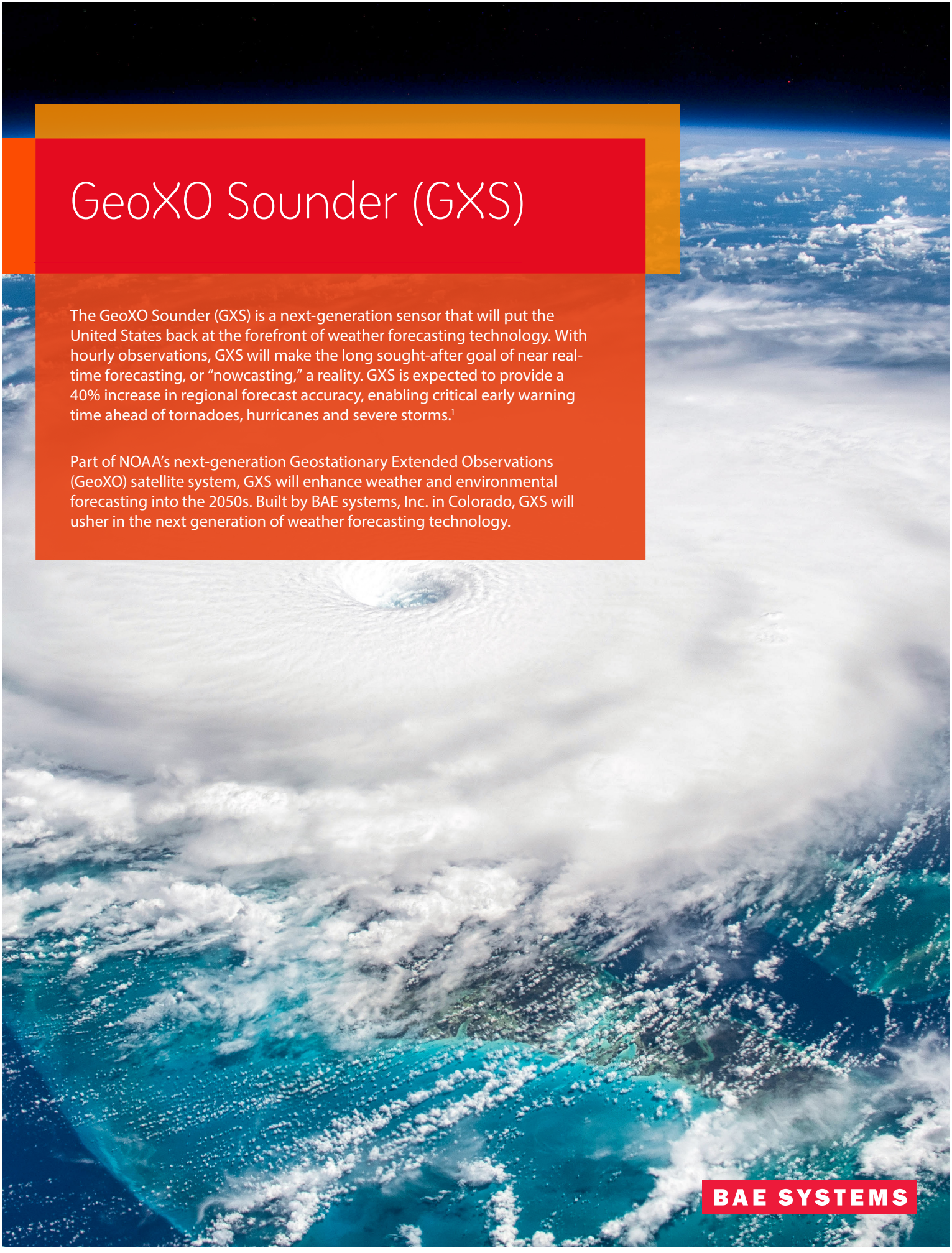

GeoXO Sounder (GXS)

The GeoXO Sounder (GXS) is a next-generation sensor that will put the United States back at the forefront of weather forecasting technology. With hourly observations, GXS will make the long sought-after goal of near real-time forecasting, or "nowcasting," a reality. GXS is expected to provide a 40% increase in regional forecast accuracy, enabling critical early warning time ahead of tornadoes, hurricanes and severe storms.[1]

Part of NOAA's next-generation Geostationary Extended Observations (GeoXO) satellite system, GXS will enhance weather and environmental forecasting into the 2050s. Built by BAE systems, Inc. in Colorado, GXS will usher in the next generation of weather forecasting technology.

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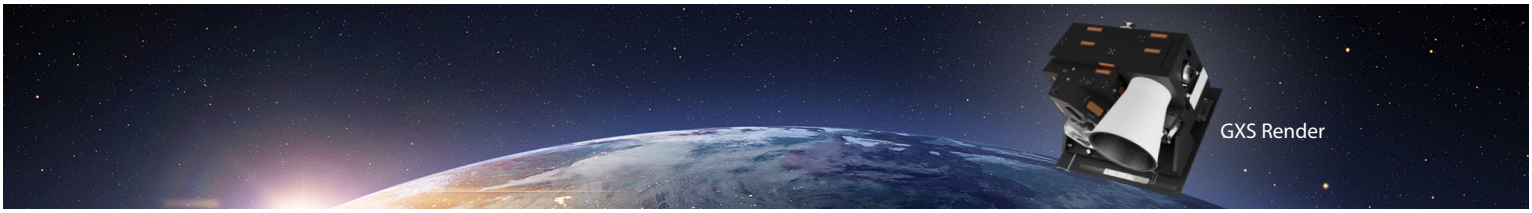

Overview

GXS will enable near real-time forecasting, or "nowcasting," improving regional forecasts over the U.S. by 40% and contributing to global forecasts that are currently informed by European and Chinese sounders.[1] Hyperspectral infrared sounding is a game-changing technology that has been on forecasters wish list for decades.

In 2018, weather-related airline delays cost the airline industry $18.9 billion, according to the Federal Aviation Administration.[2] GXS data will help to reduce these delays by providing an estimated benefit of two dollars for each dollar spent on GXS. Analysis of simulated GXS data has shown that the instrument will be the dominant contributor for improving forecasts over the United States, with more than two times the value of any other source.[1] The value of GXS is enhanced even further when paired with planned enhancements in ground-based weather radar.

Our Role

BAE Systems, Inc. was selected by NASA on behalf of NOAA to develop GXS. Our innovative GXS design leverages prior investments made by the Department of Defense and will advance technologies to enable future civil and defense missions.

For more than 40 years, BAE Systems, Inc. has designed and built innovative remote sensing instruments and systems—providing actionable environmental intelligence.

Case Study

- FEMA projects up to $3.5 to $7 billion in Hurricane Helene flood insurance claim payments.[3] (Learn more)

GXS Benefits

- Airlines: GXS data will help reduce weather-related airline delays with more accurate forecasts. Even a 1% reduction in airline delays would equate to $2 billion annually.[2] In addition, GXS can detect wind shear, helping aircraft predict and avoid turbulence.
- Hurricanes: Improved information on hurricane position and intensity enhances preparedness and can help reduce unnecessary evacuations by increasing forecast accuracy and certainty. GXS is expected to provide a 40% increase in regional forecast accuracy.[1] Previous studies have shown that the 50% increase in forecast accuracy between 2007 and 2020 saved an estimated $5 billion per hurricane.[4]
- Tornadoes: Real-time dynamic weather data, which is currently unavailable, would enable earlier warning of severe weather events. GXS will enable "nowcasting" and enhance tornado and thunderstorm forecasting, helping to reduce loss of life and property from rapidly developing storms.[1]
- Energy: Improved inputs to energy load forecasting will lead to an estimated 2.5% error reduction, generating $629 million in benefits to the energy sector over the life of GXS, according to NOAA.[2]

Resources
(1) Adkins J. 2022. (2) Adkins J, Alsheimer F, Ardanuy P, et al. 2023. (3) FEMA. 2024. (4) NBER. 2024.

BAE Systems, Inc.
303-939-4000 • www.baesystems.com

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