L2B processor evolution

- Introduction
- Recent changes
- Upcoming changes for baseline 13
- Planned future changes

L2B processor evolution: introduction

- The L2B processing software is part of the full chain of ground processors, and focusses on NWP assisted generation of Aeolus winds.
- It is updated twice per year to reflect the latest insights in wind processing and calibration.
- The latest 2 releases are:
  - L2BP v3.50:
    - Was released 31-Jan-2021, deployed 26-May-2021.
    - Is used in current baseline 12 NRT production.
  - L2BP v3.60:
    - Was released 31-Jul-2021, not yet deployed.
    - Will be used for upcoming baseline 13 NRT production (expected to start 6-Dec).
    - Will be used for the planned 3rd reprocessing for the FM-A period (Sep-2018 up to Jun-2019).
- The next release will be:
  - L2BP v3.70:
    - Still in development. Release planned for 31-Jan-2022.

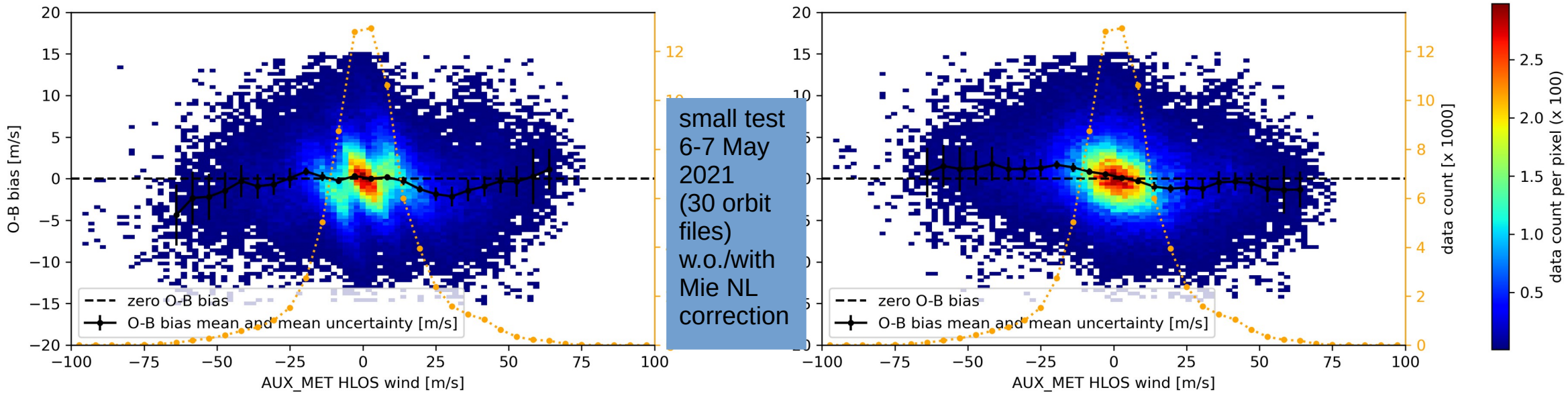
L2B processor evolution: introduction

- Remind that the L2BP software is freely available after registration, and can be downloaded from the ECMWF website:
  - https://confluence.ecmwf.int/display/AEOL/L2B+processor+documentation+and+datasets
- It is largely implemented in Fortran90 and ONLY depends on open source tools like gfortran, gcc, make and python.
- We develop on linux and try to make it compatible to most linux and unix systems.
  - It should also run on MacOS, but not on plain windows.
  - It might run on windows using CygWin or WSL (windows subsystem for linux), but this is not tested and not supported at the moment.
  - It runs very well inside a linux container, so that approach would be recommended on those systems.
- All needed input auxilary data can be freely downloaded from:
  - https://aeolus-ds.eo.esa.int/oads/access/collection/Auxiliary_files_for_L2B_processing
- Needed L1B products can be downloaded from:
  - https://aeolus-ds.eo.esa.int/oads/access/collection/L1B_Wind_Products
- Please feel free to try it if you are interested in:
  - Seeing the effect of changing different algorithm parameters for grouping, classification, etc.
  - Or if you wish to insert alternative NWP data.
- For help and advice you can contact the L2BP developers.

L2B processor evolution: recent changes

The following notable changes have been implemented in L2BP v3.50:

- Improvements in Mie-non-linearity correction (see next talk by G. J. Marseille).
- In addition we had to add extra options to handle hardware related problems:
  - To handle the fact that internal reference results became less reliable.
  - To handle the issue with unreliable pointing when the startrackers are moon-blinded (as shown in the previous talk by M. Rennie).

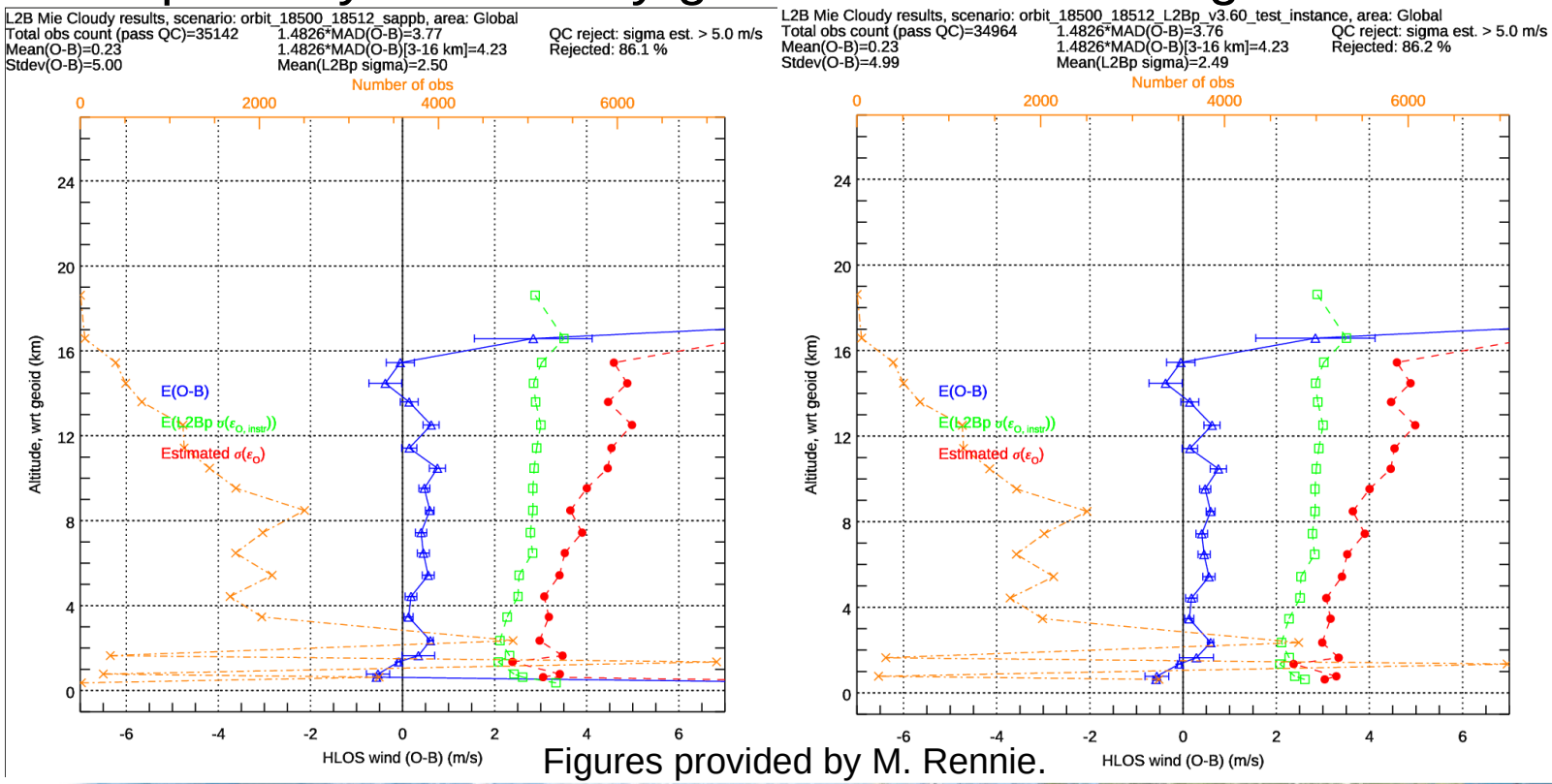


L2B processor evolution: upcoming changes

The following notable changes have been implemented in L2BP v3.60:

- (not activated yet). New parametrization to correct the bias in Rayleigh response from Mie cross-talk, which can be used to improve Rayleigh cloudy winds.
- Added flexibility to flag winds possibly affected by ground echoes if the ground is near.
- Added an option to consider the DEM as provided in the AUX_MET input file.

small test case
12 orbits (1-2 Nov 2021)
w.o./with improved ground flagging:
178 Mie winds discarded
out of 35142 (0.5%)
1108 Rayleigh winds discarded
out of 109796 (1%)
(removes lowest range bin).



Figures provided by M. Rennie.

L2B processor evolution: future plans

The following notable changes are planned for implementation in L2BP v3.70:

- An option to do accumulation of signals before the classification is applied.
  - Recent tests modifying the high resolution measurements (on-board P/N accumulation settings) have clearly shown that this can lead to improved wind quality (thanks to better classification), especially for decreasing signal levels as observed during the mission (as shown in the previous talk by M.Rennie).
  - Adding this to the software will hopefully also bring this improvement to next reprocessing results for data with the old P/N setting.
- An option to allow winds to be generated but flagged invalid during moon-blinding.
  - Currently this flagging removes data before entering the wind retrieval calculation. It also is rather conservative and throws away too much data.
  - We hope this new option will allow us to tune the associated thresholds and allow more winds to be flagged valid around these events.

Questions or suggestions?