SNPP/NOAA20 VIIRS Continuity with MODIS Evaluation from Land Surface Reflectance Perspective

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BELMANIP CROSS-CALIBRATION

remote sensing

MDPI

Article

A 30+ Year AVHRR Land Surface Reflectance Climate Data Record and Its Application to Wheat Yield Monitoring

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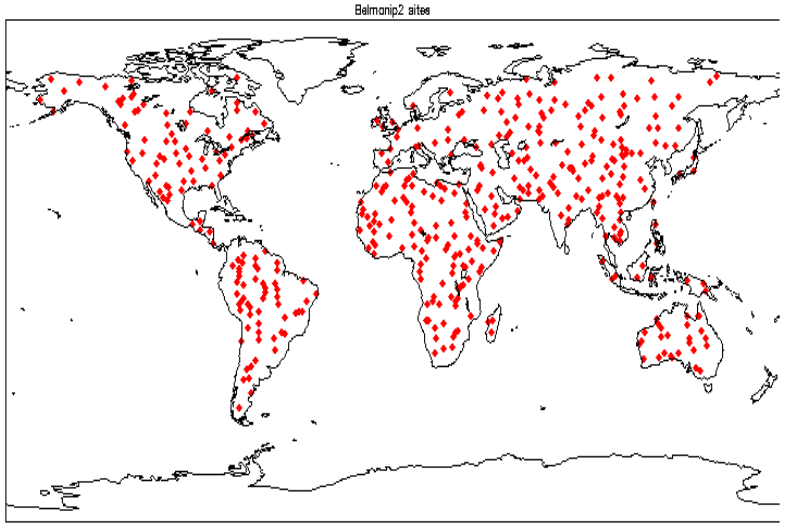
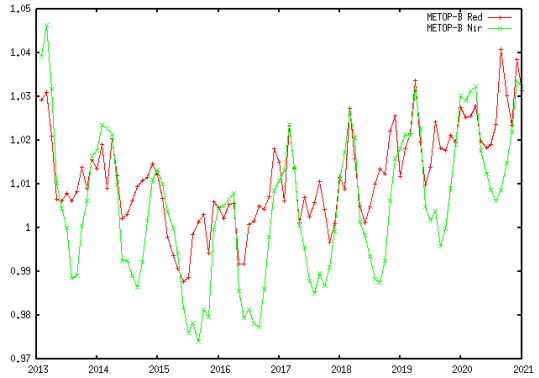
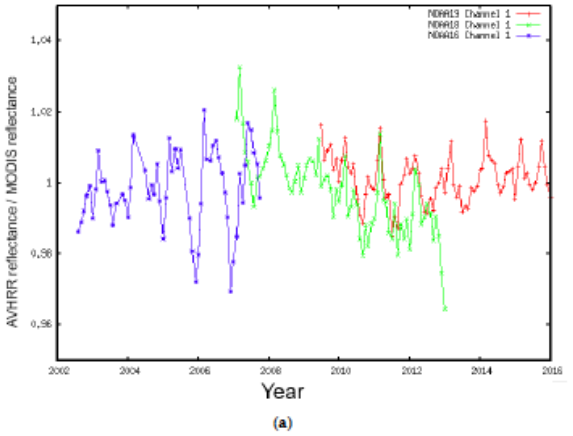
BELMANIP2 sites

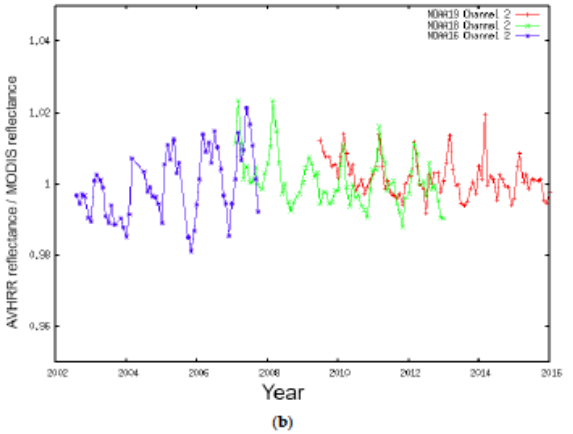


AVHRR



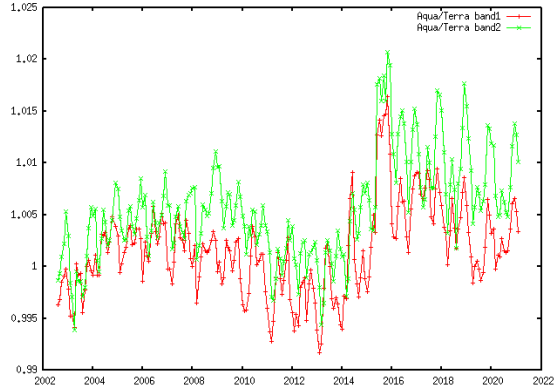


(a)

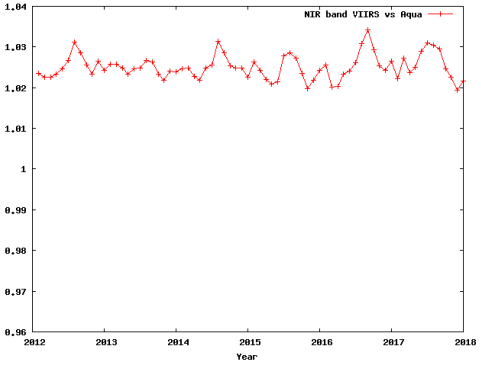


(b)

MODIS Aqua/Terra

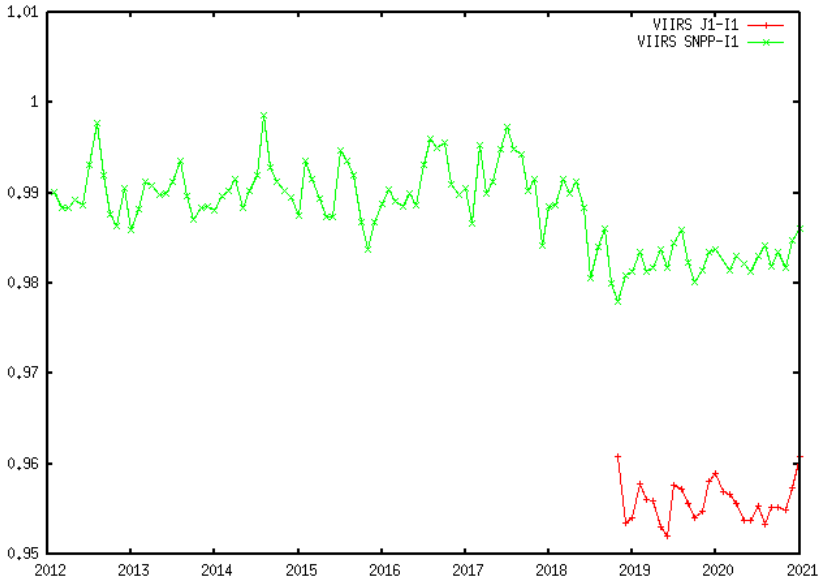


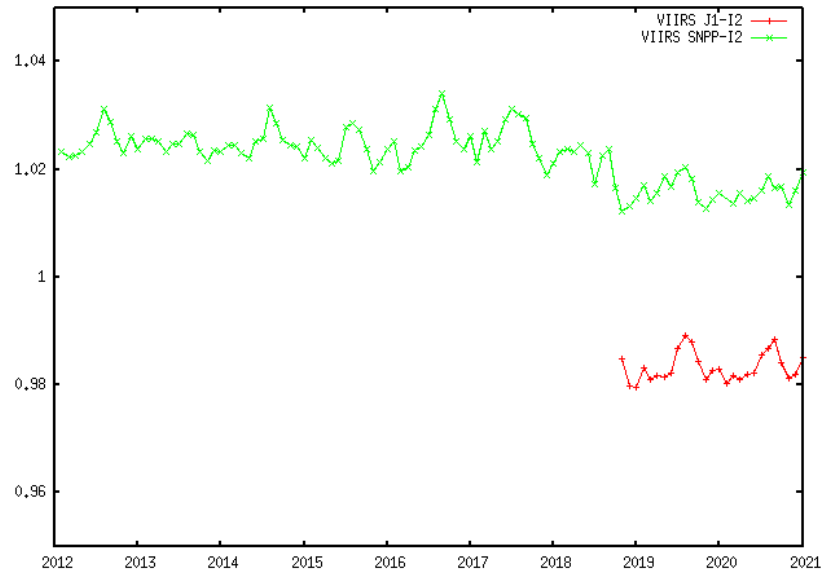
VIIRS / Aqua MODIS

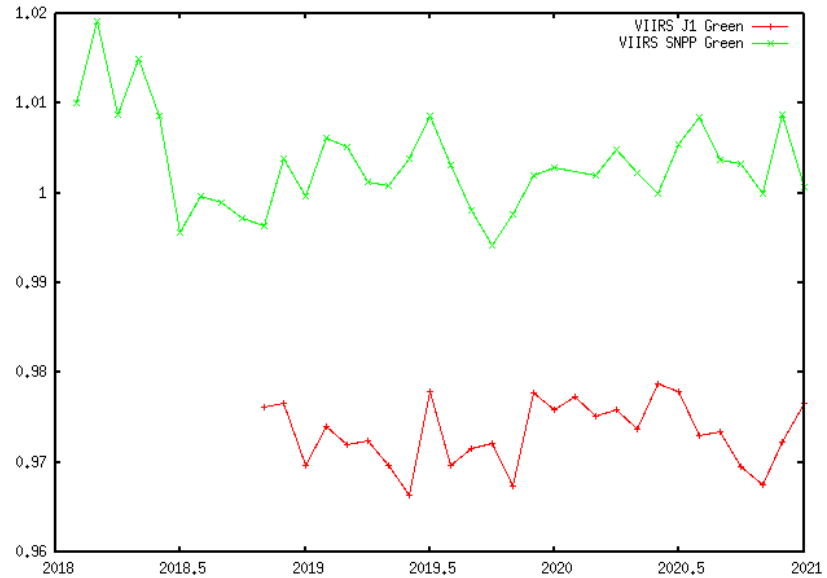


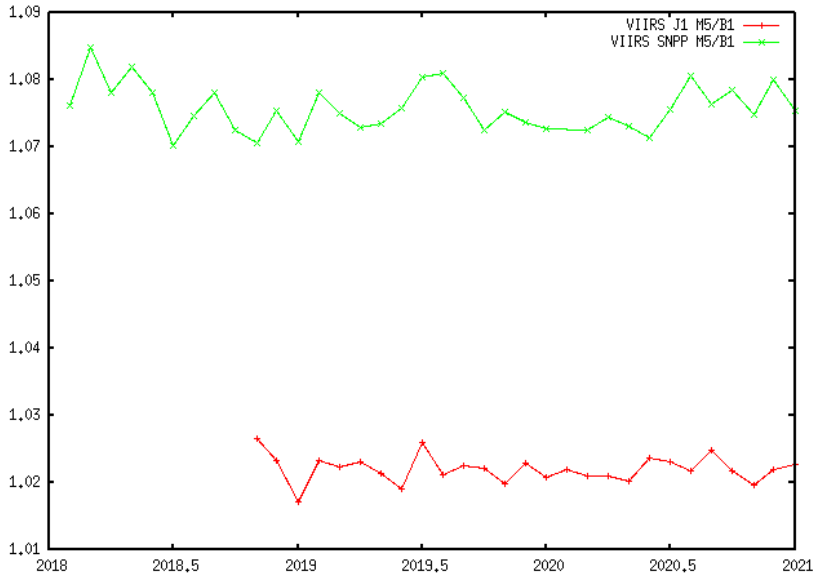
Automated monthly VIIRS cross comparison (over BELMANIP sites) with MODIS Aqua from 2012. the stability of both VIIRS and MODIS Aqua is excellent in both red and NIR as shown (+/- 0.5%).

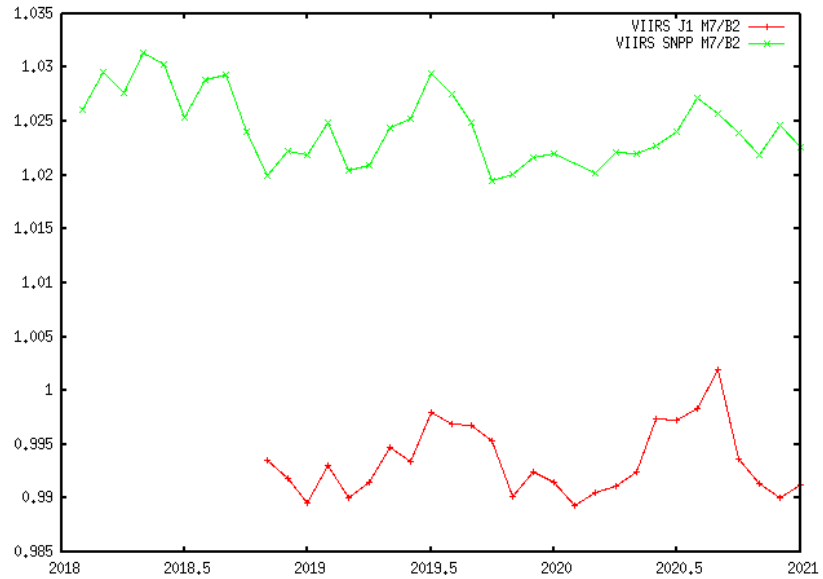
BELMANIP CROSS-CALIBRATION VIIRS SNPP, NOAA20 / MODIS Aqua

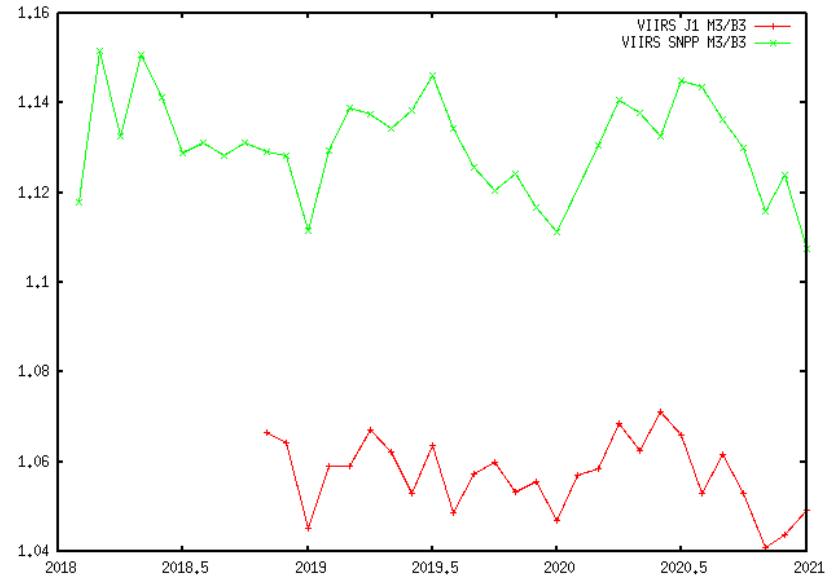




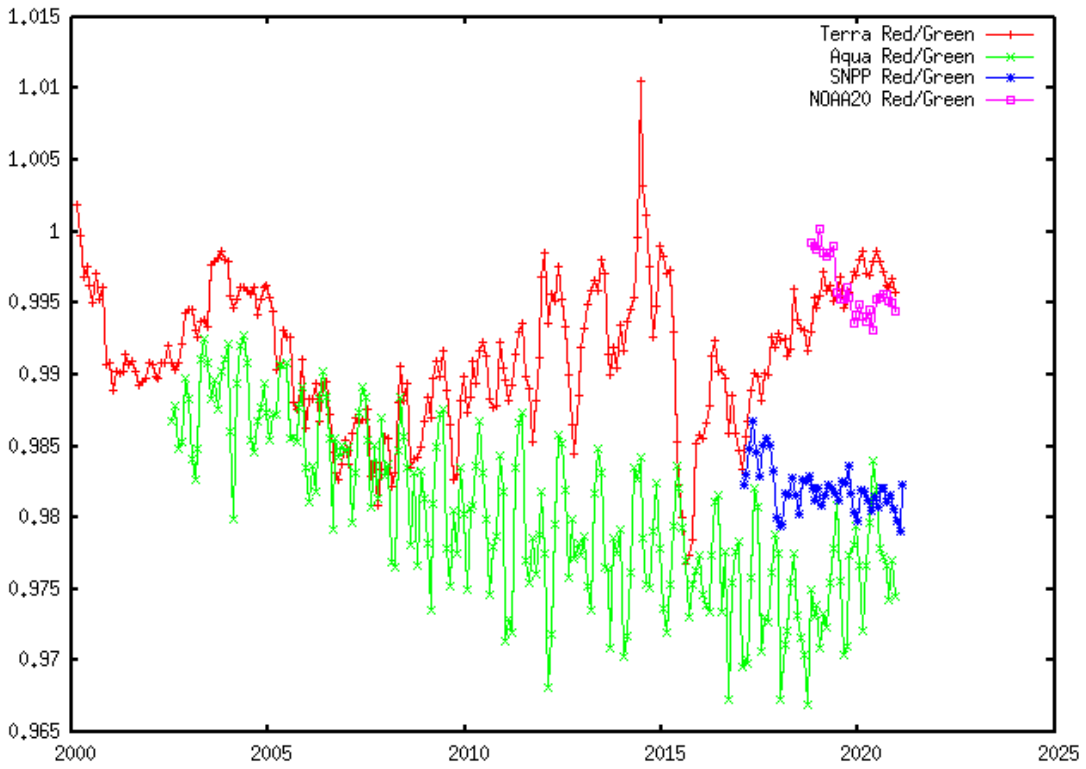


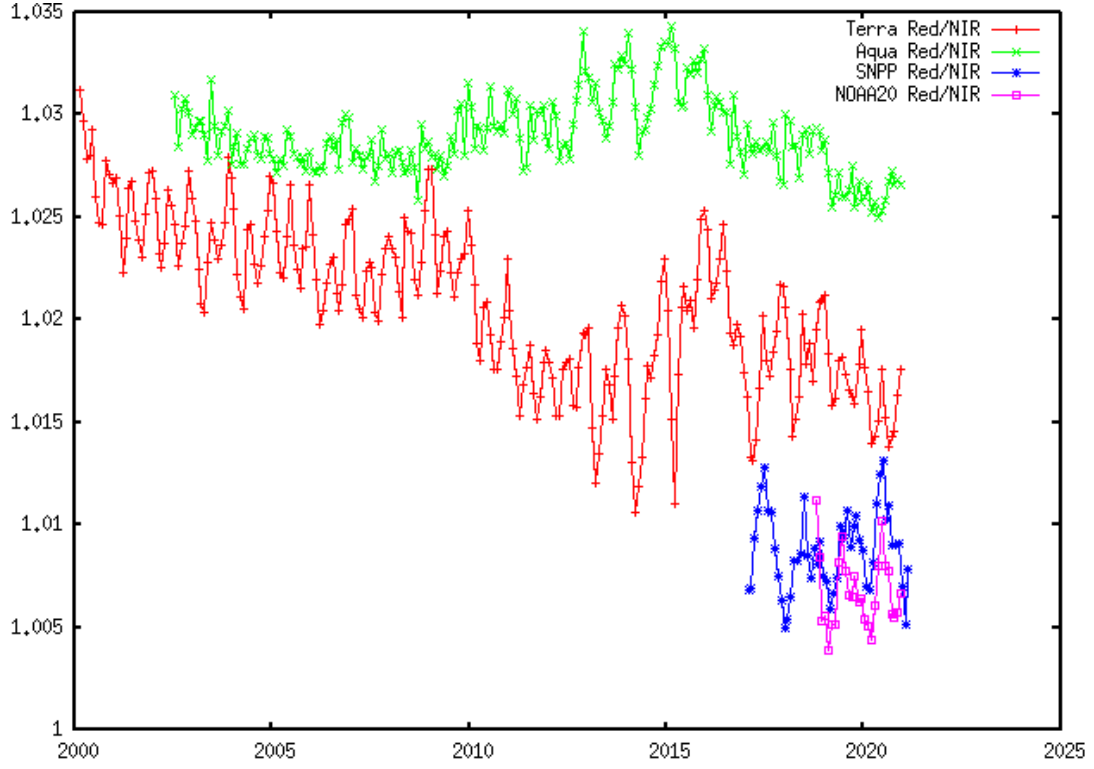






SPECTRAL INTERCALIBRATION OVER DCC FOR VIIRS SNPP, NOAA20 / MODIS /Terra,Aqua





- SNPP and Aqua match pretty well in Red/Green ratio. So Red difference between SNPP and Aqua over BELMANIP is probably due to spectral differences (TBC) and/or is probably small. The Green difference between SNPP and Aqua is also small (~0.5%)
- The NIR difference between SNPP and Aqua is likeky real because spectral differences are expected to be small (M7/I2 are really similar over BELMANIP) and is confirmed by Red/NIR DCC ratio ~2%

SUMMARY

- Analysis need to be repeated with MODIS C6.1
- DCC cloud ratio approach needs to be refined (atmospheric correction) and verified
- Some spectral correction needs to be implemented for VIIRS
- Overall, the current results show that SNPP might need some adjustement in some bands (decrease NIR by ~2%) but J1 needs adjustment in all bands (increase Green by 3%, Red and NIR by 2%)
- We should explore extending the approach to more bands.