

Ocean Breakout Report

Chuck McClain & Bob Evans

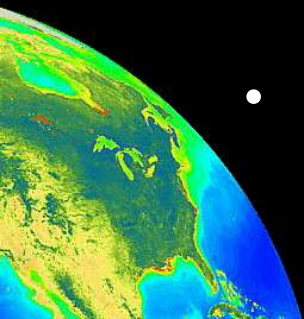
MODIS-VIIRS Joint Science Team Meeting

May 13-16, 2008



Science Team Presentations

- R. O'Malley (OSU for M. Behrenfeld, PI)
 - Primary production and FLH
- H. Feng (UNH for J. Campbell, PI)
 - East Coast aerosol retrieval comparisons MODIS Oceans, Atmos. & AERONET
- R. Evans & P. Minnett (U. Miami/RSMAS)
 - SST (presented in Wed. plenary)
- S. Maritorena (UC/SB)
 - Data merging and ocean product development
- C. McClain (NASA/GSFC)
 - MODIS & VIIRS calibration and validation
- C. Thomas (UMD/Horn Point)
 - HPLC pigment analyses



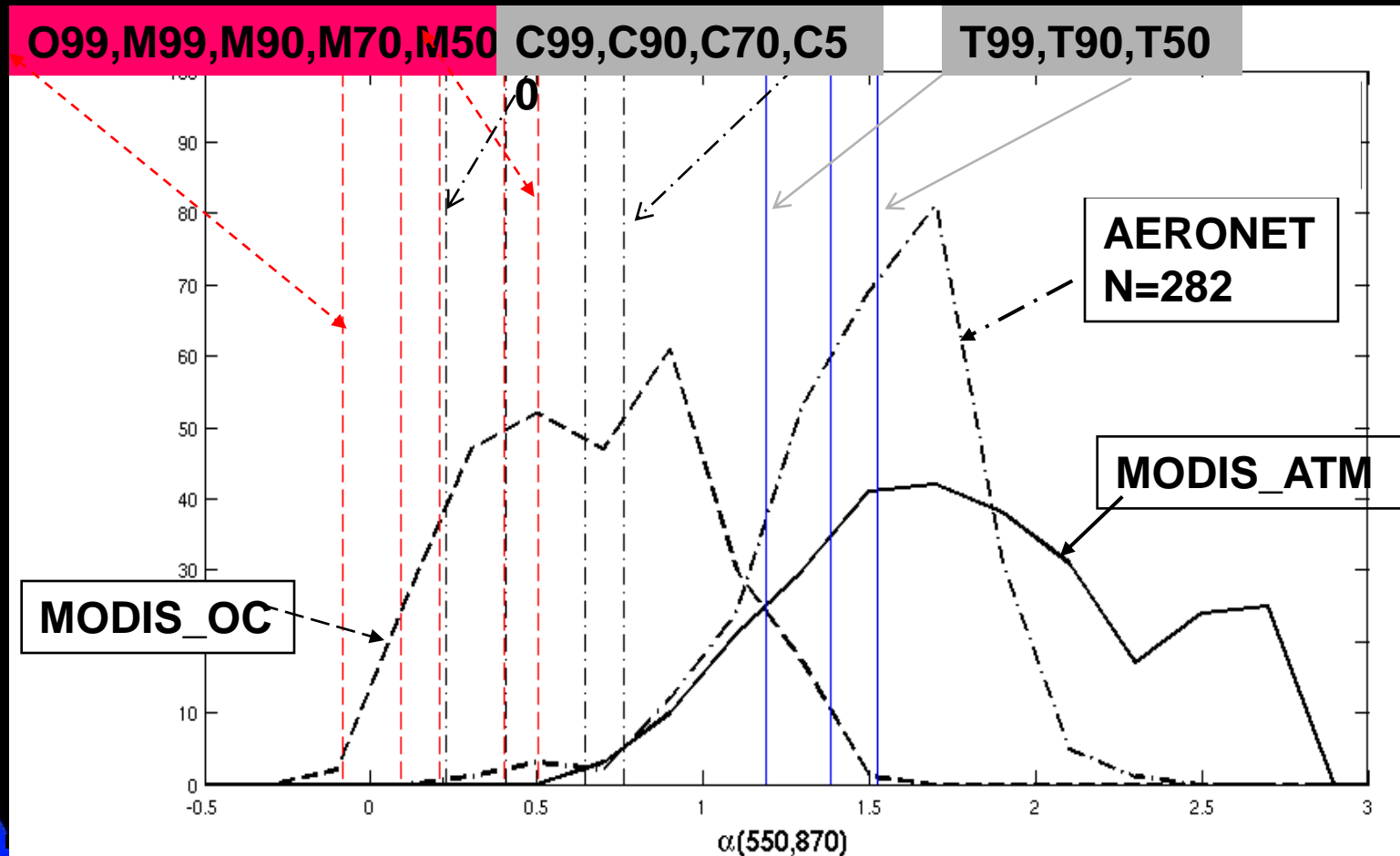
Science Team Presentations

- K. Voss (U. Miami)
 - Marine optics and instrumentation
- M. Wang (NOAA/NESDIS)
 - Ocean color atmospheric correction
- W. Gregg (NASA/GSFC)
 - Global ocean ecosystem modeling & data assimilation
- S. Hooker (NASA/GSFC)
 - Ocean biology Calibration & Validation Office
- B. Franz (NASA/GSFC)
 - Ocean biology reprocessing plans
- VIIRS
 - F. Patt (GSFC): SDS Status & NPP Maneuvers Update
 - K. Turpie (GSFC): Calibration analyses



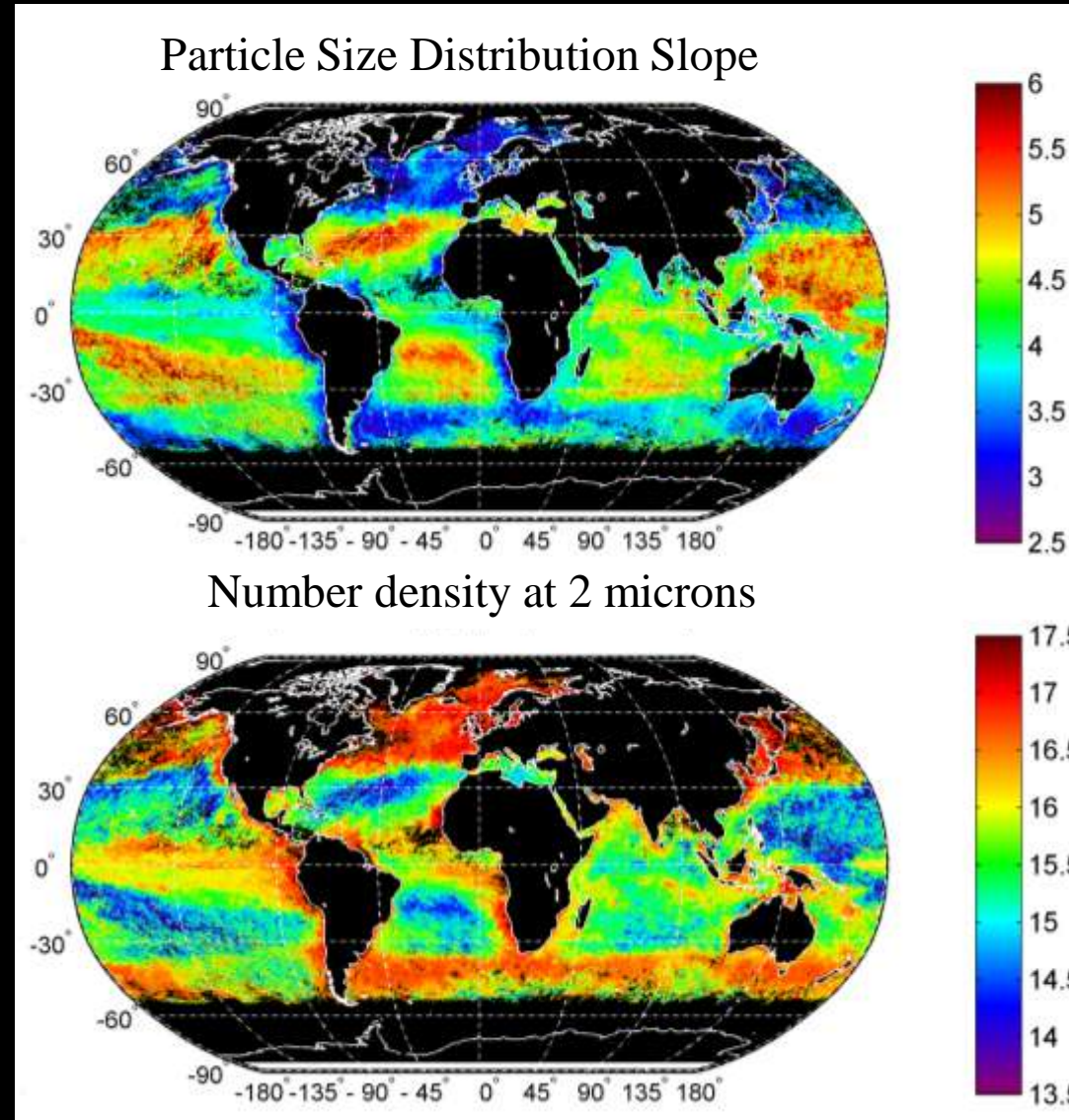
Some Science Team Highlights

- H. Feng : MODIS atmos aerosol retrievals closer to AERONET values than ocean aerosol retrievals off US northeast coast. Ocean processing over-corrects at blue wavelengths.



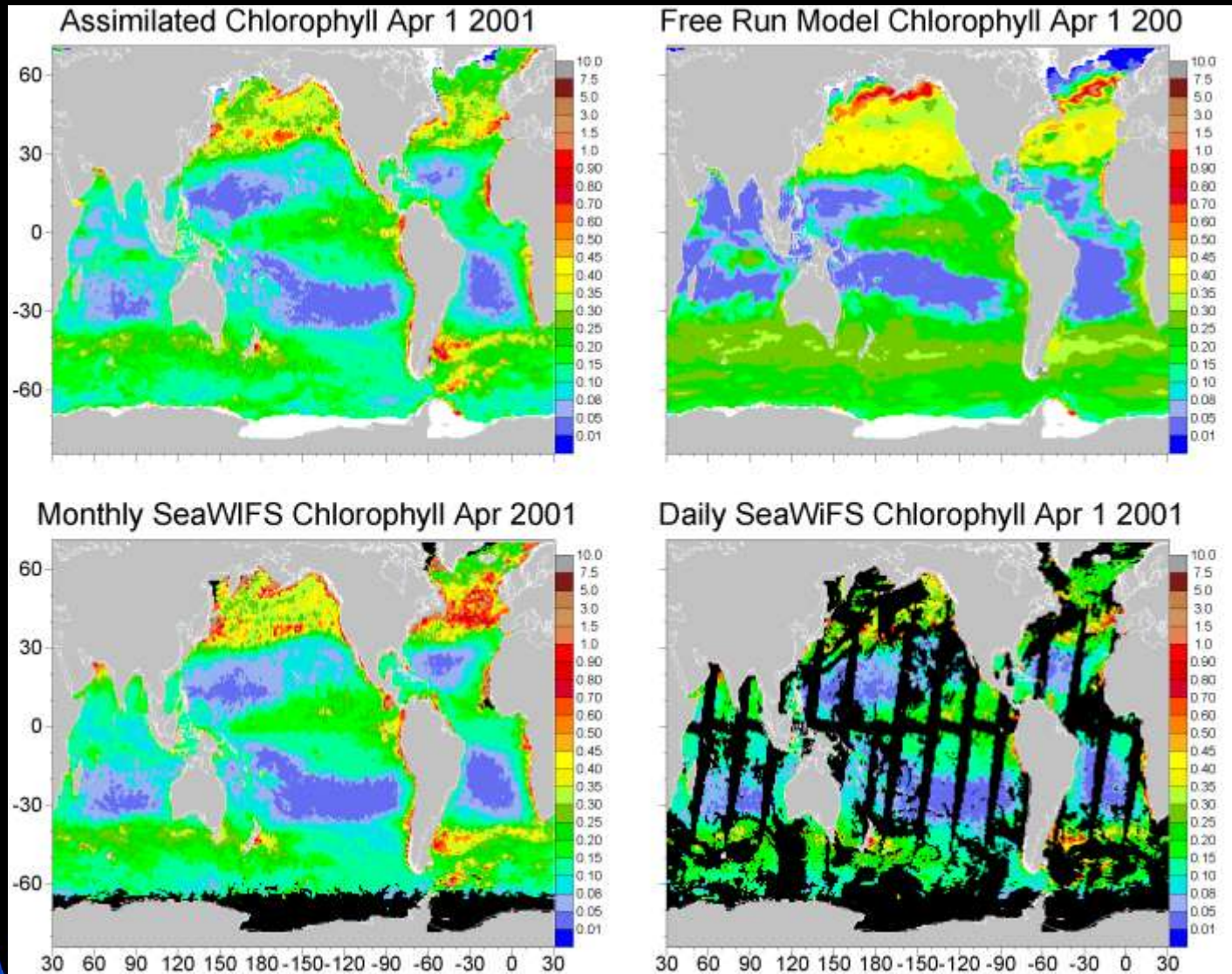
Some Science Team Highlights cont.

- S. Maritorea: UC/SB development of marine particle size distribution properties=> phytoplankton functional groups, etc



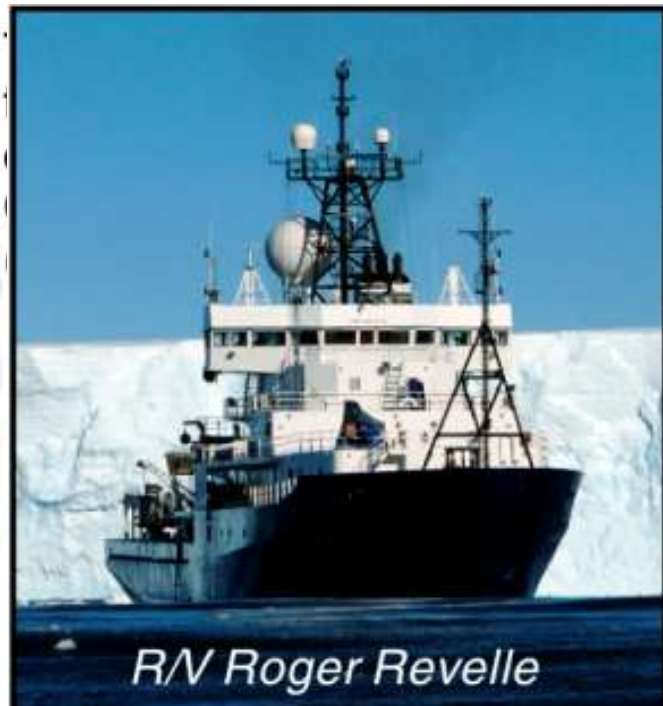
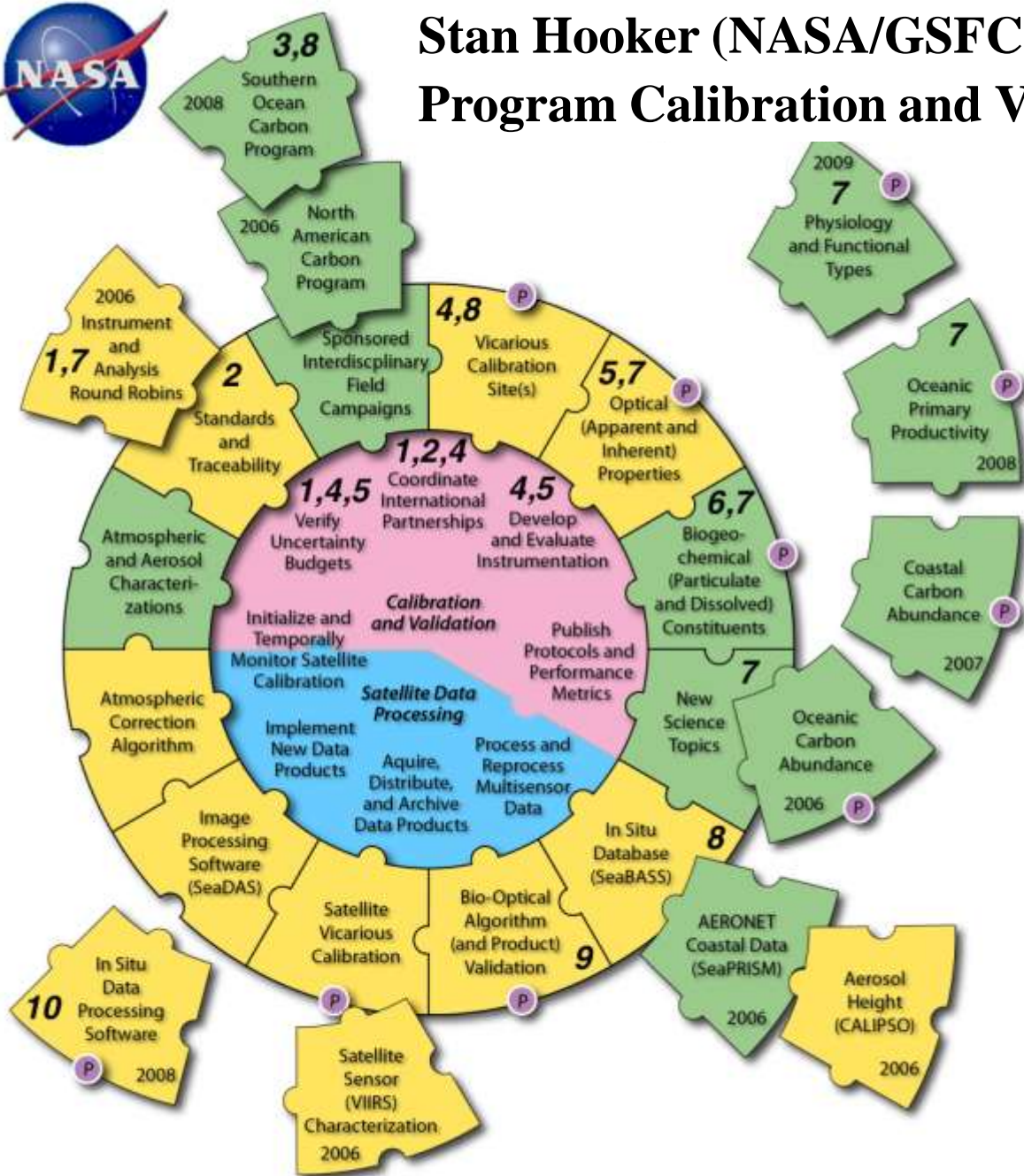
Some Science Team Highlights cont.

W. Gregg (GSFC): Model data assimilation



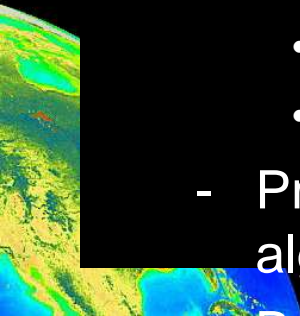


Stan Hooker (NASA/GSFC): Ocean Biogeochemistry Program Calibration and Validation Office



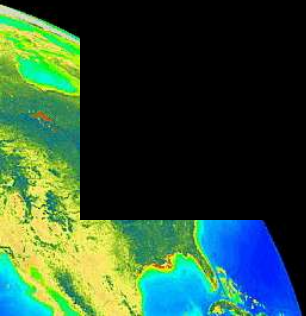
Ocean Biogeochemistry Issues

- **Continuity of SeaWiFS-MODIS product quality & global time series**
 - Sensor performance & attributes
 - Optical xtalk severity & characterization data quality
 - On-board calibration – SD, end to end, on orbit maneuvers
 - Thermal vacuum test results TBD
 - Recommended VIIRS improvements
 - Remanufactured IFA
 - Dual gains in M6 (748 nm), SST/fire bands
 - 2x higher SNRs in M8 (1.2 micron) & M10 (1.6 micron)
 - Recommendations for “VIIRS-2”
 - FLH bands (phytoplankton physiology, HABS, etc.)
 - UV band (360-380 nm)
 - 510 nm band (turbid water chlorophyll)
 - Split 4 micron band into 2 bands (night-time SST-4) 3.95+4.05um
 - Processing/Reprocessing with consistent current-generation algorithms



Ocean Biogeochemistry Issues

- **Gearing up for new science thrusts of Ocean Biogeochemistry Program**
 - Coastal regimes (turbid water): science theme refinement, measurement requirements & protocols (satellite & in situ), atmospheric corrections
 - Habitats: same issues
 - Multi-disciplinary science associated with ACE and GeoCAPE



Recommendations for FU2

(Not in Priority Order)

- Improved VNIR IFA to address the optical crosstalk problem
- Improved optical design in SWMWIR and LWIR address dewar window ghosting features
- Improved VNIR Read Out Integrated Circuit (ROIC) to address static electrical crosstalk problem
- Perform end-to-end testing of the solar diffuser/monitor/screen on-board calibration system relative to earth view
- Eliminate the noise in the gain switch regions of the VIIRS dual gain bands
- Maintain calibration and characterization of all GSE between successive VIIRS flight units
- Improved saturation handling for single bands (i.e. aggregation)
- Employ tunable lasers (e.g. NIST SIRCUS) in measurements of system level spectral response of VIIRS bands
- Report sub-scene statistics of the impact of crosstalk and near field response particularly in regions of scientific interest such as coastlines and cloud edges (i.e. currently full scene statistics are reported)
- Employ NIST Optical Technology Division personnel in VIIRS instrument and calibration technical meetings.
- Improved testing of near field and far field stray light VIIRS response
- Implement testing in t/v of band to band registration between cold and warm focal planes

