David
Painemal
Analytical Mechanics Associates
W.L. Smith, NASA Langley Research Center
L. Nguyen, NASA Langley Research Center
T. Chee, ADNET Systems, Inc.
A.J. Barnett, Booz Allen Hamilton
R. Palikonda, Analytical Mechanics Associates
A. Khlopenkov, Analytical Mechanics Associates
Cecilia Fleeger, Analytical Mechanics Associates
Andrei A. Vakhnin, Analytical Mechanics Associates
Oral
Numerous applications in satellite remote sensing of surface properties, atmospheric state, composition, and radiation require accurate knowledge of the location and characteristics of clouds. Operational satellite imager radiances are valuable for cloud detection and for deriving many different physical parameters that can be used for a variety of weather, aviation, and energy applications. The NASA Satellite ClOud and Radiation Property retrieval System (SatCORPS) applies a suite of algorithms to meteorological satellite data to provide cloud properties, radiative fluxes and other parameters on a global scale. This paper describes a new global high-resolution dataset of cloud properties made available for community use that is constructed from analyses of a constellation of meteorological satellite imagers. Data taken from Meteosat-8/9 and -11, Himawari-8/9, GOES-16, and -17/-18, Aqua, Terra, Suomi-NPP and NOAA-20 are processed and composited on a 3-km grid to provide hourly global coverage. A historical multi-year dataset is available to serve various needs including modeling challenges related to cloud evaluations and parameterizations. Near real-time data products are also currently available between 60N and 60S. Efforts are underway to operationalize polar orbiting satellite cloud detection methods for low-latency applications over polar regions. The cloud detection and retrieval algorithms have been developed over many years to support NASA weather and climate programs such as the Clouds and Earth’s Radiant Energy System (CERES). To improve the utility of the data products, machine learning and other innovative methods are applied in various ways to help minimize data product uncertainties under the most challenging conditions and to improve their consistency at all times of day. A brief description of the methods highlighting the unique aspects of the SatCORPS data products will be presented along with information on their status and availability.
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