

Title	GeoNEX: A Cloud Gateway for Near Real-time Processing of Geostationary Satellite Products
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Abstract	The emergence of a new generation of geostationary satellite sensors provides land and atmosphere monitoring capabilities similar to MODIS and VIIRS with far greater temporal resolution (5-15 minutes). However, processing such large volume, highly dynamic datasets requires computing capabilities that (1) better support data access and knowledge discovery for scientists; (2) provide resources to enable real-time processing for emergency response (wildfire, smoke, dust, etc.); and (3) provide reliable and scalable services for the broader user community. This paper presents an implementation of GeoNEX (Geostationary NASA-NOAA Earth Exchange) services that integrate scientific algorithms with Amazon Web Services (AWS) to provide near realtime monitoring (~5 minute latency) capability in a hybrid cloud-computing environment. It offers a user-friendly, manageable and extendable interface and benefits from the scalability provided by Amazon Web Services. Four use cases are presented to illustrate how to (1) search and access geostationary data; (2) configure computing infrastructure to enable near real-time processing; (3) disseminate and utilize research results, visualizations, and animations to concurrent users; and (4) use a Jupyter Notebook-like interface for data exploration and rapid prototyping. As an example of (3), the Wildfire Automated Biomass Burning Algorithm (WF_ABBA) was implemented on GOES-16 and -17 data to produce an active fire map every 5 minutes over the conterminous US. Details of the implementation strategies, architectures, and challenges of the use cases are discussed.
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