Title	GeoNEX: A Cloud Gateway for Near Real-time Processing of Geostationary Satellite Products

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Keywords	GeoNEX, MODIS, cloud-computing, wildfire, GOES

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.

Event Name	AGU Fall Meeting 2019
Location	San Francisco, CA
Presentation Date	December 11, 2019
Presentation Sponsor	American Geophysical Union (AGU)
Presentation URL	https://agu.confex.com/agu/fm19/webprogrampreliminary/Paper510676.html