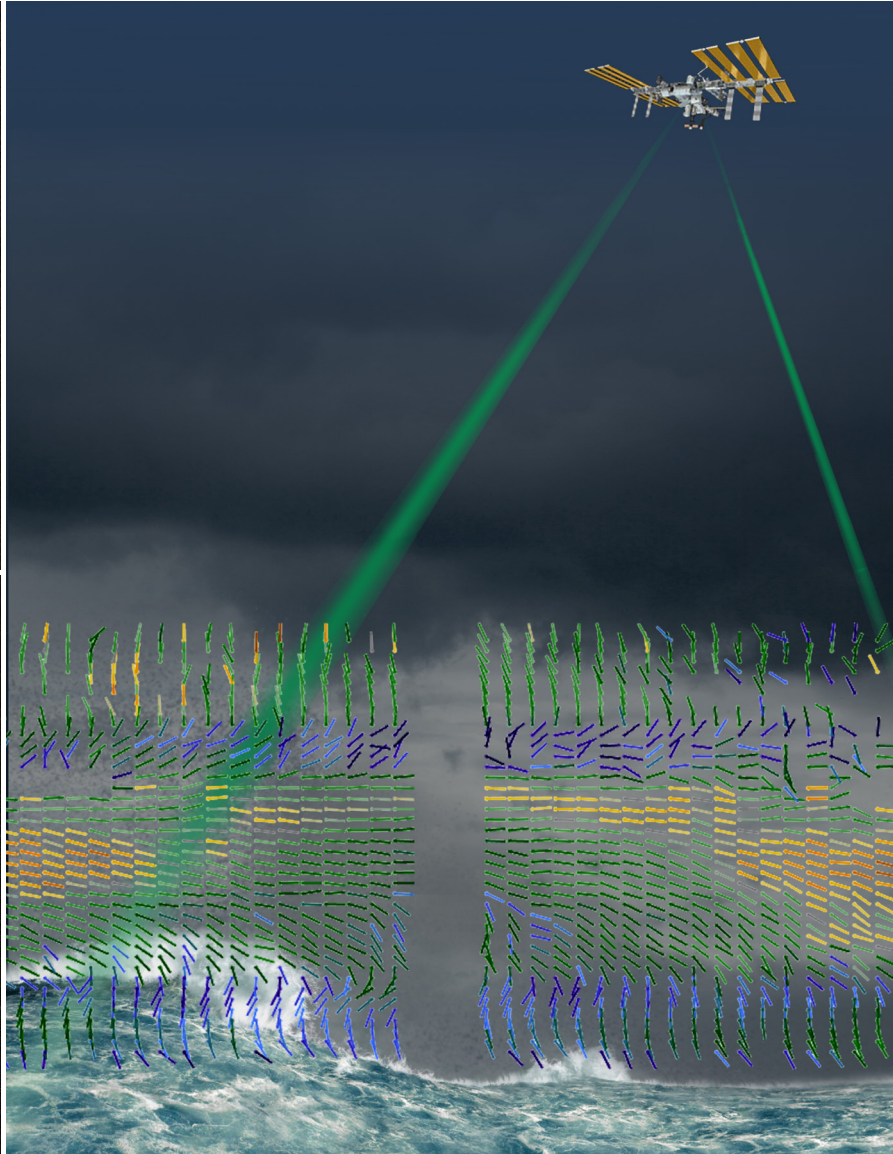


# ATHENA-OAWL



GO BEYOND WITH BALL.®

For more than 40 years, Ball Aerospace has designed and built innovative space systems that collect critical data to improve our understanding of the environment. We are working to increase our knowledge of atmospheric dynamics by providing high quality wind profile measurements. Optical Autocovariance Wind Lidar (OAWL) aerosol and wind profiles can be used to improve understanding of weather, water and energy cycles and climate processes and variability.

## THE MISSION

The ATHENA-OAWL mission would significantly increase our knowledge of atmospheric dynamics by providing high quality wind profile measurements with regular horizontal distribution over 80 percent of the Earth's surface. Combined with OAWL aerosol profiles, the wind profiles would improve our understanding of weather, water and energy cycles, and climate processes and variability.

## OBJECTIVES

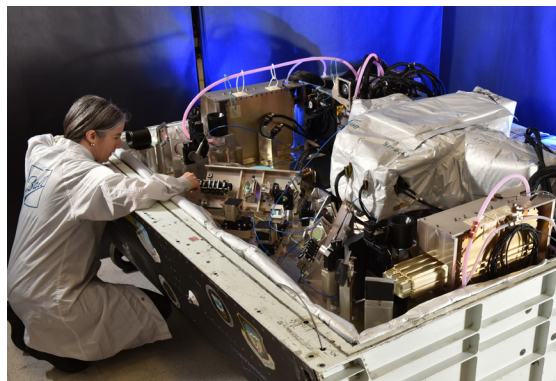
- Create a breakthrough in prediction and understanding of low and mid-latitude weather and climate via improved sampling of wind profiles.
- Improve our understanding of the effects of the interaction between aerosol radiative forcing and atmospheric dynamics on the genesis and lifecycle of tropical cyclones via co-located aerosol and wind measurements in the tropics.
- Improve our understanding of the impact of concurrent wind-aerosol measurements on long-range aerosol transport affecting the global energy/water cycles and aerosol forcing of climate and air-quality.

## OUR ROLE

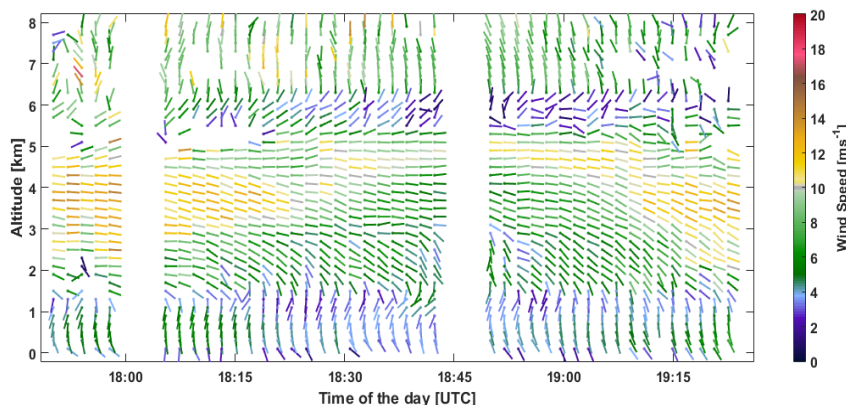
In 1998, Ball Aerospace began working on space-based Doppler wind lidar solutions to provide global atmospheric wind data as actionable environmental intelligence. To date, Ball has invested internal research and development funds for wind lidar technology development and multiple mission architecture studies, including the architecture proposed for the ATHENA-OAWL mission. Together with grant funding from NASA, we have designed, built and validated multiple versions of the OAWL system. This includes the ATHENA-OAWL Airborne Demonstrator, the Green-OAWL (GrOAWL) which recently flew on the NASA WB-57 jet.

## QUICK FACTS

- Breakthrough wind lidar measurements from the ISS serve as a pathfinder for future operational 3D-winds missions
- Will measure winds with a regular horizontal distribution over 80 percent of Earth's surface
- Will provide more than 10 times more wind profile measurements across the oceans than provided by the current measurement systems (e.g. radiosondes)
- The ISS orbit:
  - Covers >80 percent of the globe
  - Focuses on the middle latitudes where the scientific demand for additional wind profiles is strongest
- Additional winds data is expected to extend the useful forecast range by about four hours
- The instrument design leverages heritage technologies from the CALIPSO mission (>10 years on orbit) reducing mission risk



GrOAWL Airborne Demonstrator for the ATHENA-OAWL mission.



GrOAWL wind profiles from June 17, 2016