

# VIIRS FU1 Prelaunch Characterization:

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## Further aspects of Polarization Characterization of Ocean Color Bands

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b: OBPG (Ocean Biology Processing Group)

1/25/10

VIIRS Science Team Meeting 2010, Washington, D.C.

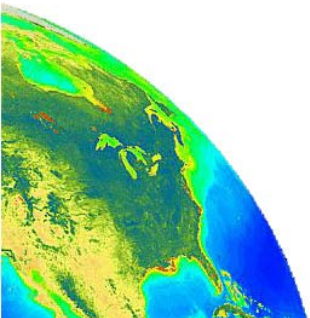
VIIRS Calibration Workshop 2010, Greenbelt, MD



## What's new about the test ?

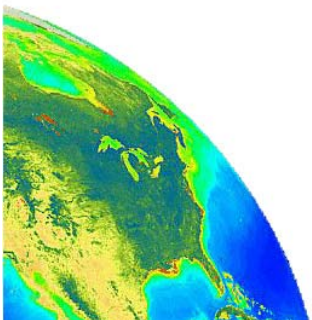
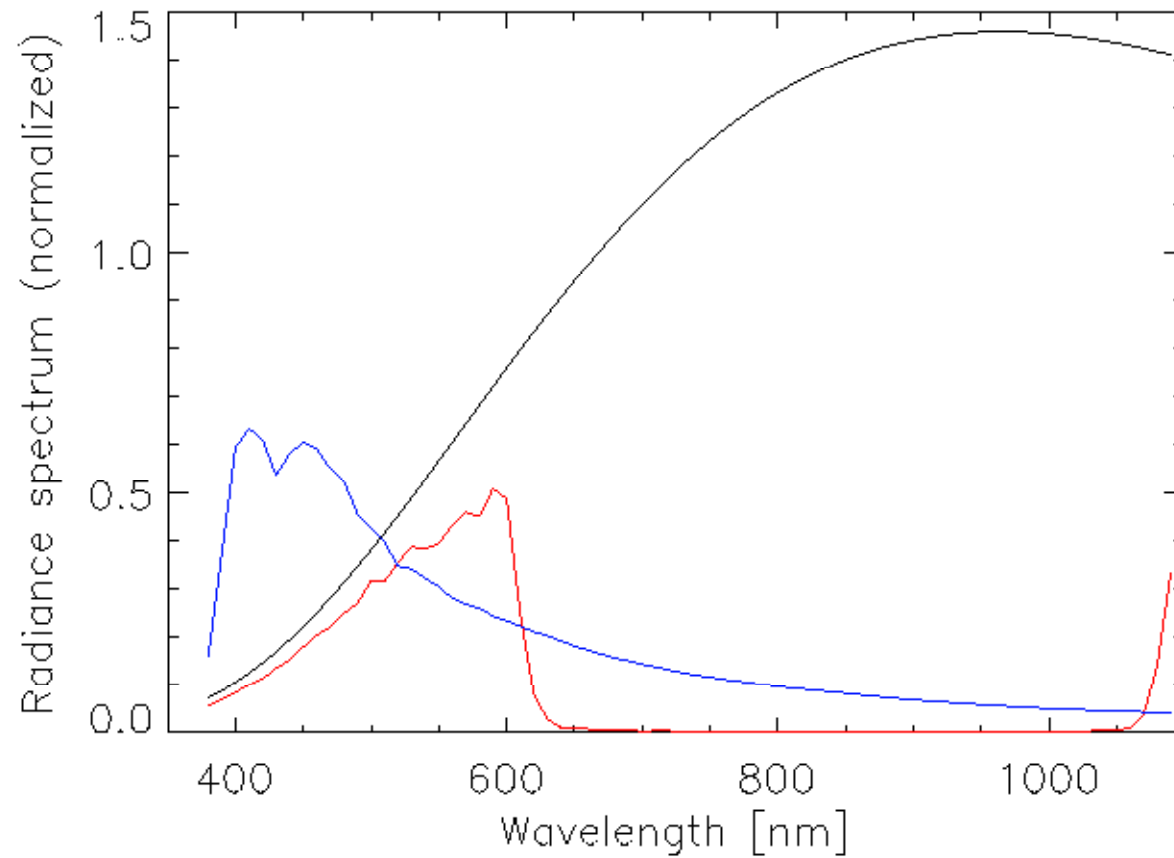
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- Better baffling (almost none in previous test)
- Long wavelength blocking filter used between SIS and polarizing sheet (previous test suggested out-of-family results for M1)
- Test setup not shown here due to ITAR restrictions



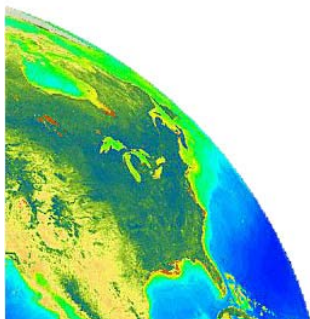
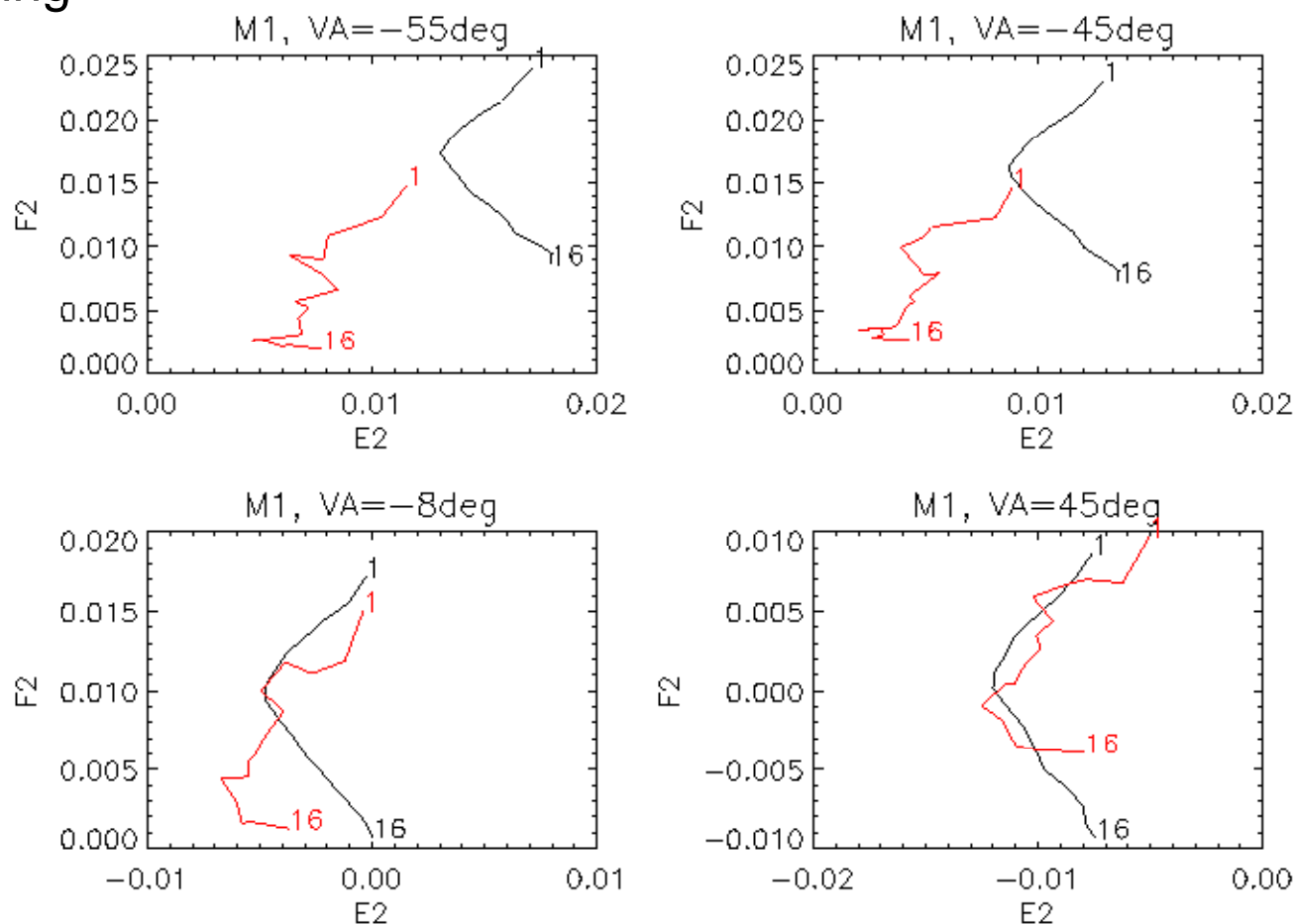
# Source spectrum not ideal

Black: SIS; Red: SIS after blocking filter;  
Blue: open ocean TOA



# Blocking filter effect for M1:

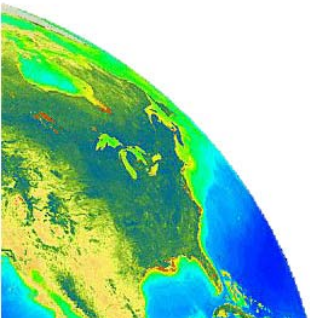
- Two cycle Fourier-coefficients E2 and F2 without (red) and with (black) blocking filter
- Magnitude and direction were never confirmed by OOB/crosstalk modeling



# Raytheon uncertainty analysis:

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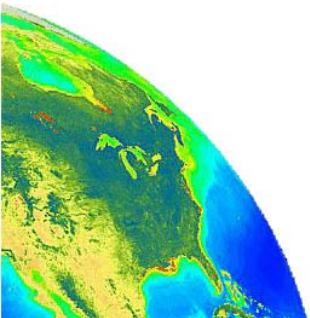
- Excellent work (no other test has such a detailed uncertainty analysis)
- Not shown here due to ITAR restrictions
- OOB response likely underestimated



# Detector dependency

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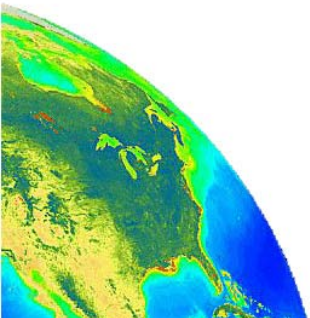
- Large detector variation (1.5% absolute) is not understood
- Raytracing model is not able to predict it using 'realistic' assumptions
- Detector variation is seen in all tests, also in special translation test
- Conclusion: it is most likely real



## Do we know the setup well enough ? (McCarthy, NGST)

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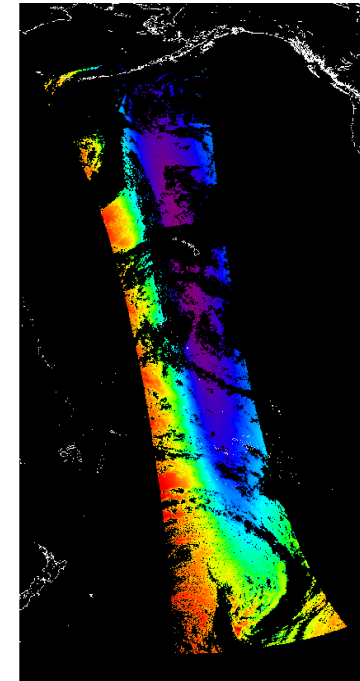
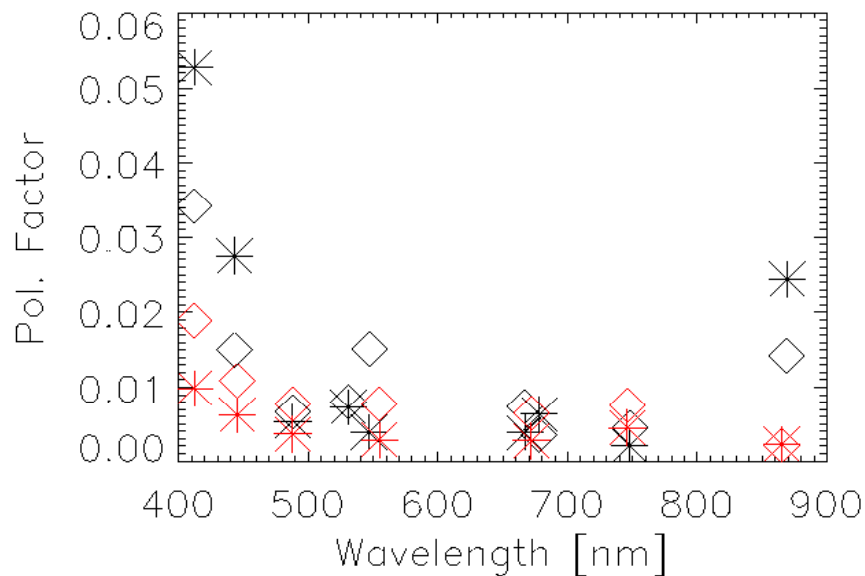
- Setup provided in a detailed image, showing VIIRS orientation, filter rotation angle and associated angle of electric field vector
- Image not shown here due to ITAR restrictions
- Lack of such an image caused serious problems on MODIS



# Comparison to MODIS Aqua:

- VIIRS has lower polarization factor, except at 748nm
- Even lower at end of scan, beneficial because TOA degree of polarization increases with scan angle for VIIRS/Aqua orbit

Stars = +45deg, Diamonds = -45deg  
MODIS Aqua (black) and VIIRS (red)



0.0 [dimensionless] 0.7

TOA deg. of pol.