
L2B pm20:

Burst-vs-Continuous mode

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Overview

- possible scenarios
- assumptions on L1B input
- identification of needed modifications
- estimation of amount of work

Possible scenarios

- A) keep BRC concept but use different accumulation length or make accumulation length adjustable at L2B level
- i.e. user can choose to have 50, 100 or 200 km accumulation, default could be 100 km (multiple of L1B BRC length).
 - produce profiles representative on this L2B BRC level
- B) forget about old BRC concept:
- dynamic choice of accumulation length, depending on required SNR, determined separately for each range bin level
 - possible maximum accumulation length to be set by the user (for example 500 km), or otherwise determined by orbit section in L1B file
 - L2B winds do no longer form profiles !
 - L1B product may still use BRC concept, but L2BP will only use measurement level information

Assumptions on L1B input

- overall organisation kept the same
- measurements still packed into BRCs
- BRC / observation length possibly larger (100 or 200 km)
- only minor changes to L1B product file format

Needed modifications (1)

- all measurement level algorithms can stay the same:
 - optical properties calculations (extinction, scattering ratio)
 - classification, select and weigh measurements
 - input screening (uses L1B BRC looping)
- all BRC level algorithms need to be rewritten (scenario B only)
 - collocation with AuxMet data no longer possible on BRC level, needs to be done separately for each accumulation. Algorithm stays the same.
 - construction of observations needs rewrite
 - wind retrieval can be simplified: it is no longer needed to loop over range bins here, since this will be moved into the main program
 - filling of output data structure and writing L2B product needs rewrite
- some routines become obsolete
 - checking for warm up pulses

Needed modifications (2)

- looping in main program needs to be rewritten (scenario B only)
 - “L1B BRCs no longer used” means we will need to copy all measurement data for all BRCs first to a continuous working array, before data selection and accumulation independent of BRC becomes possible (this will have consequences for memory usage and run time, since at the moment we load and process only one BRC at a time)
 - main looping will thus be the range bin loop, no longer the BRC loop
 - scenario A would need a modification here as well in case several L1B BRCs need to be combined into a single L2B BRC
- data storage needs to be made more flexible
 - Scenario A: to allow combining multiple L1B BRCs into one L2B BRC
 - Scenario B: to accomodate variable number of measurements per accumulation, and unknown number of windresults (max of 5 profiles that we have now is no longer usefull)

Needed modifications (3)

- L1B file format
 - minor modifications
- L2B file format (scenario B only)
 - needs to be redesigned
- Interfacing to IFS of L1B and L2B data and import/export to BUFR format needs to be adapted (scenario B only)
- L2B AUXPAR
 - some new parameters are needed, so minor modification
- all other file formats can stay the same
 - no changes expected for AUXRBC, AUXMET, AUXCLM, AUXCAL file formats

Needed modifications (4)

- Testing and verification tools
 - L2BP unit tests need to be adapted to any changes
 - concept change will make it hard to compare output from old and new situation to validate the implementation
 - data plotting and verification needs to be adapted to file format changes, and for scenario B to new concept without profiles

Estimation of amount of work (line counts based on dat_CY36R4_Aug18)

description	current nr of lines of fortran code	modifications needed for case A	modifications needed for case B
main loop	745	minor change	major change
data storage (workingdata)	2170	no change	major change
observation construction	504	no change	complete rewrite
L2B/L2C data structure	30639	minor change	major change
L1B data structure	15704	minor change	minor change
plot and verification tools	17170 (matlab) and 4855 (python)	minor change	major change
L2C interfacing	?	minor change	major change
total	168.081 (fortran only)	1-3 months ?)	12-18 months (?)

L2B pm20:

L2B Processor status

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L2BP additions

- Additions/work done since previous pm:
 - Clean-ups (L1B interface)
 - Review Mie Core (making it more robust for faulty inputs)
 - L2C interfacing (Blazej/David)
 - Portability (MF)

L2BP portability status

L2BP development version dat CY36R4 Sep25 has been tested on the following platforms/compiler:							
platform	compiler	xml-library	Test results				remarks
			passed	failed	skipped	missing	
linux 32 bit intel	g95	ee_cfi	257	0	0	0	
linux 32 bit intel	pgf90	ee_cfi	255	2	0	0	test_lexer build and stderr problems
linux 32 bit intel	ifort	ee_cfi	250	7	0	0	line break issue at column 80
linux 32 bit intel	gfortran	ee_cfi	257	0	0	0	compiles OK now on fedora 13!
linux 32 bit intel	g95	simple_xml	248	0	9	0	
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	248	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	233	15	9	0	only after manual intervention

The end