ATL09 Known Issues for ASAS V5.1

(Data Release 001)

The following lists the known issues with the ASAS version 5.1 (release 001) ATL09 atmospheric parameters. We are actively working to correct the problems for the next release.

Profile_x/high_rate

Bsnow_con: When blowing snow is found, the confidence that is computed always has the value of "6" – indicating the highest confidence.

Bsnow_dens and ***bsnow_hdens*** are currently undefined

Bsnow_od: is contaminated with surface signal, making the values too large.

Cab_prof: this is the calibrated attenuated backscatter profile. The absolute calibration is fairly good, but the slope of the average signal is somewhat less than molecular in a clear sky environment. This is caused by folding of molecular signal from above 15 km and will be addressed in the next release. *Also, in an area east of Africa westward to over South America, the South Atlantic Anomaly (SAA) causes added noise to the lidar signal. This is only noticeable at night nighttime and is evident as an increase in background. This will be mitigated somewhat in the next version.*

Cloud_flag_asr: works well over Antarctica, Greenland and ocean, but has problems over land. It tends to underestimate cloud cover over land.

Cloud_flag_atm: is the number of layers found in each 25 Hz backscatter profile. There are times when the ground return is misidentified as an atmospheric layer. Thus, in conditions devoid of any cloud or aerosol layers, this parameter could have a value of 1, instead of 0. This problem only occurs infrequently.

Cloud_fold_flag: does not capture all instances of cloud folding (times when there are clouds above 15 km that are folded down to the -0.5 – 3 km height).

Dem_h: has some errors in this release, mainly over and near the Weddell Sea. But there could also be errors in other regions of the globe.

Layer_attr: this is the cloud aerosol discrimination for each atmospheric layer detected. It is of very poor quality and should not be used for this purpose.

Layer_flag: consolidated layer flag – this is an attempt to combine cloud_flag_atm and aloud_flag_asr into one 0/1 flag indicating the presence of cloud/no cloud. Due to a code implementation problem, this flag should not be used.

Layer_top and layer_bot: For very optically thin layers such as elevated aerosol, at times instead of having 1 top and bottom to define the layer, there can be multiple tops and bottoms within the layer. This is caused by the layer finding algorithm picking up on small gradients of backscatter within the layer. This can also infrequently happen in thin cirrus clouds.

Msw_flag *This is the multiple scattering severity flag. When blowing snow has been detected and the optical depth of the layer is > 0.5, the value of msw_flag should be 5. However, it sometimes has the value of 0*

Surface_bin, ***surface_height*** and ***surface_sig*** are affected by the DEM problem. The surface finding algorithm uses the DEM value to define a search window. When the DEM is bad, often the surface cannot be found even when it is clearly there.

Profile_x/low_rate

Bsnow_con: has the value of 6 (highest confidence) whenever a blowing snow layer is detected.

Bsnow_od: is contaminated with ground return and often the values are not accurate.