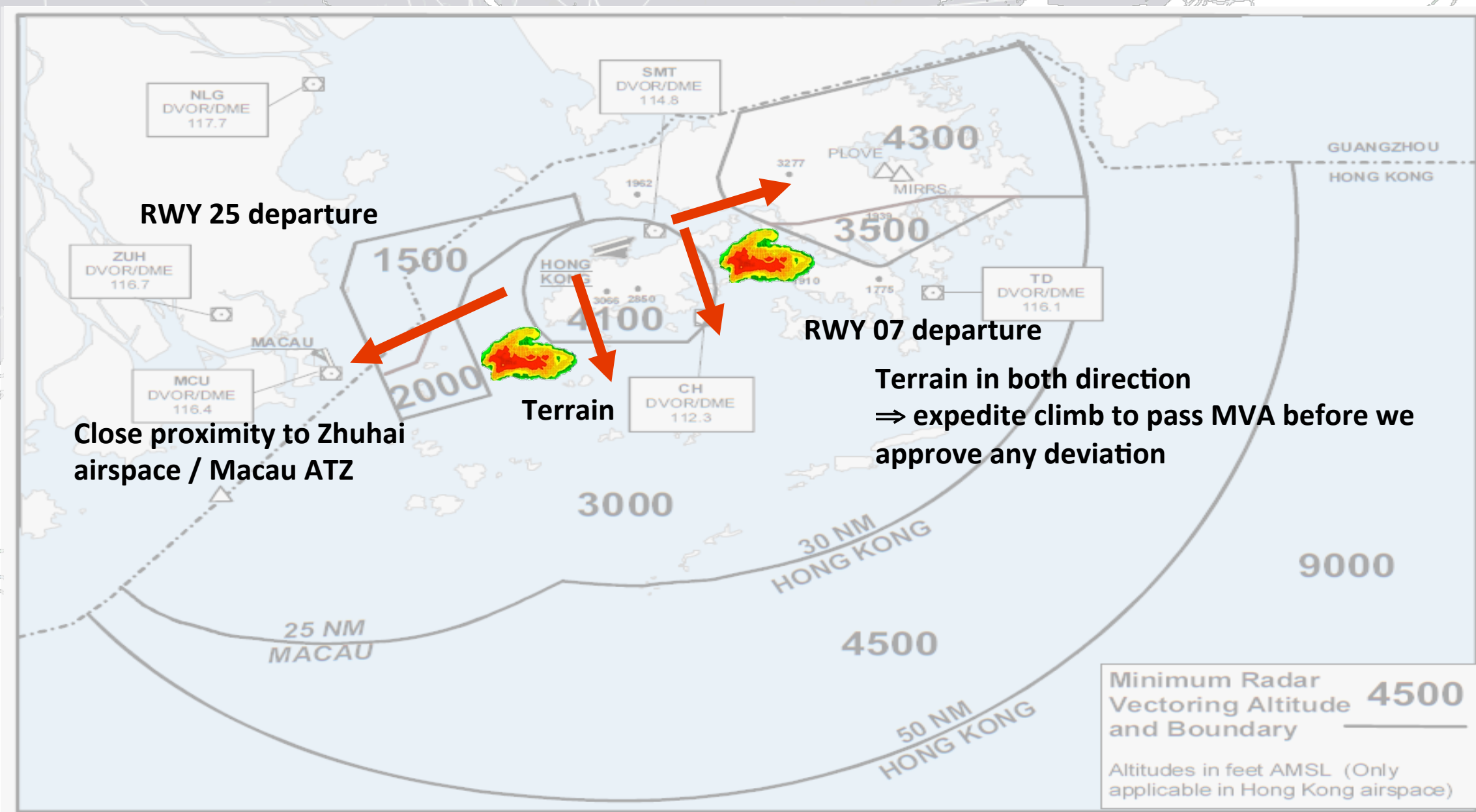


APP-DEP Airspace RWY 25



Deviate to the left ⇒ has to step under HK arrivals sometimes

Deviate to the right ⇒ conflict with VMCC arrivals (range from A030 to F110) ⇒ airspace integrity



RWY 25 departure

RWY 07 departure

**Close proximity to Zhuhai
airspace / Macau ATZ**

Terrain

**Terrain in both direction
⇒ expedite climb to pass MVA before we
approve any deviation**

**Minimum Radar
Vectoring Altitude and Boundary 4500**
Altitudes in feet AMSL (Only
applicable in Hong Kong airspace)