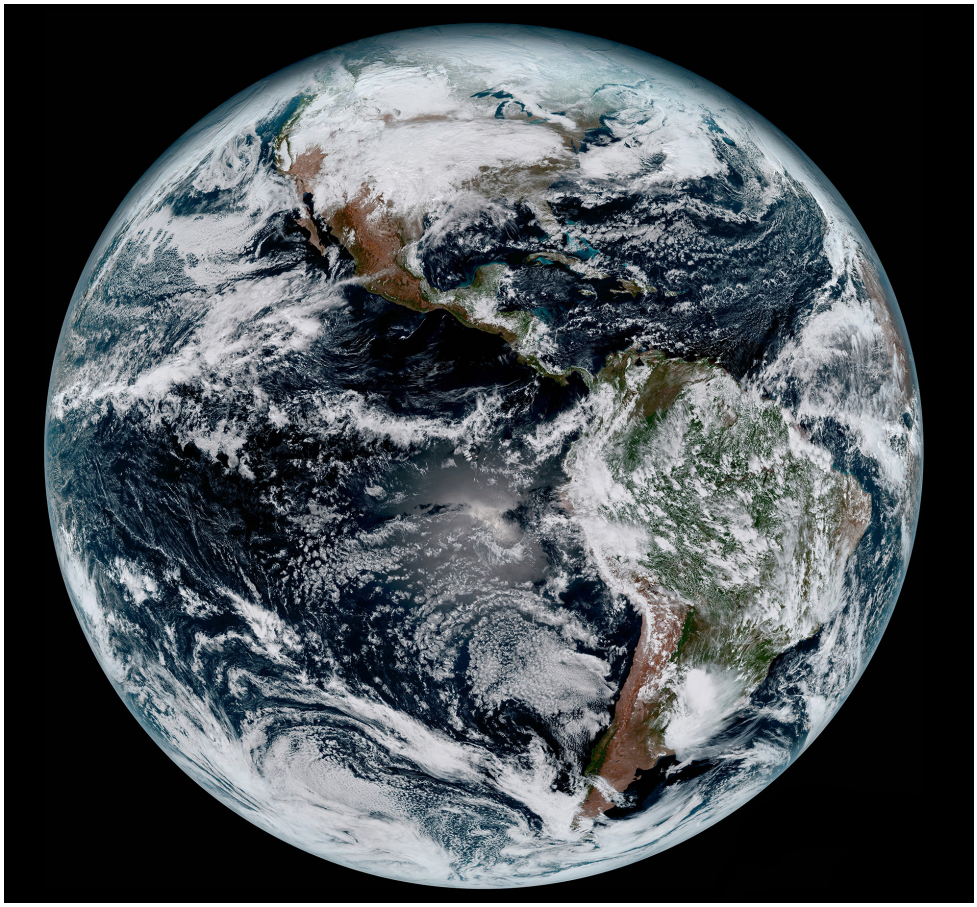
Geostationary Extended Observations (GeoXO)

FACT SHEET

NOAA's GeoXO satellite system will advance Earth observations from geostationary orbit. GeoXO will supply vital information to address major environmental challenges of the future in support of U.S. weather, ocean and climate operations. The GeoXO mission will continue vital observations provided by the GOES-R Series and bring new capabilities to address our changing planet and the environmental challenges that threaten the security and well-being of everyone in the Western Hemisphere.



What will GeoXO provide?

NOAA is planning a three-satellite GeoXO operational constellation.
Credit: Lockheed Martin

- Real-time, high-resolution visible and infrared imagery for monitoring Earth's weather, oceans and environment.
- Lightning detection to analyze severe storms, predict the intensity of hurricanes, respond to wildfires, estimate precipitation, and mitigate aviation hazards.
- Real-time information about the vertical distribution of atmospheric moisture, winds and temperature for better numerical weather prediction and short-term severe weather forecasts.
- Observations of air pollutants to improve air quality monitoring and mitigate health impacts from severe pollution and smoke events.
- Measurements of the biology, chemistry, and ecology of the ocean to better assess ocean productivity, ecosystem change, coastal and inland water quality, seafood safety, and hazards like harmful algal blooms.

GeoXO information herein is notional, subject to funding authority approval.

https://www.nesdis.noaa.gov/GeoXO

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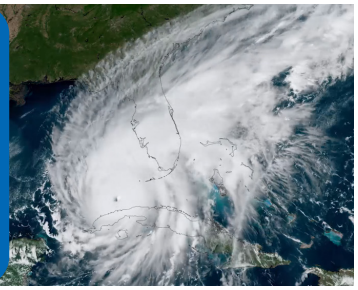
Why do we need GeoXO?

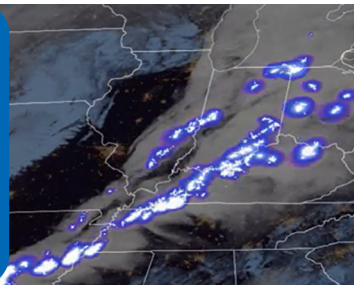
Geostationary satellites orbit 22,300 miles above the equator at the same speed the Earth rotates, allowing them a constant view of the same area. GeoXO will continuously observe the Western Hemisphere to detect and monitor events as they unfold.

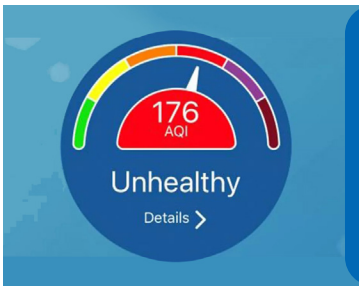
Hurricanes: Real-time monitoring of storm properties, tracking of storm position and movement, wind and intensity estimates; improved tack and intensity forecasts



Industrial hazards: Detection and hazards forecasting of oil spills and chemical and toxic material

Severe storms: Detection of storm potential, improved forecasts and warnings, real-time monitoring of cloud properties, atmospheric motion, moisture in the atmosphere, and severity of storms





Air pollution: Air quality monitoring and forecasting, trace gas monitoring, improved forecast models; mitigation of impacts on human health and environmental ecosystems

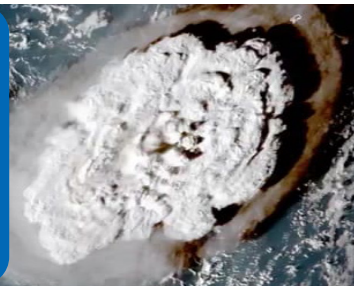
Numerical weather prediction: Improved forecast accuracy and early predictions of severe weather

Harmful algal blooms: Detection and monitoring of harmful algal blooms and coastal pollution, identification of toxic species; reduced economic and public health impacts

Wildfires: Early warning of potential ignition, hot spot detection, real-time tracking of fire behavior, smoke monitoring, and size, temperature and intensity estimation

Fisheries management: More refined estimates of fisheries yield, improved protection of shellfish stocks, increased fishing efficiency, fewer fisheries closures

Volcanic eruptions: Real-time detection and monitoring of eruptions, ash, lightning, and volcanic cloud behavior; detection and monitoring of sulfur dioxide and air quality



Aviation: Fog detection and dissipation prediction, aircraft icing threat detection, turbulence prediction, volcanic ash monitoring and fewer weather-related flight delays

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