World Wide Weather Briefing 2013 – Session 8

Heavy rain event at Azores: March,13-14, 2013

Pico mountain (Pico)

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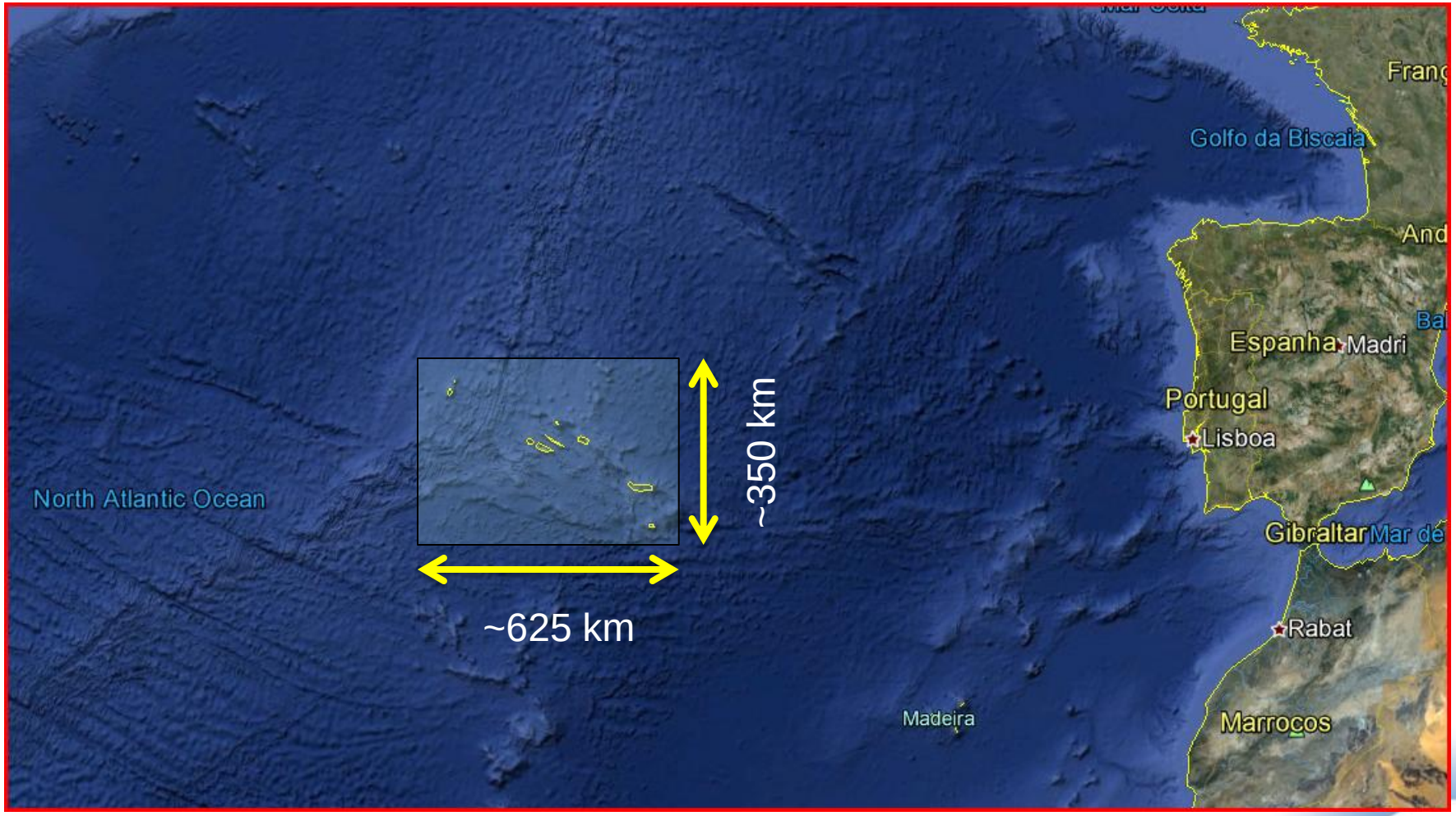
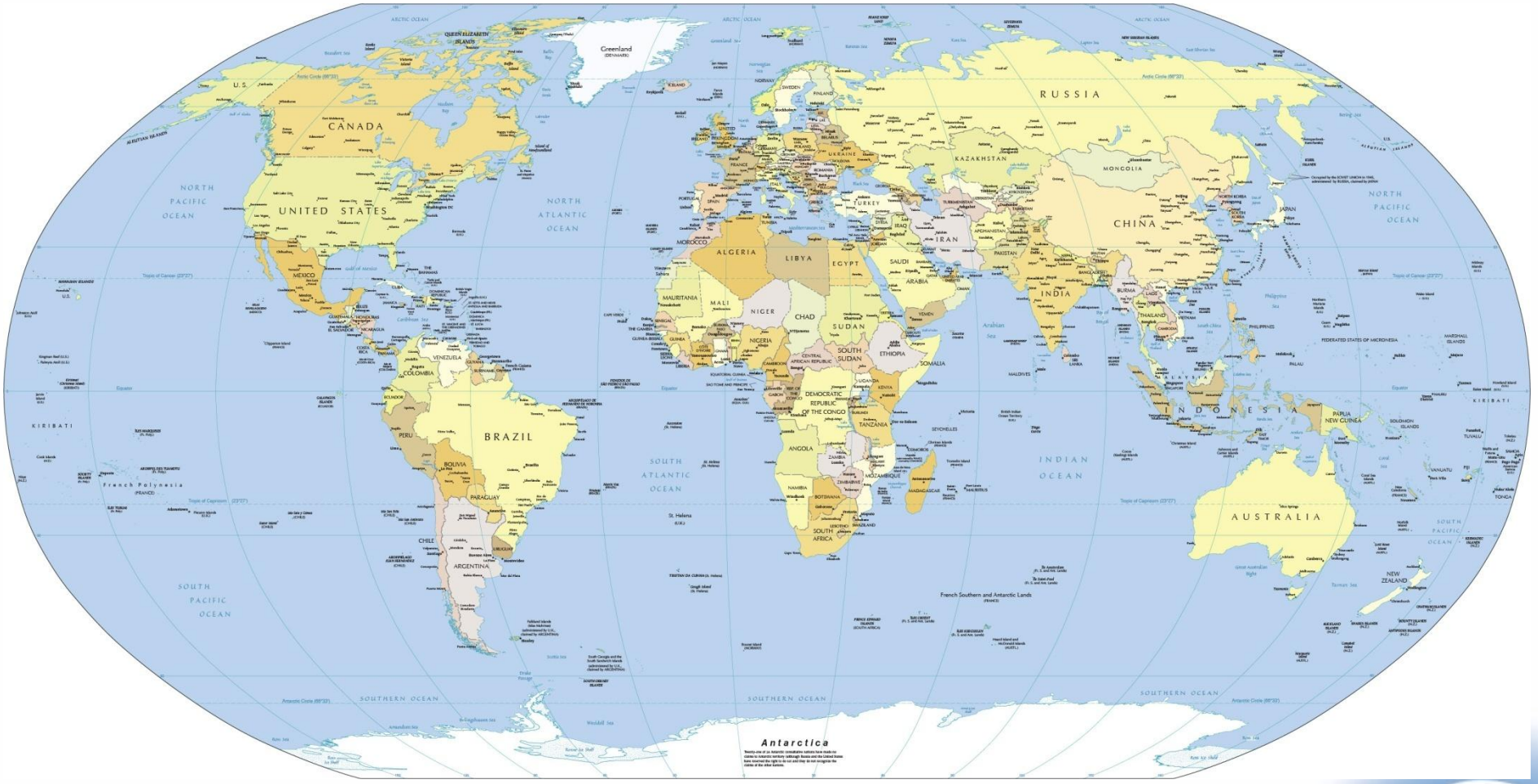
Azores islands



Some facts about Azores:

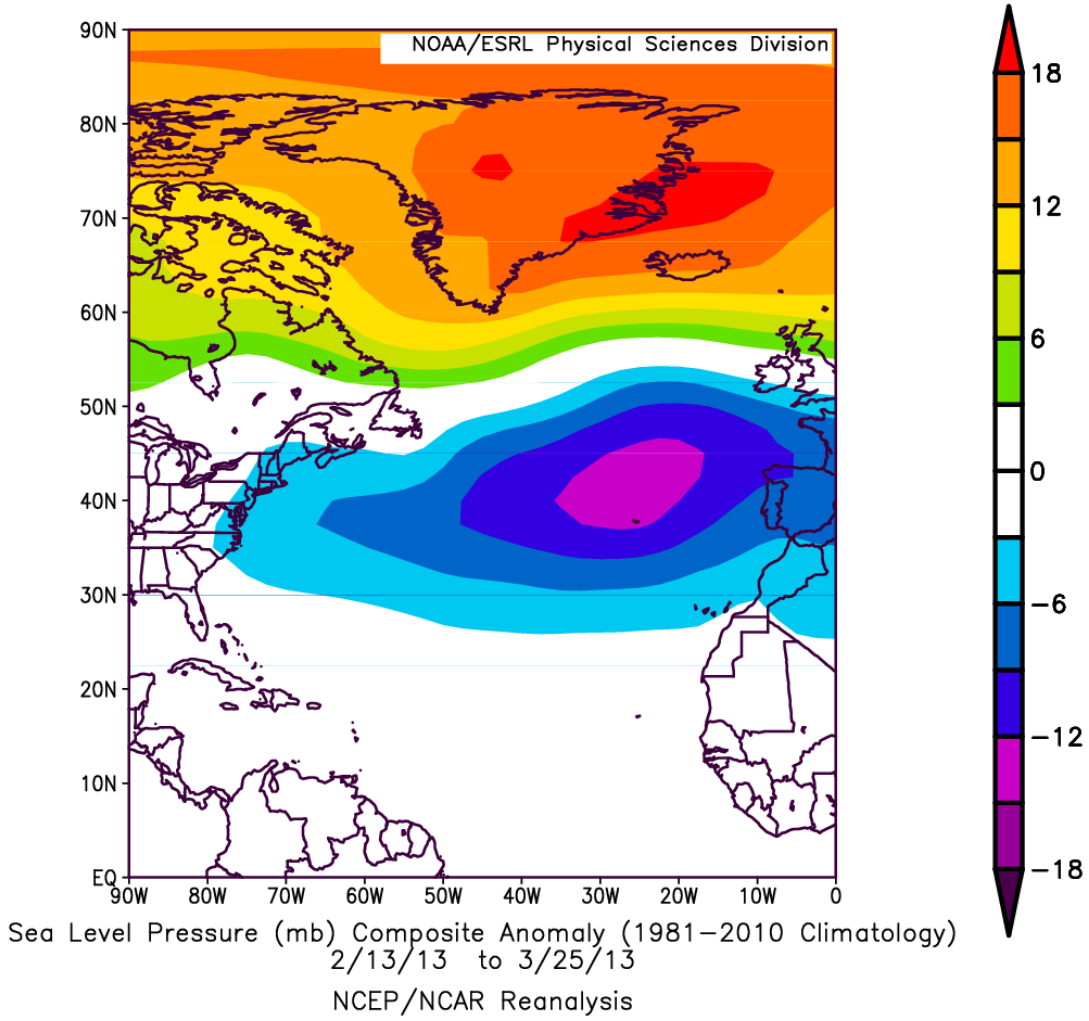
Lagoa do Fogo (S. Miguel)

Where are you from ?



Sea level surface pressure anomaly

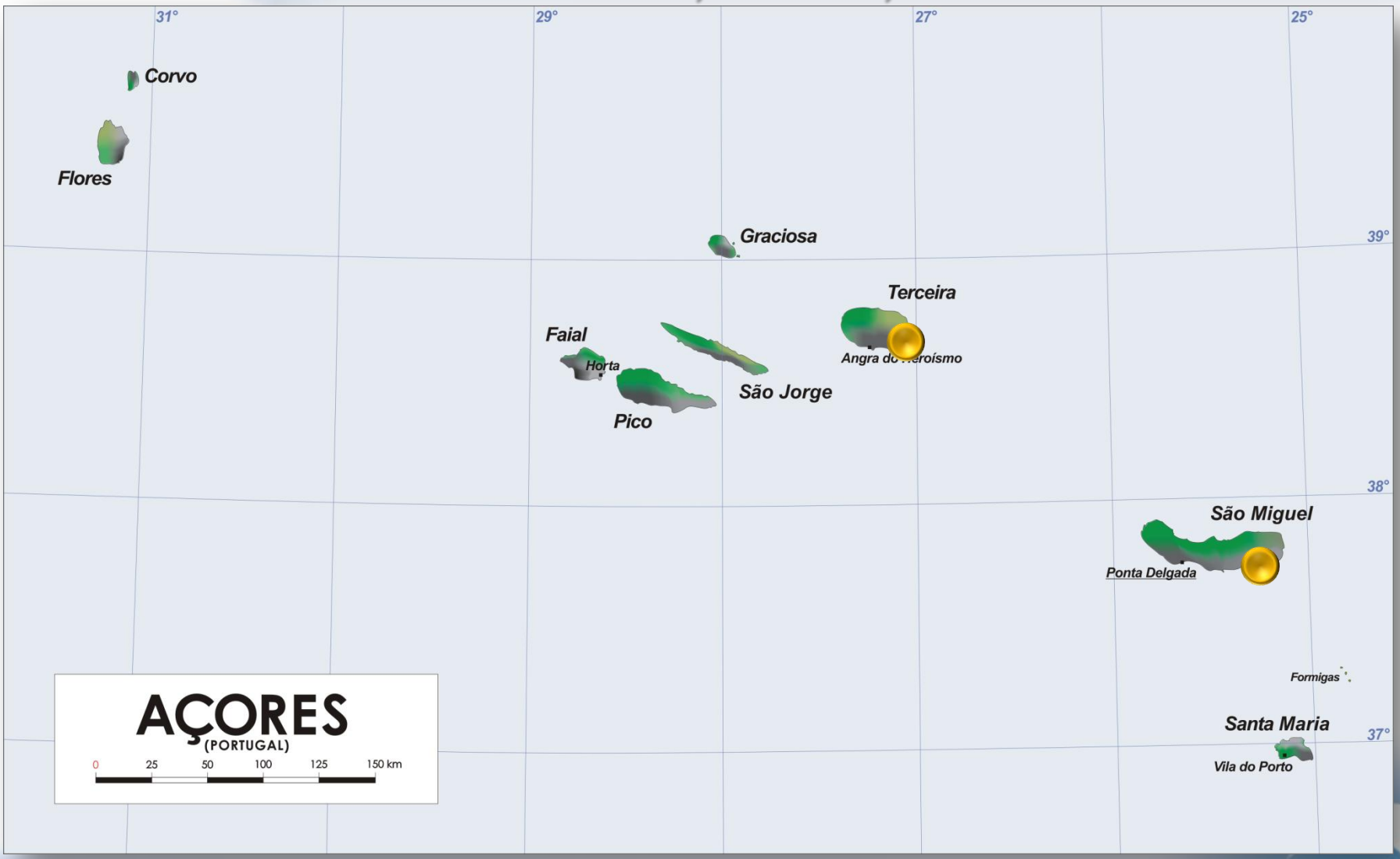
Feb.13 to Mar.25 2013



S. Miguel, Feb.13 to Mar. 25 (40 days)

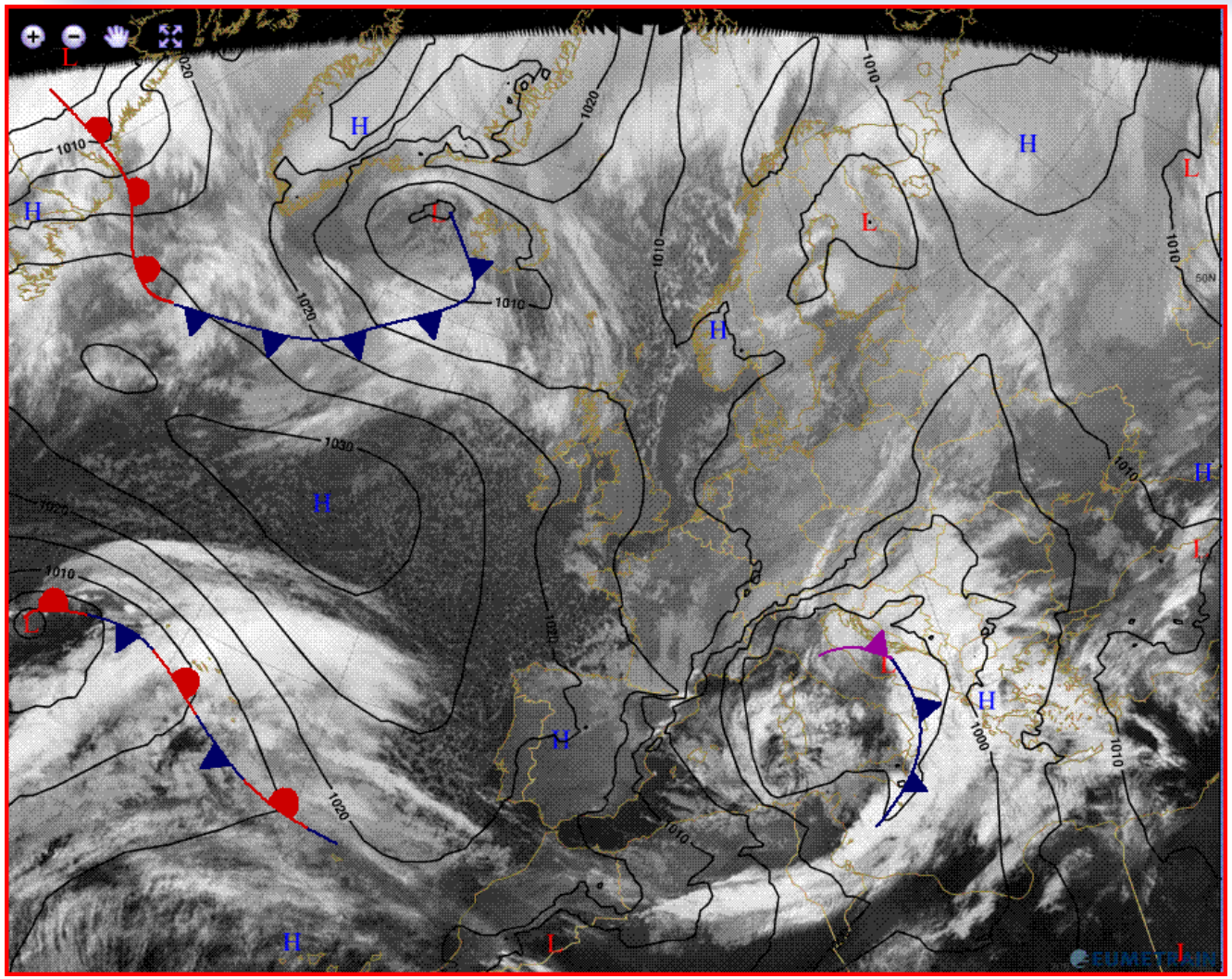
	Ponta Delgada (Observatory)	Ponta Delgada (Airport)	Nordeste
Total precipitation amount	1947-2011	1970-2011	1970-2009
	411.8 mm (2010)	316.7 mm (1984)	726.4 mm (1981)
		2013	
	388.7 mm	438.8 mm	653.9 mm
Max. # days with R > 0.5 mm	1947-2011	1970-2011	1970-2009
	34 (2010)	27 (1987)	31 (1977)
		2013	
	30	30	33

Severe weather event at Azores: March,13-14, 2013



IR10.8 and surface analysis

2013-03-14 00:00UTC



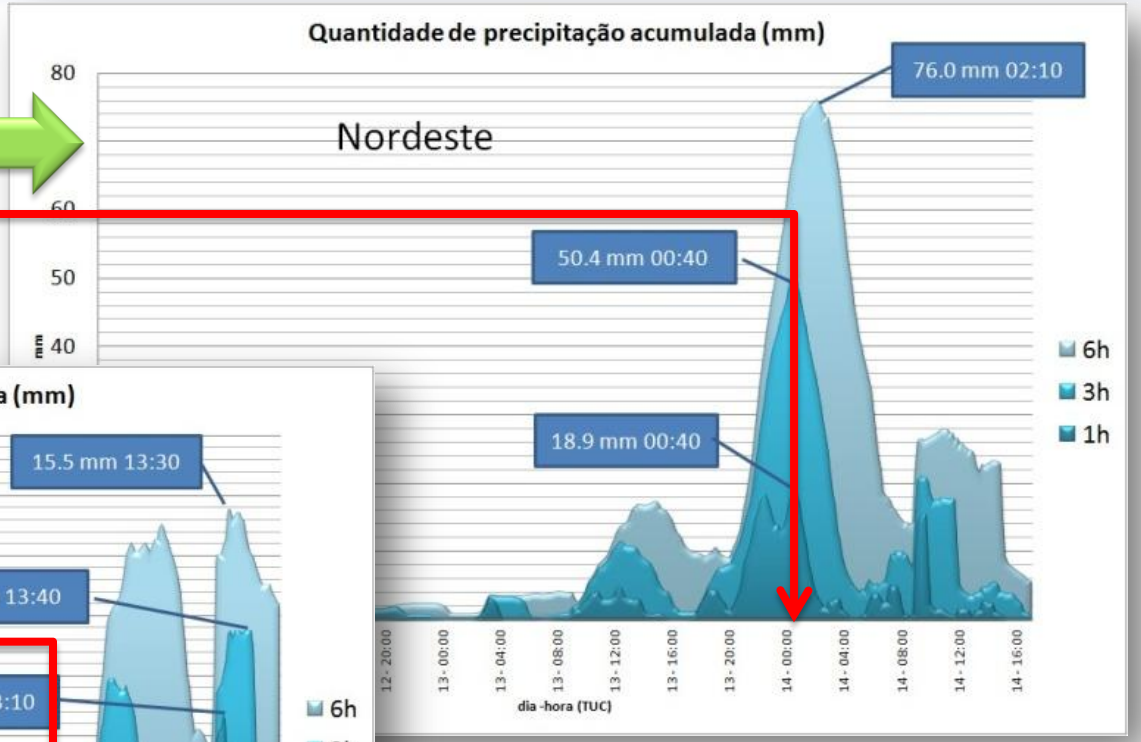
Faial da Terra (São Miguel)

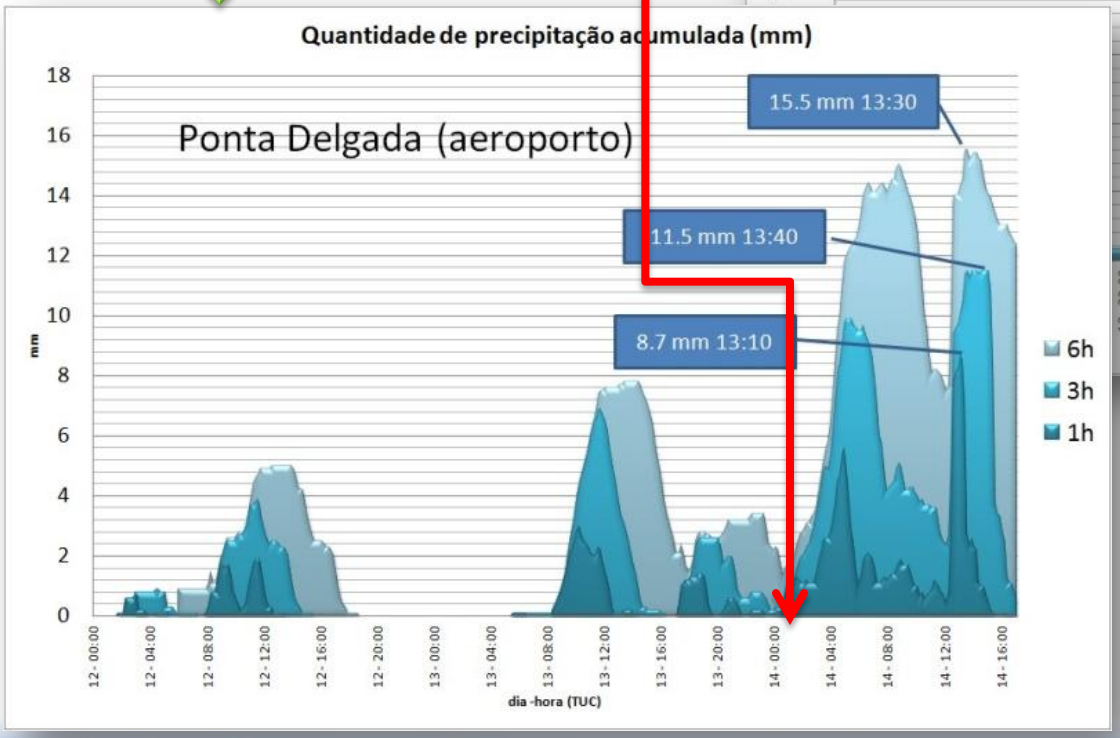
Faial da Terra, 14th March, 00:30 UTC – A landslide destroyed 3 houses and causes 3 casualties.

Faial da Terra (São Miguel)

Faial da Terra

Weather stations: Acumulated rainfall amounts





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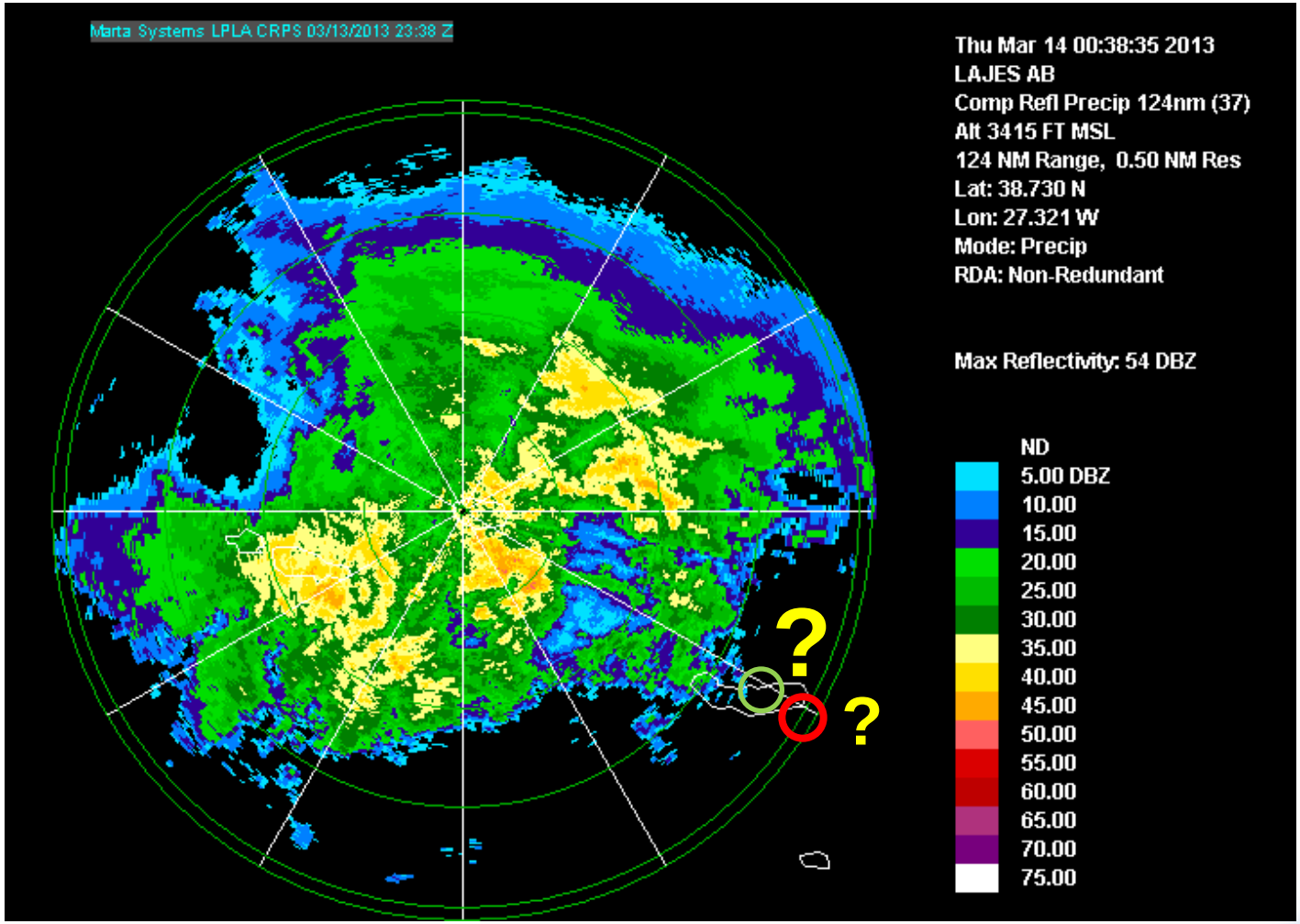
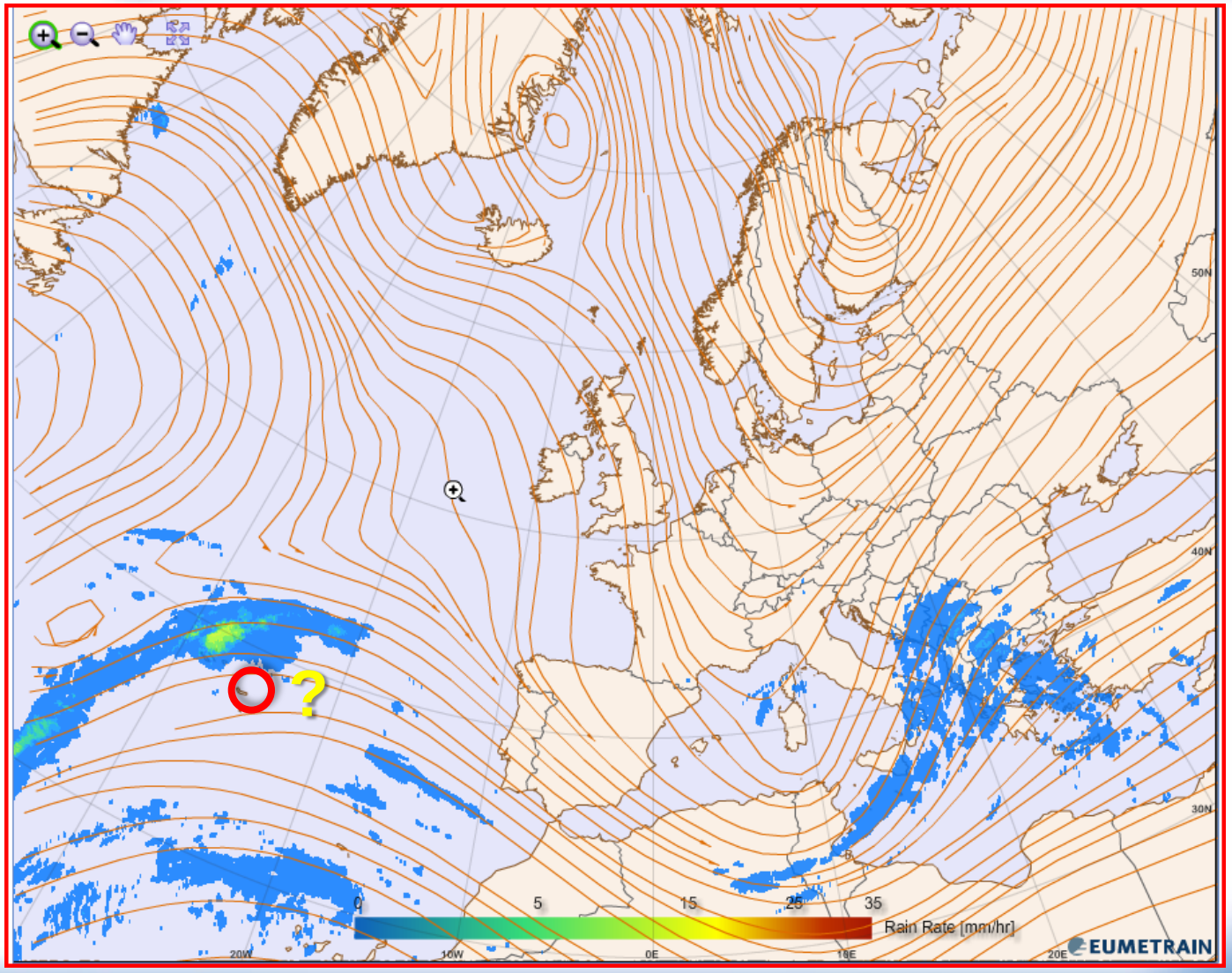
Composite refeletivity precipitation (NEXRAD)



300 hPa streamlines and Multi-sensor Precipitation Estimate (MPE)

2013-03-14 00:00UTC

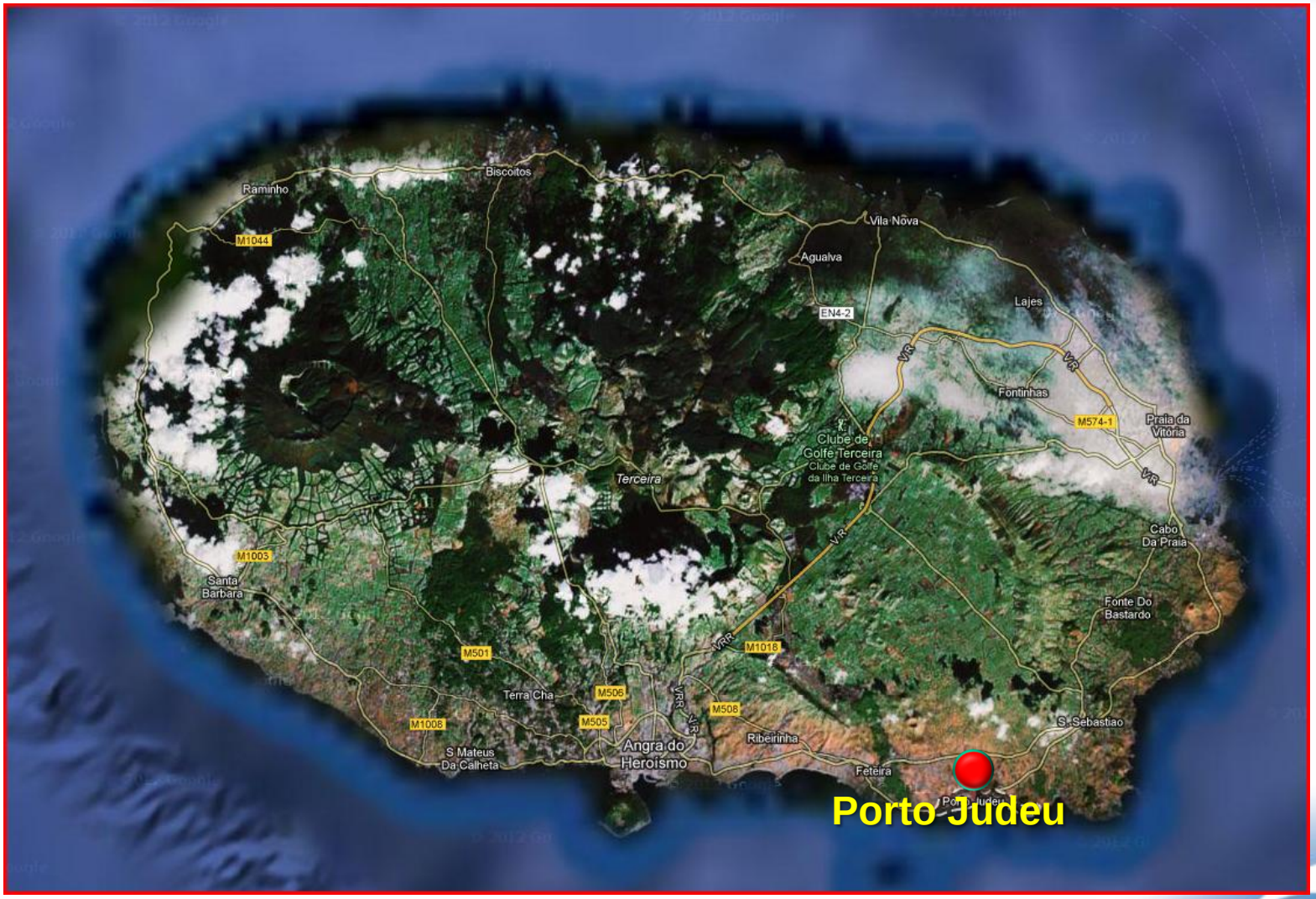


Question:

What kind of information you usually trust more to decide to emit a heavy precipitation alarm?

- Numerical models
- Surface observations
- Weather Radars
- Satellites

Porto Judeu (Terceira)



Porto Judeu (Terceira)
13 and 14 March, 2013

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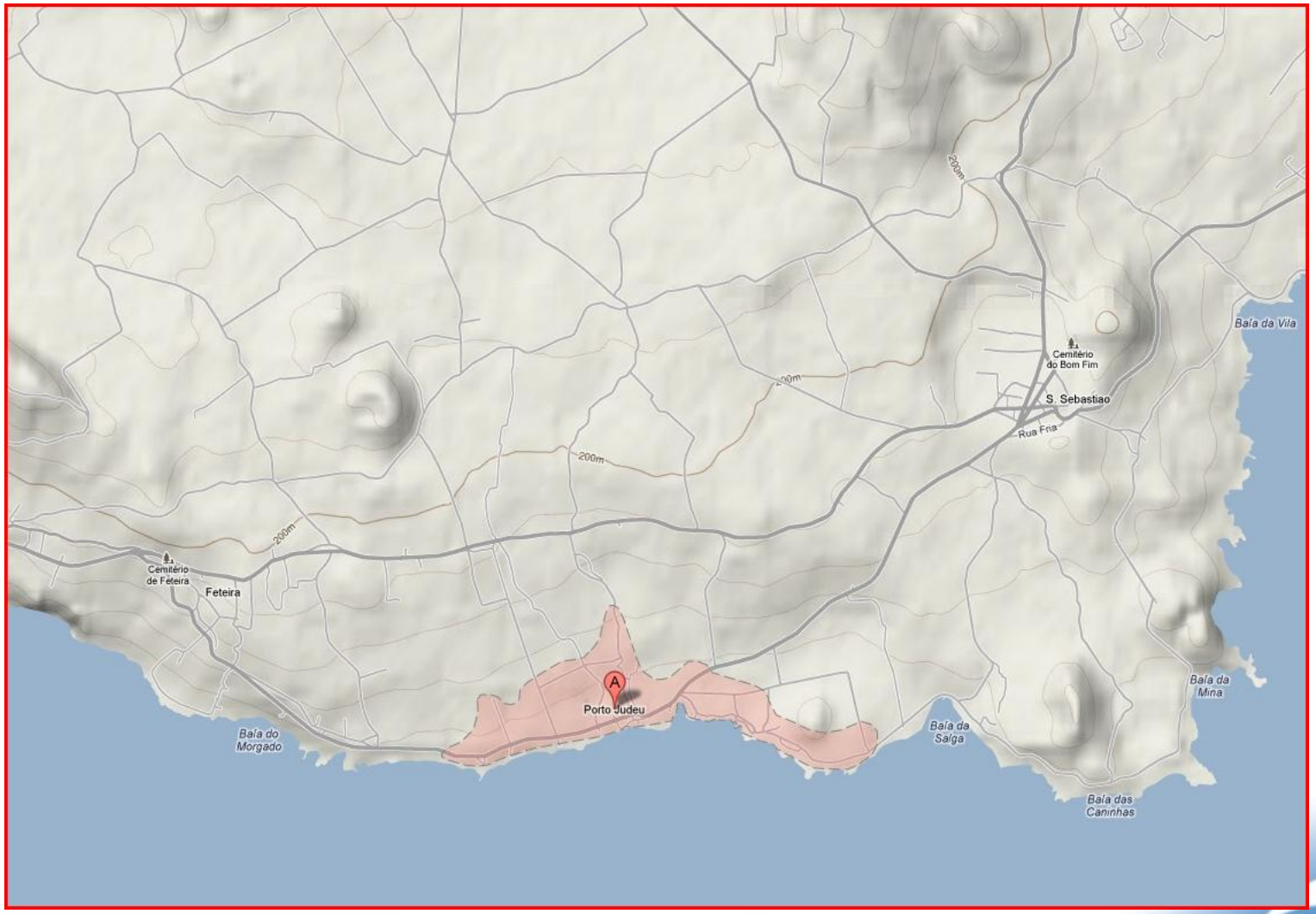
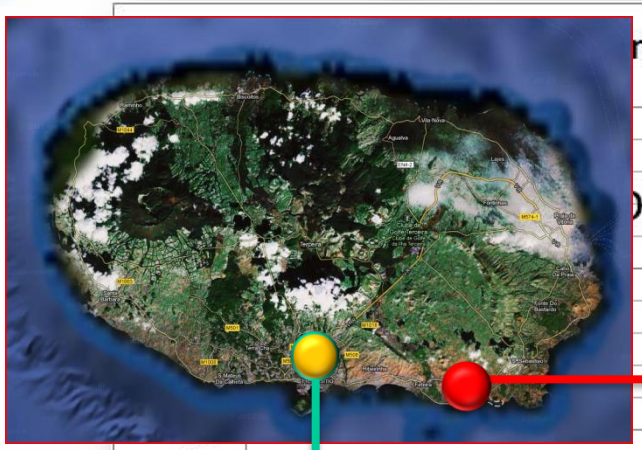


Weather station: Acumulated rainfall amounts



ntidade de precipitação acumulada (mm)

ísmo (Observatório)

20.6 mm 02:10

12.6 mm 00:50

5.5 mm 23:30

mm

10

5

0

6h

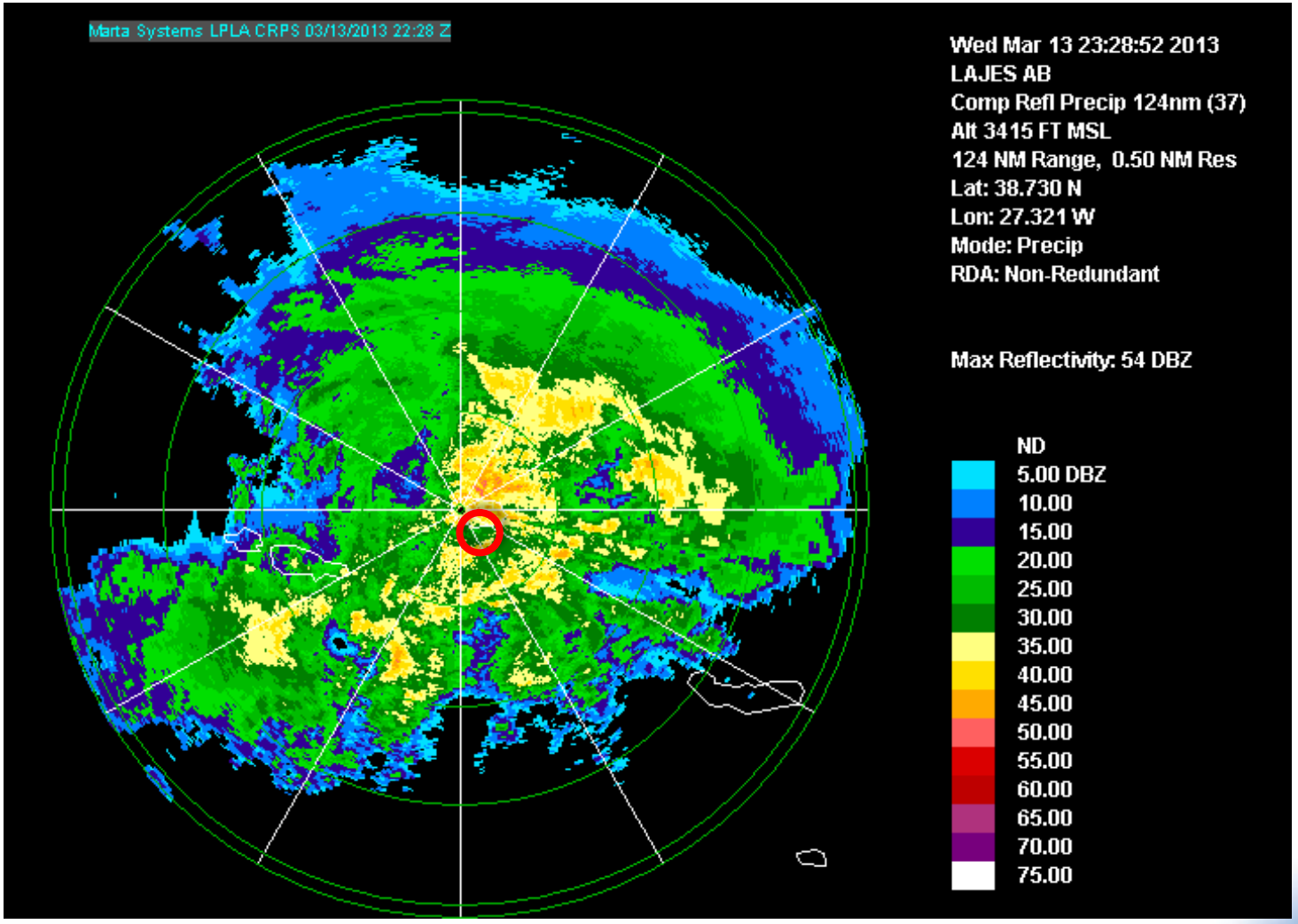
3h

1h

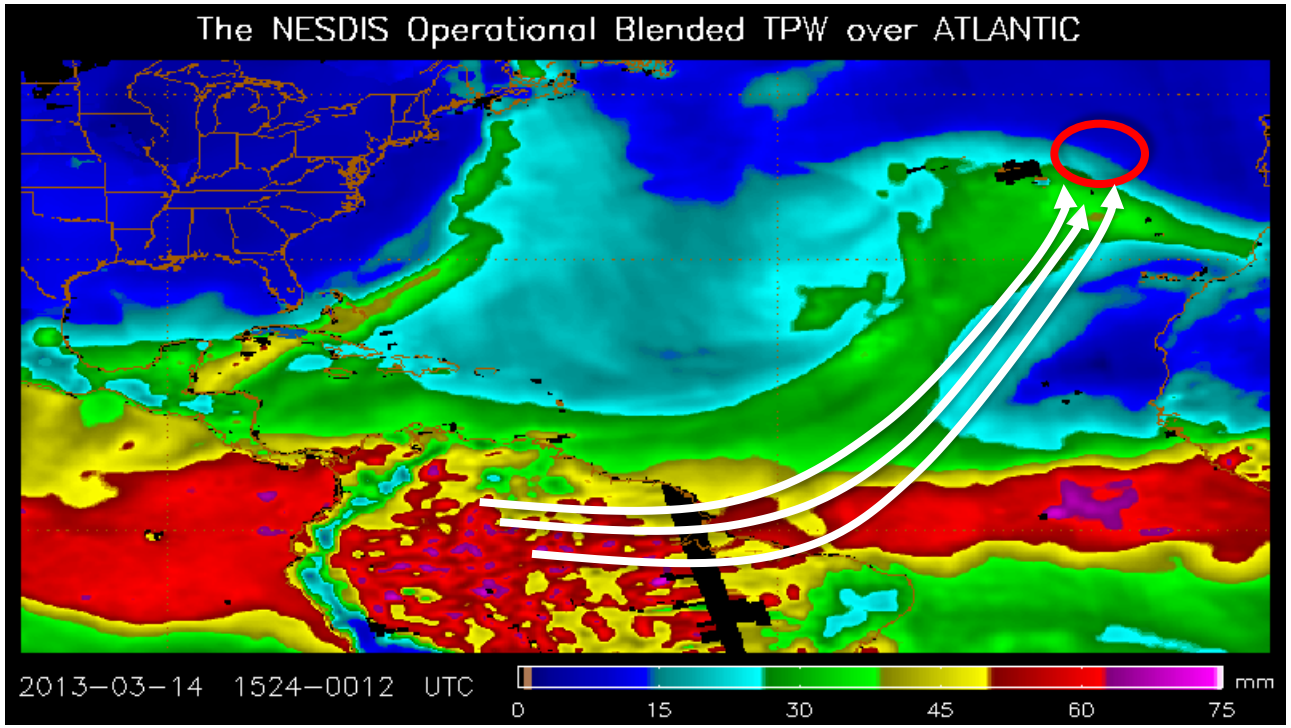
12 - 00:00
12 - 04:00
12 - 08:00
12 - 12:00
12 - 16:00
12 - 20:00
13 - 00:00
13 - 04:00
13 - 08:00
13 - 12:00
13 - 16:00
13 - 20:00
14 - 00:00
14 - 04:00
14 - 08:00
14 - 12:00
14 - 16:00

dia -hora (TUC)

Composite refeletivity precipitation (NEXRAD)

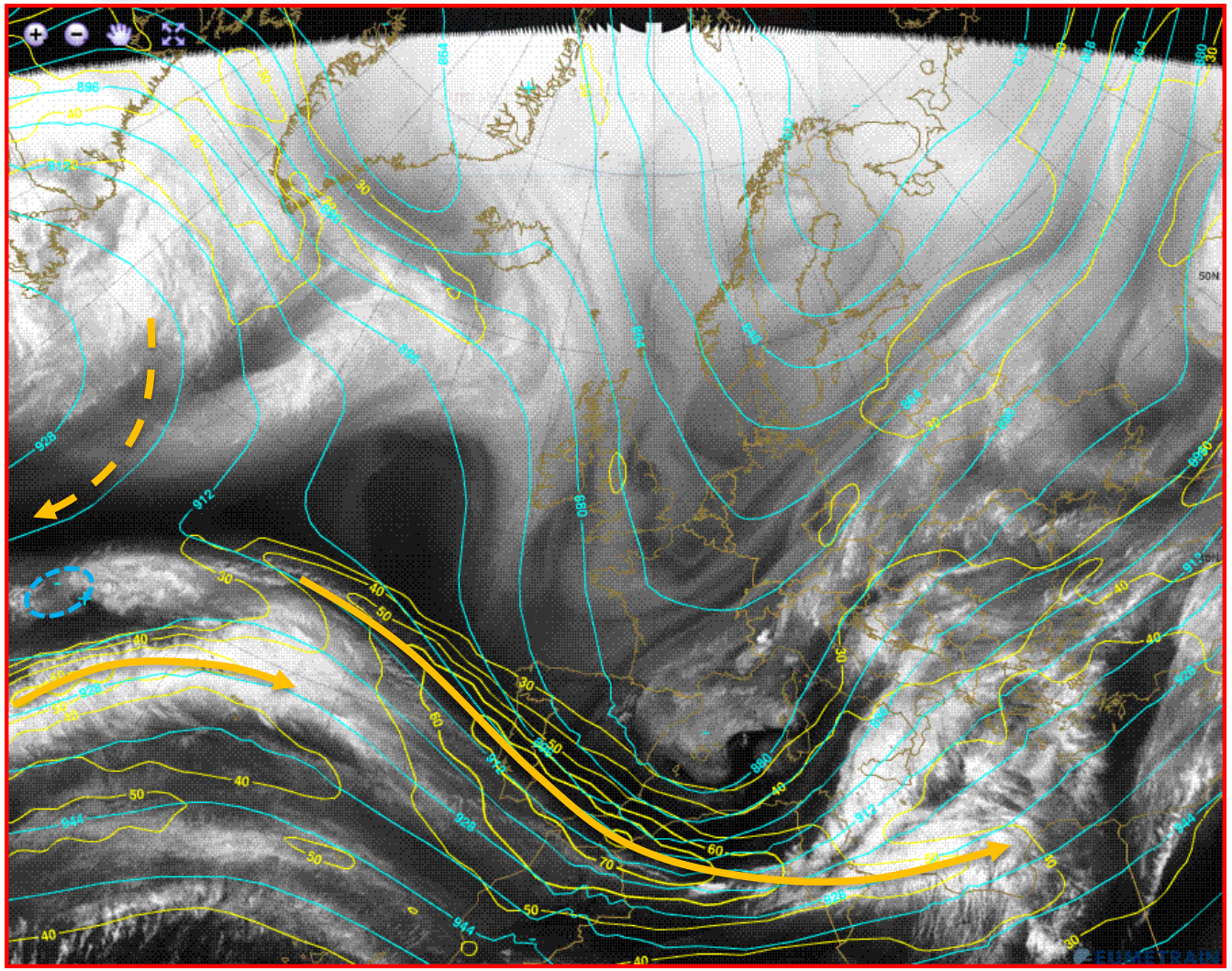


“Atmospheric River”



WV6.2 and 300hPa Z and isotachs

2013-03-13 18:00TUC



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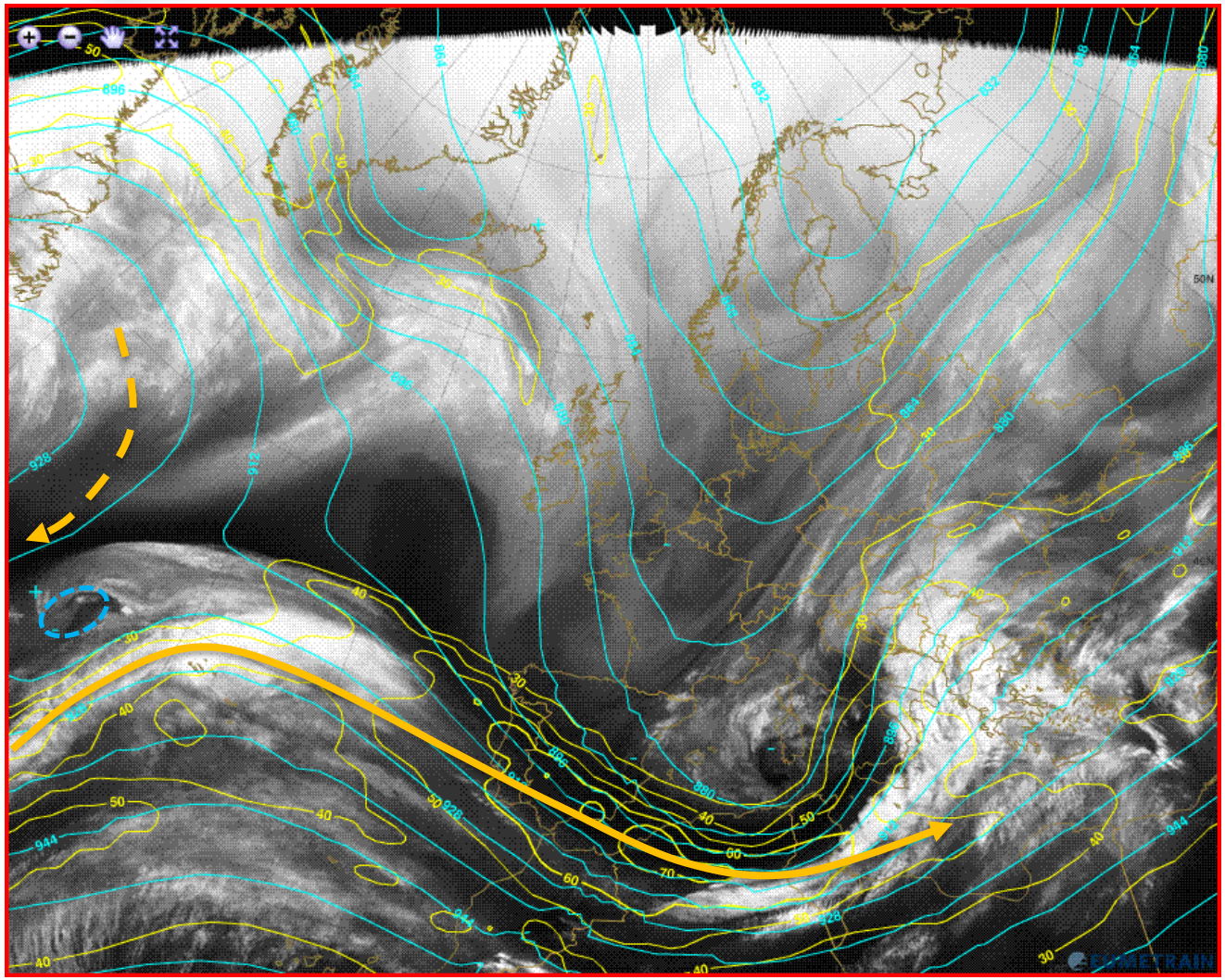
2013-03-14 00:00UTC



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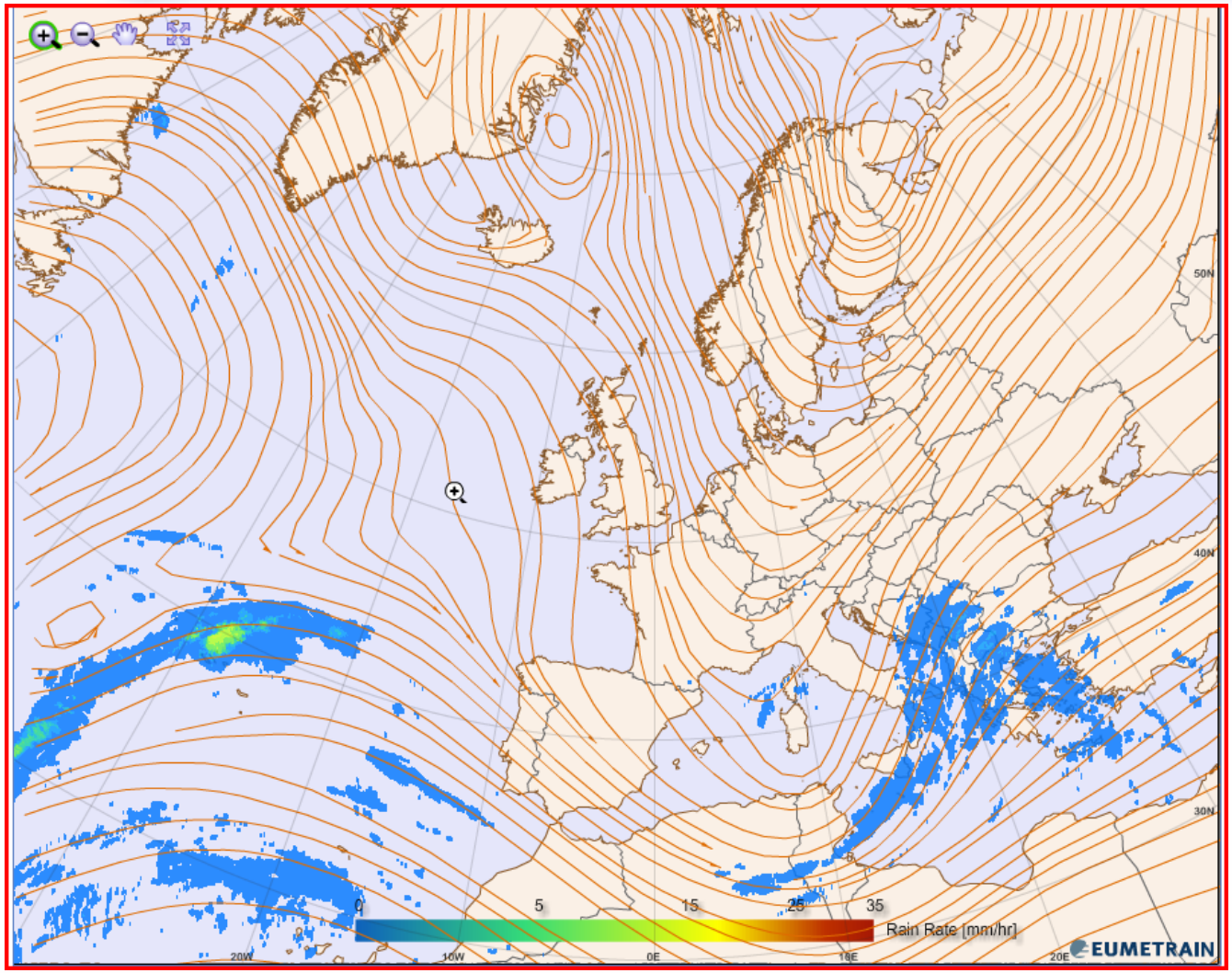
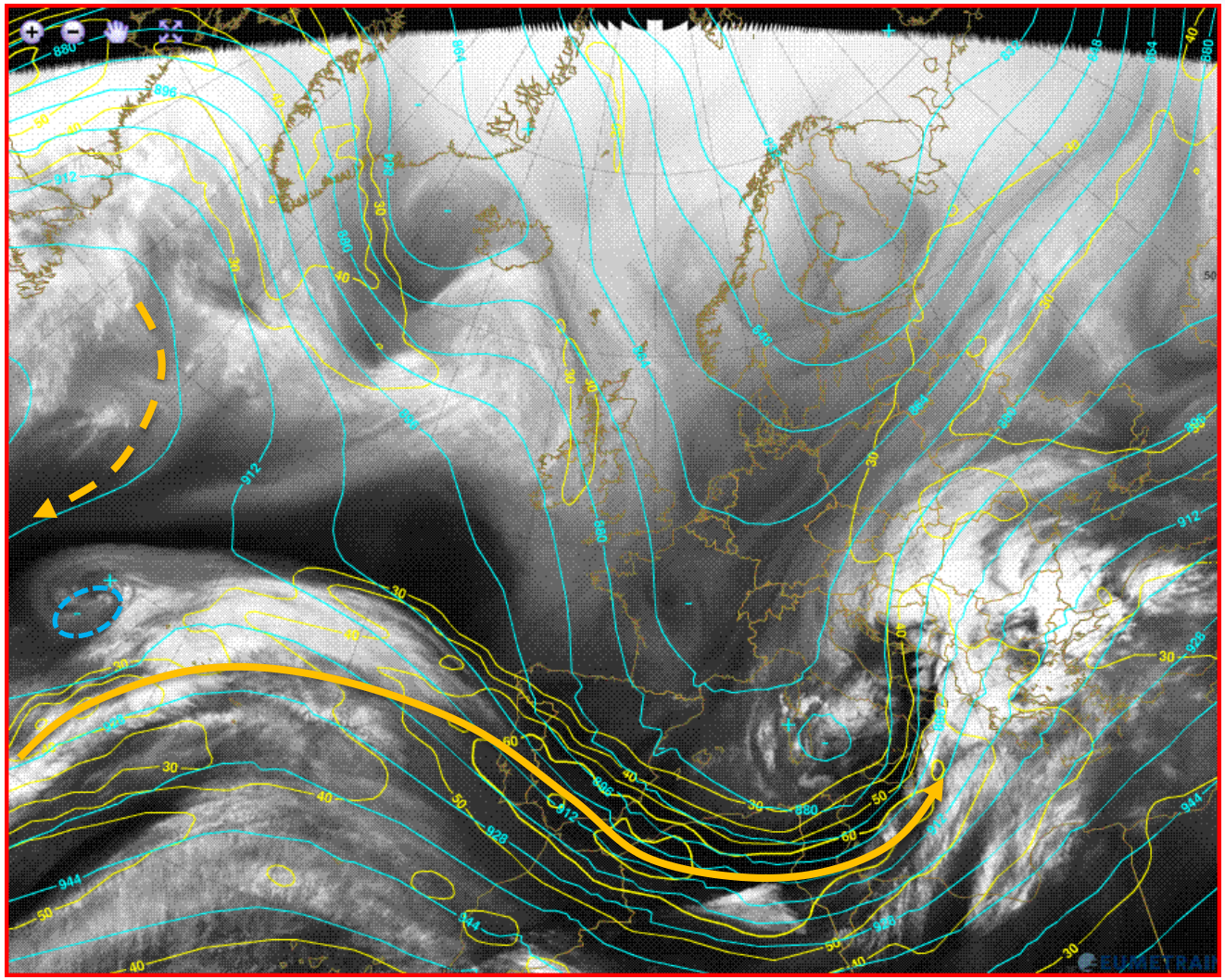


WV6.2 and 300hPa Z and isotachs

2013-03-14 00:06UTC



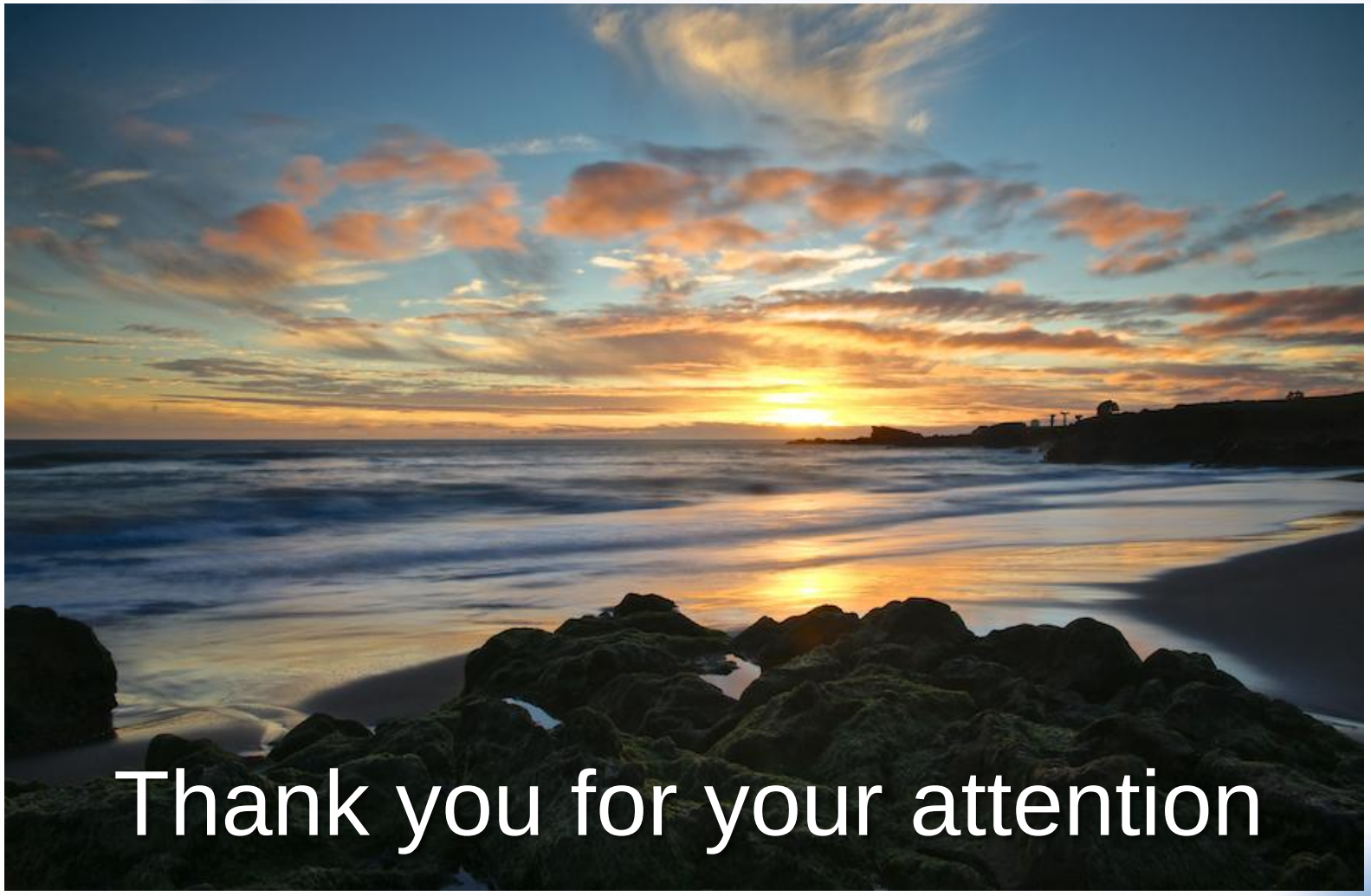
Question:

What kind of alert is more frequent in your country ?

- Rain
- Wind
- Snow/Ice
- Thunderstorms
- High Temperature
- Low temperature
- Coastal
- Other

Conclusions

- The high precipitation event was caused by the concurrence of **two ingredients:**
  - **High precipitable water** amounts advected from tropics at high levels: Atmospheric River
  - Vertical motions triggered by a **jet stream**
- According radar and satellite images, the most part of the precipitation should have occurred in the **second case** (Terceira), but surface weather stations located nearby the affected places suggested the opposite.
- However, the floods occurred in the second case, while the landslide occurred in the first case, showing that other effects **different** from this specific weather situation could also played a decisive role in the triggering the landslide.


Thank you for your attention