

Complementing Quality Assurance in Satellite Data using GRASP's Dynamic Error Estimates

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Quality assurance and quality flagging are crucial elements for accurately analyzing satellite data. In many satellite applications, ensuring the quality of retrieved parameters heavily depends on validation studies and empirically determined tendencies. This happens primarily because pixel error estimates are typically not available.

GRASP (Generalized Retrieval of Atmosphere and Surface Properties, Dubovik et al., 2021) algorithm has the capability to provide the dynamic error estimates for the different retrieved parameters and they can be used for defining the quality assurance criteria. Certainly, the accuracy of generated error estimates themselves also has a number of limitations, therefore it is not expected that use of these estimates fully replaces the conventional quality assurance approaches but rather considered as complementary input for defining the quality flags and criteria.

In this study we describe and analyze the use of the dynamic error estimates provided by GRASP algorithm for the selection of criteria quality filters. We consider the magnitude of the estimated retrieval errors as well as the consistency of these errors across different measurements ensuring that the selected criteria effectively filter out the majority of data with unacceptable error levels without a substantial loss in the amount of data. The tests were performed for the full 2008 year of PARASOL/GRASP over 19 AERONET sites. The evaluation of different filters is shown mainly based on the AOD error at 560 nm. Finally, we show the generation and analysis of the error estimates images over extended selected zones.

References

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