



A global climatology of the AIRS Version 6 cloud top microphysical properties

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A new set of cloud products from the upcoming Version 6 release of the Atmospheric Infrared Sounder (AIRS) algorithm is described and initial climatological results are presented. The three new cloud retrieval products include (1) cloud thermodynamic phase, (2) cirrus cloud optical thickness, and (3) cirrus cloud effective diameter. The retrieval methodology of the cirrus cloud parameters is based on an optimal estimation approach that uses Level 1B observed radiances and Level 2 cloud clearing-derived atmospheric profiles that define the atmospheric state, surface temperature and emissivity, and cloud top temperature. The Stand Alone AIRS Radiative Transfer Algorithm (SARTA) is coupled to a delta-4-stream (D4S) approximation (SARTA+D4S) to simulate single-layered cloudy spectra. The error characterization and averaging kernels associated with the retrieved fields, and various challenges to operational implementation, will be highlighted. We will demonstrate that the new suite of AIRS cloud products offer useful and tangible constraints for climate model development.