

# Aviation Meteorological Forecaster Competency 3

## Warn of Hazardous Weather Phenomena

### Aerodrome Warning Case Study AMF AC 1.2, 3.1.5 and 3.2

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# AIM OF THIS PRESENTATION

Before starting this practical AMF task presentation, review the following theory presentation:

RTC-PRE-085 AMF AC 3.2 Warn of Hazardous Phenomena Formats

At the end of this presentation, you will be able to:

- **Continuously monitor** weather parameters and evolving significant weather phenomena (as defined in ICAO Annex 3) and validate current forecasts and warnings based on these parameters (AMF AC 1.2)
- **Compile** Aerodrome warnings and use it to demonstrate competency in AMF AC 3.1.5
- **Compile** Aerodrome warnings in the correct format to demonstrate competency in AMF AC 3.2
- **Issue** aerodrome warnings using this presentation as an example.



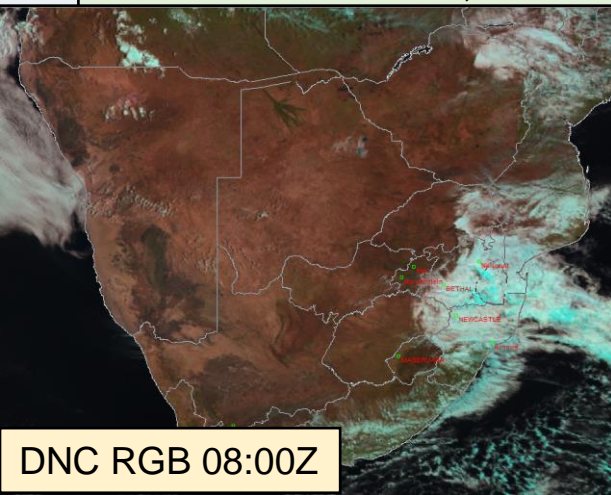
# Introduction

## Example Task for Case Study 20 Oct 2018:

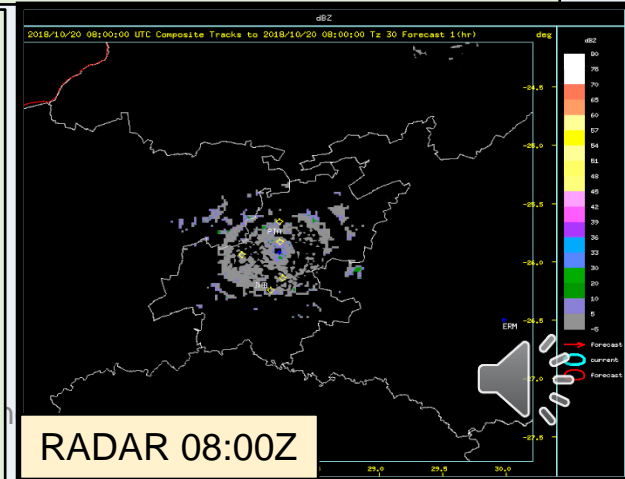
Issue **Aerodrome warning/s (AMF AC 3.1.5)** for any of the main airports, if necessary.

### Answer:

- When you completed AMF Competency 1, you would have already done the hard work in identifying possible Aerodrome warnings imminent at 08Z
- **From AMF Competency 1 at 08Z, it was established that no OBS Aerodrome warnings** for low cloud and thunderstorms need to be issued.
- NWP can give you a good idea early in the day as to possible aerodrome warnings later in the day.
- You will however need to continuously monitor (AMC AC 1.2) real time data as it becomes available and continuously evaluate the need to issue any imminent aerodrome warnings.
- The NWP will be used to check on the duration of wind related warnings.
- For thunderstorms, the RADAR tracks are important, to determine event duration.



- RADAR data is available every 6 min and Satellite data every 15 min.
- You are expected to continuously monitor all incoming real time data.
- In this presentation new data has been displayed selectively so that you can follow the forecast process.



# FOCUS AREA FOR AERODROME WARNINGS

- From the nowcast (next 4 hours) that was done to construct significant weather charts in AMF Competency 2, it was seen from the NWP, that thunderstorms are likely to develop over the North-eastern interior (Gauteng) during the day.
- Therefore, you now must monitor your real time data (RADAR, Satellite and METARs for the first thunderstorm development, especially in this area, as **HVY TS, squall or hail** would require the issue of an aerodrome warning.
- When monitoring your METARs and NWP check also for sandstorm, dust storm, rising sand or dust and **strong surface wind and gusts (25Kt)**. In this case we have already seen strong wind due to the ridging high behind the cold front. That is something that needs to be monitored in terms of aerodrome warnings

# Monitor (AMF AC 1.2) new data at 09Z

Strong winds to monitor from a few aerodromes  
No active thunderstorms near aerodromes

METAR FACT 200900Z **14016KT** CAVOK 24/06 Q1025 NOSIG=

METAR FACV 200900Z **07021KT** CAVOK 21/M01 Q1028=

METAR FADY 200900Z **11021KT** CAVOK 17/M02 Q1028=

METAR FAEL 200900Z **22017KT** 9999 FEW049 18/07 Q1032=

METAR FAGG 200900Z **12017KT** 9999 SCT028 17/10 Q1033=

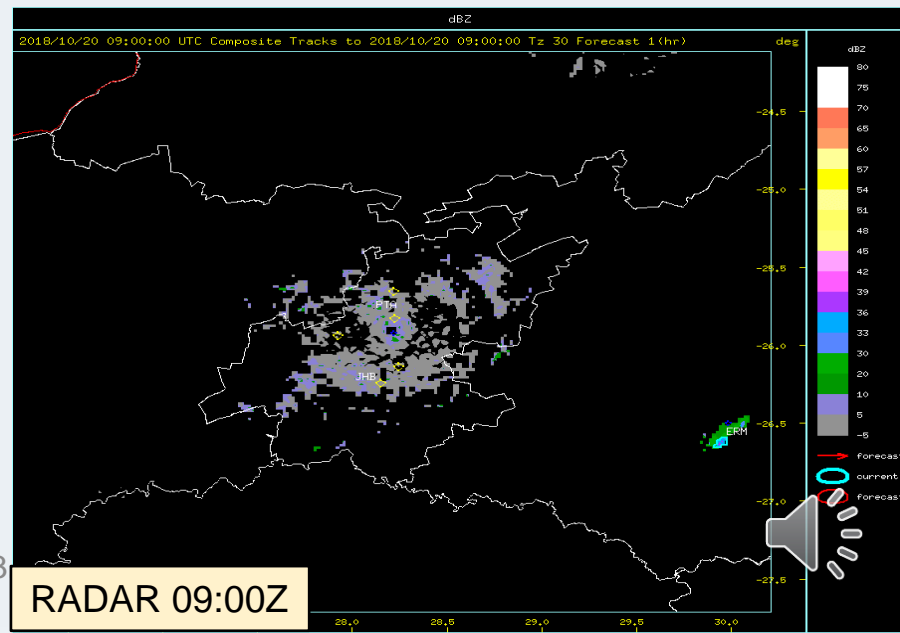
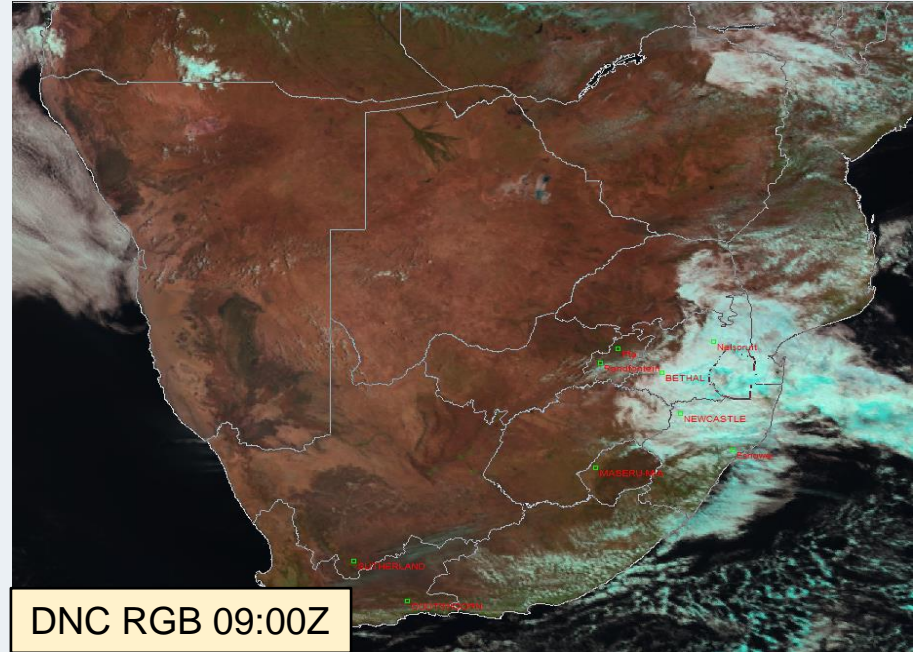
METAR FAHV 200900Z AUTO **14018G28KT** //// // // 17/00  
Q1028=

METAR FAKM 200900Z **14016G27KT** CAVOK 24/M05 Q1025=

METAR FALE 200900Z **17018KT** 130V190 9999 SCT020 20/14  
Q1027 NOSIG=

METAR FAMG 200900Z AUTO **17016KT** //// // // 17/14 Q1028=

METAR FASB 200900Z **09026G39KT** CAVOK 22/M08 Q1023=



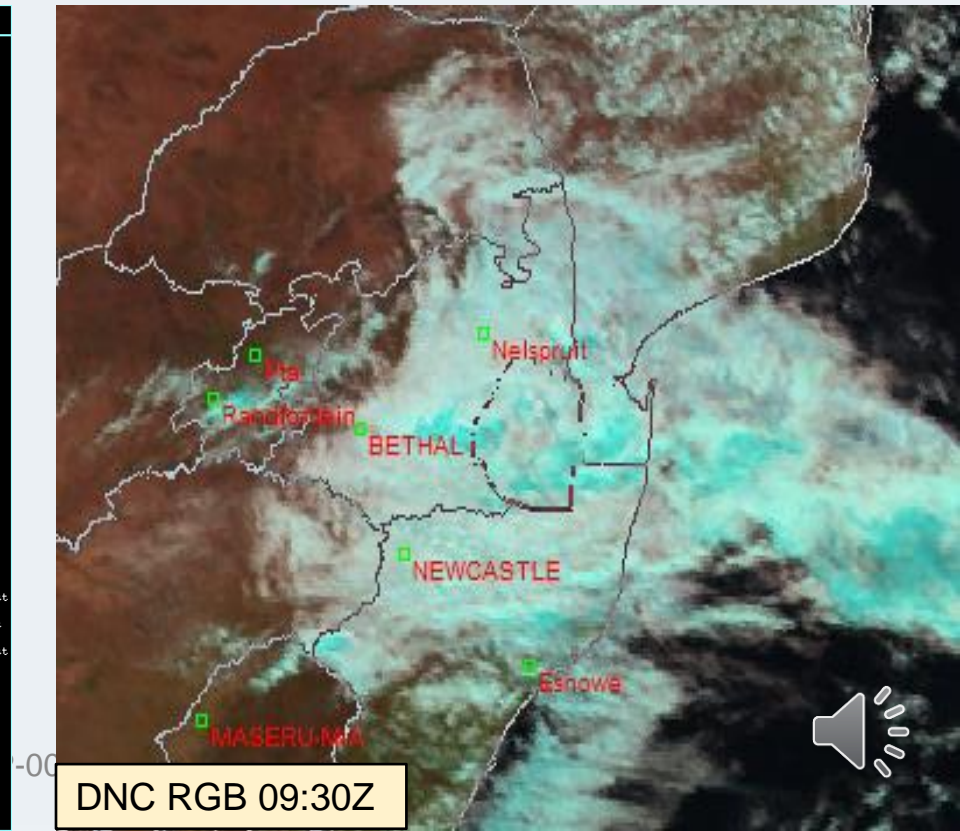
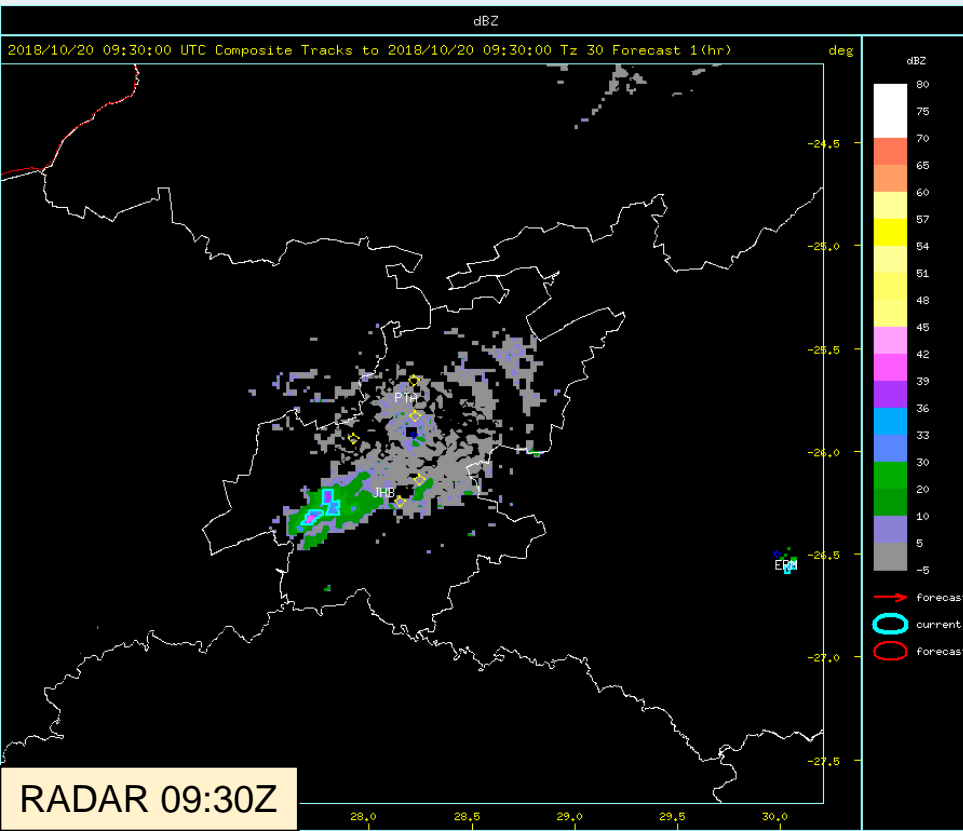
# Monitor (AMF AC 1.2) new data at 09:30Z

From the following data it can be seen that the nowcast you made in the sigweather charts, thunderstorms are in the process of happening, as there is TCU observed on the METAR and on the RADAR reflectivity's are between 30 and 40 dbz. As yet there are no storm tracks.

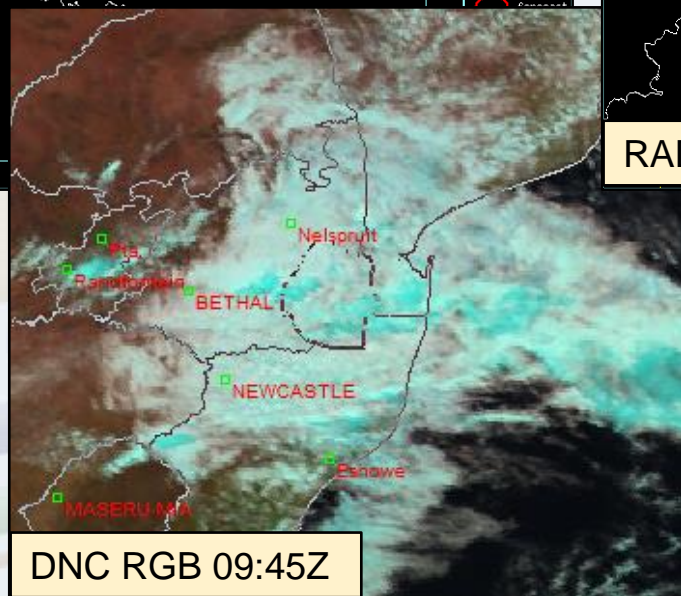
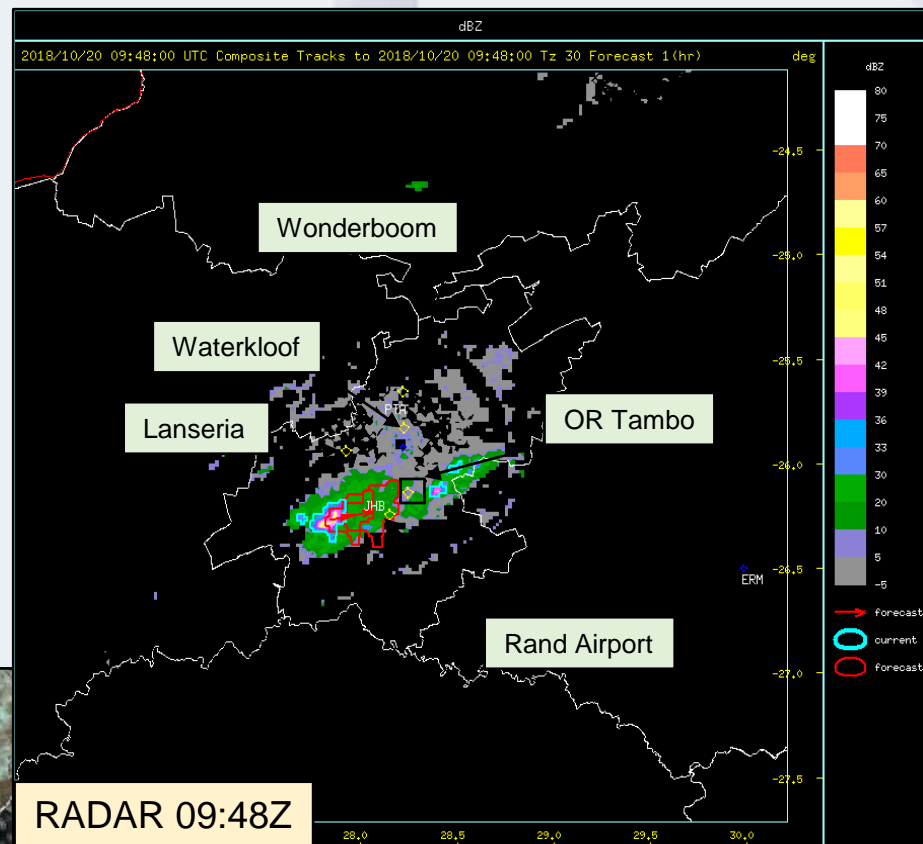
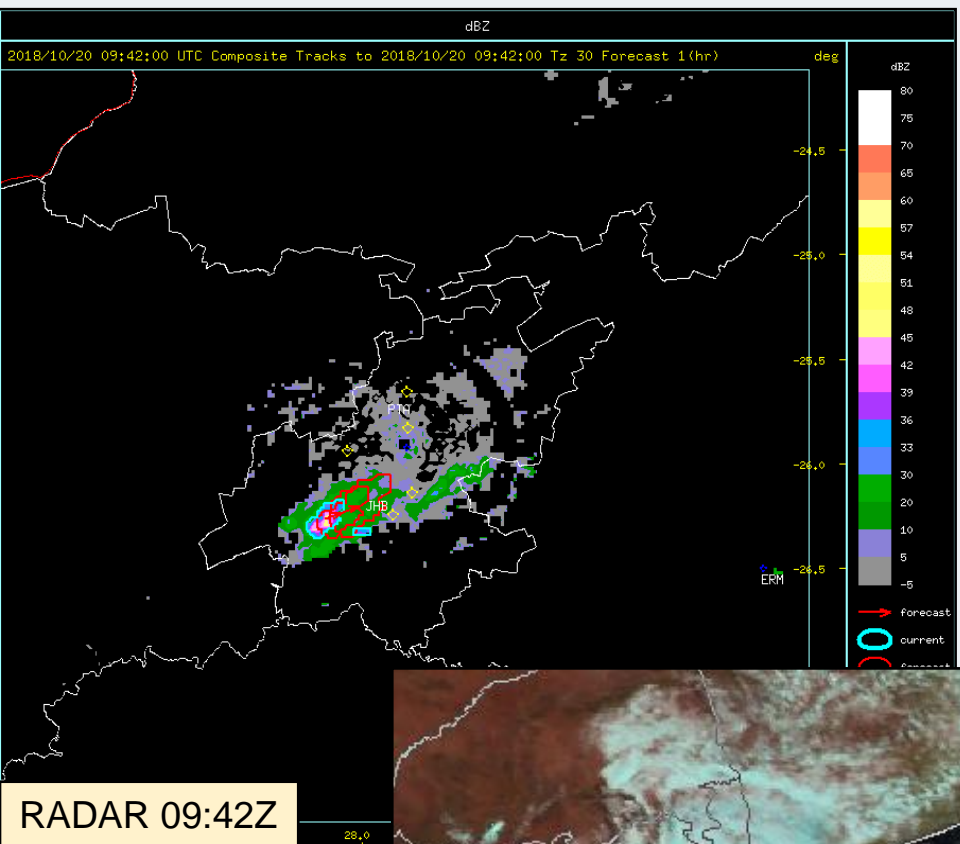
This means your monitoring will have to be more frequent from now on.

SAZA42 FAOR 200930

METAR FAOR 200930Z 03006KT 350V080 9999 BKN044 **FEW048TCU** 23/10 Q1025 NOSIG=



# Monitor (AMF AC 1.2) new data at 09:42Z to 09:48Z

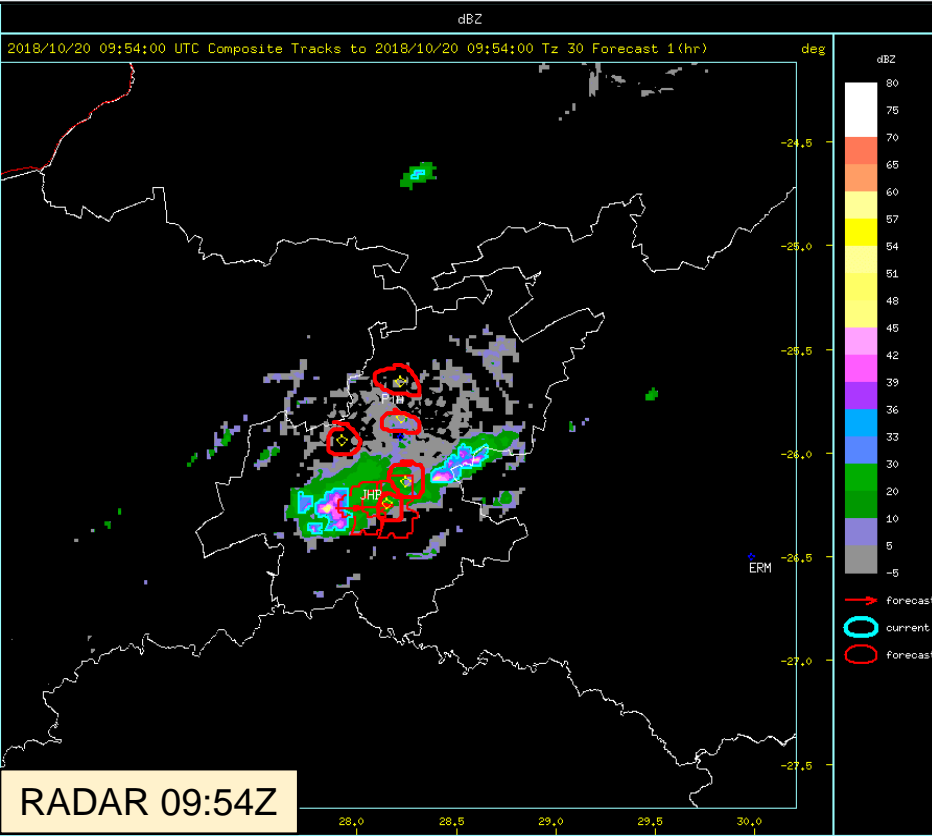
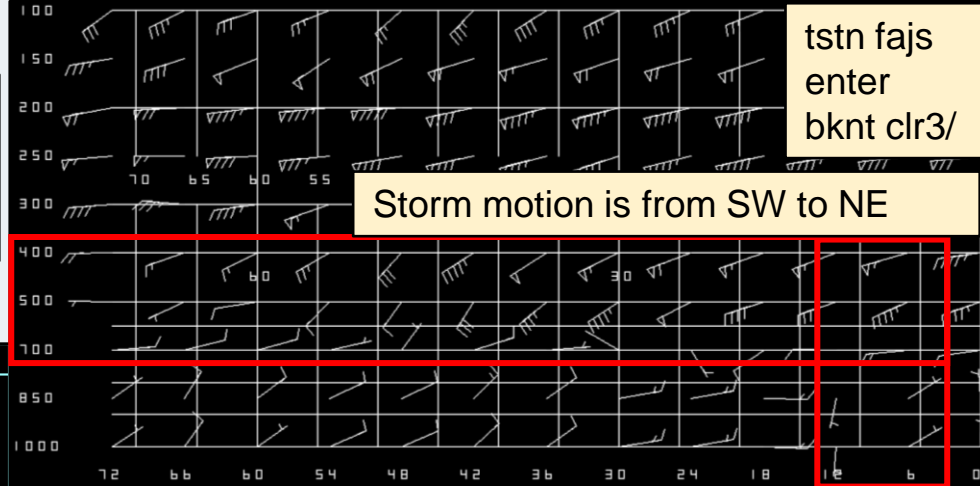


At 09:42Z to 09:48Z you have a CB cloud with a track forecast towards OR Tambo in the next 1 hr. You can wait another 6min to make sure of the track and then issue the aerodrome warning



# Issue Aerodrome warning (AMF AC 3.1.5) for OR Tambo at 0954Z

**WARNING FOR FAOR - 20181020 09:54**  
 FAOR AD WRNG 1 VALID 201030/201230  
 HVY TS FCST=



Although the RADAR data suggests a start time of 1054Z (in 1 hour) for the aerodrome warning at FAOR caution makes one rather go for 1030Z

Similarly Rand airport will be affected. No evidence that it will move over FALA, FAWK, FAWB for now

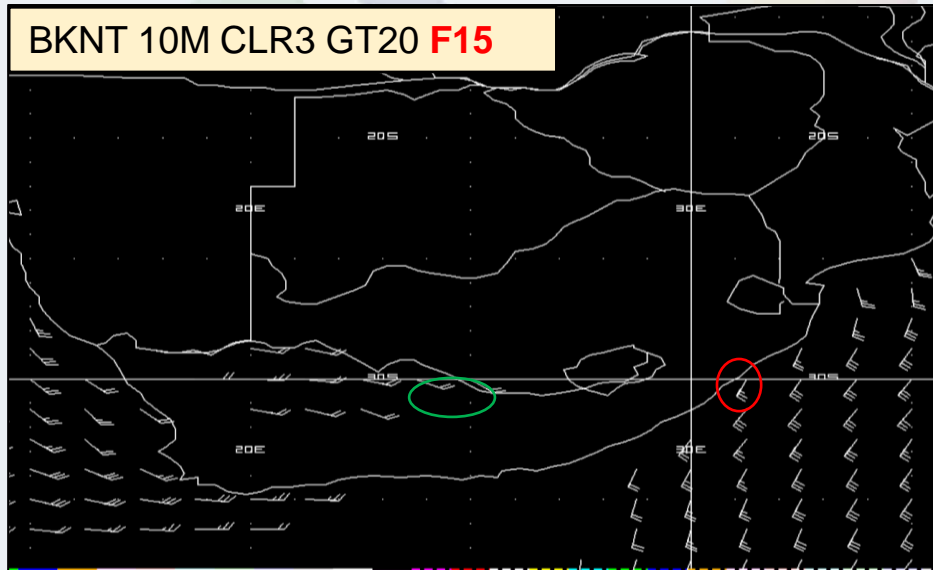
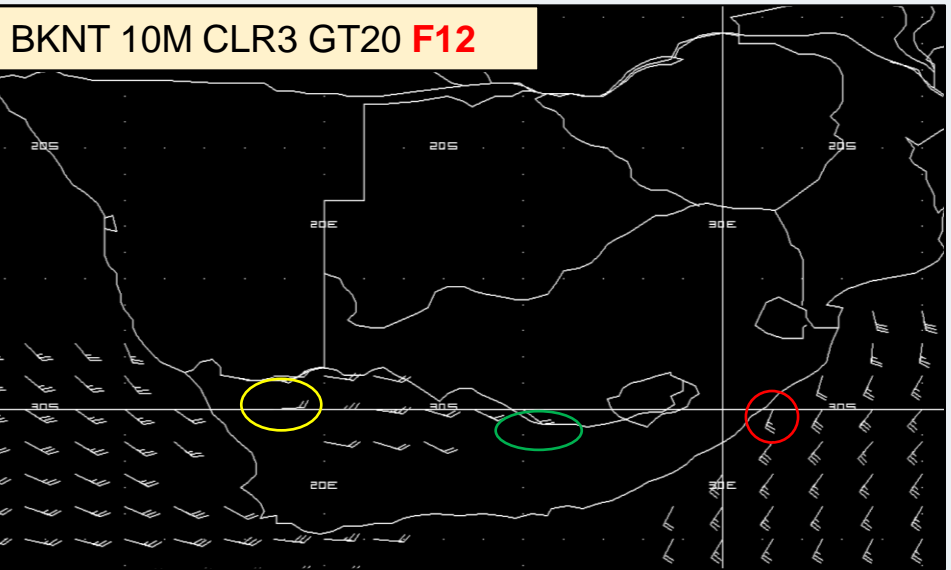
**South African Weather Service**

RADAR 09:54Z





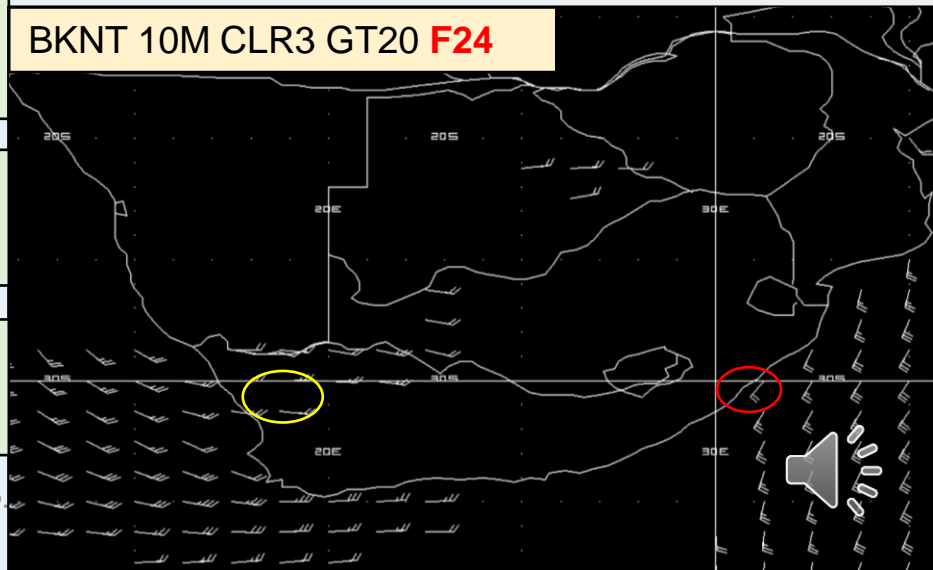
# Issue Aerodrome warning (AMF AC 3.1.5) for FALE, FASB and FADY at 10Z



**WARNING FOR FALE - 20181020 10:00**  
FALE AD WRNG 1 VALID 201000/202400 SFC WSPD 22KT MAX  
32KT OBS AT 1000Z NC=

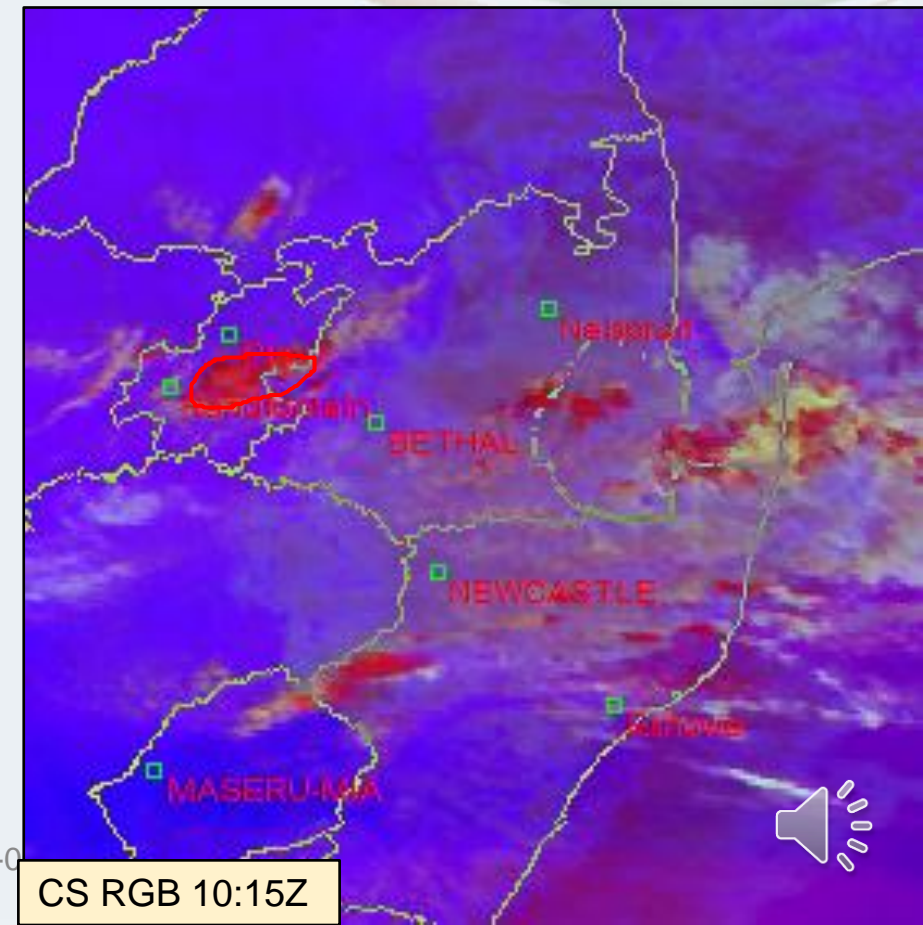
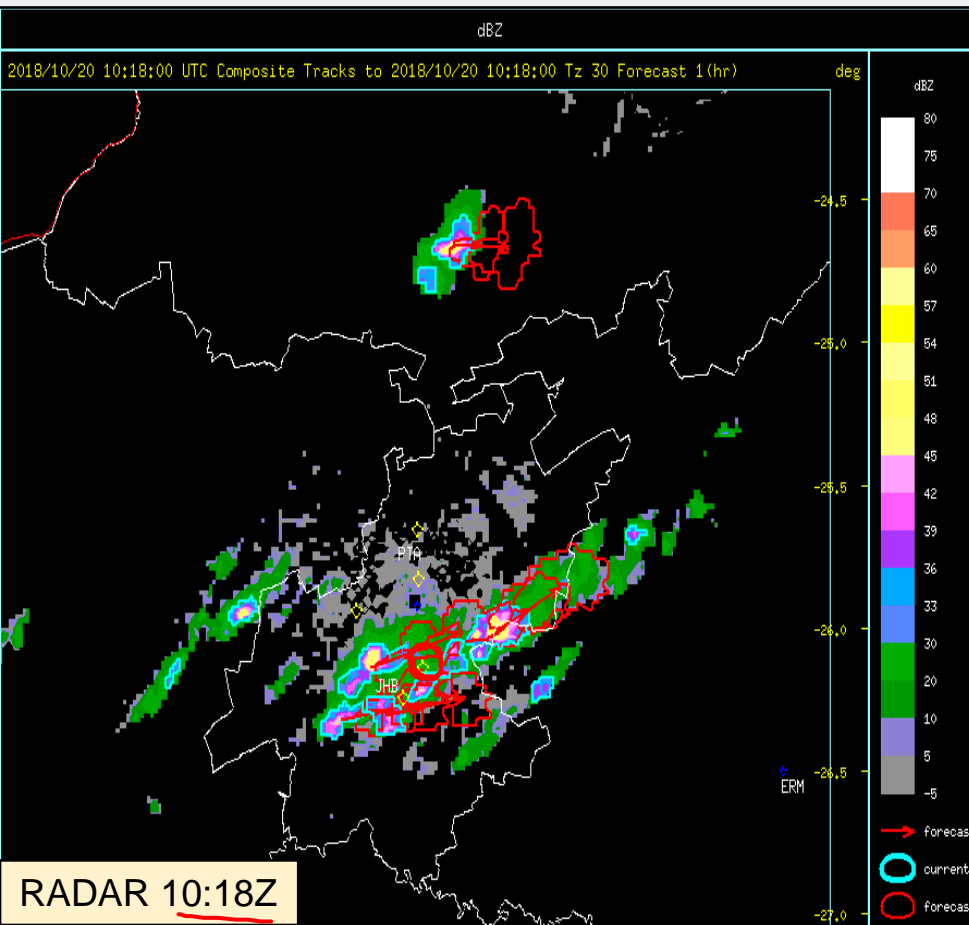
**WARNING FOR FASB - 20181020 10:00**  
FASB AD WRNG 1 VALID 201000/202400 SFC WSPD 22KT MAX  
37KT OBS AT 1000Z NC=

**WARNING FOR FADY - 20181020 10:00**  
FADY AD WRNG 1 VALID 201000/201500 SFC WSPD 20KT MAX  
30KT OBS AT 1000Z NC=



# Monitor (AMF AC 1.2) new data from 1015Z to 1018Z

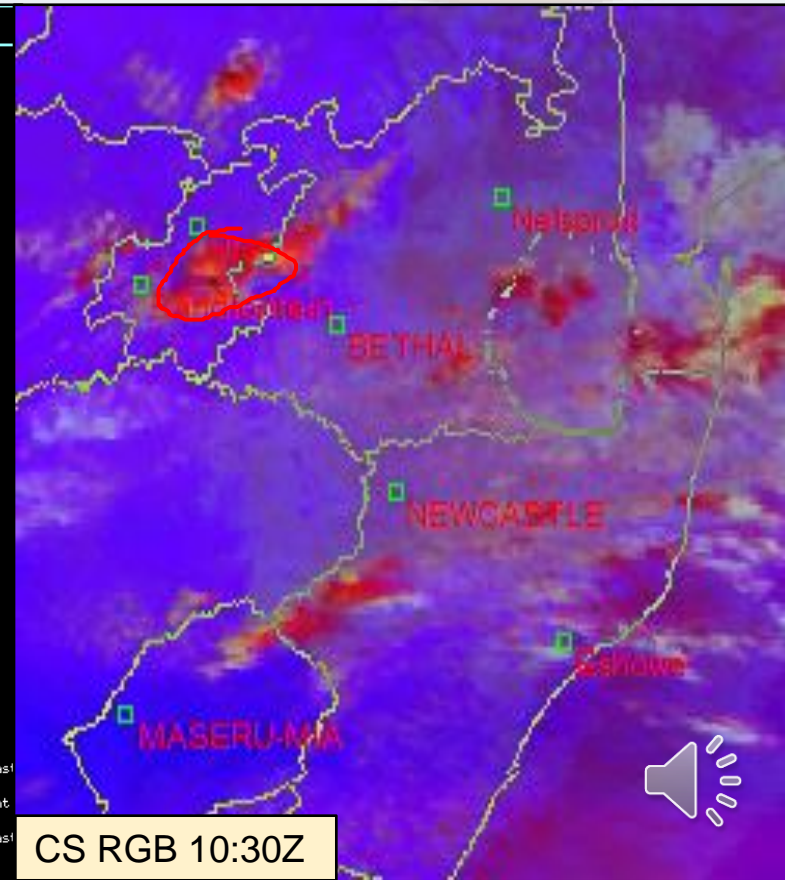
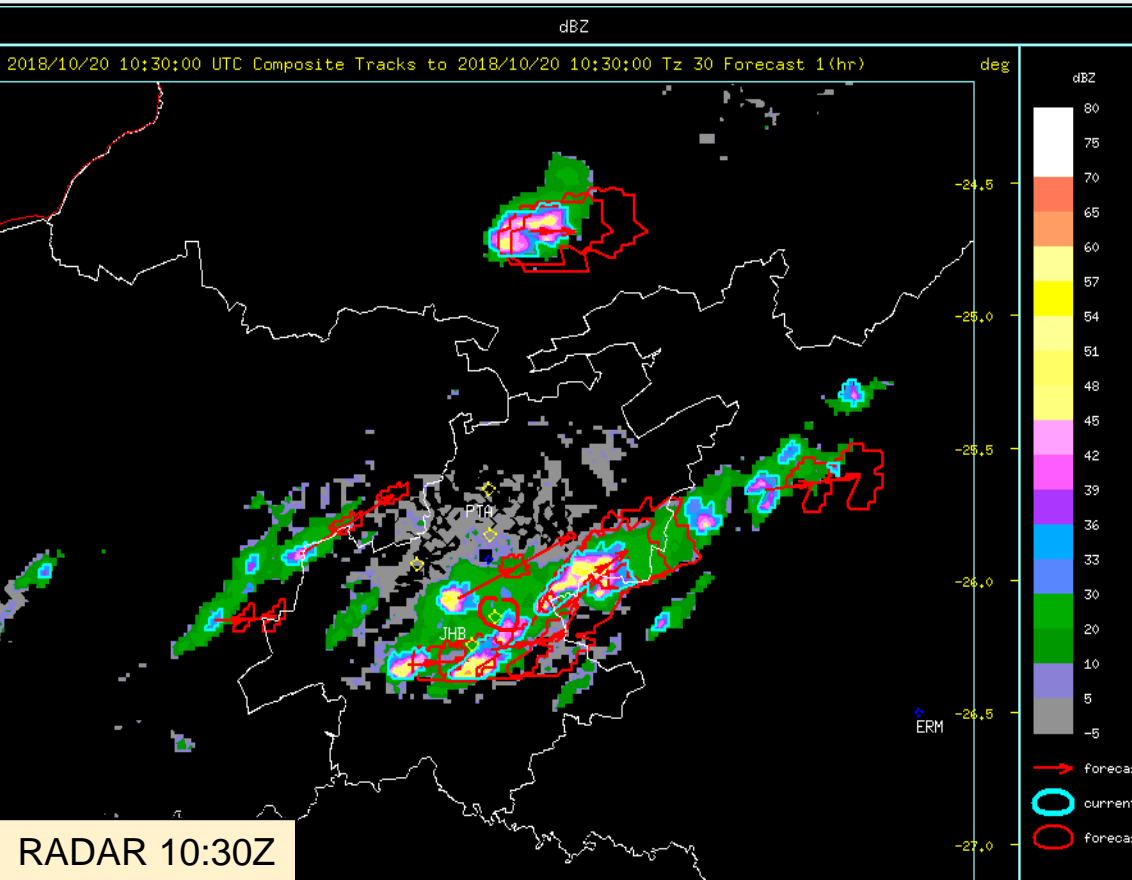
Based on the RADAR and satellite image, the Aerodrome warning for FAOR is still valid. No need for further updates



# Monitor (AMF AC 1.2) new data at 1030Z

OR Tambo Aerodrome  
warnings still on track and  
occurring at the moment  
predicted ☺

SPECI FAOR 201025Z 32006KT 280V350 9999 **TS**  
SCT040CB SCT044 SCT048 22/10 Q1025 **TEMPO**  
**5000 TSRA=**



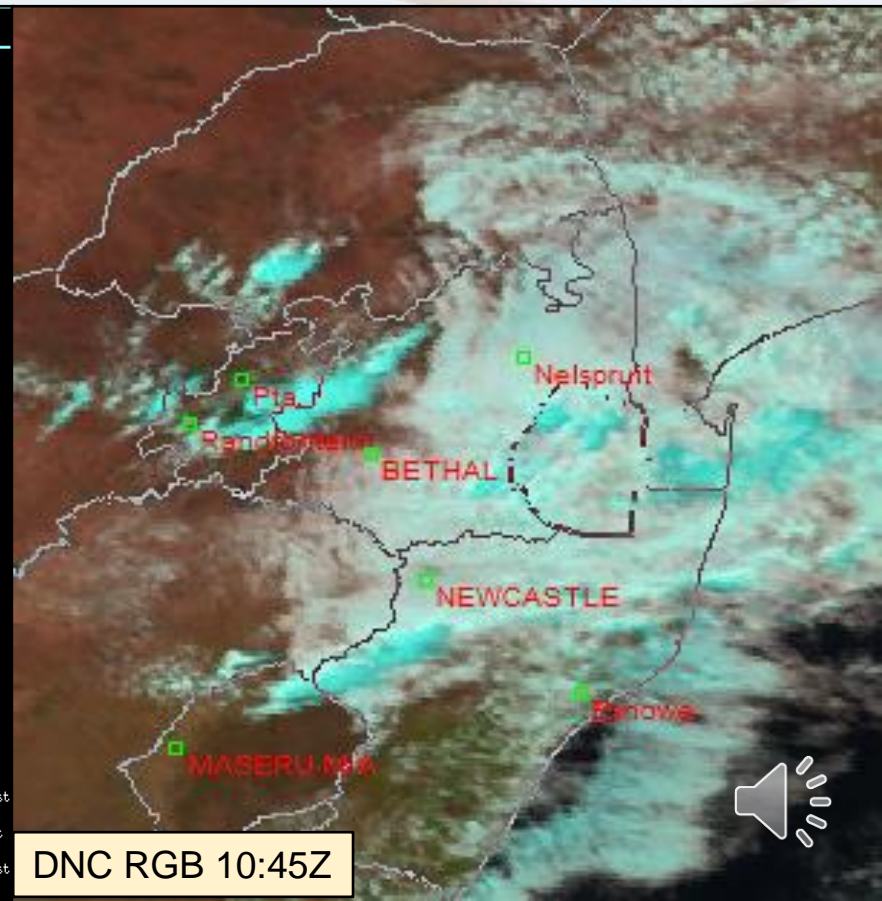
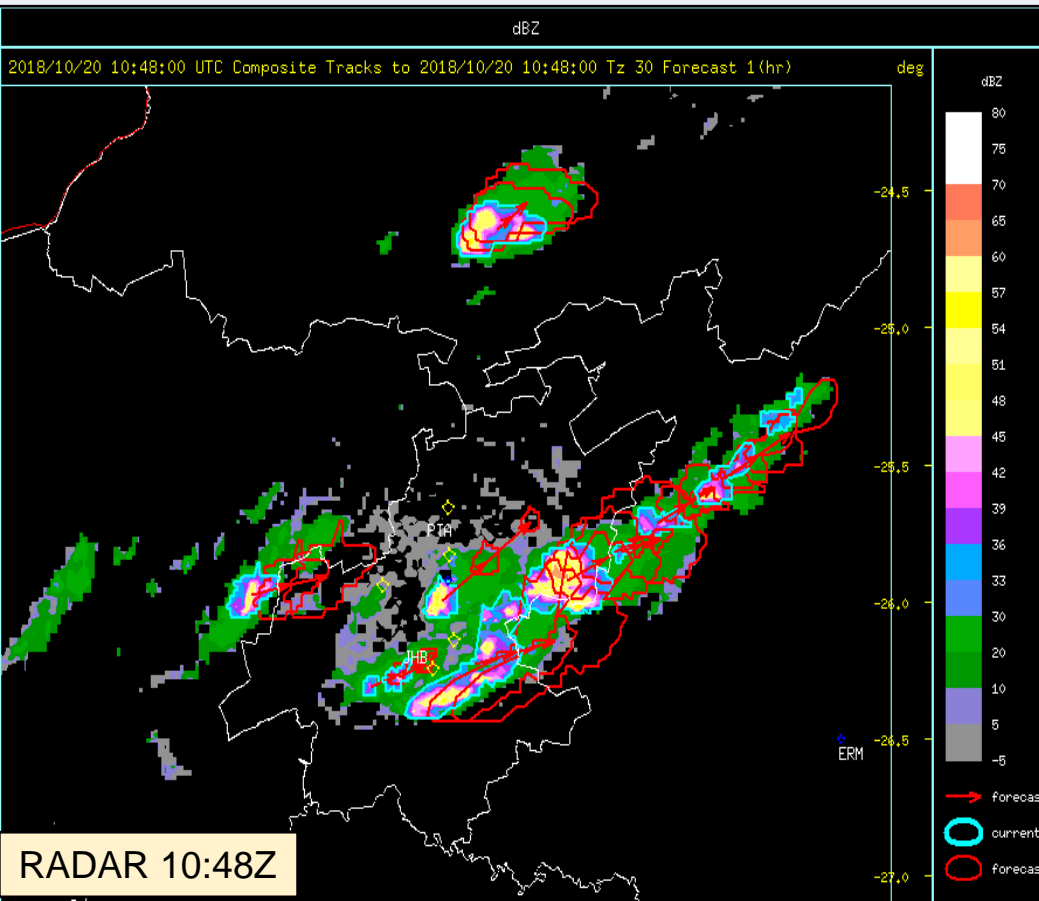
# Monitor (AMF AC 1.2) new data from 1045Z to 1048Z

## FAOR:

A small cell to the south-west. Can maintain the warning.

## FALA:

In 1 hour a thunderstorm could be passing close to the north. Require more certainty, so hold back with the aerodrome warning.



# Monitor (AMF AC 1.2) new data at 11Z

## FAOR:

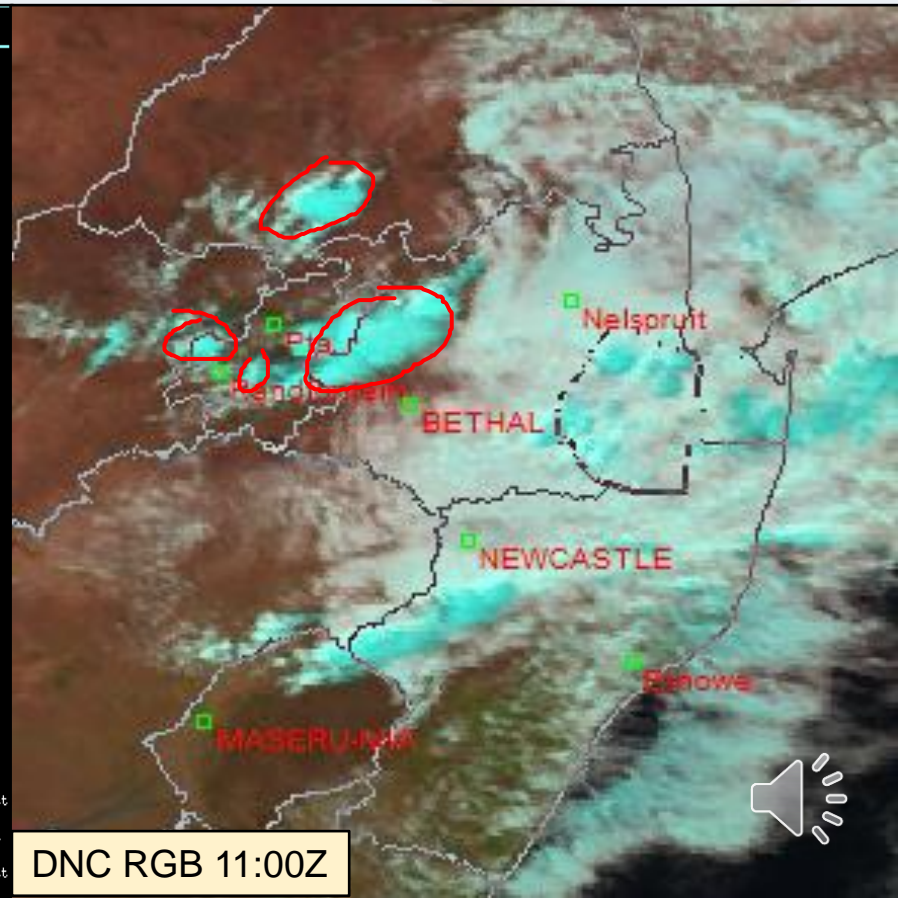
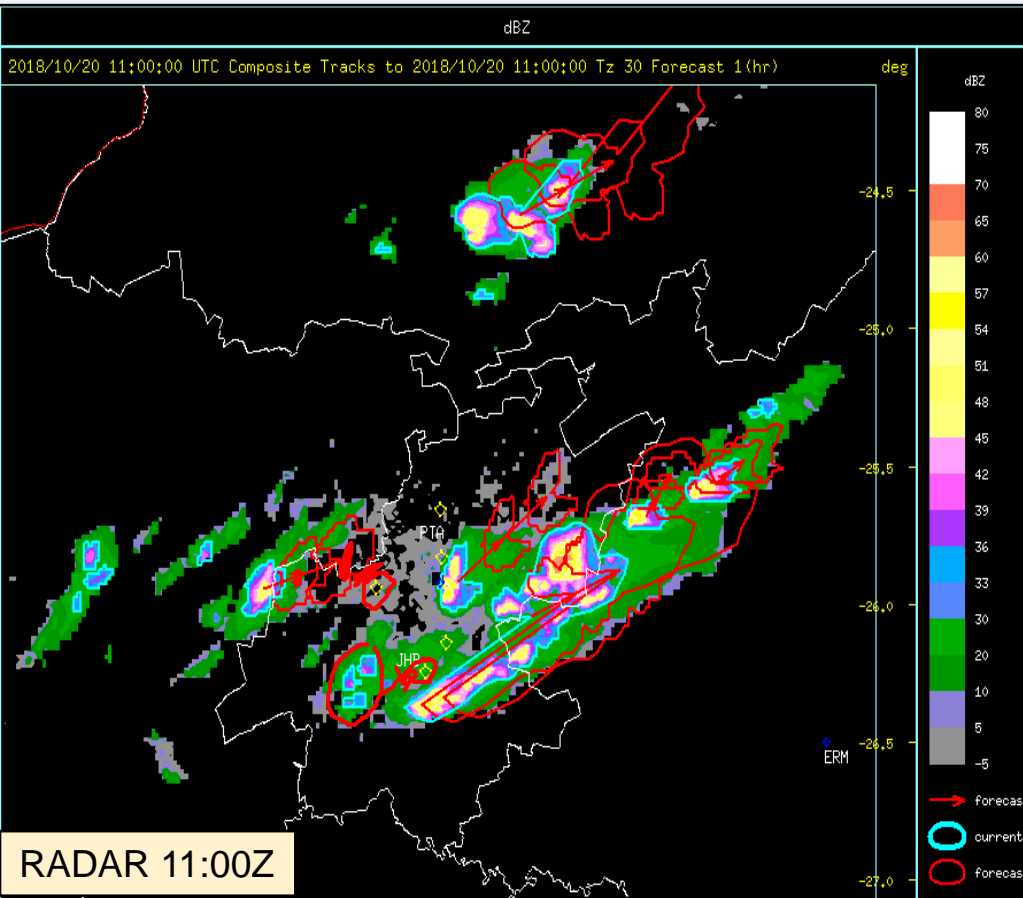
Thunder still in vicinity. Can maintain the warning.

METAR **FAOR** 201100Z 29009KT 210V340 9999 TS SCT038CB SCT044 SCT048TCU 23/05 Q1024 TEMPO 5000 TSRA=

## FALA:

In 1 hour a thunderstorm could be passing close to the north. Require more certainty, so hold back with the aerodrome warning.

METAR **FALA** 201100Z 04004KT 330V140 9999 SCT040 27/12 Q1022 NOSIG=



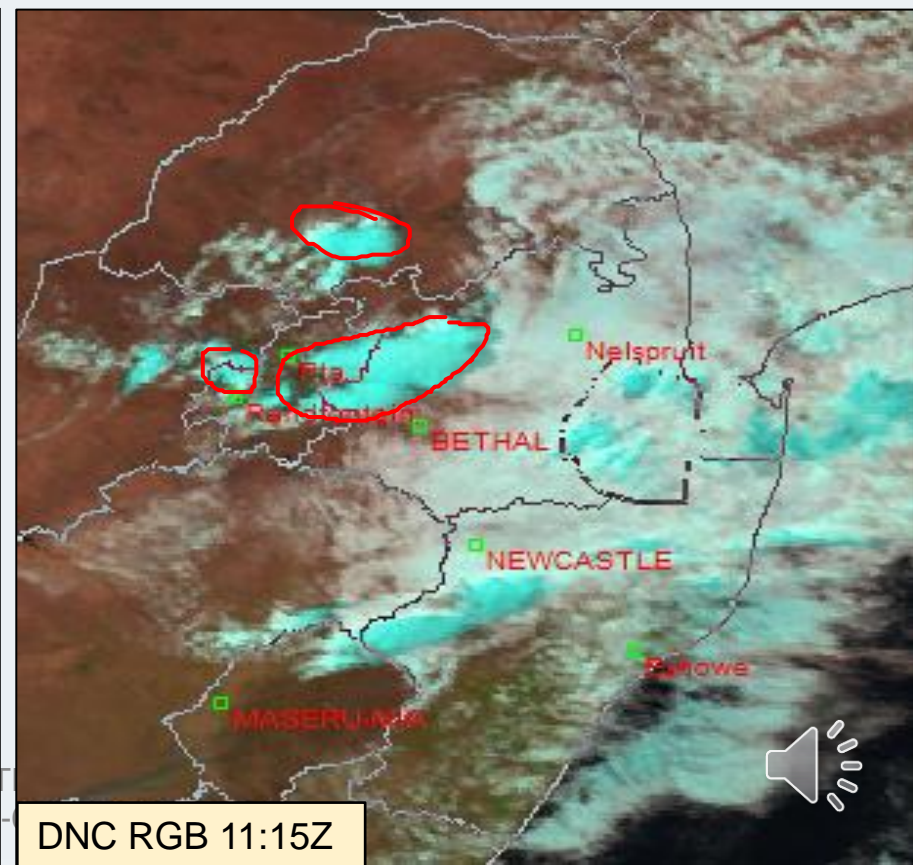
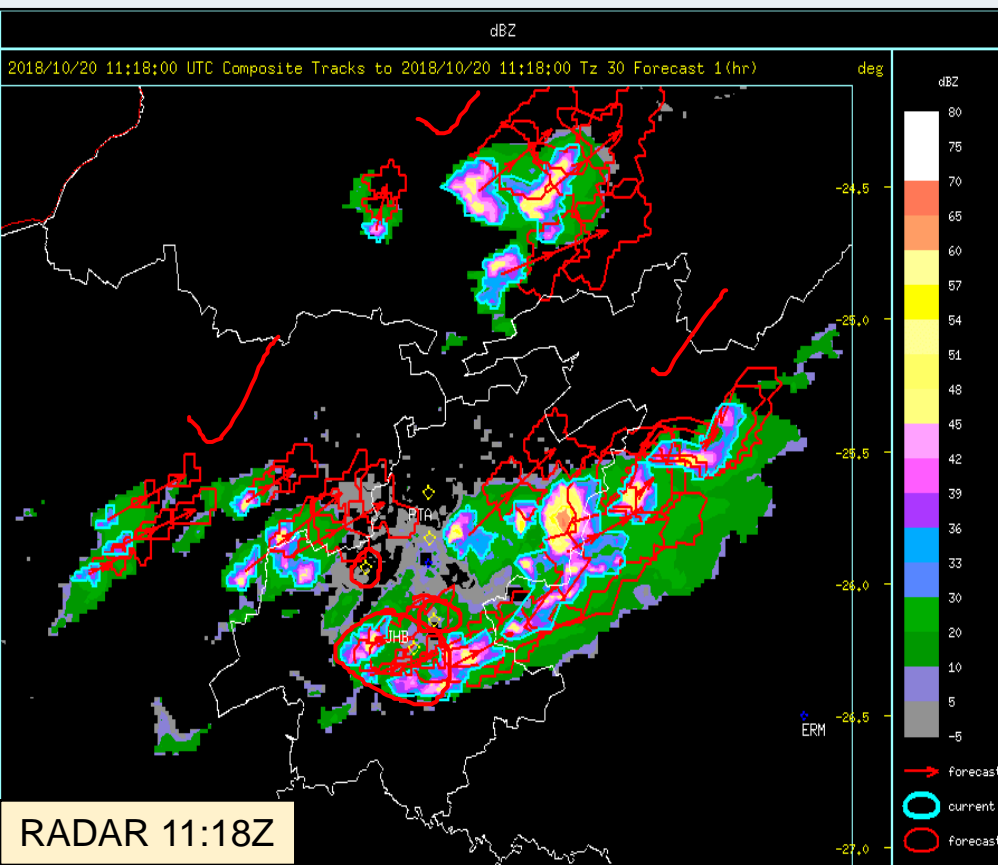
# Monitor (AMF AC 1.2) new data from 1115Z TO 1118Z

## FALA:

In 30min a thunderstorm can be close just to the north of aerodrome.  
Wait for next 6min Radar image before making a decision.

## FAOR:

Thunderstorm still tracking to move over FAOR. Maintain the current warning



# Monitor (AMF AC 1.2) new data at 11:30Z and issue Aerodrome warning FALA

## FALA:

In 30min a thunderstorm can be close just to the north of aerodrome. Issue the aerodrome warning Aerodrome Warning

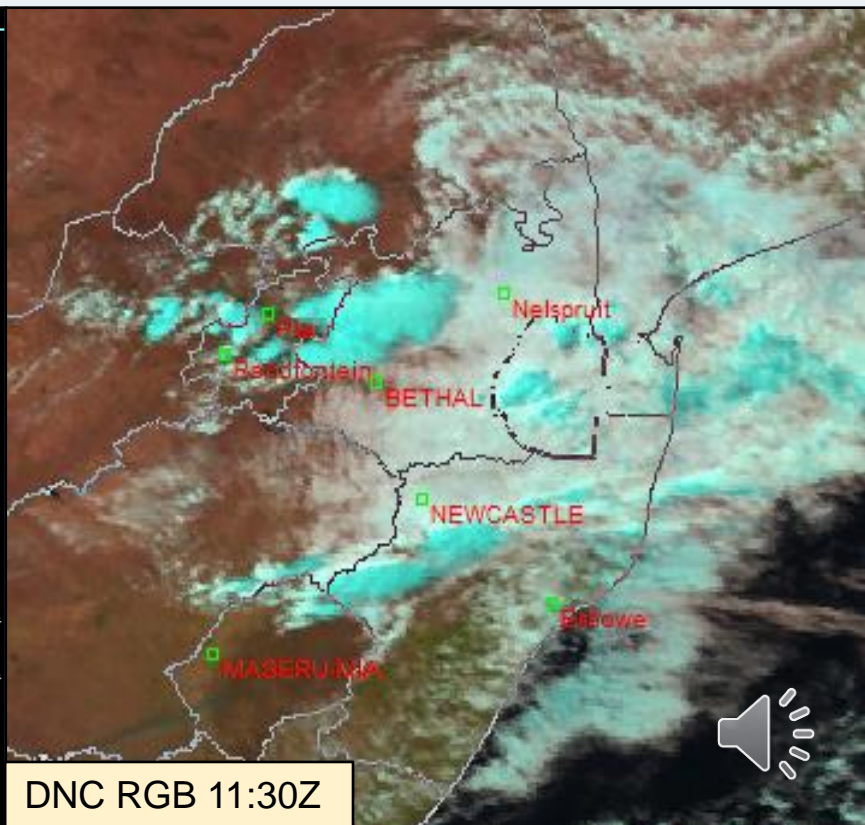
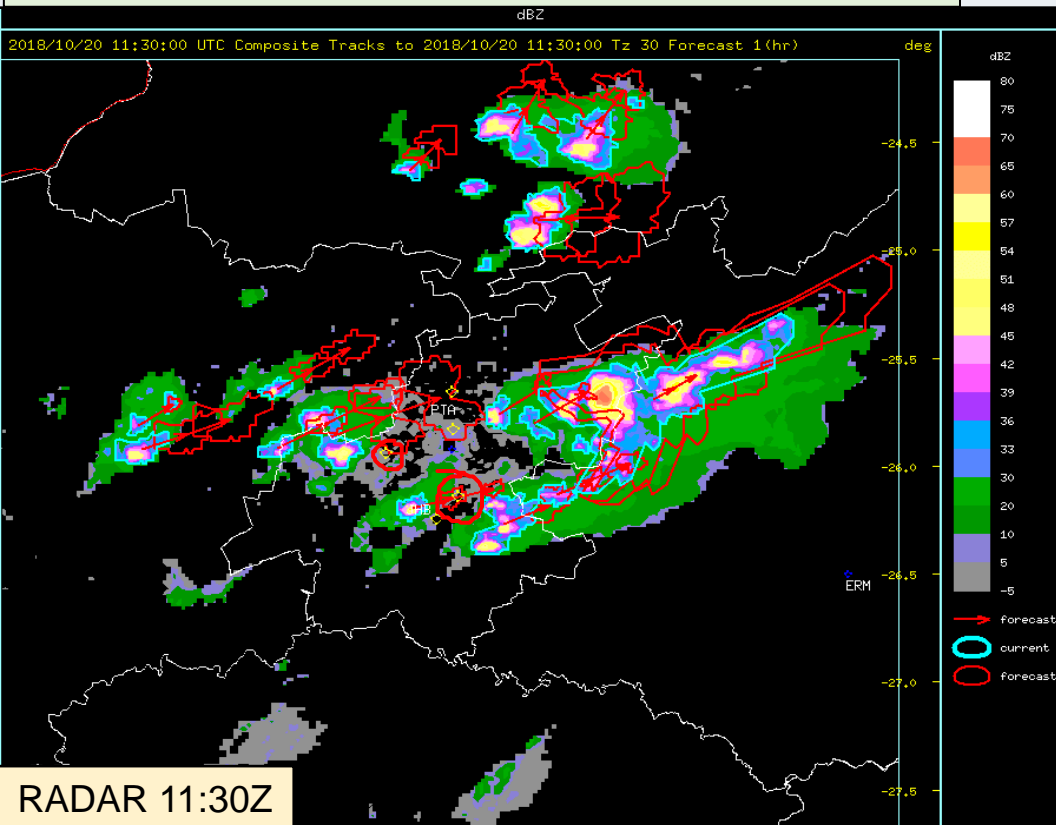
**WARNING FOR FALA - 20181020 11:32**  
FALA AD WRNG 1 VALID 201132/201300  
HVY TS OBS AT 1130Z NC=

## FAOR:

Another thunderstorm still tracking to move over FAOR in 30min.

Maintain the warning.

METAR FAOR 201130Z VRB05KT 9999 **TS**  
FEW015 FEW035CB SCT048 22/07 Q1024  
NOSIG=





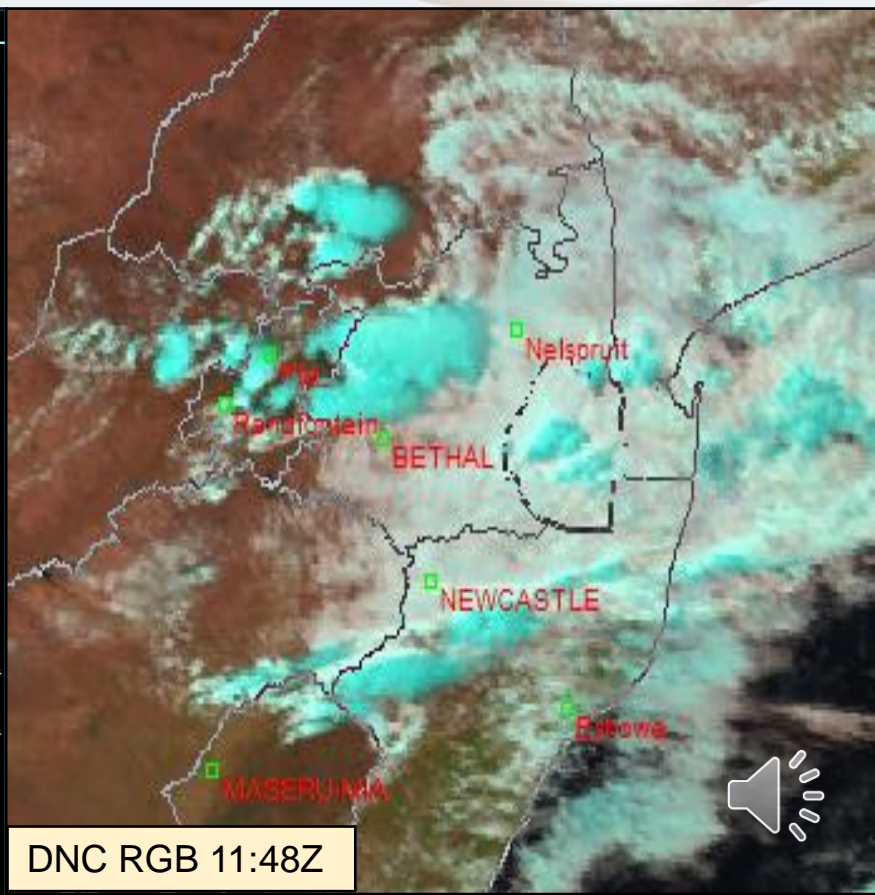
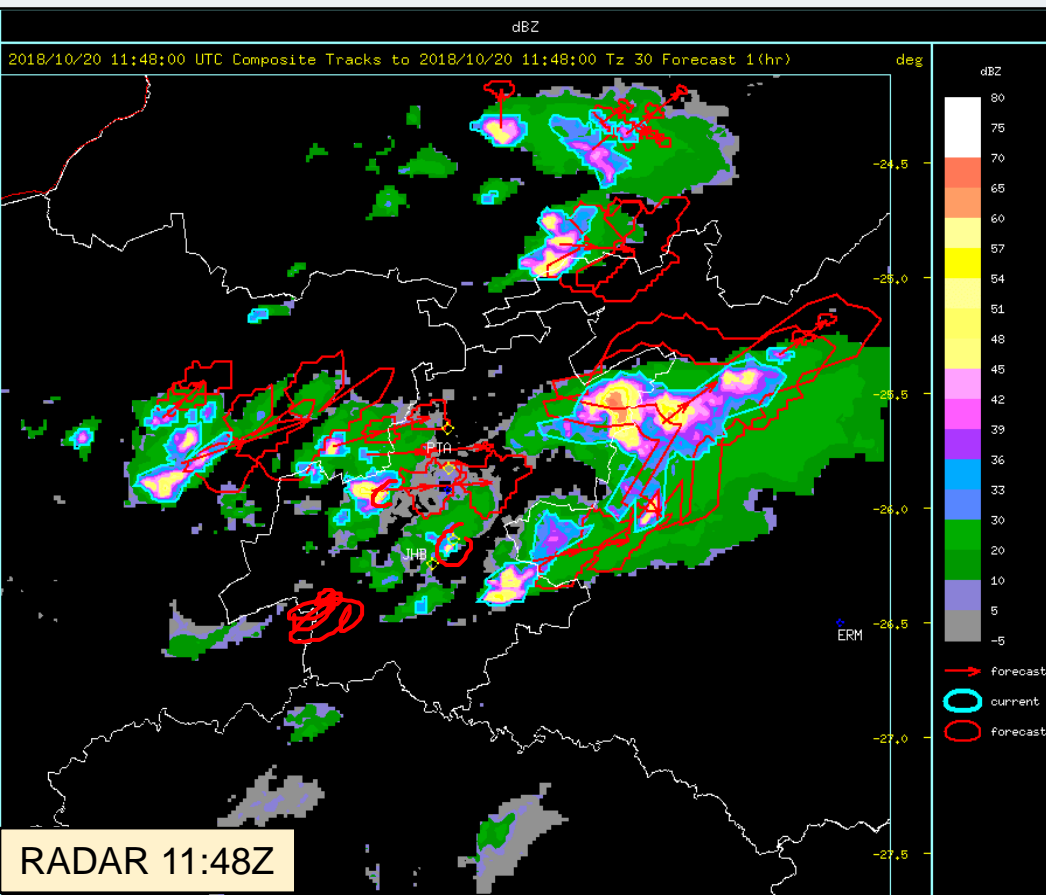
# Monitor (AMF AC 1.2) new data from 11:45Z to 11:48Z

## FALA:

Thunderstorm is over Lanseria, should be over in 30min

## FAOR:

Thunderstorm is over – based on history new development can occur



# Monitor (AMF AC 1.2) new data at 12Z

## FALA:

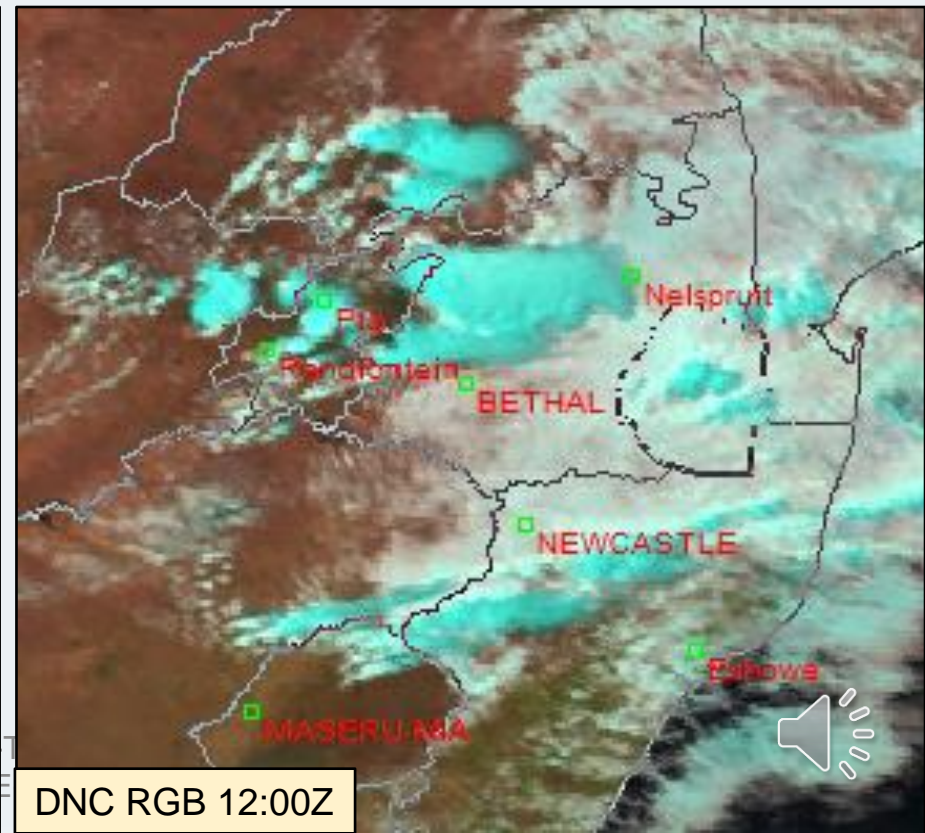
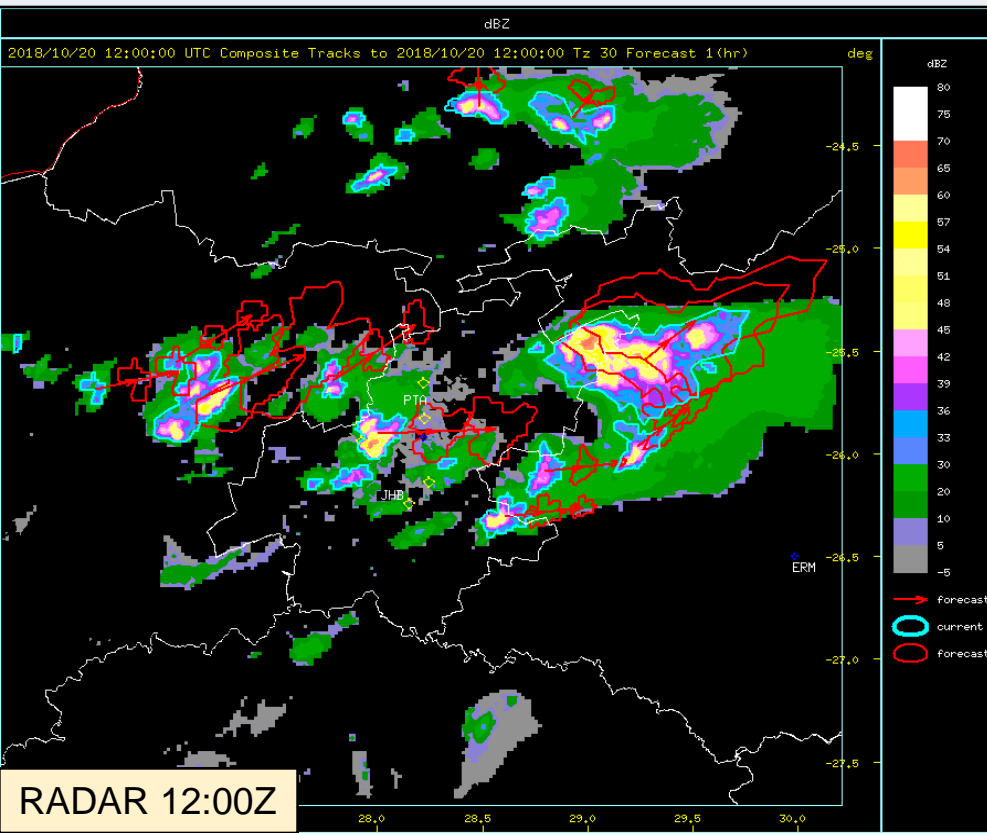
Thunderstorm over Lanseria – should be over in 30min

METAR FALA 201200Z VRB05G33KT 8000 -TSRA SCT035 FEW040CB 17/11 Q1022=

## FAOR:

Thunderstorm is over

METAR FAOR 201230Z 10018KT 060V120 9999 FEW012 FEW040CB 20/14 Q1023 NOSIG=



# Monitor (AMF AC 1.2) new data at 13Z

## FALA:

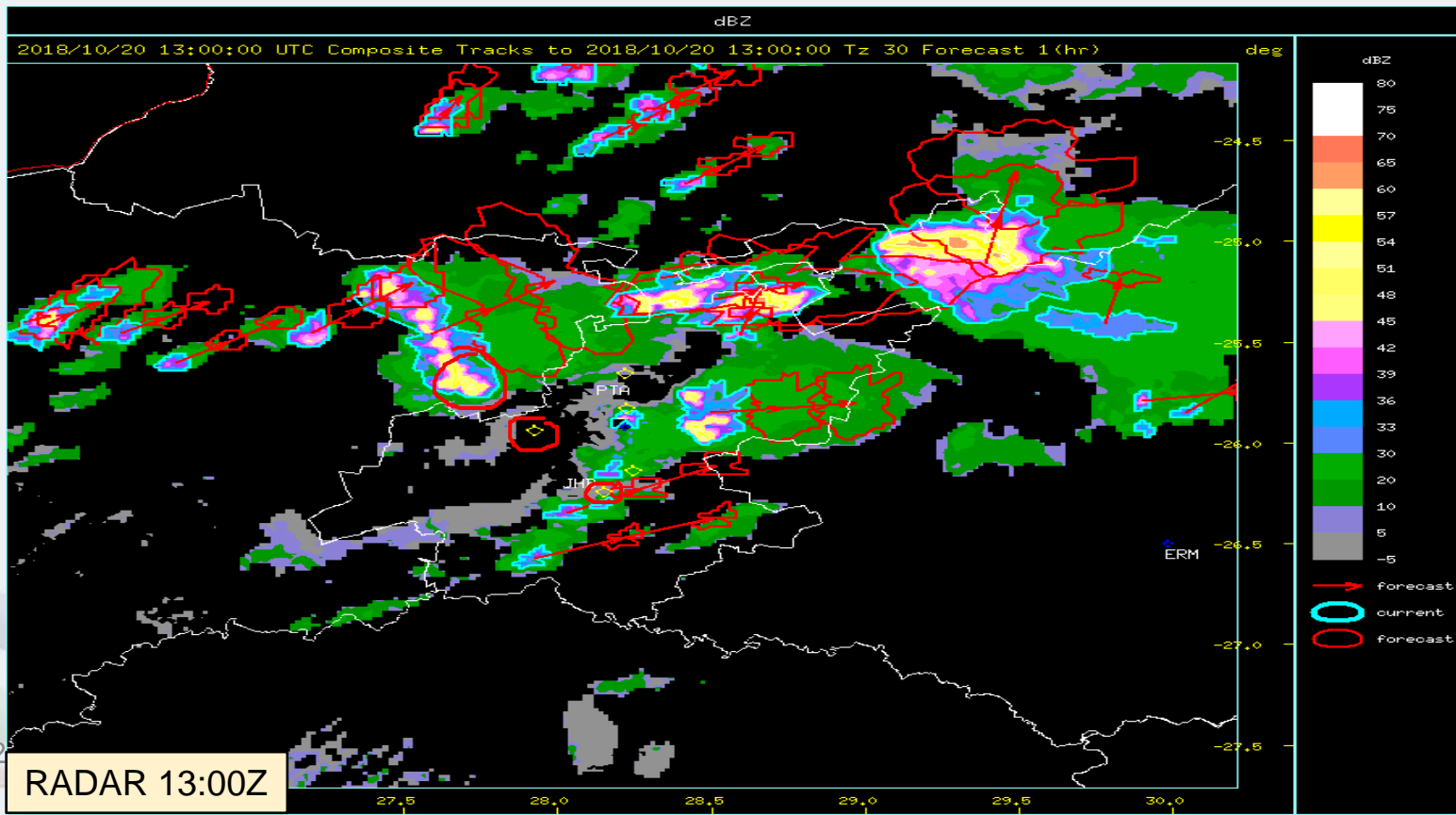
Thunderstorm is over according to RADAR.

METAR FALA 201300Z 09016KT 9999 -TSRA SCT040 FEW045CB 22/14 Q1022 NOSIG=

## FAOR:

Light Thunderstorm still present – Aerodrome warning has elapsed already.

METAR FAOR 201300Z 10013KT 9999 -TSRA FEW035 FEW040CB 19/12 Q1024 NOSIG=



# Monitor (AMF AC 1.2) new data at 1324 to 1330Z

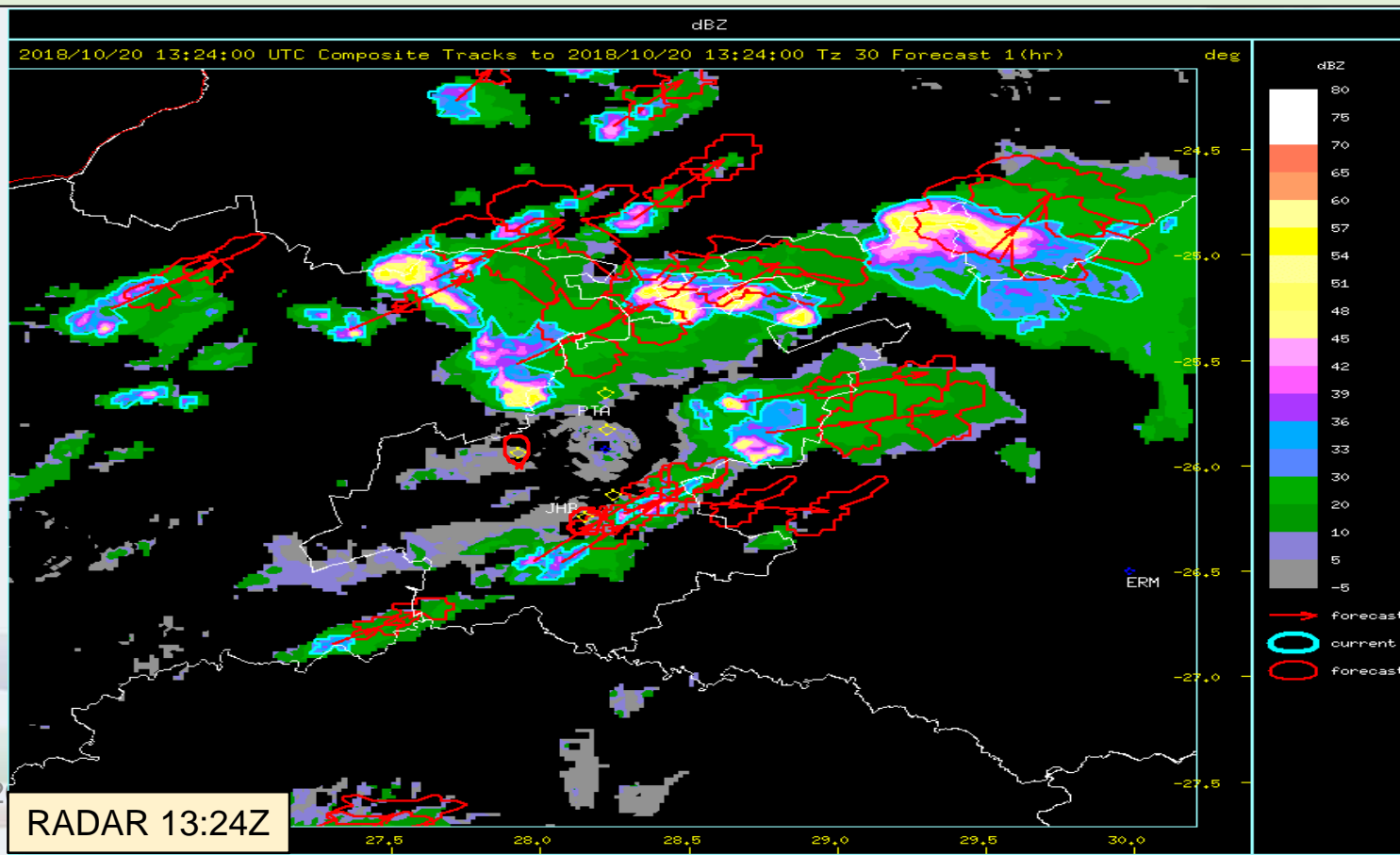
## FALA:

Thunderstorms are over

## FAOR:

Still small thunderstorms passing over OR Tambo

METAR FAOR 201330Z 10013KT 9999 -TSRA FEW015 FEW040CB 18/14 Q1024 NOSIG=



African  
Service

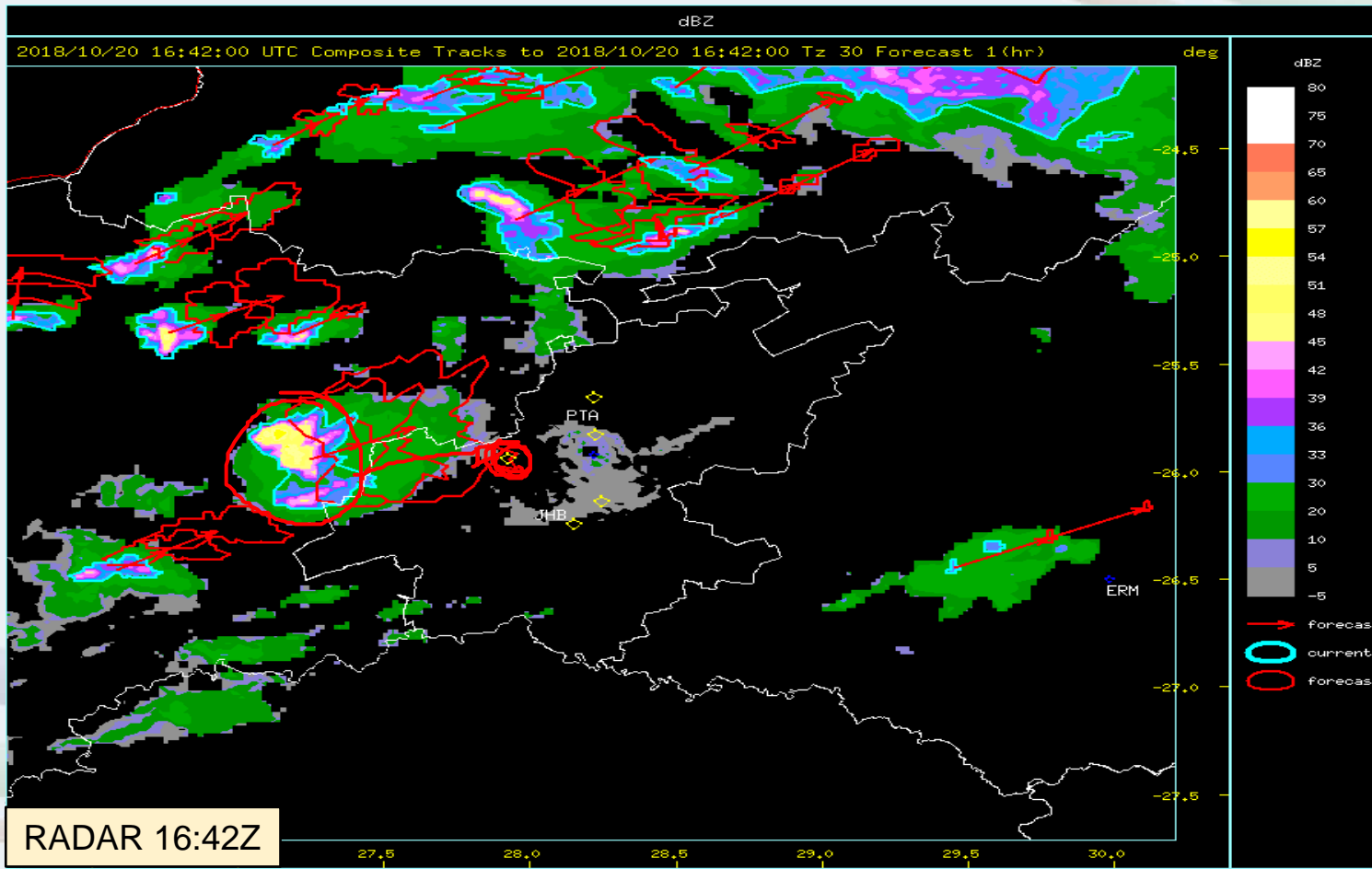
20



# Monitor (AMF AC 1.2) new data at 1642Z

## FALA:

In 1 hour a thunderstorm will be over FALA. Wait another 30min before issuing the aerodrome warning



# Issue Aerodrome warning (AMF AC 3.1.5) for FALA at 1736Z

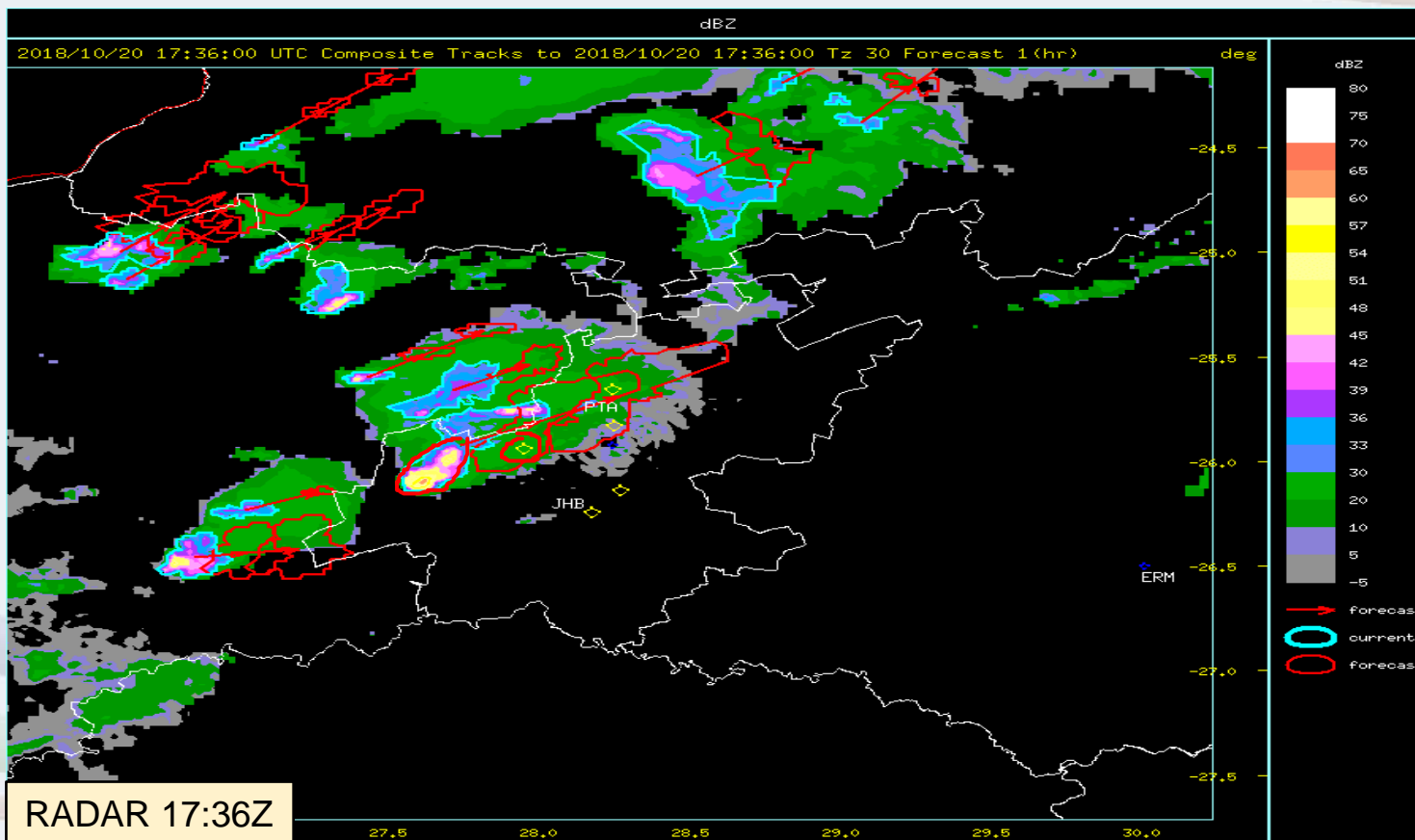
## FALA:

In 30min a thunderstorm will be over FALA. Issue the aerodrome warning

**WARNING FOR FALA - 20181020 17:36**

FALA AD WRNG 2 VALID 201750/201900

HVY TS OBS AT 1736Z NC=



# Monitor (AMF AC 1.2) new data at 1748Z

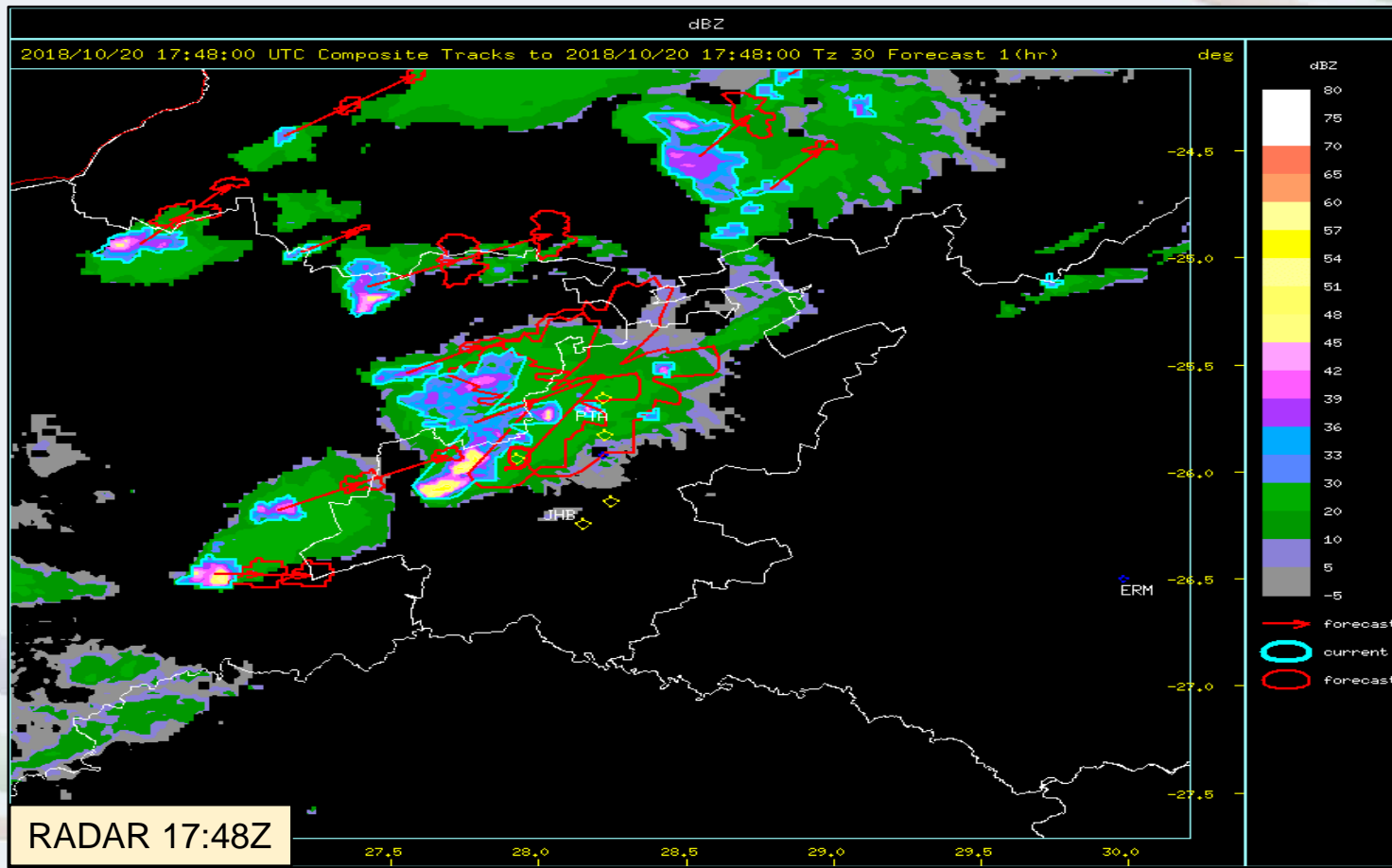
## FALA:

In 30min a thunderstorm will be over FALA. Maintain aerodrome warning

## WARNING FOR FALA - 20181020 17:36

FALA AD WRNG 2 VALID 201750/201900 ✓

HVY TS OBS AT 1736Z NC=



# References

- Latest edition of RTC-CN-020 Aviation Practical Course Notes
- RTC-PRE-085 AMF AC 3.2 Warn of Hazardous Phenomena Formats

