



ADM-Aeolus L2B-processor status

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L2B PM19: 16-Jun-2010

L2BP additions (1)

- Additions/work done since previous PM:
 - AuxCal example file added to binary datapack and example JobOrder files as 6th L2BP input file
 - implement SNR threshold profile checking and fill the SNR_Threshold_failed flag in Obs_Mie_Bin_QC
 - wire weight_col2o for MieCore processing to AuxPar switch
 - implement new BUFR template (see next presentation by David and Blazej)



L2BP additions (2)

- Additions (continued)
 - L1B v5.05 fileformat verified with L2BP implementation, and a few minor discrepancies identified



L2BP portability status

L2BP development version dat_CY36R3_May11 has been tested on the following platforms/compiler:

Test results

platform	compiler	xml-library	passed	failed	skipped	missing	remarks	
linux 32 bit intel	g95	ee_cfi	254	0	0	0		
linux 32 bit intel	pgf90	ee_cfi	254	0	0	0		
linux 32 bit intel	ifort	ee_cfi	226	0	0	28	LD_LIBRARY_PATH problem in test script	
linux 32 bit intel	gfortran	ee_cfi	n.a.				compilation fails	
linux 32 bit intel	g95	simple_xml	not yet tested					
linux 32 bit intel	pgf90	simple_xml	not yet tested					
linux 32 bit intel	ifort	simple_xml	not yet tested					
linux 32 bit intel	gfortran	simple_xml	245	0	9	0		
linux 64 bit intel	g95	simple_xml	not yet tested					
linux 64 bit intel	ifort	simple_xml	not yet tested					
linux 64 bit AMD	g95-32 bit	simple_xml	not yet tested					
linux 64 bit AMD	g95-64bit	simple_xml	not yet tested					
linux 64 bit AMD	gfortran-64b	simple_xml	not yet tested					
IBM unix	xlf90	simple_xml	not yet tested					
SUN unix	sun-f90	simple_xml	not yet tested					
NEC unix	sxf90	simple_xml	230	15	9	0	dat_CY36R3_May08_IT6_BufrWrapper	

L2BP todos (1)

- L2BP coding:
 - many cleanups (filling of all variables in L2B product, removal of old workarounds, activate AuxPar switches, etc.)
 - continued development of experimental optional functionality (optical properties, etc.)
 - tuning of thresholds (for input screening etc.)
 - portability (can always be improved)

L2BP todos (2)

- Scientific testing
 - debug weird results in case #0110 (done)
 - run and study all test cases from TN 3.1 using E2S v2.10, L1B v5.05 and latest L2BP software (partially done)
 - interpretation of the results (in progress)
 - implementation of automatic pass-fail criteria checks (in progress)
 - update TN3.1b (not yet done)

Anomaly Report Status (no change)

Status of AR's:

Report	Date:	Description:	Status:
AE-IPF-41	03-Apr-2009	need for IODD update / RID #166	to be re-opened as minor AR for IODD change. Removal of MPH from aux files postponed.

General remark: the small number of reports is mainly caused by the fact that we have almost no users outside the L2BP team to test our software and products....



End of this part

- questions ?





ADM-Aeolus Test results

Jos de Kloe

L2B PM19: 16-Jun-2010



Software and data used for testing:

- Software version/updates used for testing:
 - E2S v2.11
 - prototype of 19-Mar-2010 with patch of 24-Mar-2010
 - L1B v5.05
 - patched version of 8-Feb-2010
 - L2B pre-release v1.50
 - perforce branch nl8_CY36R3_May07
 - L2A v2.05 (but results not inspected due to lack of time)
 - version of 26-Jun-2009 (patches not yet applied)
- Data used:
 - MRC and RRC files posted by O. le Rille 24-Feb-2010.
- Atm. DB. version 1.7, dated 28-Sep-2009

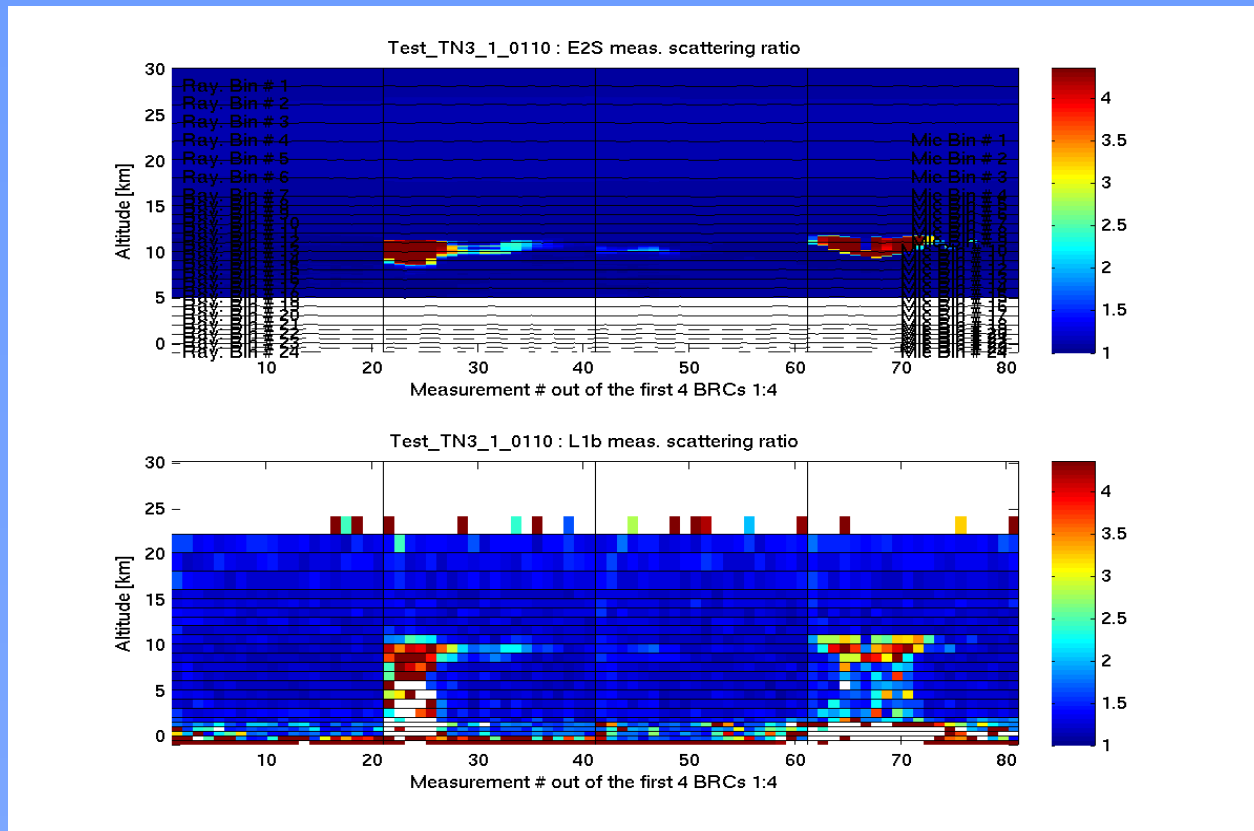
Debugging of case #0110 (1)

- TN3.1 #0110 had very suspicious results, biases far above 100 m/s for the lowest few rangebins for both L1B and L2B wind results

bin	L1B Rayl. std	L1B Rayl. bias	L2B Rayl. clear std	L2B Rayl. Clear bias
18	3.3	-3.08	3.3	-3.2
19	1.0	-2.9	1.4	-3.0
20	31.8	12.0	34.9	13.3
21	115.5	65.8	123.8	70.6
22	300.1	186.9	315.1	197.5
23	622.4	410.7	712.1	567.7
24	NaN	NaN	NaN	NaN

Debugging of case #0110 (2)

- inputs seemed already strange (white area in e2s data), for both scattering ratio and hlos wind:





Debugging of case #0110 (3)

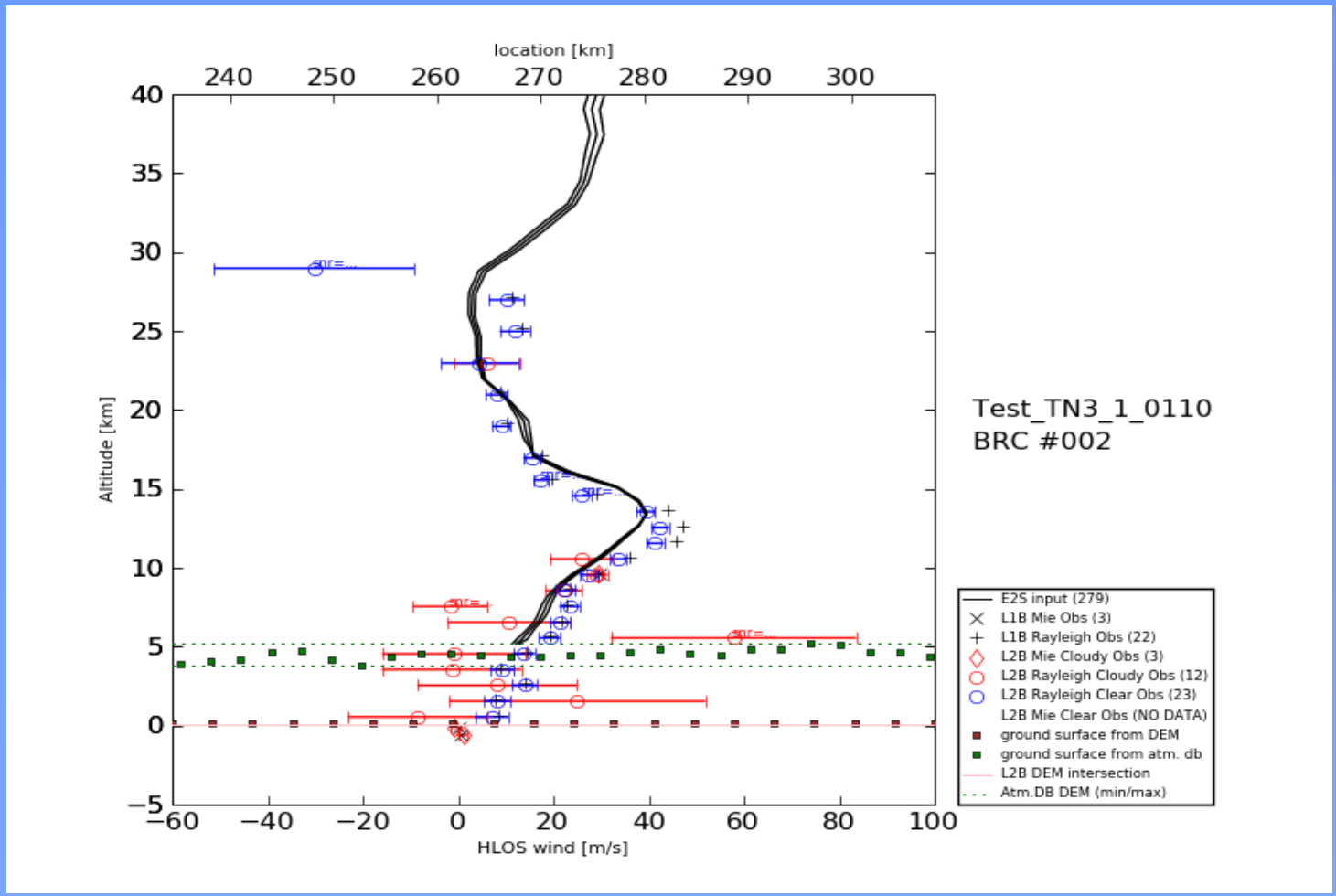
- at first no obvious problem found, so:
 - reimplemented reader
 - reimplemented plotting code
 - added reading of segment input data
(allows comparing E2S inputs and outputs)
- (these were needed anyway for the automatic pass-fail criteria checks)



Debugging of case #0110 (4)

- during this exercise, it became clear that we had overlooked the several different surface levels in the data and their effects:
 - atm. db surface level: mountains
 - e2s surface level: unrelated (rather flat)
- extra atmospheric level at -1 km should give full data coverage anyway ==> NOT HANDLED WELL

Debugging of case #0110 (5)



Debugging of case #0110 (6)

- problem 1: E2S meas. to observation accumulation:
- problem 2: automatic extrapolation or not?

meas bin	1	2	3	4	5	...	20	obs wrong	obs good
1	39.94 km	39.94 km	39.94 km	39.94 km	39.94 km	...	39.94 km	39.94 km	39.94 km
2	39.81 km	39.81 km	39.81 km	39.81 km	39.81 km	...	39.81 km	39.81 km	39.81 km
...
308	1.56 km	1.56 km	1.56 km	1.56 km	1.56 km	...	1.56 km	1.56 km	1.56 km
309	1.44 km	1.44 km	1.44 km	1.44 km	1.44 km	...	1.44 km	1.44 km	1.44 km
310	1.31 km	1.31 km	1.31 km	1.31 km	1.31 km	...	1.31 km	1.31 km	1.31 km
311	1.19 km	1.19 km	1.19 km	1.19 km	1.19 km	...	1.19 km	1.19 km	1.19 km
312	1.06 km	1.06 km	1.06 km	-1.0 km	-1.0 km	...	1.06 km	0.854 km	1.06 km
313	0.938 km	0.938 km	-1.0 km				0.938 km	NaN	0.938 km
314	0.813 km	0.813 km					-1.0 km	NaN	0.813 km
315	0.688 km	-1.0 km						NaN	0.688 km
316	-1.0 km							NaN	-1.0 km



Debugging of case #0110 (7)

- Finally it was found that:
 - we have varying length of arrays that define the atmospheric input (which is allowed!)
 - plotting and validation tools truncate these arrays to shortest one (averaging to obs. level is wrong now)
 - matlab does unwanted automatic extrapolation in its interpolation routine, but only for some interpolation types (especially spline ...)
 - this extrapolation was the cause of the huge wind biases that we have seen
 - solution: interpolate meas. level arrays to a common altitude grid **BEFORE** calculating the observation average
- fix has been inserted in matlab code again

Debugging of case #0110 (8)

- TN3.1 #0110 now shows much improved results (old results in red, new ones in yellow):

bin	L1B Rayl. std	L1B Rayl. bias	L2B Rayl. clear std	L2B Rayl. Clear bias				
18	3.3	2.41	-3.08	3.83	3.3	2.33	-3.2	3.87
19	1.0	0.75	-2.9	5.58	1.4	1.25	-3.0	5.56
20	31.8	1.84	12.0	3.17	34.9	1.92	13.3	3.46
21	115.5	3.94	65.8	3.77	123.8	4.29	70.6	4.03
22	300.1	2.23	186.9	-0.72	315.1	2.88	197.5	-0.27
23	622.4	2.17	410.7	-3.18	712.1	1.85	567.7	-4.61
24	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

Other testcases

- see table
- inspected cases indicated by green bar on right
- many small and some larger changes compared to last run. Especially Rayleigh Stdev sometimes much larger.
- possible reasons:
 - change in random number initialisation in E2S
 - change in E2S mean-to-obs accumulation following bugfix for case #0110: cause more ground echos to be included (?)
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The end

- questions ?

