Outstanding Issues & Important Future Work

- Ice cloud model, 2 habit vs 1 Habit
    - Are the models properly formatted?
    - Why no variation in De? Turn off all non-VISST procedures for testing
    - What other factors affect the analysis for a given model set?
    - Do we need new IR parameterizations?

- Examine what actually happens when we have the VISST-CO2 test actuated
    - Determine where and when the values are changed
    - Determine what actual CO2 looks like compared to what comes out
    - Repeat same approach with BTD
    - How do we correct Ed4 data post facto?

- Run Aqua 1.24 with new parameterization to determine impact on tau & Re
    - recompare with VIIRS
    - validate over NSA and Greenland
    - repeat for 1.6 and 2.1 μm to ensure they are ok

- Perform validation studies on multilayered clouds
    - use CALIPSO, ARM sites, and AMSR-E

- Develop Data Quality Summary for Ed4

Outstanding Issues & Important Future Work 2

- MODIS reflectance models
    - Gang rerun model for MODIS to be consistent with VIIRS
    - Rerun cases to determine impact

- Revisit polar masks for VIIRS
    - Use CALIPSO when possible
    - Why do we miss thick clouds over snow/ice as seen by Wenying?
    - Need to improve nighttime mask if possible

- Develop short subroutine to recompute thick ice cloud top and base for Ed4 users?

- Perform validation studies on multilayered clouds
    - use CALIPSO, ARM sites, and AMSR-E

- Develop Data Quality Summary for Ed4 & Ed1

- Develop papers for Ed1 and Ed4

- Provide improved IWC profiles for SARB group so they can use Ztop (Smith)

- Redo AMSR-E LWP comparisons using Ed4
    - is another MWR LWP product available on A-Train now?

Outstanding Issues & Important Future Work 3

- Determine what causes the "hump" on the water cloud height comparison plot

- Redo thick ice cloud optical depth at night
    - Use WV & 12 µm with neural net
    - Study techniques for determining thick water cloud tau at night (3.7, 11, 8.5 µm?)
    - Tune with VIIRS DNB

- GEOsat improvements to be more 5-chan like
    - Use WV and 12 µm channels to improve thin cirrus and ML detection
    - Use mean Re's?
    - Do full res (GMAO and other users)

- Use BTD technique to screen thin from thick clouds over snow/ice?

- Improve terminator cloud detection and phase

- Calibrations? Why are VIIRS cloud temps smaller? Corr-ks?

DNB COD retrieval

a) RGB

analysis area

b) COD (SIST)

c) COD (DNB)

Cloud Optical Thickness

0 1 2 4 8 16 32 64 128 256
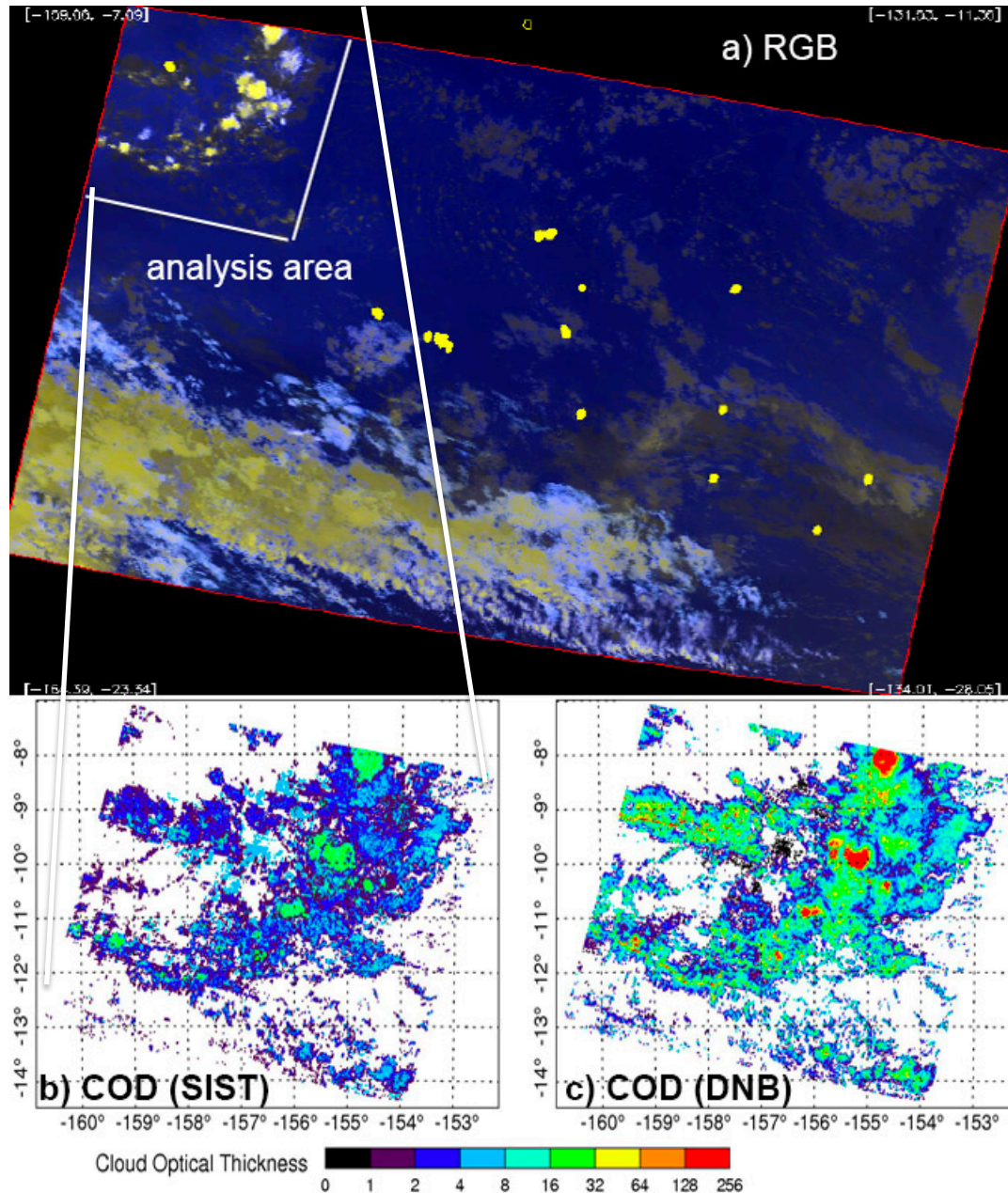
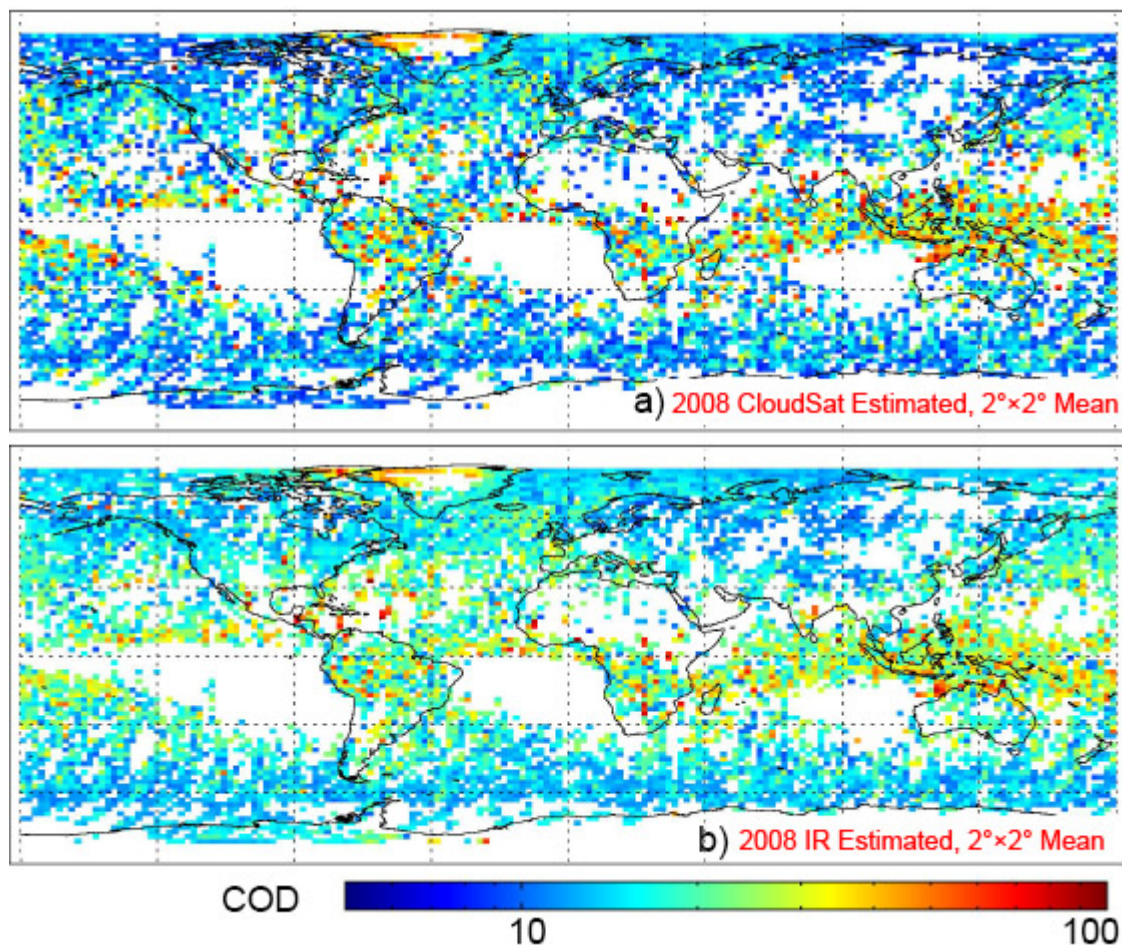• G Hong has worked out a DNB retrieval algorithm that can be used for nighttime studies

• Needs some work to make it "operational"

  1) matching with VIIRS I and M channels

  2) mesh with IR channels to select phase & compute heights

  3) SRF-specific reflectance models

Thick ice COD retrieval at night

a) 2008 CloudSat Estimated, 2°×2° Mean

b) 2008 IR Estimated, 2°×2° Mean

COD   10   100

• G Hong has developed a NN algorithm to estimate tau for thick ice clouds from 11 and 6.7 µm channels using matched CloudSat data

• Should test it using MODIS or GEO data
  - improve with DNB data