

The Impact of Auxiliary SST on SSS

Joel Scott

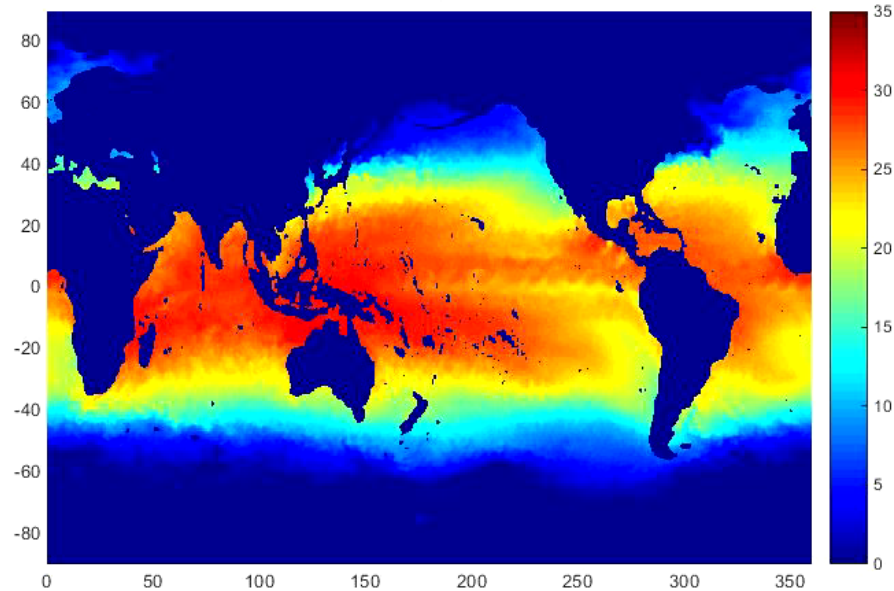
31 Mar 2015

Auxiliary SST as it relates to SSS retrievals

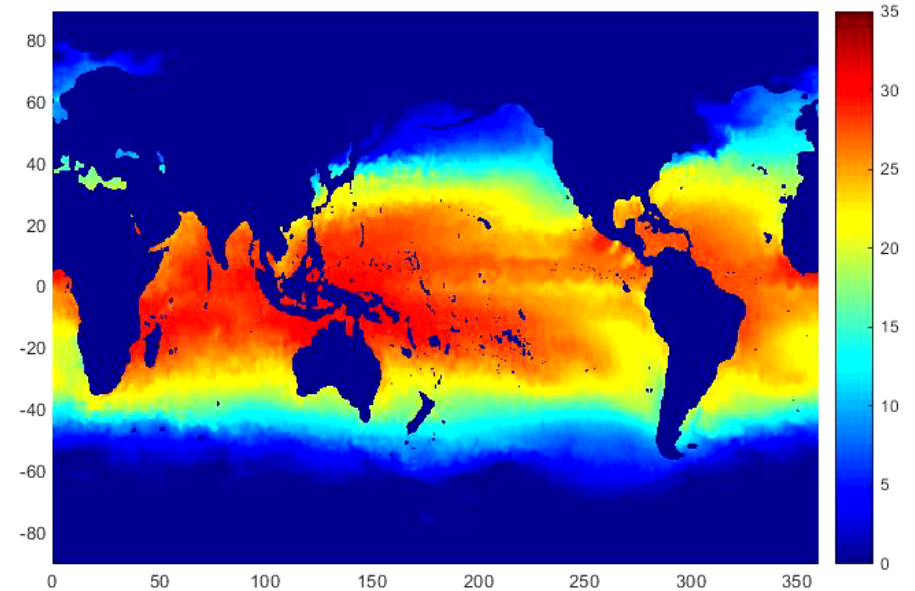
- Does uncertainty from the auxiliary SST lead to systematic errors in the Aquarius SSS retrieval?
- SST products:
 - Reynolds Daily OISST AVHRR-only
 - NOAA Optimum Interpolation 1/4 Degree Daily Sea Surface Temperature Analysis, Version 2, Final Product.
 - Reynolds et al, J Climate, 2007, 5473-5496; Banzon and Reynolds, J Climate, 2013, 2557-2562
 - RSS WindSat V7.0.1 SST retrieval
 - Daily 11-day running average at ½-degree resolution (to fill in gaps)
 - Canadian Meteorological Center (CMC) SST product
 - Global GHRSSST L4 data product via PO.DAAC
 - Inputs: AVHRR, ERS, Envisat, TMI, AMSRE, WindSat, in situ (ICOADS)
 - Interpolated on a global 0.2-degree grid
 - UKMet OSTIA (Operational Sea Surface Temperature and Sea Ice Analysis)
 - Global GHRSSST L4 data product via PO.DAAC
 - Inputs: AVHRR, SEVIRI, GOES, IASI, TMI, in situ
 - Optimal interpolation, on a global 0.054-degree grid
 - Only available since 2013.115

WindSat daily, 11-day running average SST (Half-degree resolution)

WindSat SST, daily 0.5-deg, 11day running avg, ASC
2012.001

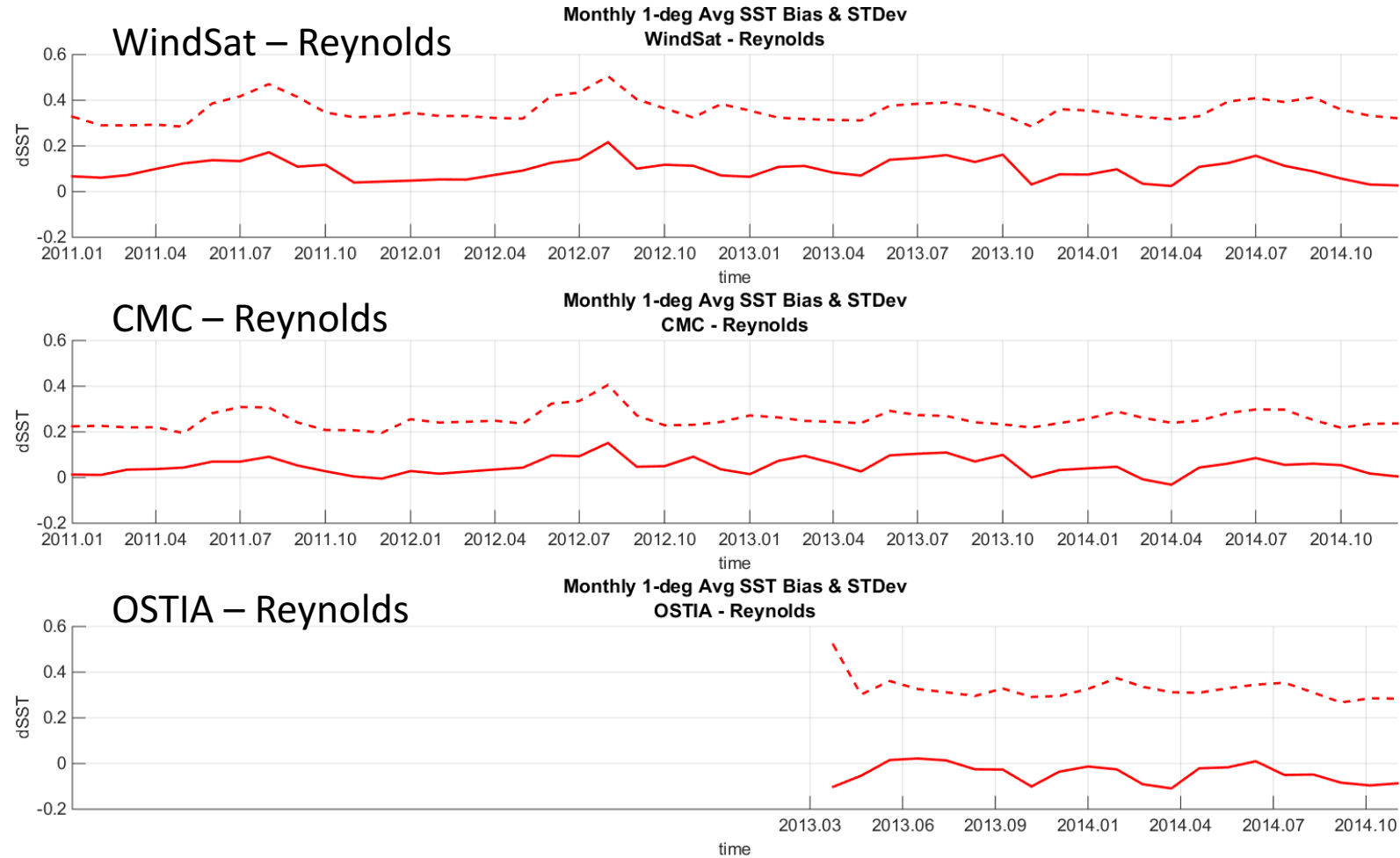


WindSat SST, daily 0.5-deg, 11day running avg, DSC
2012.001

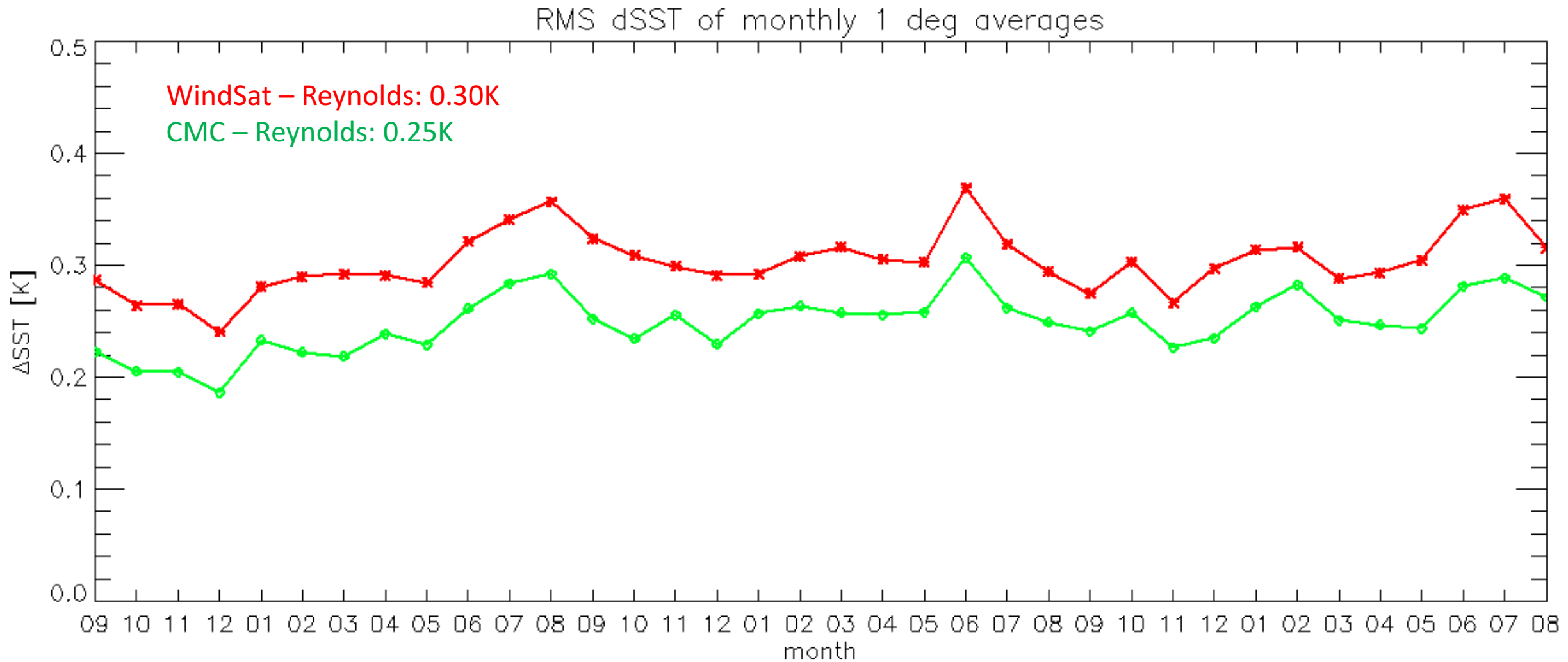


Bias & STDev

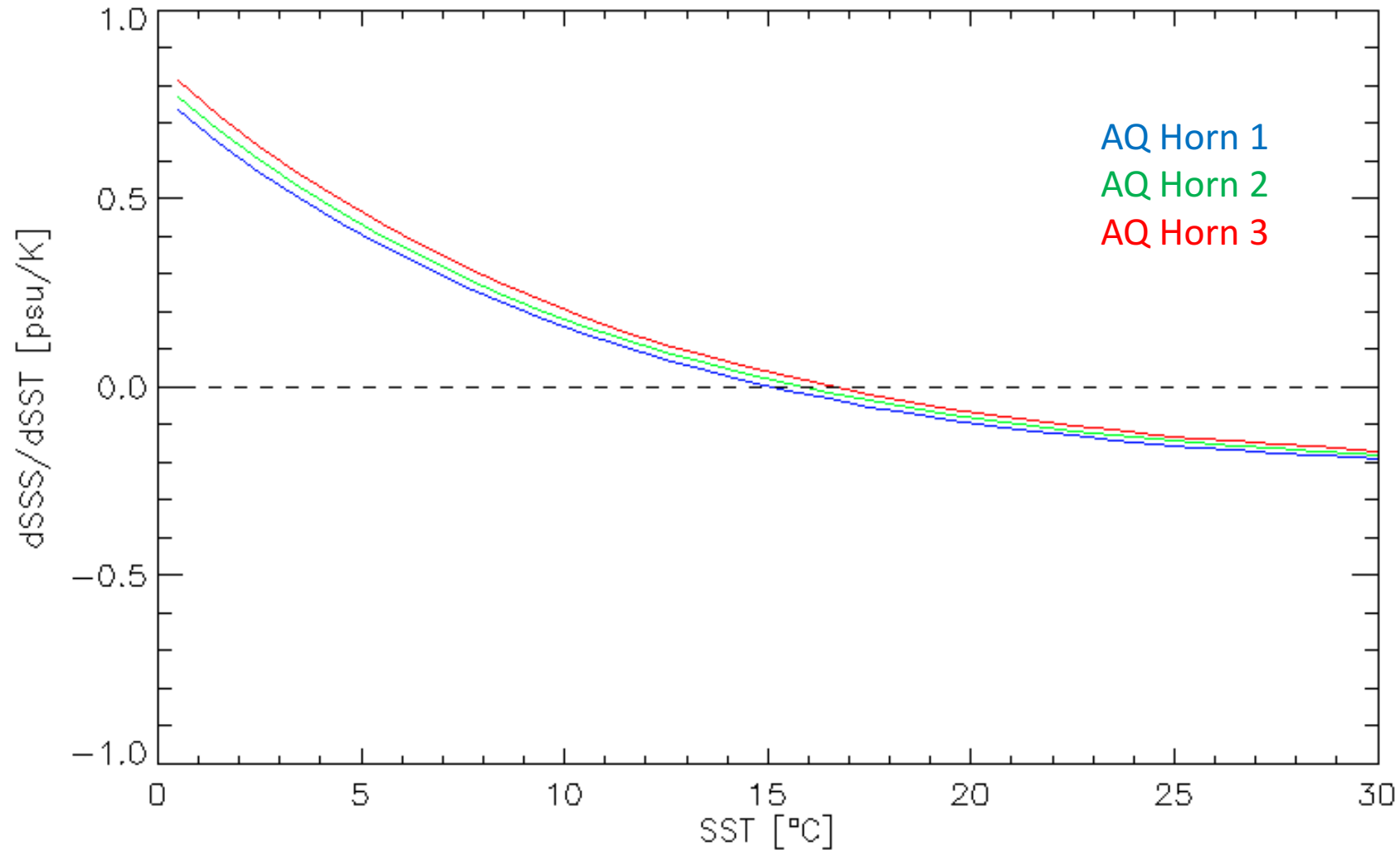
(Monthly 1-deg avg SST differences)



RMS: Monthly 1-deg Avg SST Differences



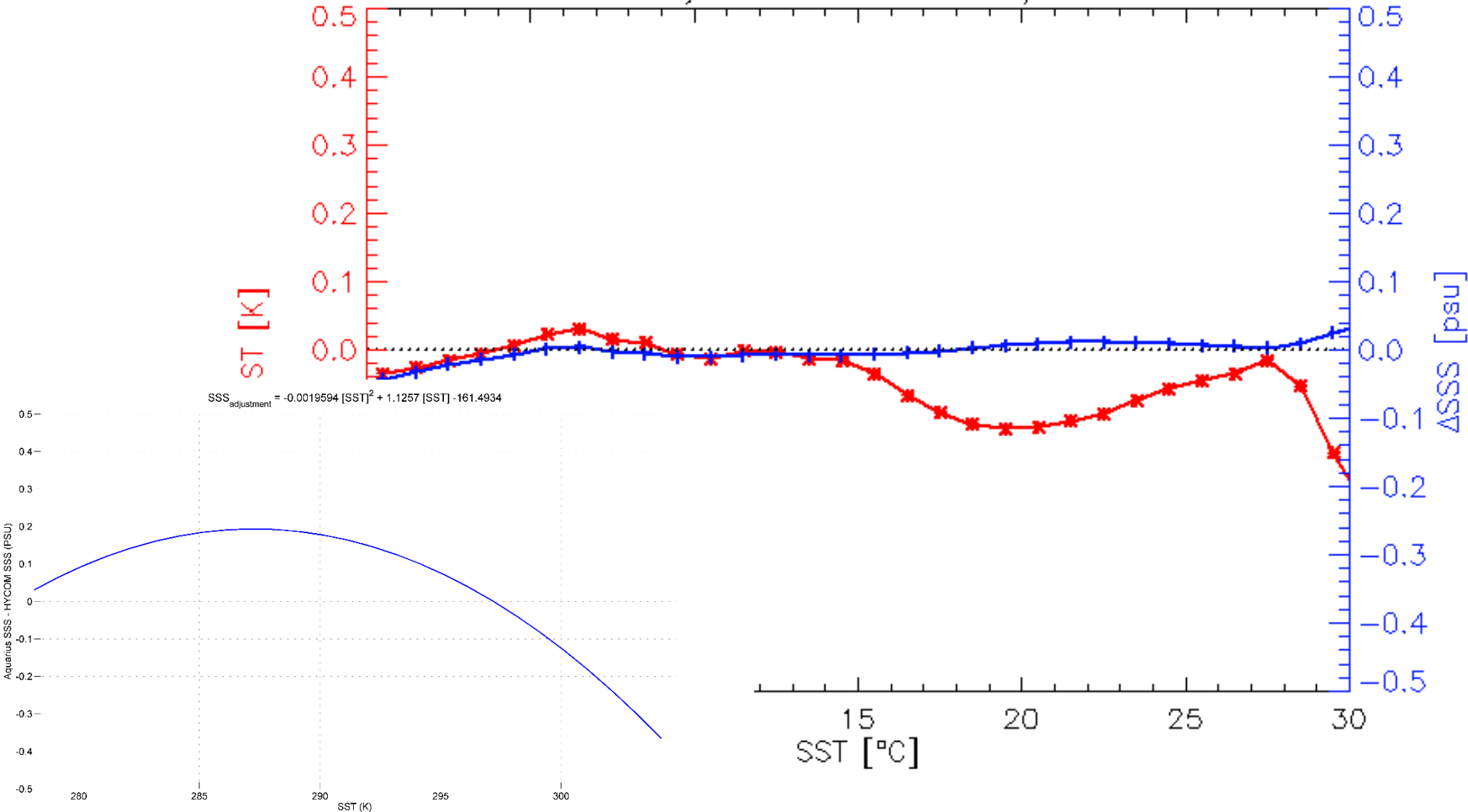
SSS Sensitivity to SST, as a function of SST



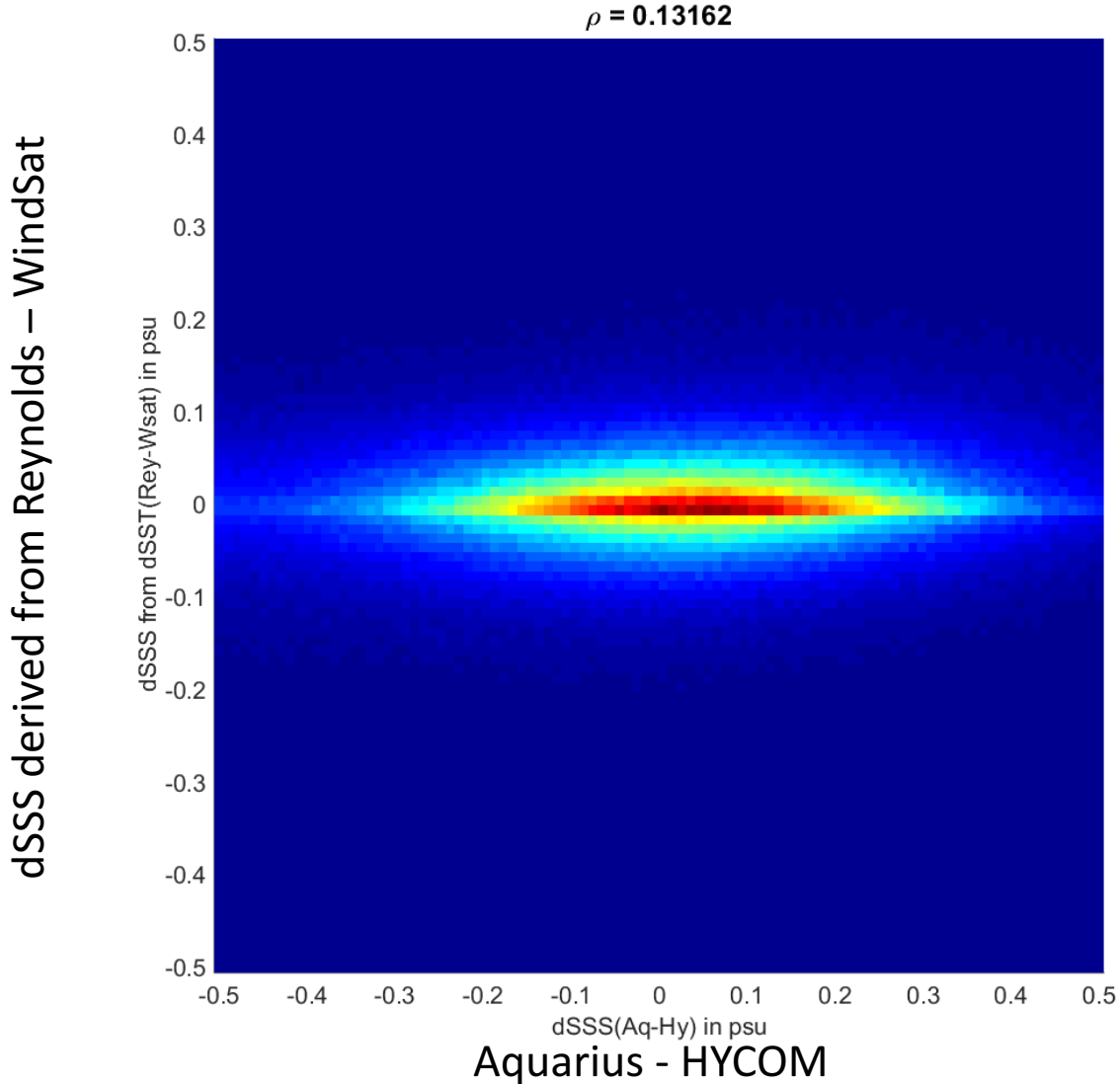
SSS Sensitivity to SST

$$dSSS = dSST * [dSSS/dSST]$$

SST Reynolds – WindSat / dSSS

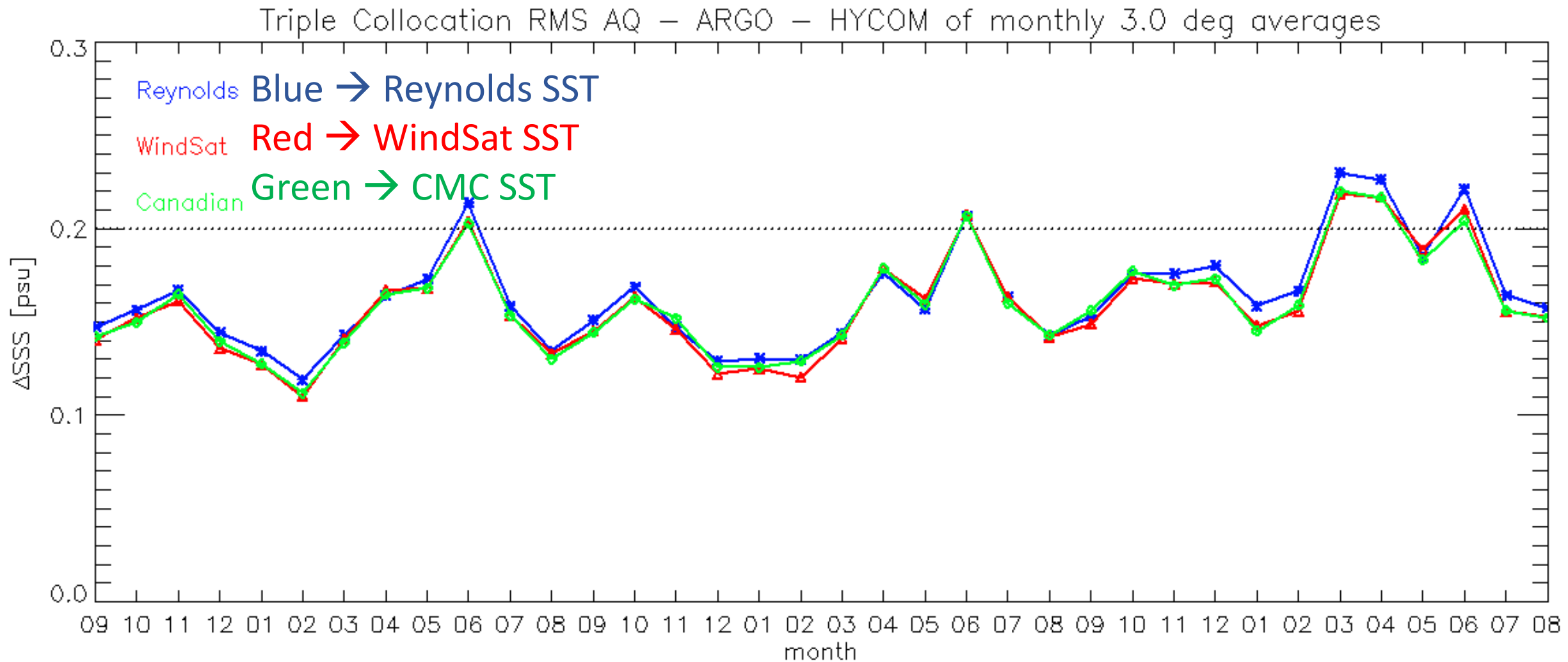


Joint PDF



RMS of Triple Collocation

(Aquarius, ARGO, HYCOM), 3-deg monthly averages



Conclusions

- Auxiliary SST does NOT cause any of the zonal SST-dependent biases
- WindSat SST and CMC appear to be slightly better than Reynolds SST
 - Not always true
- Uncertainty due to auxiliary SST may cause systematic errors
 - Which may add to or compensate for other systematic errors