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ADM-Aeolus L2B test results



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L2B PM15 11-Mar-2009



Test cases:

- Base Reference RMS (1)
- Academic Tests [with/without noise] (27)
- Sanity Tests (2)
- Realistic Tests [LITE data] (9)
- Mispointing Tests [CALIPSO data] (9)

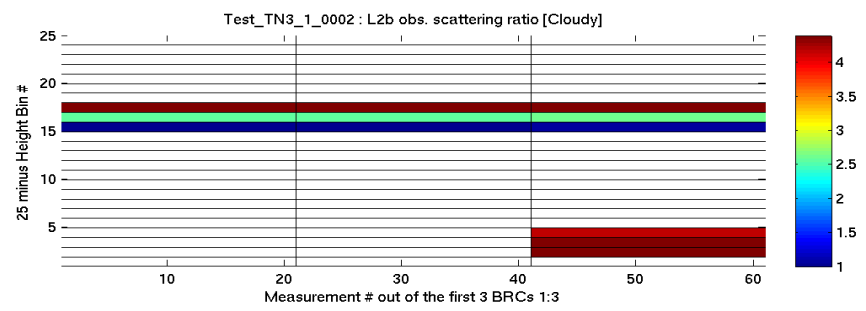
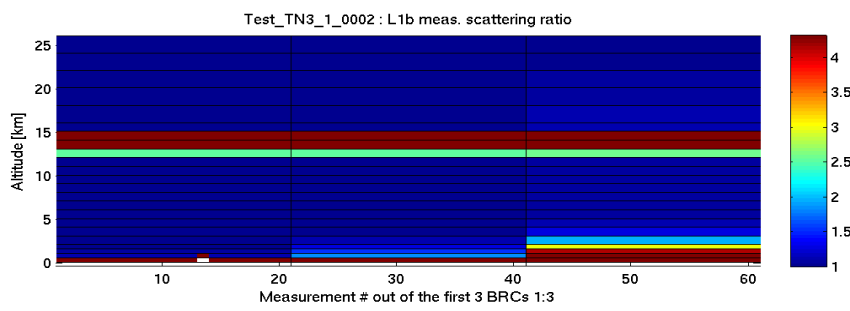
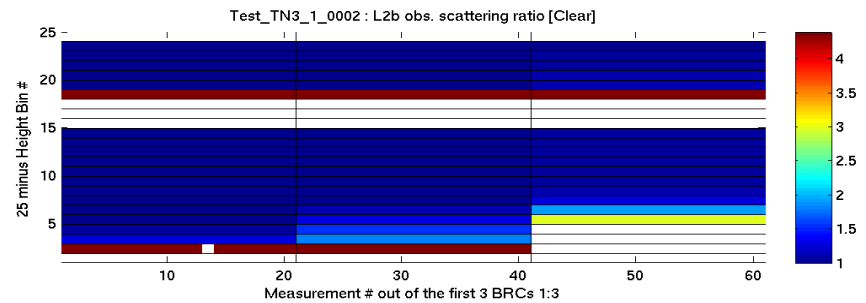
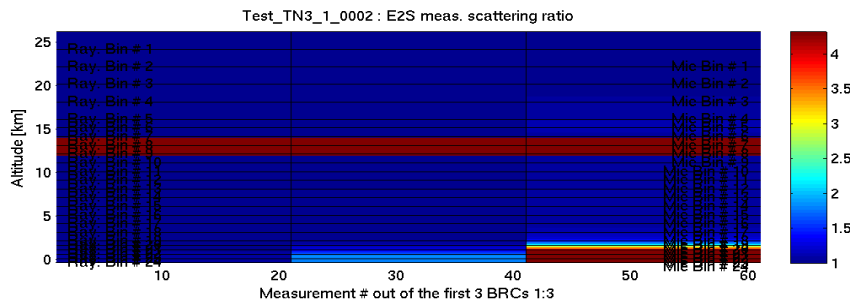


Base Reference RMS (1 test case)

- Rayleigh results on average much better than L1B
 - std 0.54 m/s [L1B had 2.1 m/s]
 - bias 0.011 m/s [L1B had 0.61 m/s]
- for individual Rayleigh profiles L2B shows
 - bias upto 0.8 m/s [depends on input wind]
 - std below 0.15 m/s
- Mie results
 - bias 0.55 m/s [worse than L12B result!]
 - std below 0.20 m/s
- Test **failed** pass-fail criteria due to bias in both channels

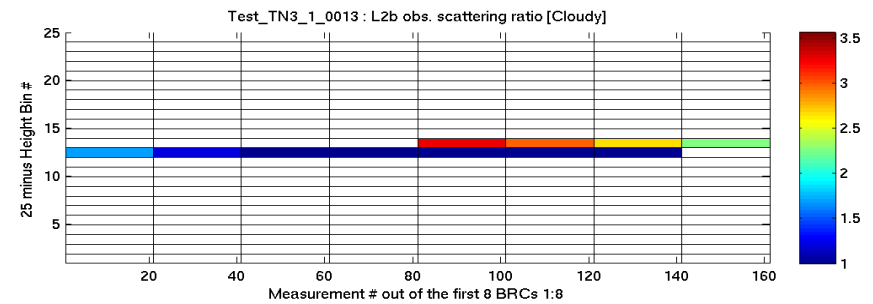
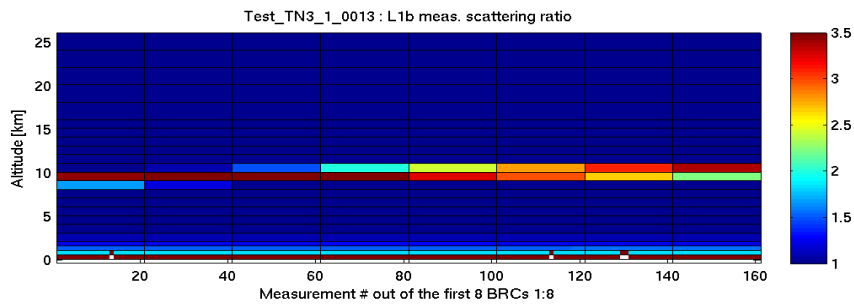
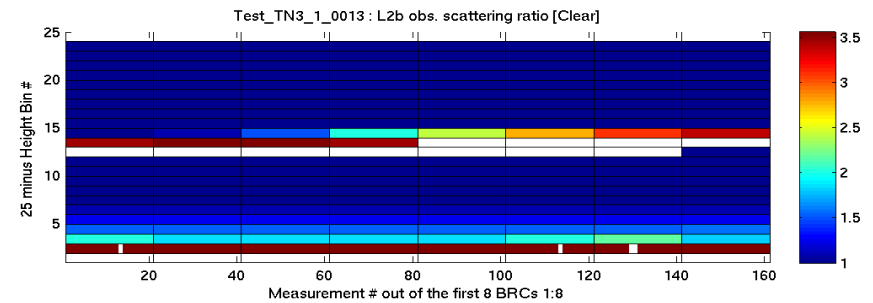
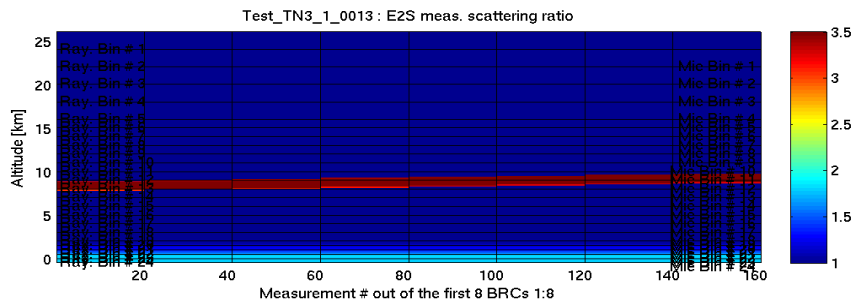
Academic Tests (27 cases)

- L2B shows bug in handling of scattering ratio
- Test #0002: Aerosol bias correction on Rayleigh channel



Test #0013: 1 km cloud scan

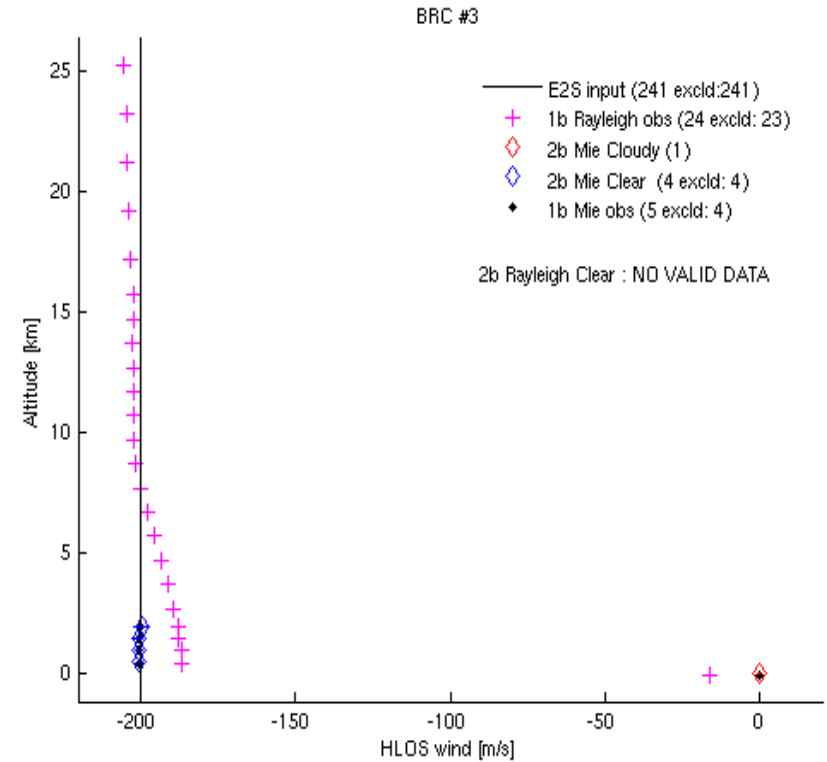
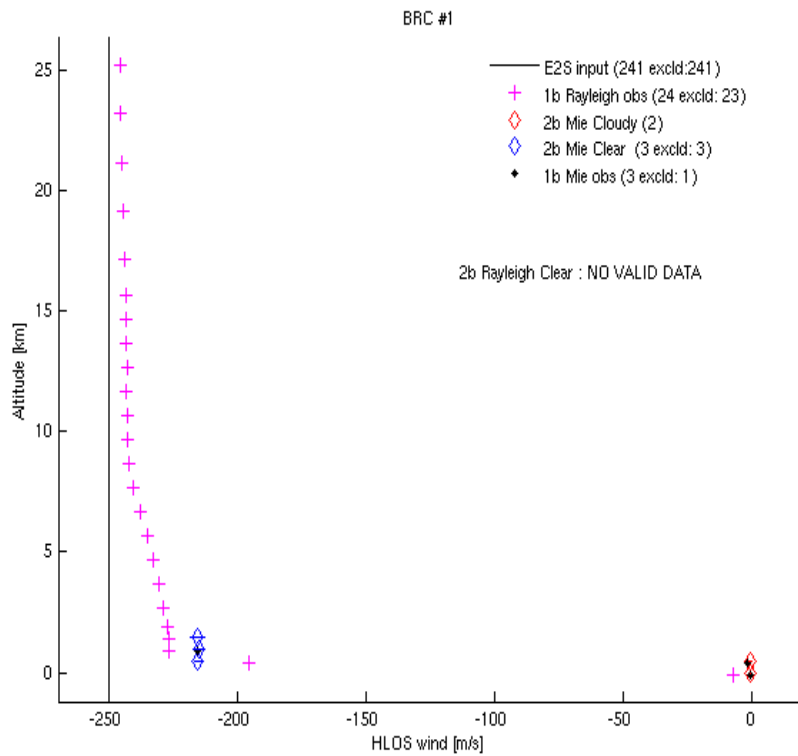
- shows the same scattering ratio problem



Sanity Tests (2 cases):

- use input winds at edge of spectrometer range
- Mie: -250, -220, -200, 200, 220, 250 m/s
- Rayleigh -400 upto +400 in steps of 50m/s
- Mie works fine upto 200 m/s
 - at -200 m/s std of 0.4 m/s and bias of only 0.13 m/s
 - at -220 m/s std of 0.3 m/s and bias of 9.5 m/s
- No L2B Rayleigh results due to settings of internal screening thresholds

Test #0050: Huge input windspeed

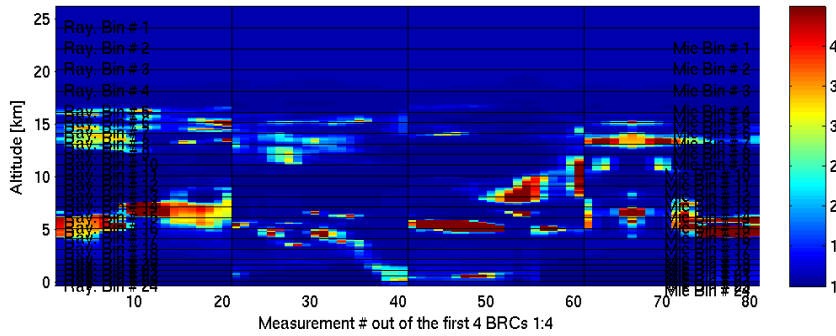


Realistic Tests (9 cases)

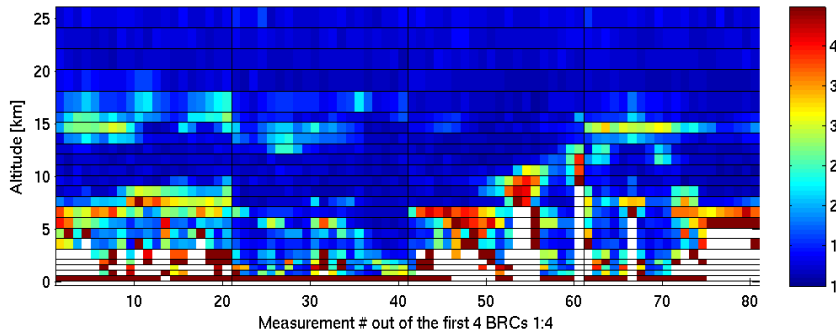
- Aerosol backscatter and extinction from LITE experiment on board of Space Shuttle
- Wind and temperature from ECMWF model
- Orbit artificial, created by E2S, not related to atmospheric data
- Poisson noise added
- Test #0106: tropical case with cirrus, convection, precipitation

Test #0106: Convective case

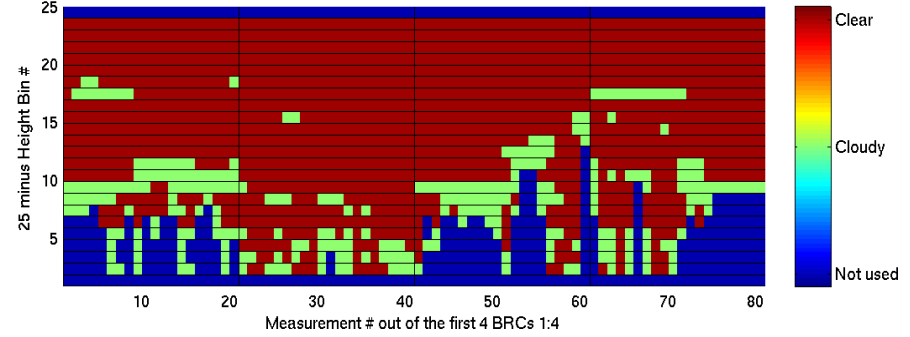
Test_TN3_1_0106 : E2S meas. scattering ratio



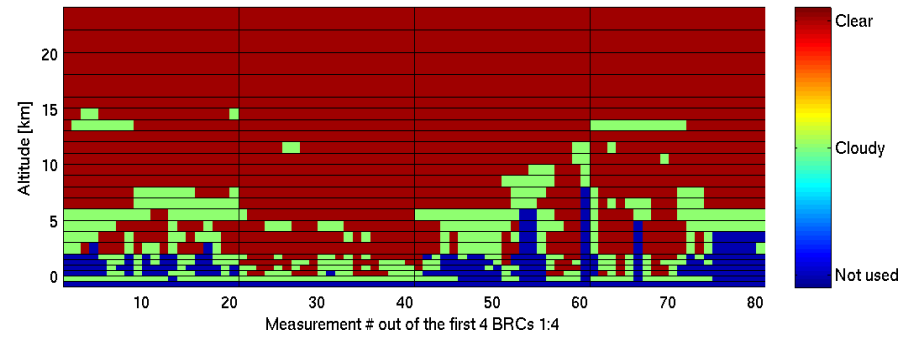
Test_TN3_1_0106 : L1b meas. scattering ratio



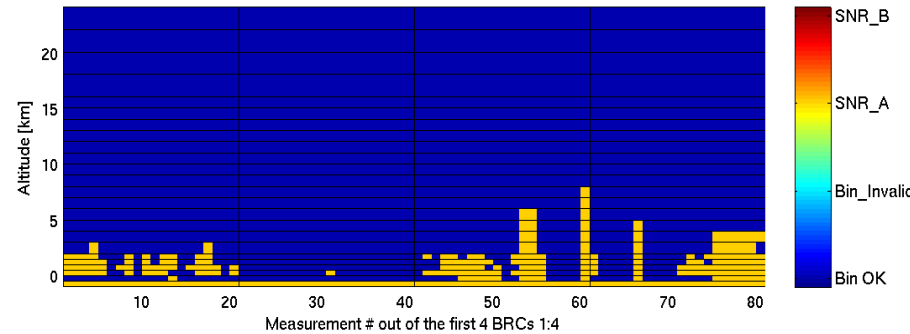
Test_TN3_1_0106 : L2b classification map Rayleigh

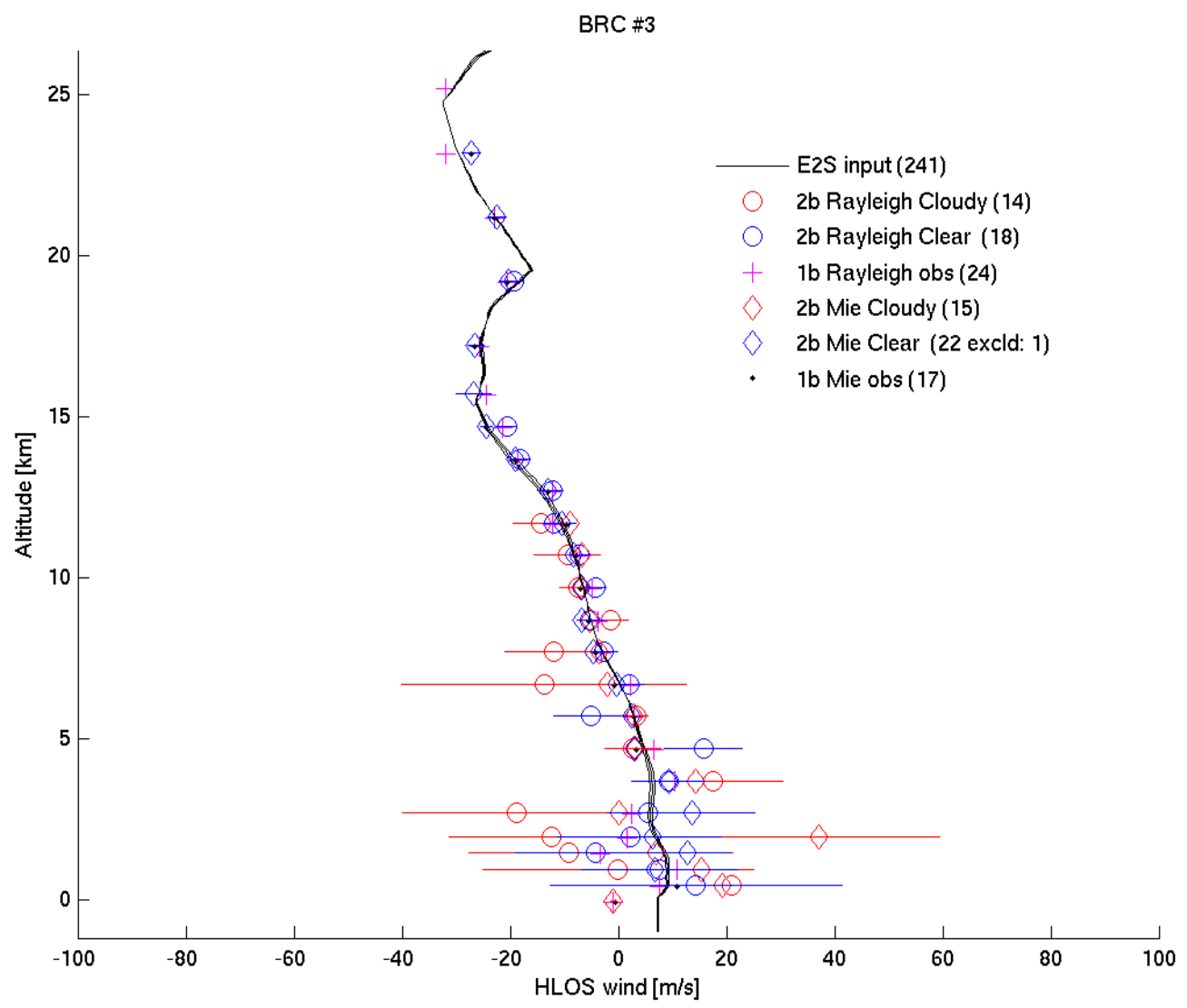


Test_TN3_1_0106 : L2b classification map Mie



Test_TN3_1_0106 : L1b input screening Mie





Todo

- Mispointing tests (9 cases)
 - results look very similar to what was reported for L1B
 - large bias in case of mispointing
 - results not yet studied in more detail
- TN 3.1b description of all test results not yet complete
 - should I finish it, or
 - fix problems found thus far in L2B and plotting tools, take along improvements in L1B as well, re-run all tests, and then finish it...



The end

- questions ?

