



## Assessing the Diurnal Cycle of Clouds using SEVIRI, MODIS and AVHRR

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The diurnal cycle of clouds represents a major source of uncertainty in the assessment of satellite cloud-climate data records. For some regions and cloud types it is larger than the seasonal cycle. Its full characterization will enable scientists to account for uncertainties among satellite data records from instruments in polar orbit with different equatorial overpass times, interpret differences among satellite data records and models with more confidence, and better characterize the role clouds play in the earth radiation budget.

We use data from the Spinning Enhanced Visible Infra-Red Imager (SEVIRI) to tie multiple polar orbiter cloud data records (e.g., MODIS, AVHRR) to a common time in the diurnal cycle. Our technique characterizes the diurnal cycle independently for disparate cloud types using various cloud properties and ancillary data sets at Level-2 and Level-3 scales. We provide two distinct statistical measures of the magnitude and variability for the diurnal cycle of clouds. The first is tied to a specific time and location within each data record. The second is the statistical relationship between cloud types and the diurnal cycle that is based on all available polar and geostationary data.