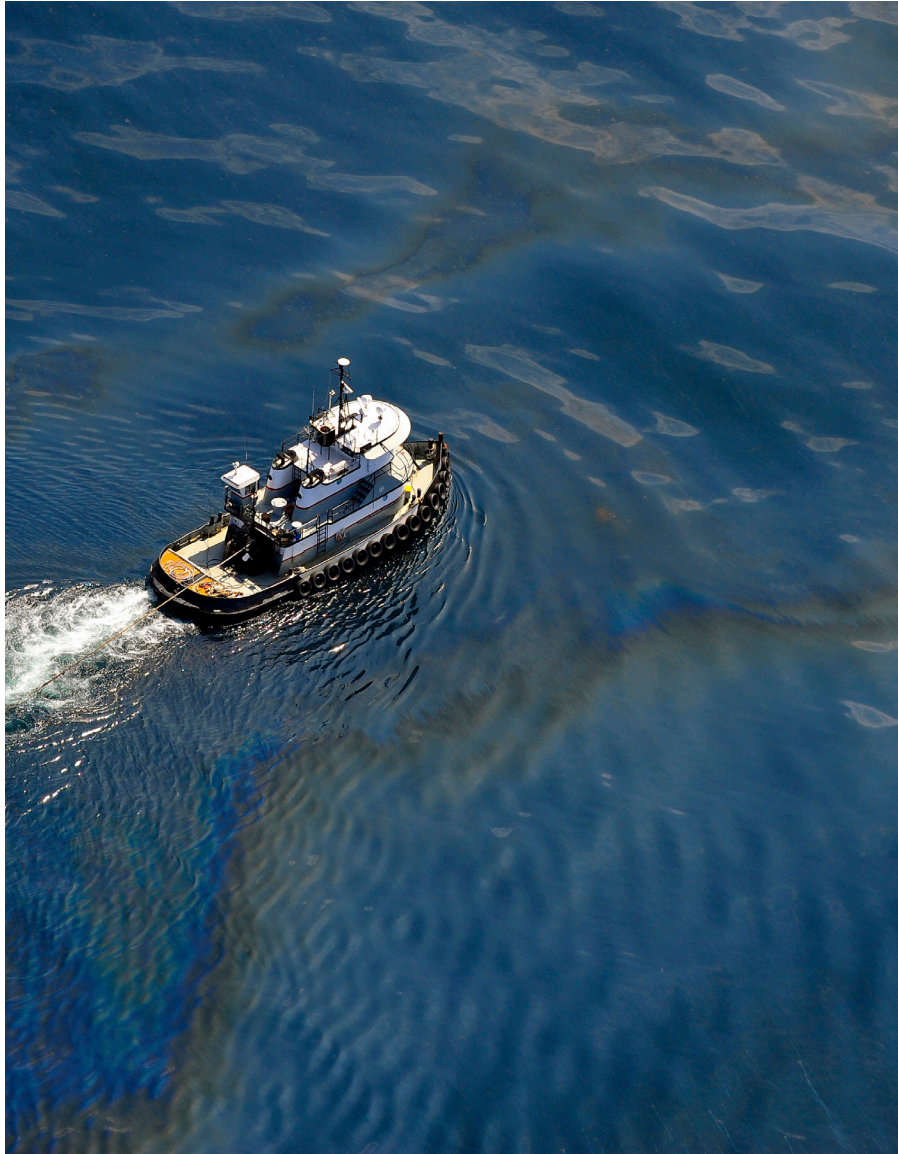


# BESST THERMAL RADIOMETER



Full size model of BESST sensor



GO BEYOND WITH BALL.®

Our Ball Environmental Sea Surface Temperature (BESST) thermal radiometer provides scientists and decision makers the high accuracy data they need to monitor changes in the ocean and respond quickly and more efficiently to events such as oil spills.

# OVERVIEW

Sea surface temperature (SST) is a crucial component of our global climate and helps to inform weather models and predictions.

Configured for airplane or drone use, our highly-calibrated BESST thermal radiometer collects very high spatial resolution data over coastal areas and inland waterways to identify small-scales changes in water temperatures.

This data can be used for various applications, including monitoring thermal pollution; providing information on the extent and location of oil spills; and studying diurnal and seasonal changes to bodies of water.

Small, light-weight and modular, the BESST sensor provides more precise SST data more frequently over a broader area of regard than comparable ship-based sensors.

With a Technology Readiness Level of 9, BESST is flight proven. Performance highlights include:

- Flying during the 2010 Gulf Oil spill
- Deployment as part of NASA's Marginal Ice Zone Ocean and Ice Observations and Processes Experiment (MIZOPEX) campaign
- Invitation for cross-calibration comparison at NPL with University of Miami's M-AERI and other terrestrial IR radiometers used for satellite validation.

The BESST sensor leverages Ball's more than 40 years of expertise in designing and building highly-calibrated instruments for environmental monitoring.

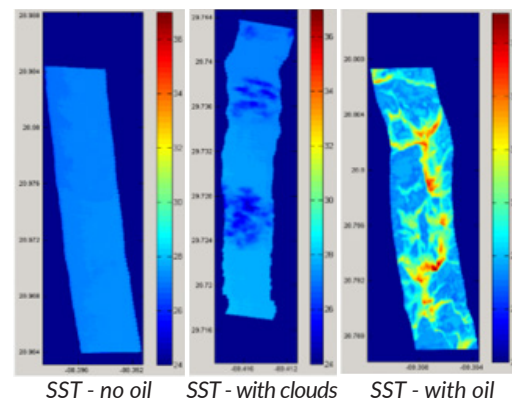
# ADVANTAGES

- Used for identifying sharp temperature changes or anomalies
- Can be used to calibrate and validate satellite measurements
- Can identify oil on water to locate thicker or thinner patches for mitigation efforts
- Easier to build, operate and deploy than ship-based sensors
- Better accuracy than conventional aircraft SST sensors
- Two filters allow for atmospheric absorption correction
- Rapid results
- Includes absolute surface variations, including diurnal, daily, periodic and seasonal
- Includes an uncooled microbolometer – smaller size, complexity and cost advantages
- On-board calibration: Blackbodies provide calibration for brightness temperature and absolute temperature with known emissivity, as well as cold-skyview

# SPECIFICATIONS

PARAMETER	SPECIFICATION
Optimal Aircraft Altitude <sup>1</sup>	5,000 ft
Swath Width	1,500 ft
Ground Resolution	10 ft
Accuracy	+/- 0.2 °C
Data Collection Rate	1 GB/hr
Field of View	18°
Sensor Weight	7 lbs (use on plane or drone)
Optical Head Size	8 in x 8 in x 7 in

<sup>1</sup>Characteristics presented are for optimal aircraft altitude. Parameters scale with altitude.



BESST identifies oily water with strong thermal gradients on the sea surface during the 2010 oil spill in the Gulf of Mexico. Information useful in addressing clean-up efforts.

BESST results line up with MODIS satellite data but provide 300 times higher spatial resolution.

