Analysis of DORIS data at Tristan da Cunha

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DORIS Analysis Working Group, June 14th, 2022

Introduction

SHORT HISTORY:

- 1986: TRIA = First beacon of the DORIS network

- 2002 : Alcatel to Starec antenna

End of 2000s: does not respect anymore DORIS requirements

- 2012 : survey and renovation mission:
  - Moving of antenna
  - Better monumentation,
  - All material is replaced
  - Iridium maintenance

- 2021 : B4G installation (Oct. 4th)
  But: containers installed near the antenna!
      → **impact?**

Credit: IGN

CLS
COLLECTE LOCALISATION SATELLITES
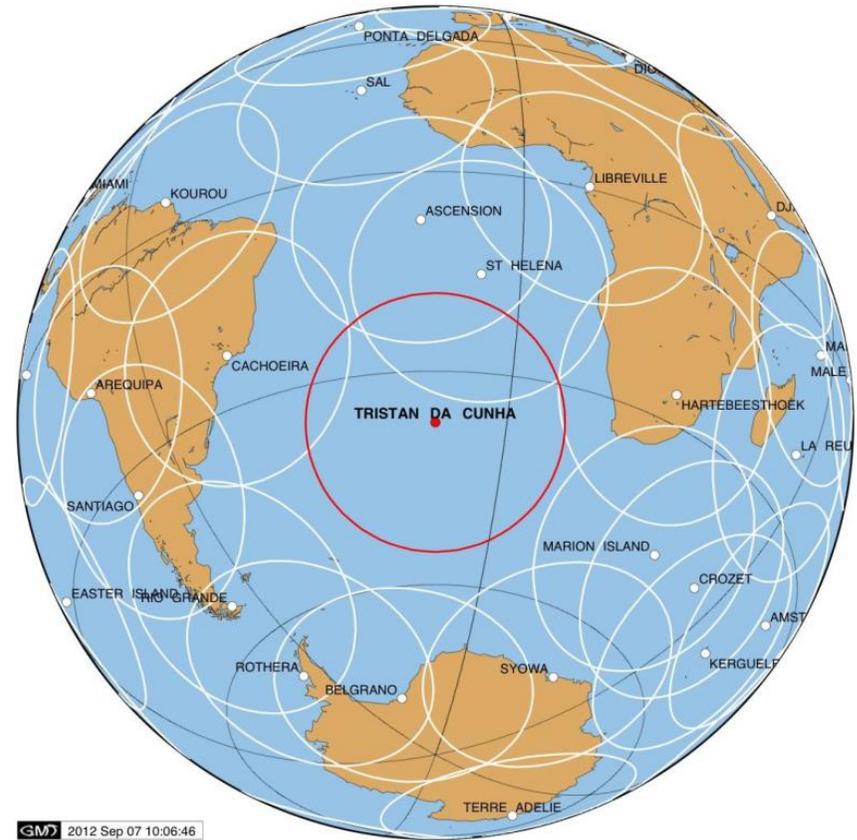
Panoramic view in 2012
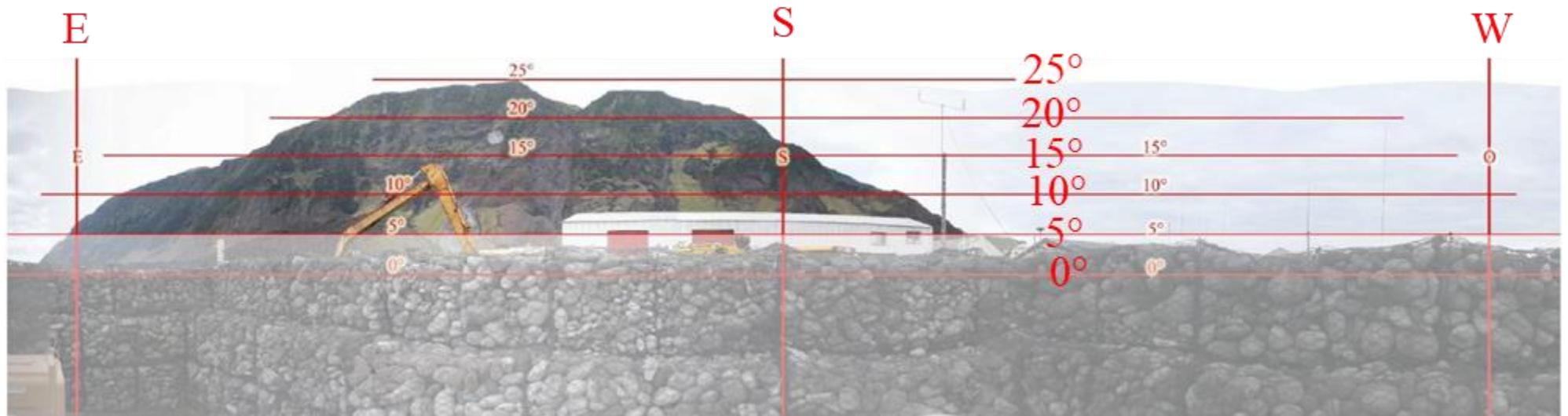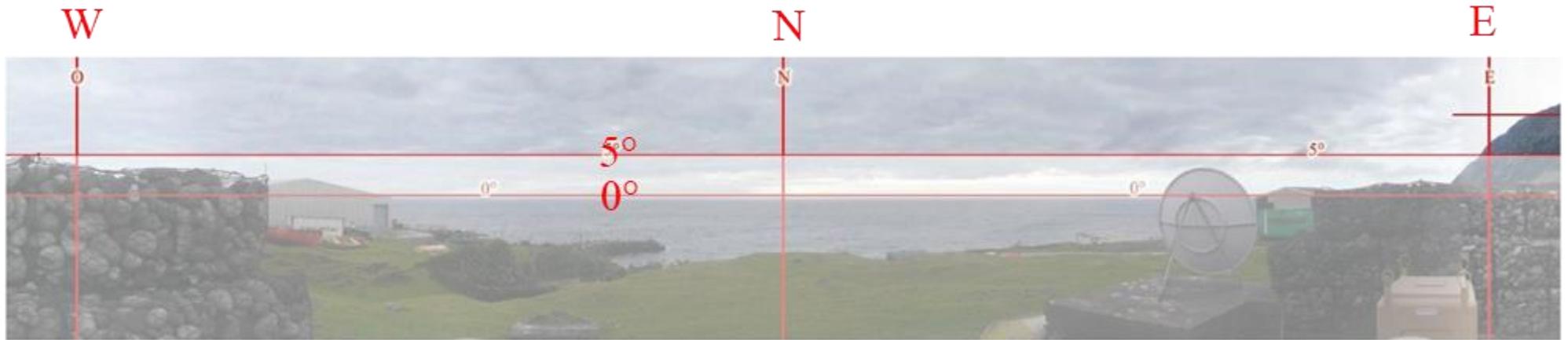
No mask above 5° (except the volcano).

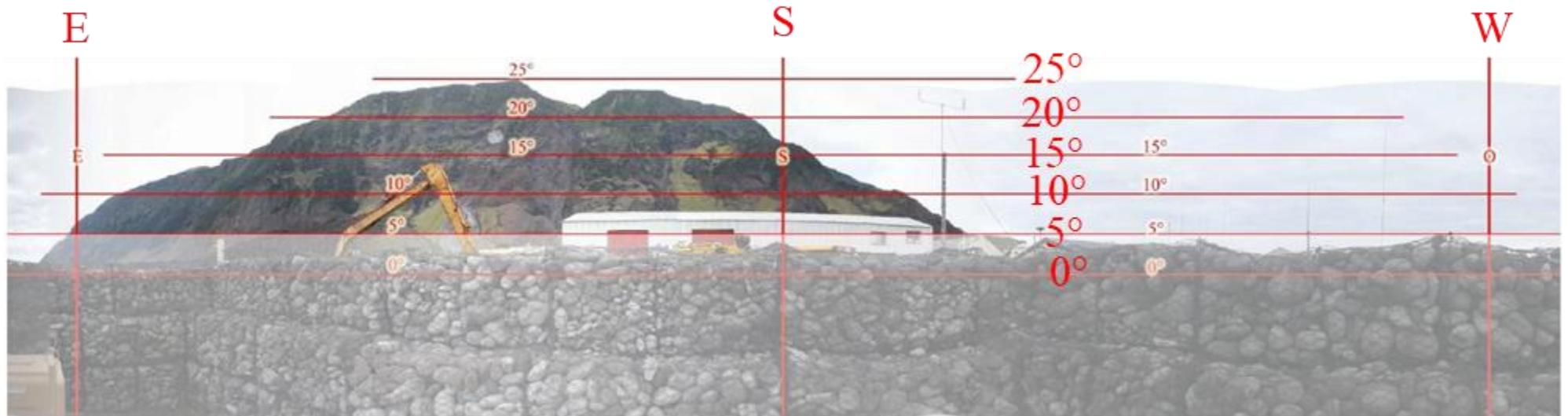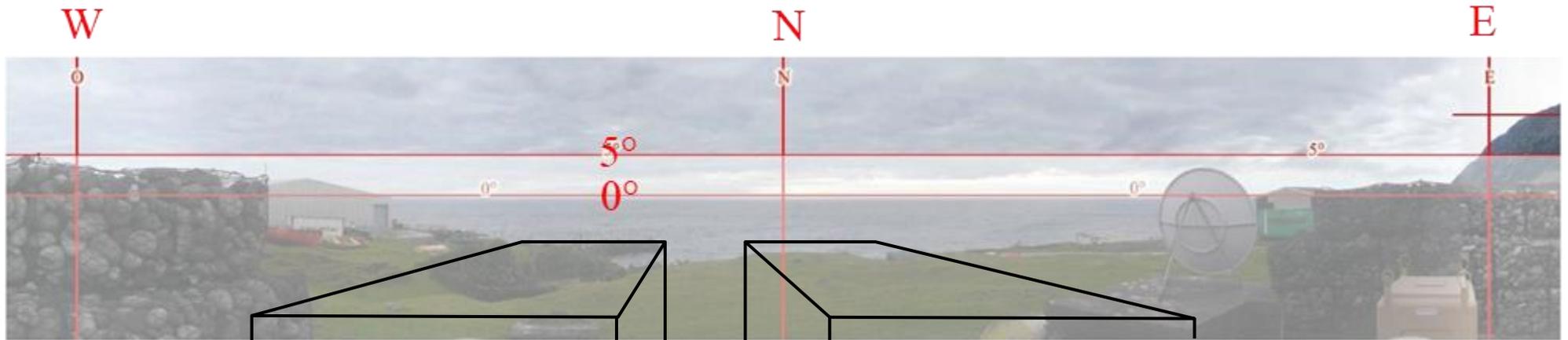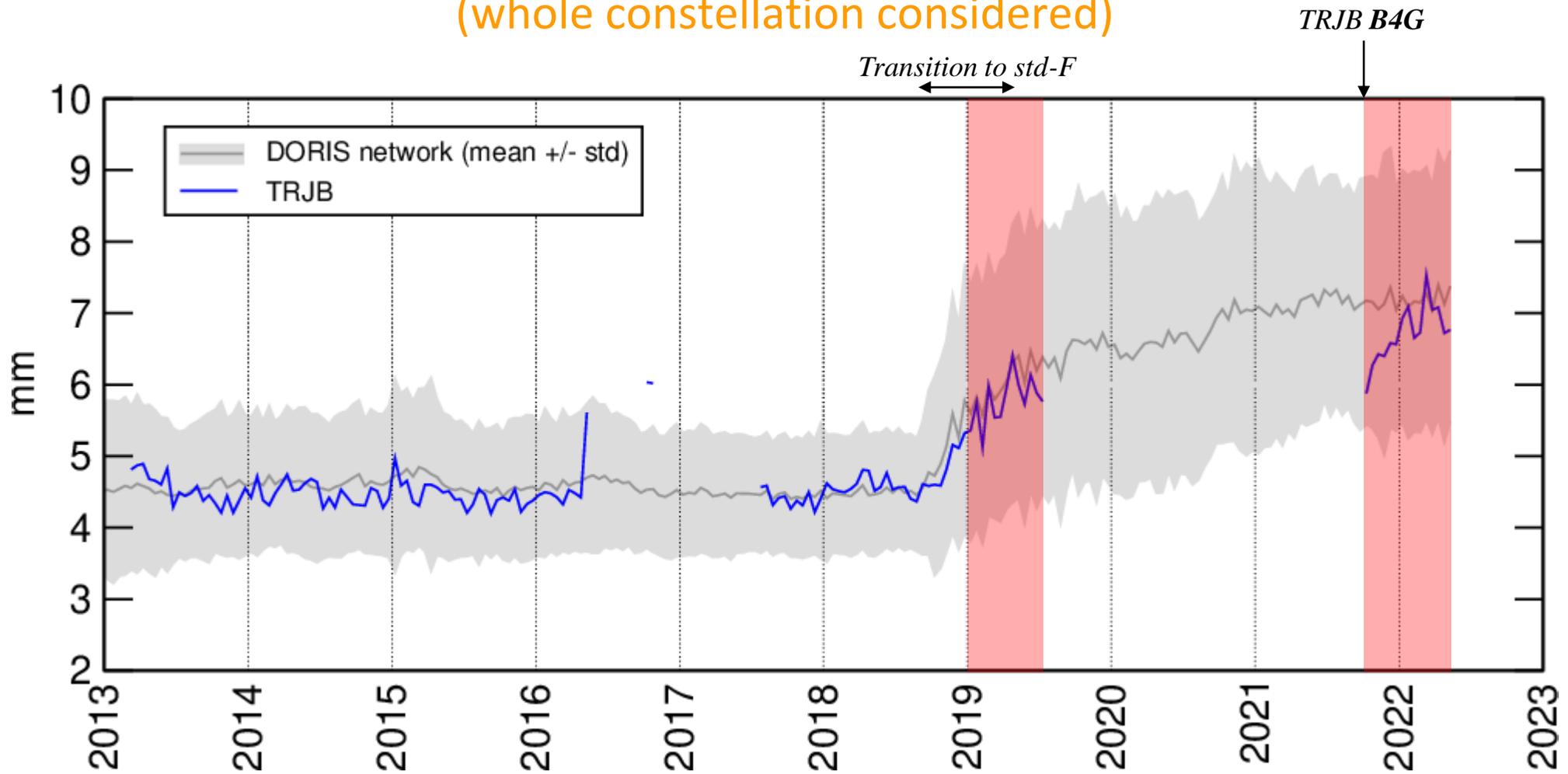# Installation of the B4G, Oct. 2021

V. Garcia, CNES

Containers had been installed in the vicinity of the antenna.
Even though their roofs are below the horizon, they might generate multipaths.

The containers on the panoramic view

Tristan vs DORIS network POE RMS
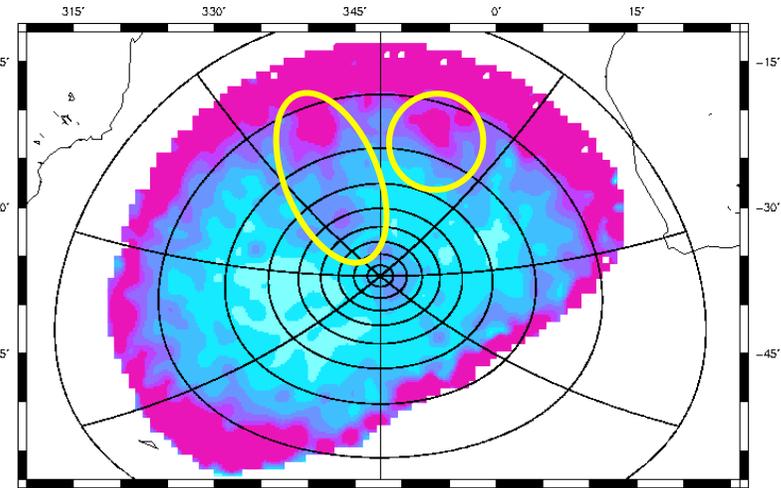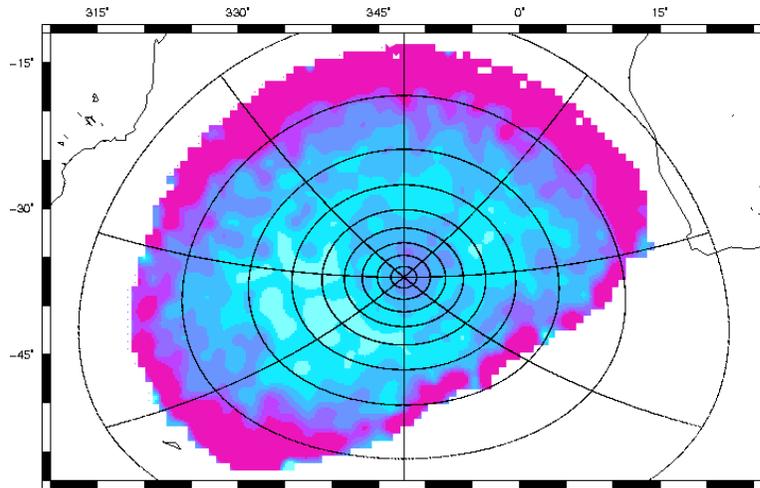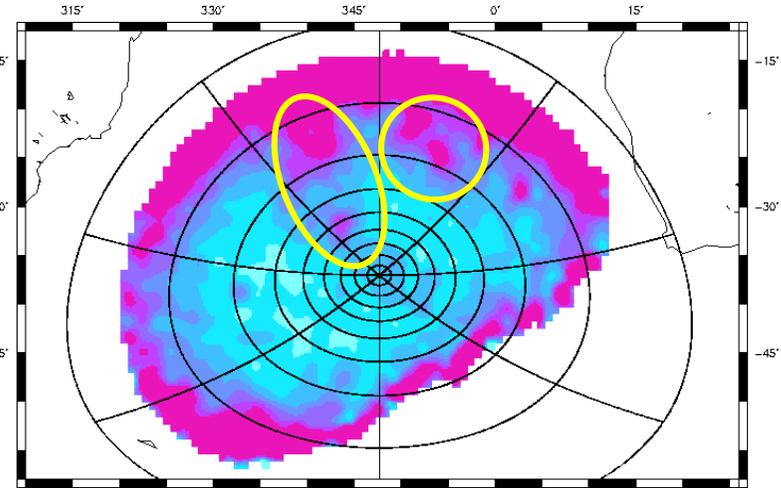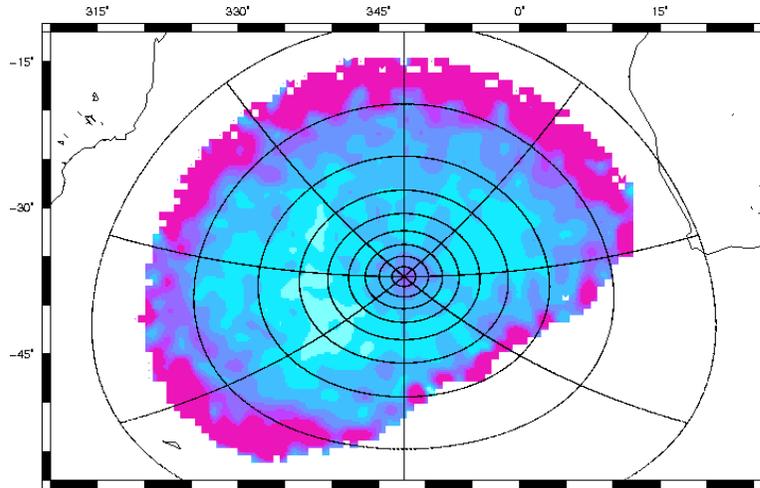## (whole constellation considered)

POE RMS maps

POE RMS maps: differences 2021/22 - 2019

SARAL

CRYOSAT-2

1.5x1.5 Difference of Doppler residual RMS (mm)
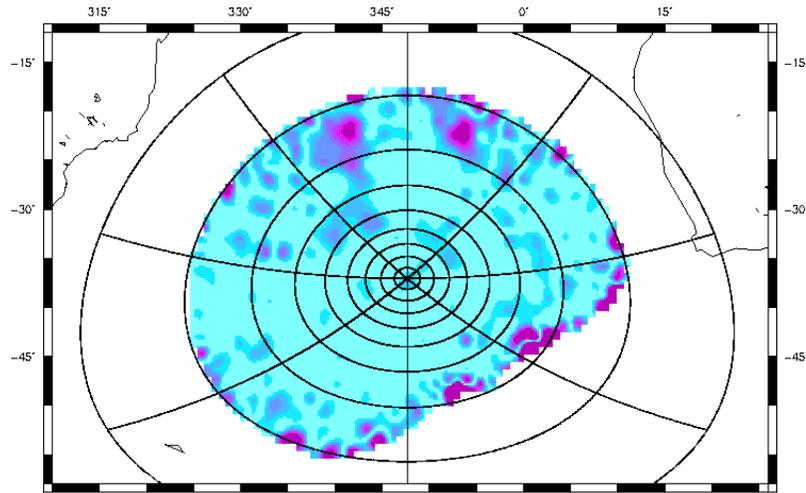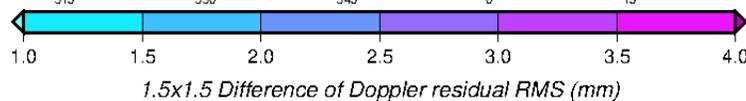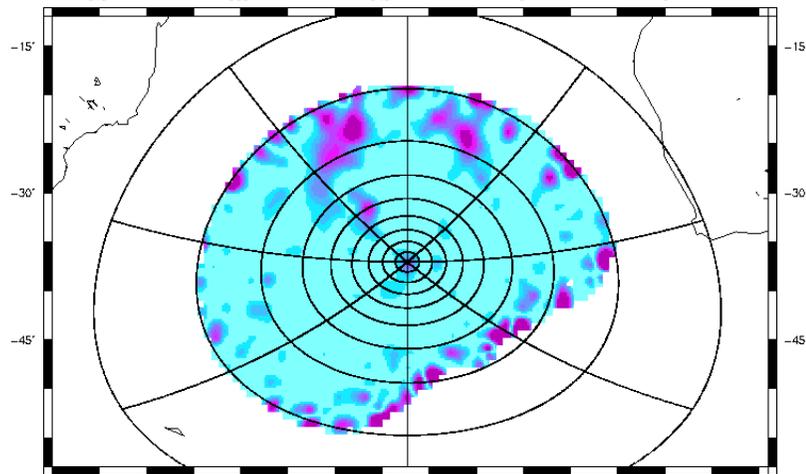
Data below 10° have been edited.

Impact of the containers: up to 4 mm, but very localized : ~3-4 % of the whole data is affected (>2 mm difference)

Conclusions

- Tristan da Cunha has good performance in terms of POE RMS (below the mean POE RMS of the whole DORIS network)

- Since the installation of the B4G, this is still the case

- Big containers have been installed in the close vicinity of the antenna between mid-2019 and end 2021, causing multipaths:
  - ➢ Raise of the POE residuals RMS up to 4 mm
  - ➢ Very localized impact