

The ROHP-PAZ Polarimetric Radio Occultation research dataset and its applications

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- Status of the mission and the data processing
- Standard products
- Coincidences database

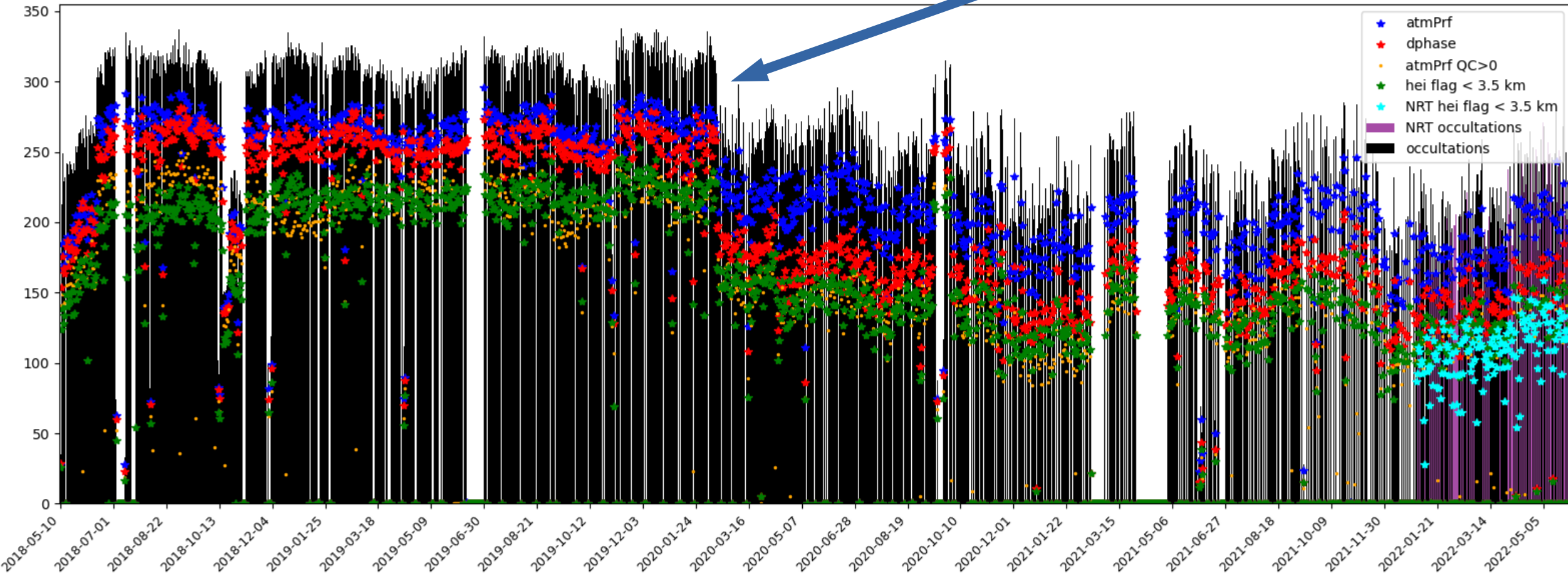
Status of the mission and data processing



Status of ROHP-PAZ

Data acquisition and analysis after 4+ years on orbit

Flex power GPS (igor+ issue)



New features in the dataset

New features included in the new reprocessing

- Better identification of the remaining cycle slips
 - Improvement of the warning flags
- } More interesting profiles allowed to go through the processing chain
- Generation of the “collocated” files, with information from:
 - Geostationary IR brightness temperature (NCEP/CPC 11.8 μ m)
 - GPM - IMERG surface precipitation
 - Passive microwave radiances from the satellites in the GPM constellation
 - Tropical Cyclones, Mesoscale Convective Systems, ...
 - Processing of the near real time data provided by UCAR (cdaac)

New features in the dataset

New features included in the new reprocessing

Polarimetric RO data available from ICE-CSIC:

<https://paz.ice.csic.es/>

and from

Jpl genesis: **<https://genesis.jpl.nasa.gov/>**

Release of the new version expected before end of the year

Standard RO products



Data processing strategies

PAZ data processing at **UCAR** (data used at ICE-CSIC/IEEC):

- H and V are combined to obtain a single output (bending, refractivity, etc.)
- Separate I,Q values for H and V, and then combined via vector sum of I and Q (D. Hunt presentation at the 7th IROWG in 2019, Elsinore, Denmark)
- Proceed as in standard processing

PAZ data processing at **JPL** (their own pol-data processing available at genesis):

- H and V are processed independently
- Two different sets of outputs for H and V (ba_H , ba_V , N_H , N_V , etc.)

Evaluation of standard products

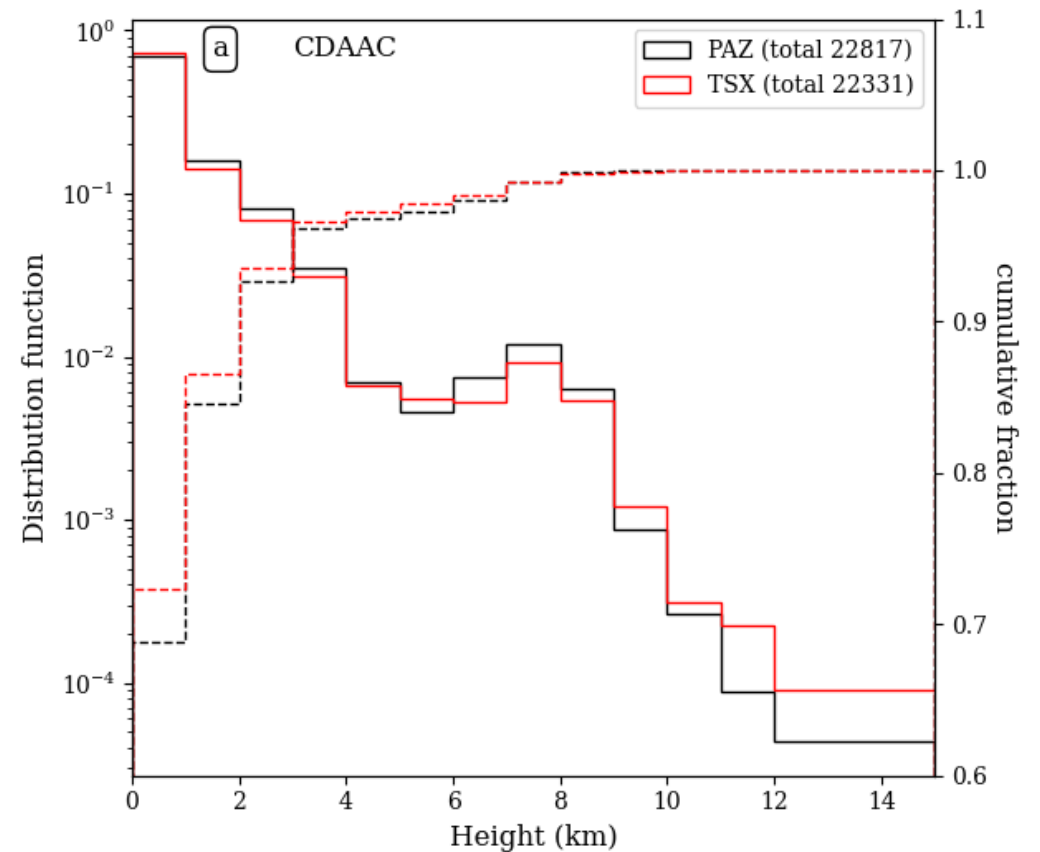
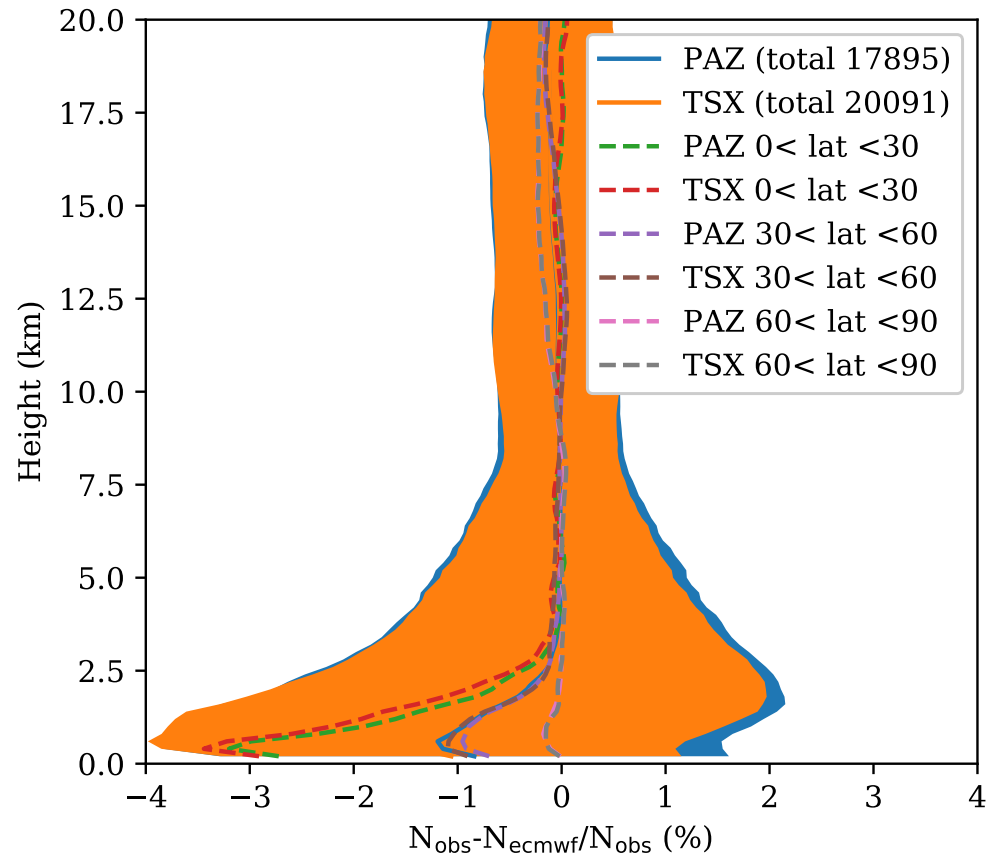
Data processing strategies

Overall, the two processing strategies result in similar statistics when compared with analyses. The main difference is that the combined products yield larger amount of data counts that pass QC.

Evaluation of standard products

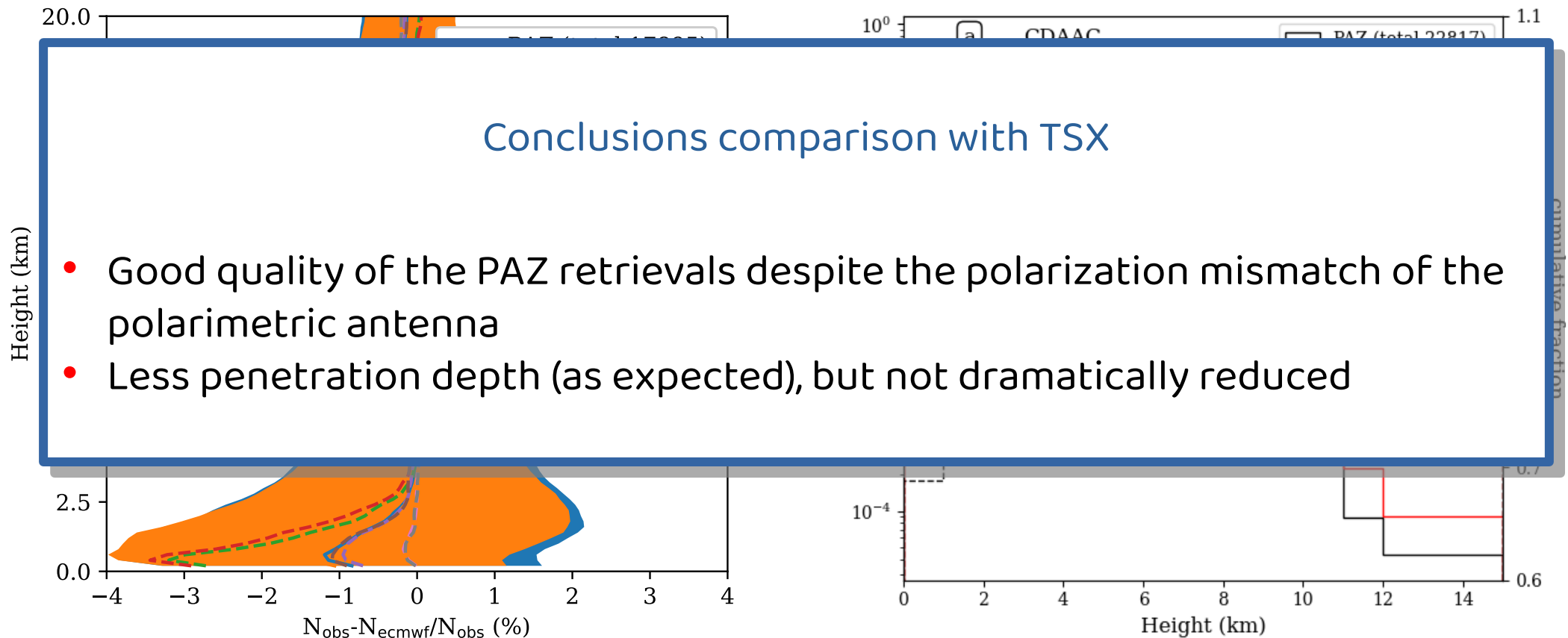
Which is the impact of using the dual-pol antenna wrt to the RHCP one?

Comparison with TerraSar-X (2020.001 to 2020.150 from CDAAC)



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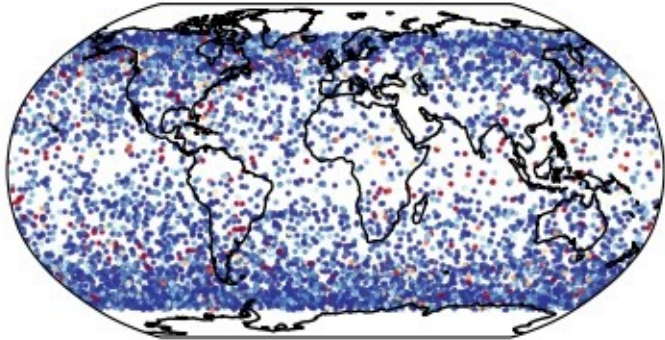
Coincidences with precipitation information



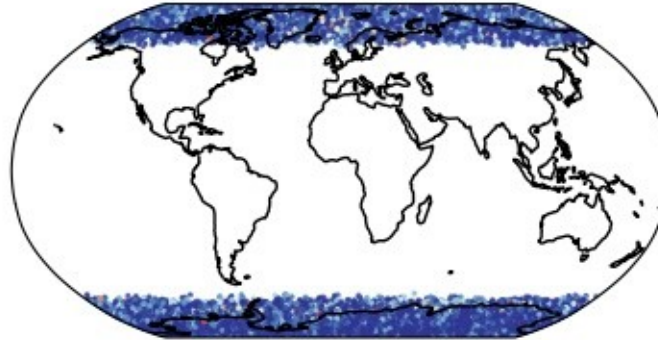
Collocations with satellites

Satellites in the GPM constellation are routinely collocated with PAZ

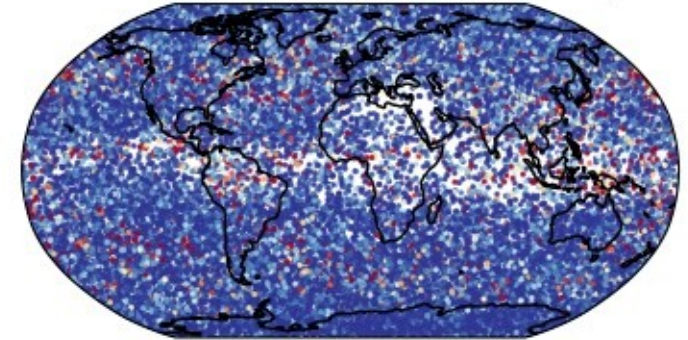
GPM-GMI:GPM.GMI (#7981)



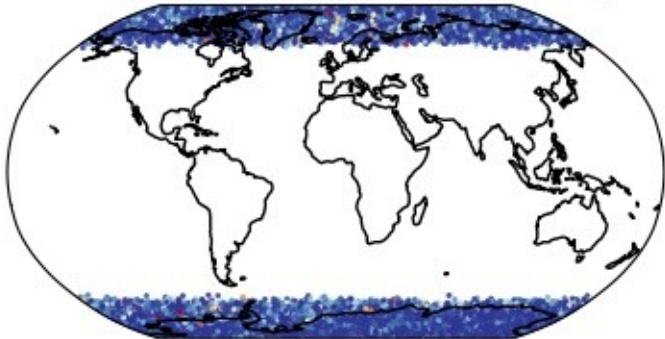
NPP:NPP.ATMS (#14245)



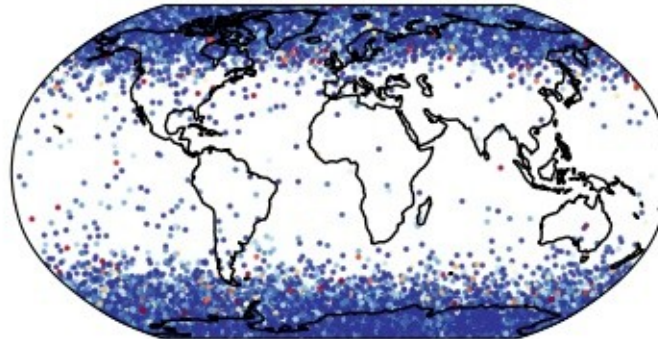
NOAA-19:NOAA19.MHS (#44282)



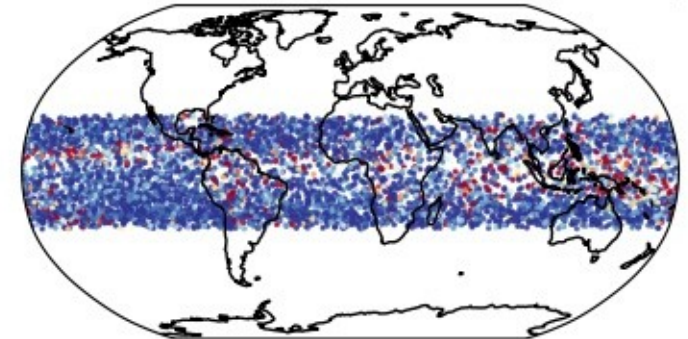
NOAA-20:NOAA20.ATMS (#14190)



METOP:METOP.MHS (#39630)

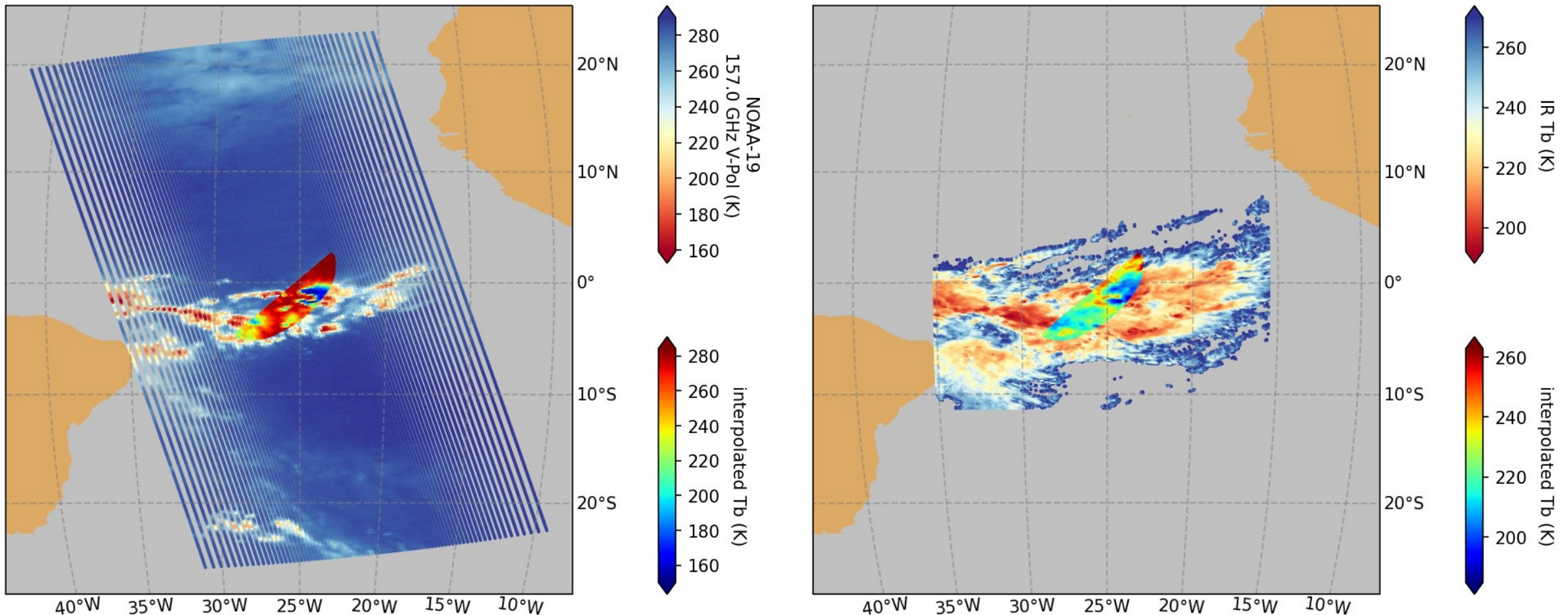


MEGHA-TROPIQUES:MT1.SAPHIR (#6209)



Collocations with satellites

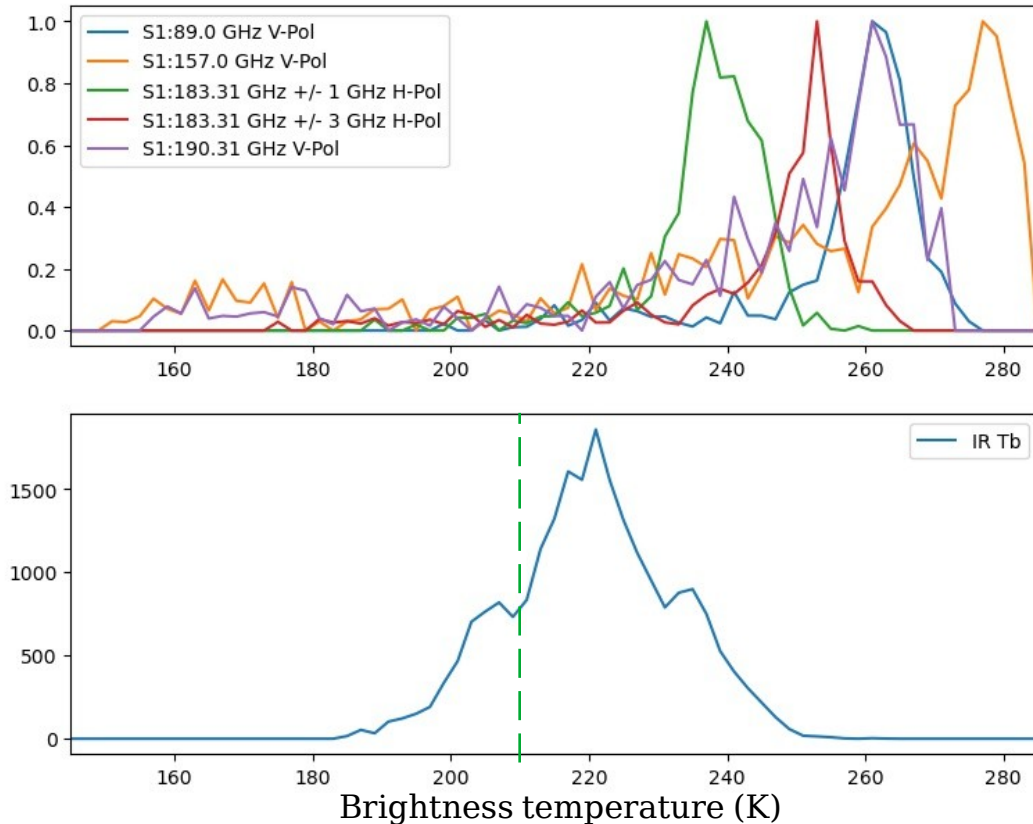
Brightness temperatures interpolated into RO rays



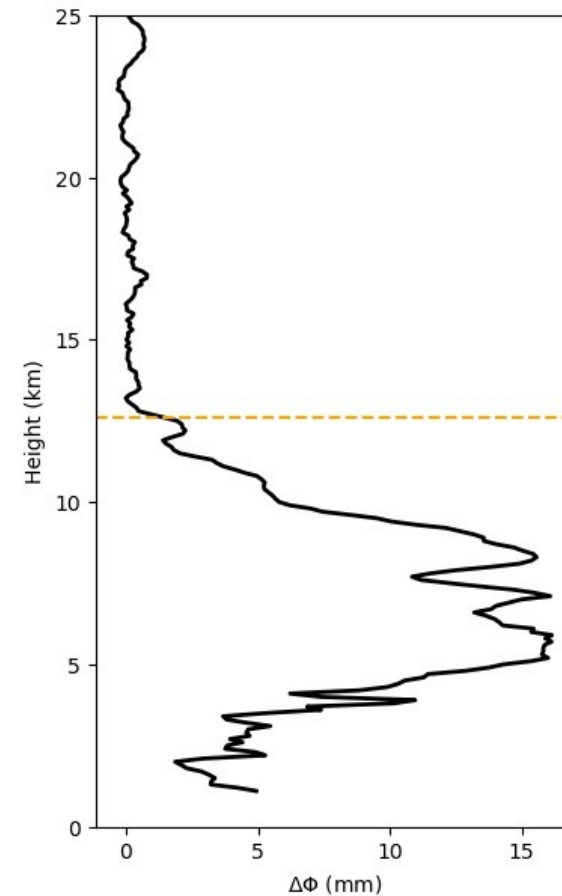
Collocations with satellites

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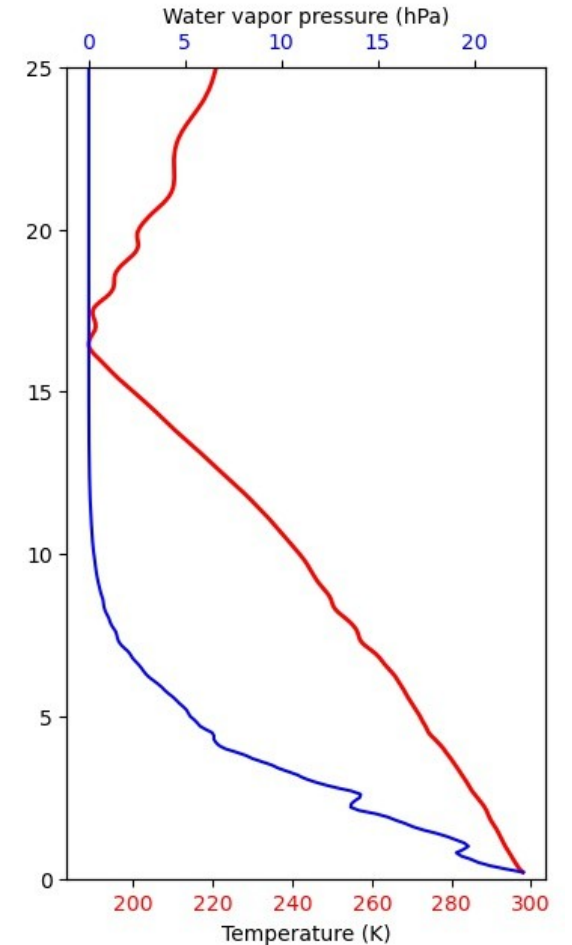
Histograms of the interpolated Tb where rays' heights is below 18 km



PAZ observation



PAZ standard prod.

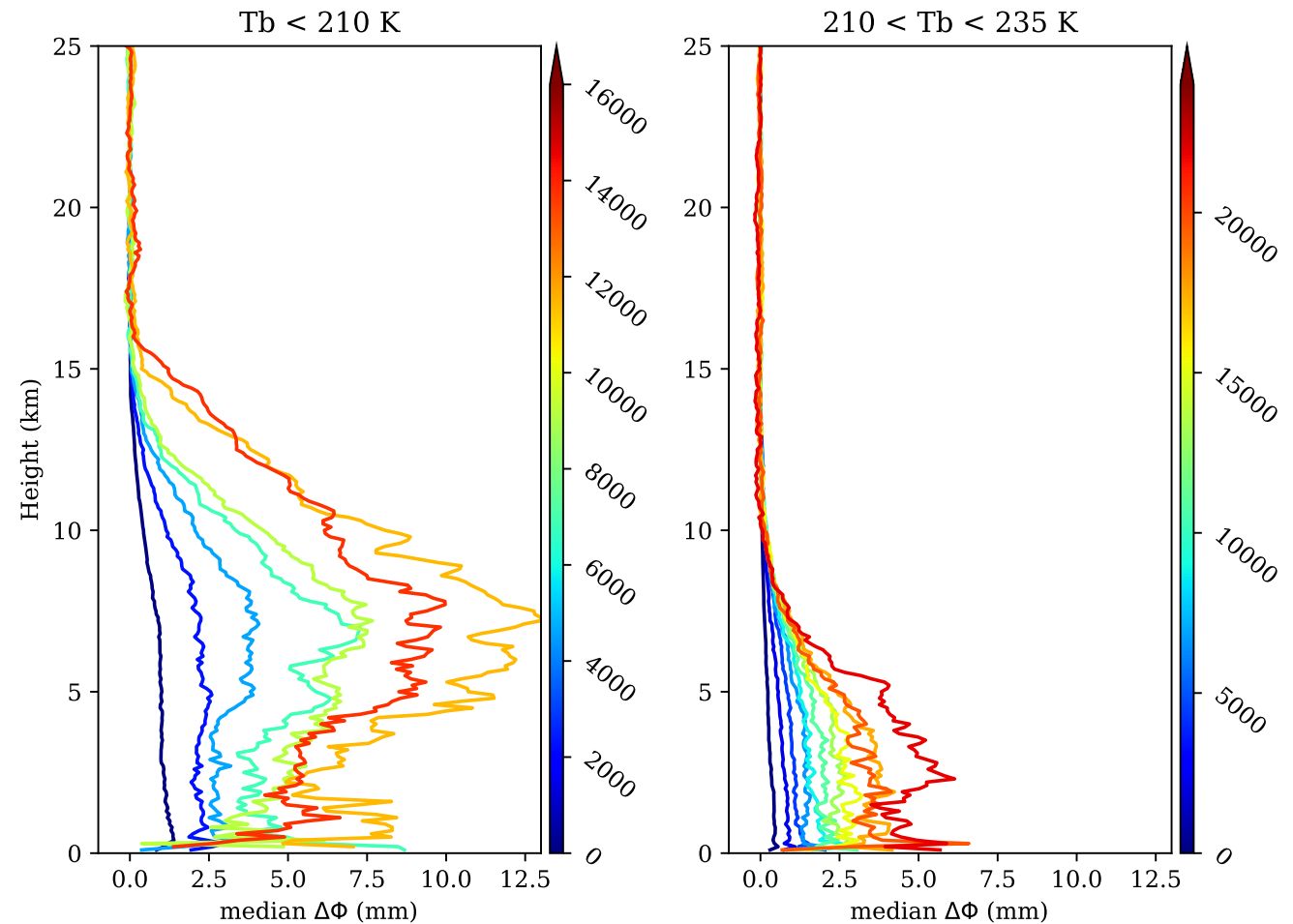


Collocations with satellites

Infrared brightness temperatures: proxy for deep convection

Grouping by IR Tb histograms

- Left - Cases where # histogram points (irTb < 210K) increases
- Right - Cases where # histogram points (irTb < 210K) is small and increasing # histogram points (210K < irTb < 235K)
- Observations within deep convective regions exhibit the largest and highest $\Delta\phi$ profiles.



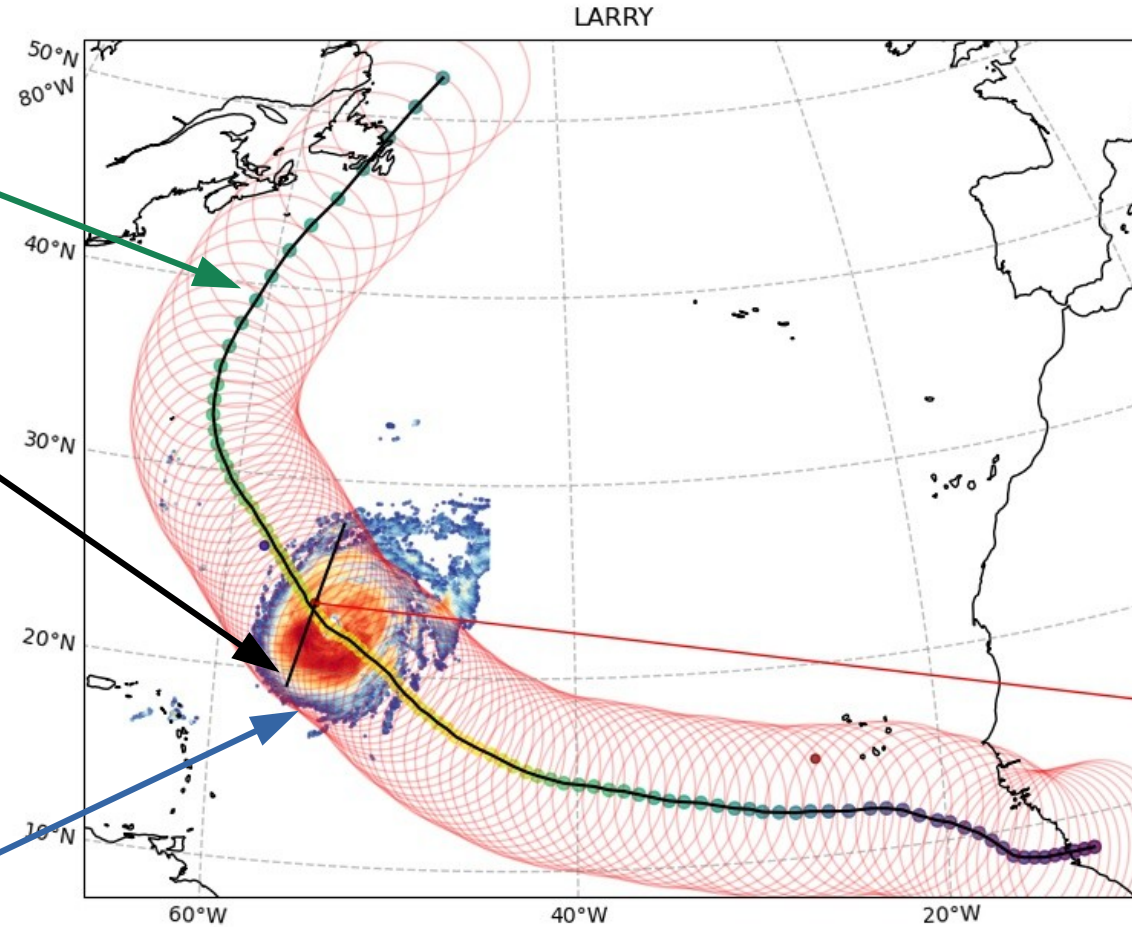
Collocations with Tropical Cyclones

PAZ observations are routinely checked against TC databases

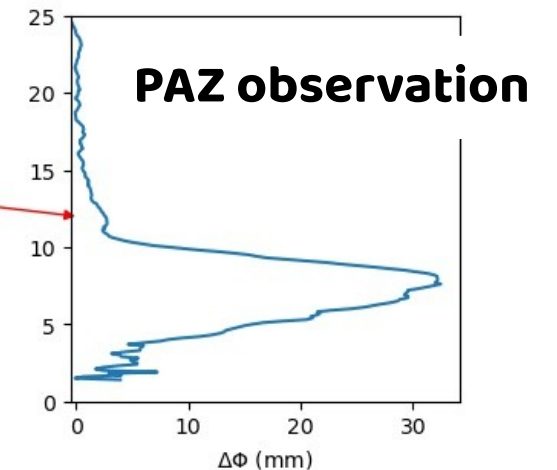
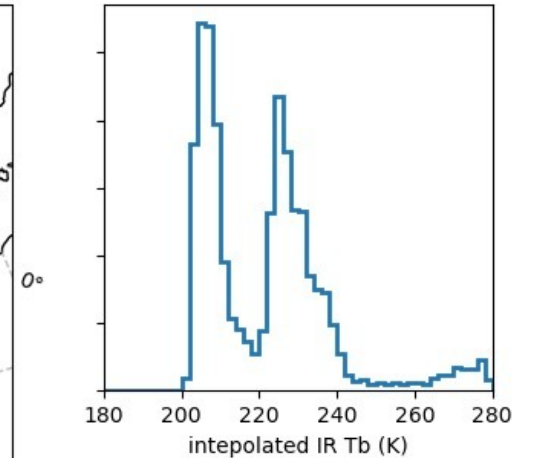
Track of hurricane Larry
(IBTrACS)

Pol RO ray

IR Tb image at the time of obs.



Interpolated Tb



Thank you

paz.ice.csic.es

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