Results and tools developed for evaluation and monitoring of GOES-R/ ABI absorbed shortwave radiation at surface product

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The ABI absorbed shortwave radiation at surface (ASR) algorithm have been evaluated with ten years of MODIS/Terra and MODIS/Aqua data over ten ground stations. The ABI ASR algorithm is composed of two algorithms. The physical algorithm is used when all atmosphere inputs are available while the statistical algorithm is applied when one or more atmosphere inputs are missing. The physical algorithm is based on forward radiative transfer calculations represented in look-up-tables. The statistical algorithm is based on a statistical relationship between the broadband top-of-atmosphere albedo and the surface absorbed flux. An extensive evaluation shows that the ABI ASR algorithm meets the requirements.

For routine monitoring and validation of ASR the tools developed for the base-line ABI shortwave radiation budget algorithm have been adapted. The tools visualize instantaneous ASR retrievals in terms of overall retrieval quality, the retrieval algorithm applied, and reasons for using the statistical algorithm. The validation tools include routine and deep-dive validation over ground showing the accuracy and precision, and a time series of these for each station. The validation tools are applied to ASR retrieval from the year 2002 MODIS/Terra data. Examples of the evaluations and the tools used are shown in the poster.