Earth observations from geostationary satellites

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The latest generation of geostationary satellites carry sensors such as the Advanced Baseline Imager (GOES-16/17) and the Advanced Himawari Imager (Himawari-8/9) that closely mimic the spatial and spectral characteristics of MODIS and VIIRS, useful for monitoring land surface conditions. The NASA Earth Exchange (NEX) team at Ames Research Center has embarked on a collaborative effort among scientists from NASA and NOAA exploring the feasibility of producing operational land surface products similar to those from MODIS/VIIRS. The team built a processing pipeline called GeoNEX that is capable of converting raw geostationary data into routine products of Fires, surface reflectances, vegetation indices, LAI/FPAR, ET and GPP/NPP using algorithms adapted from both NASA/EOS and NOAA/GOES-R programs. The GeoNEX pipeline has been deployed on Amazon Web Services cloud platform and it currently leverages near-realtime geostationary data hosted in AWS public datasets under a NOAA-AWS agreement. Initial analyses of various products from ABI/AHI sensors suggest that they are comparable to those from MODIS in representing the spatio-temporal dynamics of land conditions. Cloud computing offers a variety of options for deploying the GeoNEX pipeline including choice CPUs, storage media, and automation. By making the GEONEX pipeline available on the cloud, we hope to engage a broad community of Earth scientists from around the world in utilizing this new source of data for Earth monitoring.