Comments on " The definition of an atmospheric database for ADM-Aeolus", Marseille, et al.

General Comments

The topic addressed is extremely important but is somewhat out of sync with the process of generating performance requirements for the space-based DWL. As stated by the authors, such a data base is still useful for preparing for data analyses and raising/lowering expectations for the instrument already built and in preparation for launch.

The paper is well written and covers the topic in a thorough manner. The wavelength conversion (532 to 355nm) is done quite well and is as best as can be done until ADM is launched.

While professional preferences (approach, emphasis, assumptions, etc) may be at issue, no errors were identified. This paper should be published with minor revisions suggested under specific comments.

The authors refer to the single line-of-sight ADM wind observations as wind profiles. This is misleading to many readers who expect a "wind profile" to provide speed and direction as a function height. This is not the case for ADM.

Specific Comments

While the paper is based upon the level- 1 CALIPSO products, an explanation of how the level 2 CALIPSO data products may impact any conclusions published in this paper should be provided.

Section 2.1: The statement " the discrimination between atmospheric scenes with clouds, aerosol or combinations of both….less relevance for simulating Aeolus winds" is confusing since the heterogeneous scenes are a challenge to accurate wind observations with ADM.

Section 2.1.2: The last sentence in section 2.1.2 needs to expand on what a magnitude estimate would be for "too small/large lidar ratio". This sound like a serious weakness, but may not be the case.

Section 2.1.3: Exceptions to the use of an invariant lidar ratio between 355 and 532 can be quite large and thus should not be dismissed without some discussion and estimate of the range of lidar ratios for differing aerosol models..can use Omar's if desired (referred to in section 2.1.2)

Section 2.1.4: The assumption of a constant lidar ratio, while not totally without merit, is off-putting and results in unrealistic distributions as shown in Figure 5.

Section 2.1.4: While Aeolus may be able to penetrate thin tropical cirrus, the losses will reduce the accuracy of the wind products below the cloud layers. In many (>50%) of the situations with tropical cirrus, one might expect a velocity error increase ~ 40 -50%. If this is the case, "good quality winds" should be further annotated.

Section 3: Shear with varying aerosol /cloud densities is certain to be a challenge to a wind measurement made over 1 -2 km layers. Is there a way for Aeolus to process the data over thinner layers at the expense of accuracy per layer?

Technical Comments

Figures 1,2,6,7, & 8 are much too small to read (even with glasses).

Section 1. Correct grammar " Radiosonde data do also not provide…."

Section 2.1.1 Correct grammar " …lidar beam is not capable to penetrate…"