Processing DORIS data in a multi-satellite mode: Time scale issues

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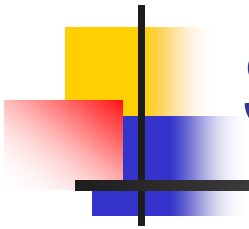
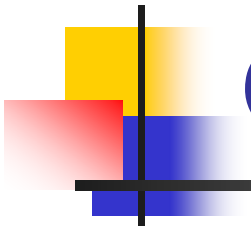


Summary

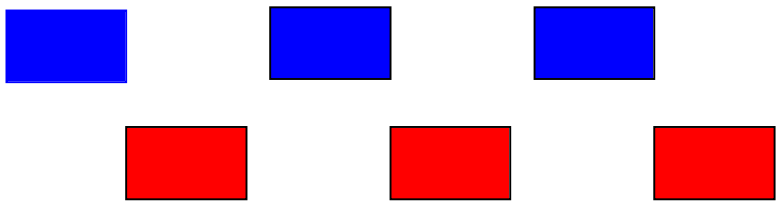
- Why should we care ?
- Description of the method
- Results
  - T/P, JASON orbits
  - Stations positions
  - EOP
- (preliminary) conclusions



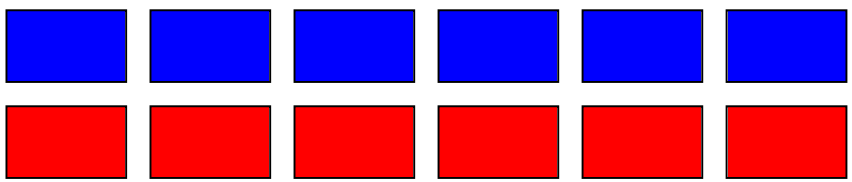
Objectives

- Process simultaneously TOPEX and JASON orbits (at the data level)
- Tandem phase (several common stations in visibility)

Estimating biases per pass (4) or clock drifts (3)?



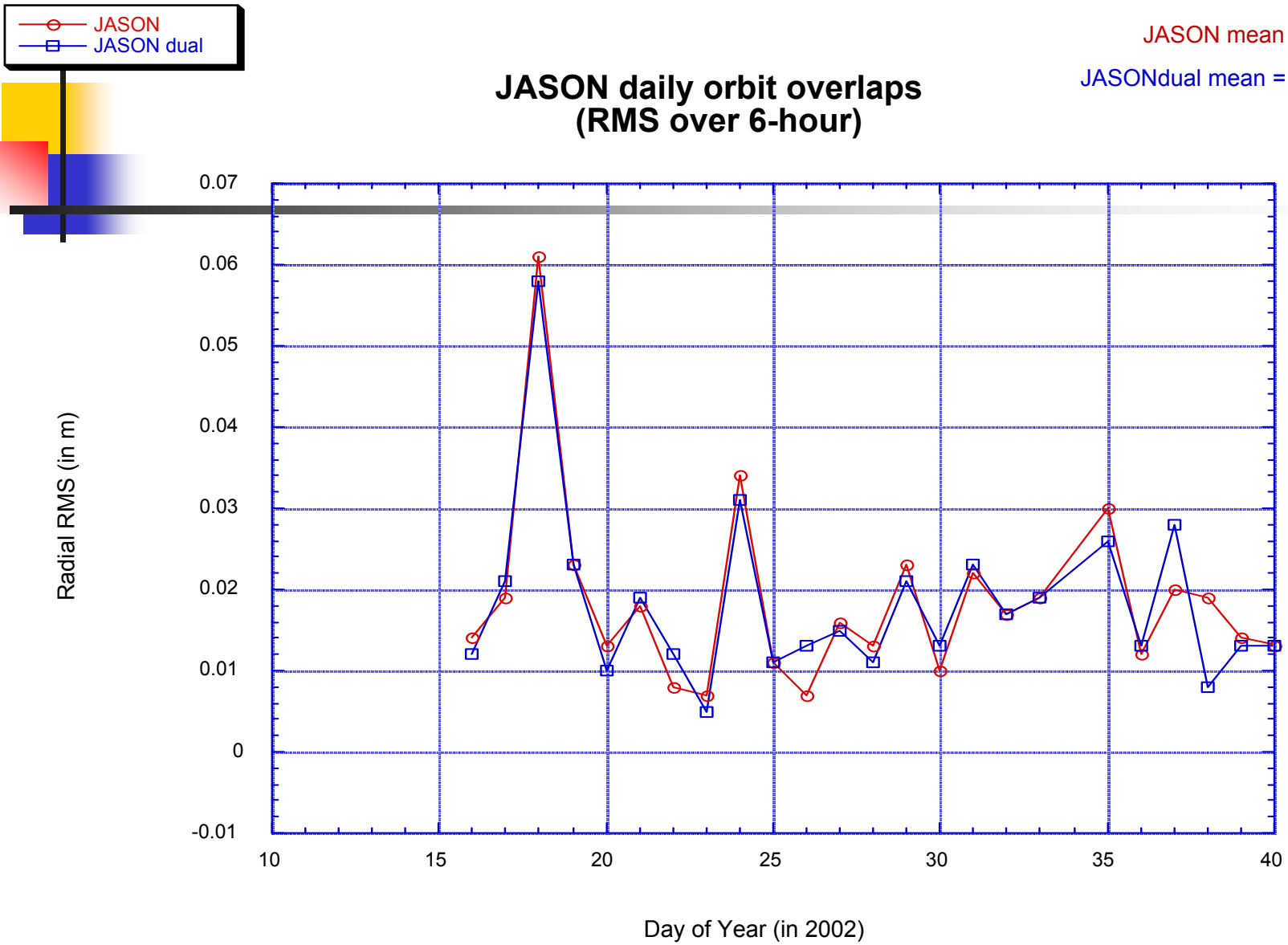
	Biases	Clock reset
TOPEX 1-channel	TA TB	A B

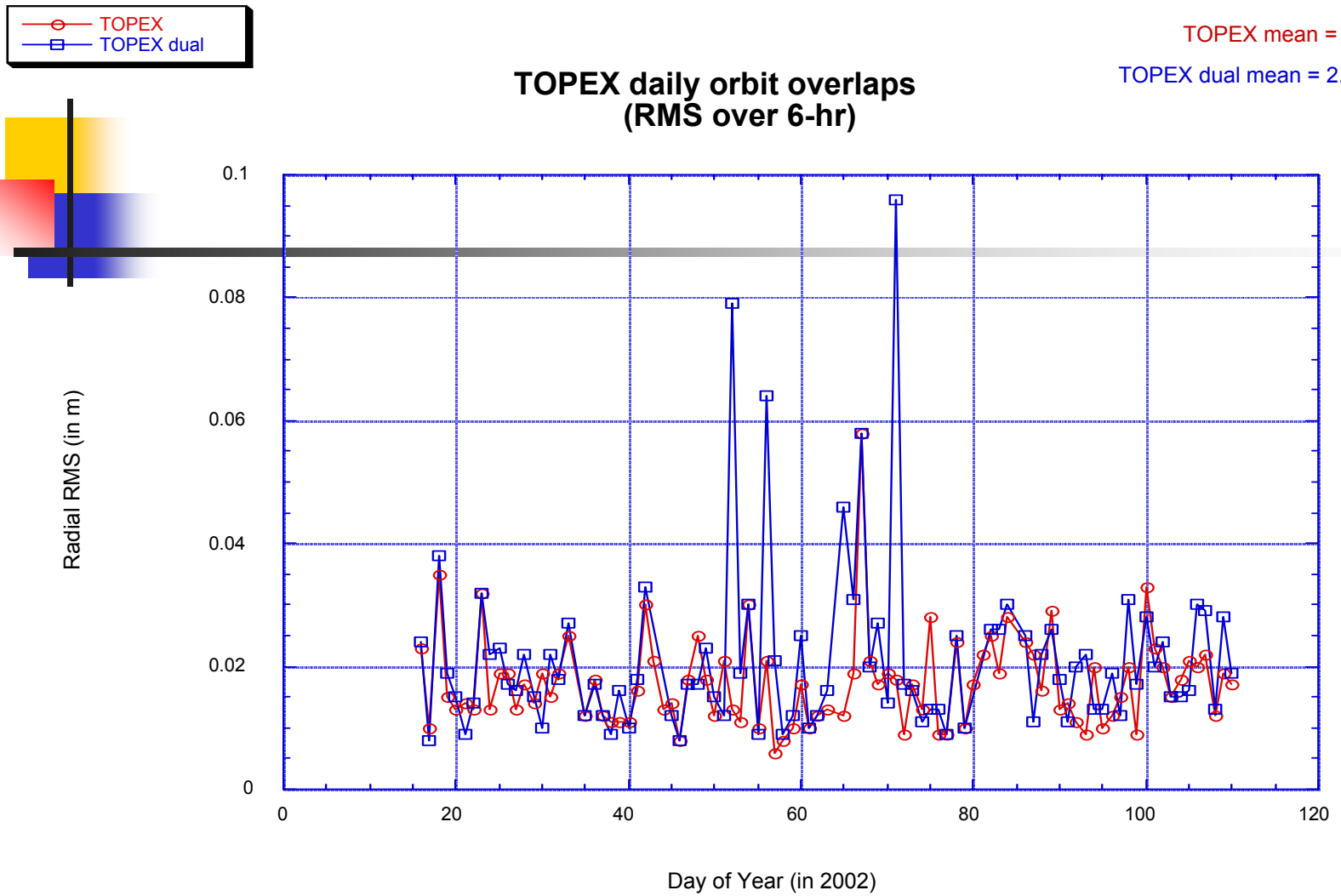


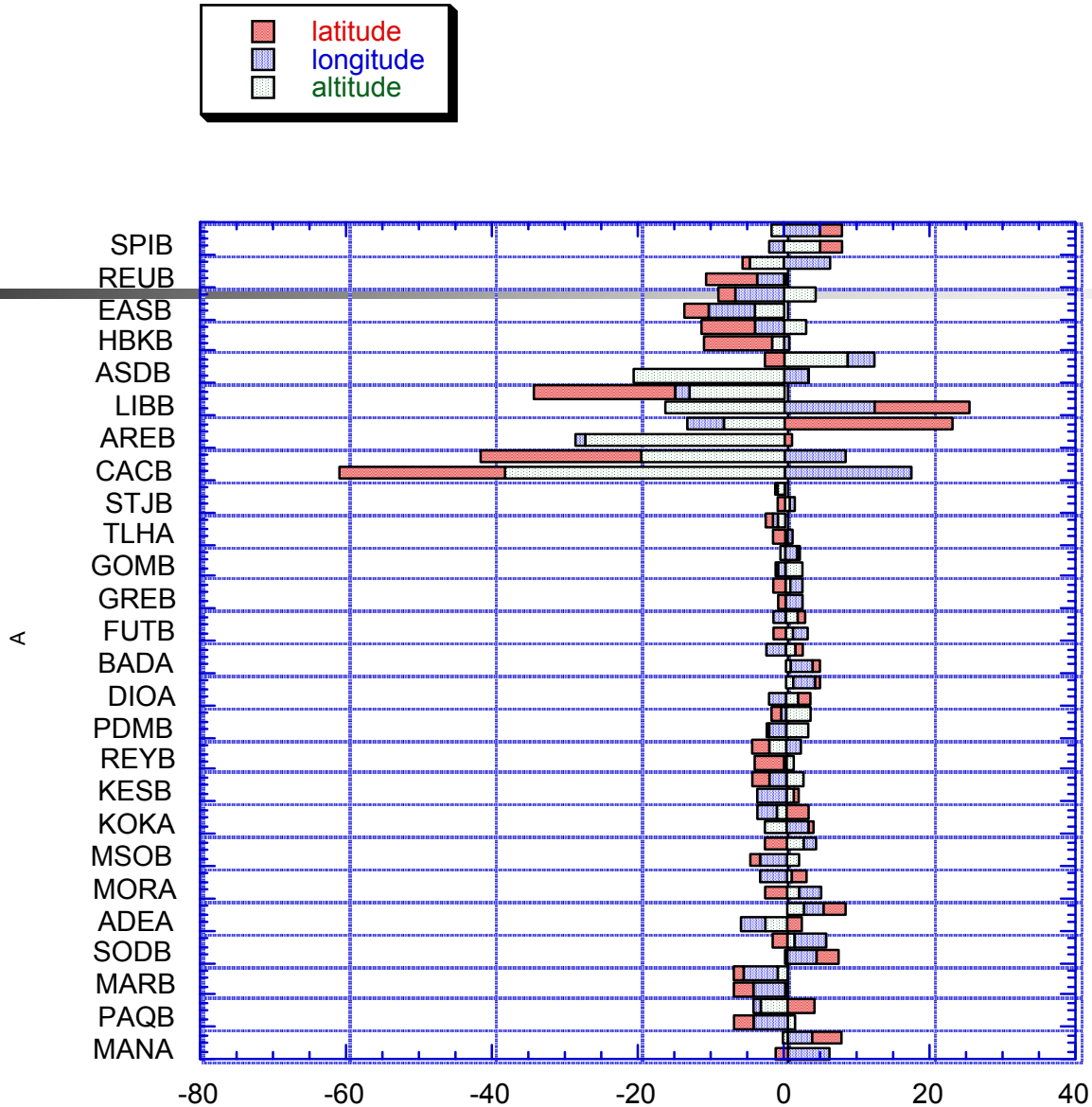
JASON 2 channel	JA JB	J -

Common parameters

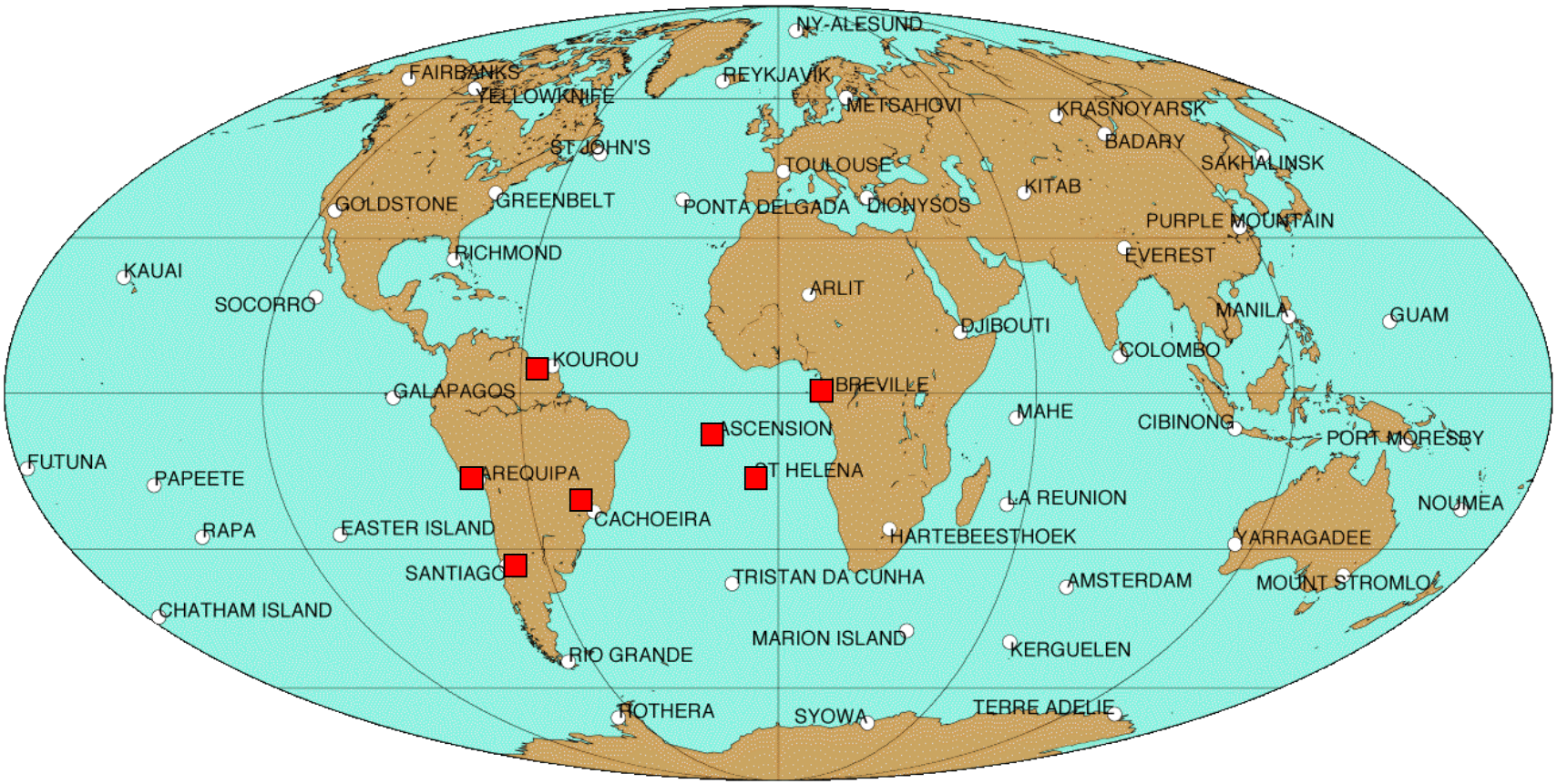
- Stations coordinates
  - fixed or constrained
- EOP
  - fixed or constrained
- Satellites and stations clocks
  - Or bias per pass
- Tropospheric corrections
  - fixed or estimated
- Drag, empirical parameters?


JASON
JASON dual
JASON mean = 1.88 cm
JASONdual mean = 2.06 cm
JASON daily orbit overlaps
(RMS over 6-hour)
Radial RMS (in m)
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-0.01
10
15
20
25
30
35
40
Day of Year (in 2002)


TOPEX
TOPEX dual
TOPEX daily orbit overlaps
(RMS over 6-hr)
TOPEX mean = 1.74 cm
TOPEX dual mean = 2.13 cm
Radial RMS (in m)
0.1
0.08
0.06
0.04
0.02
0
0
20
40
60
80
100
120
Day of Year (in 2002)



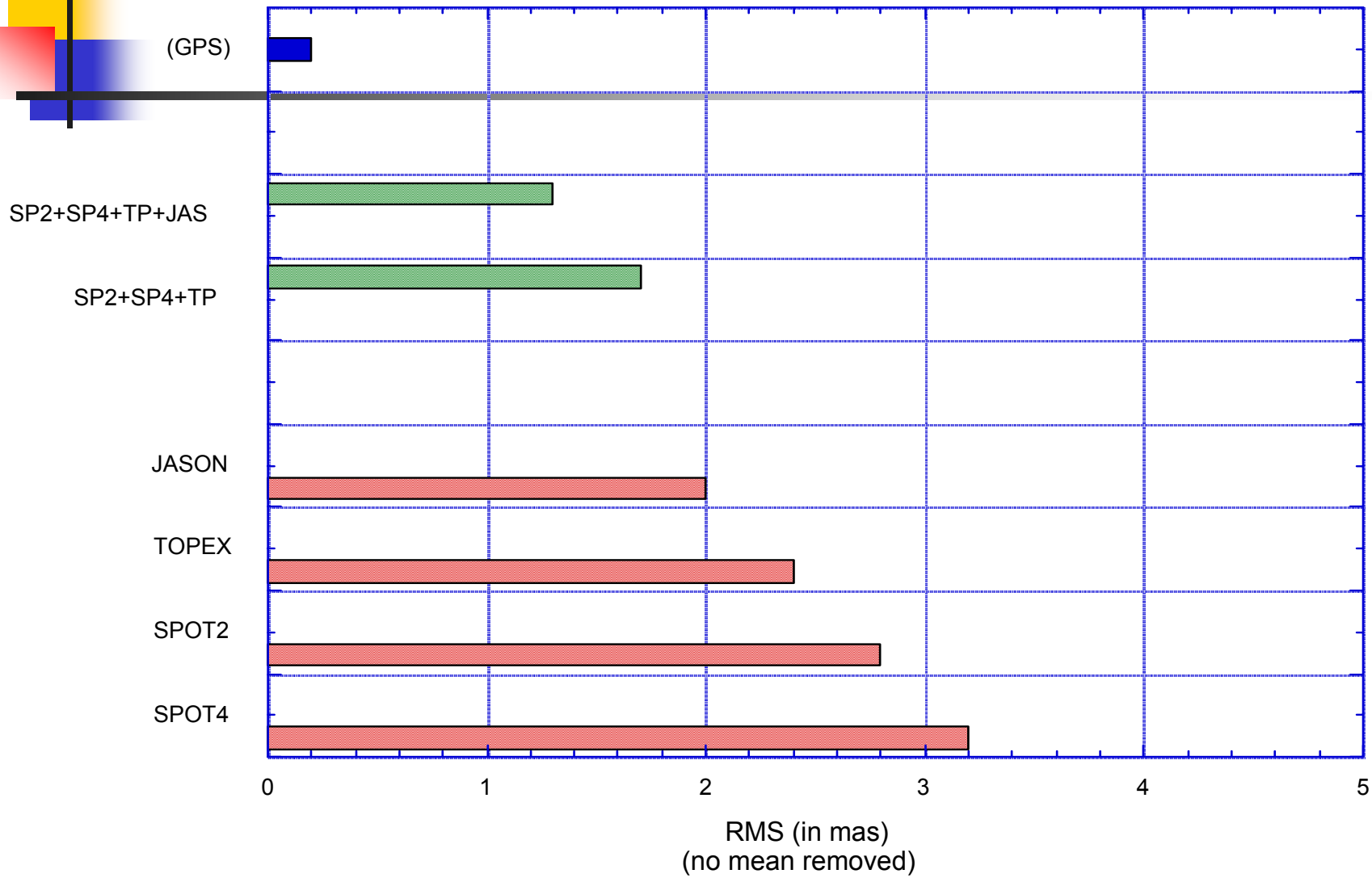
Biases in JASON ground station positioning ?



Ground stations locations

Significant difference detected between TOPEX-derived and JASON-derived position

Current EOP DORIS determination with Gipsy/Oasis
Direct comparison with IGS/GPS series
Polar Motion Y-component



Conclusions

- Demonstration of the method using actual JASON/TOPEX data
- Helped finalized new format and preprocessing strategy at CNES
- Slight improvement in orbit determination (but not a robust method)
- Possible bias seen in SAA region for JASON
- Better results for stations positions and EOP determination
- Need to be confirmed when more SPOT2&4 data are available (+ ENVISAT +SPOT5)