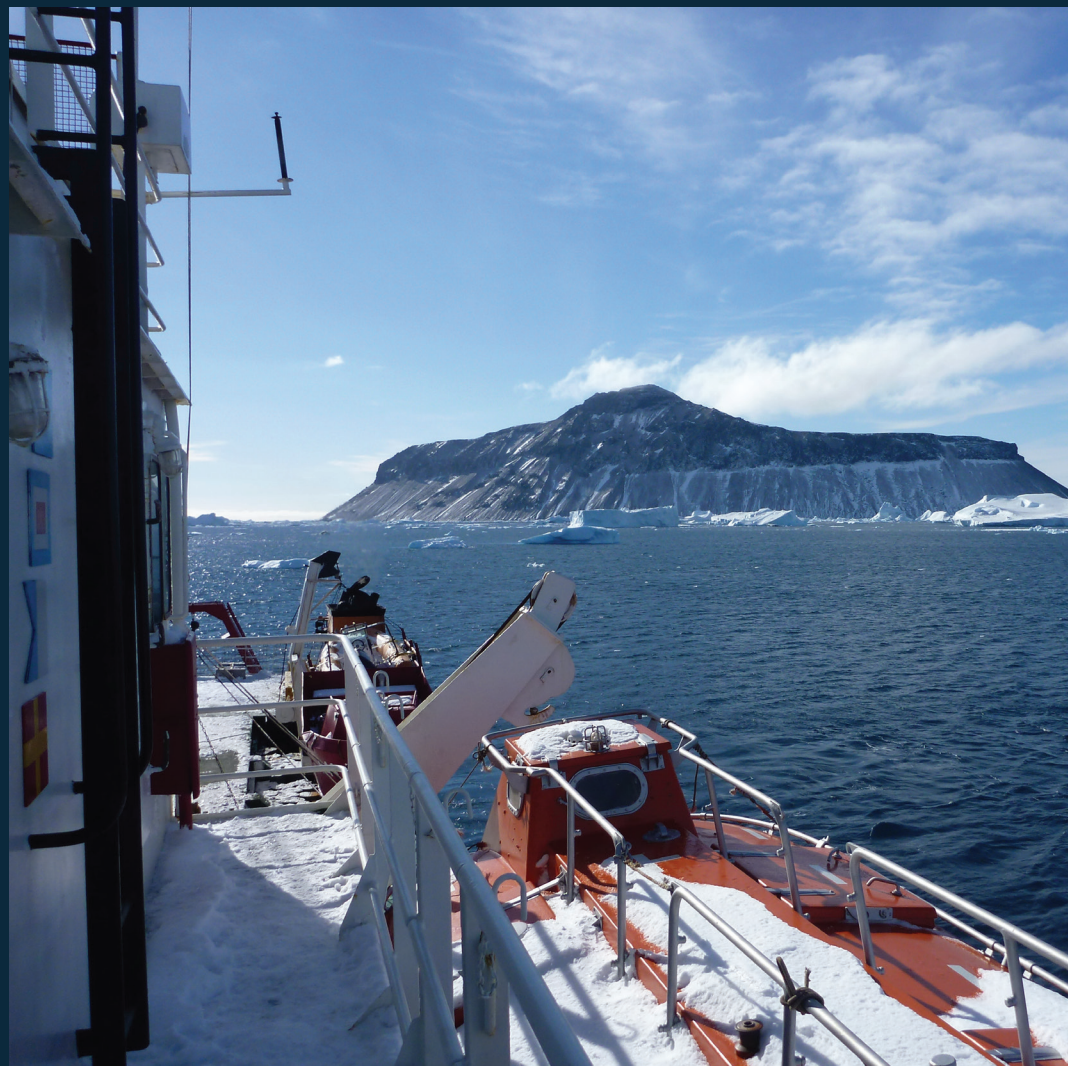


**VAISALA**

# Extreme performance for extreme expeditions

Solutions Brochure



# High-quality, reliable metocean data in extreme conditions

Oceanic and atmospheric research is important for understanding and protecting the complex ecosystems that support our planet. Multipurpose oceanographic research vessels fill an important need, making it possible to carry out research expeditions in every corner of the sea.



Photo credit: Arctia

Multipurpose oceanographic research vessels operate in the toughest environmental conditions, from coastal areas to the most remote regions of the ocean. Researchers and ship operators depend on accurate metocean data about the sea state, wind, and all other weather conditions for everything from oceanic and atmospheric research to safe navigation.

Fortunately, you can make confident decisions with observation data from Vaisala's reliable and accurate sensors, as well as complete environmental monitoring solutions.



## Research in the most challenging environments

Marine research vessels are usually customized to suit operational needs. Utilized for various purposes and in diverse oceanic regions and polar areas, the vessels support a wide variety of research goals such as hydrographic, oceanographic, climate change, fisheries and offshore exploration.

The vessels, equipment and instruments must be built to perform in the toughest environmental conditions.

## Get the most accurate weather data for your research expedition

Dependable and accurate measurements of environmental parameters is critical for successful research expeditions. Vaisala offers specialized meteorological, hydrological and oceanographic environmental measurement solutions and engineering services for all kinds of oceanic research vessels. A Vaisala Environmental Monitoring System (EMS) can also be upgraded to comply to a CAP437 Helideck Monitoring System (HMS).

Vaisala's weather solutions are best-in-class and built to withstand everything from arctic conditions to high humidity and tropical weather – so you can be confident they are always at work to improve your ship's safe and efficient operations and provide the highest level of research support.



## A comprehensive Environmental Monitoring System with unprecedented accuracy

Building on more than 85 years of scientific innovation and measurement leadership, Vaisala has a unique understanding of weather measurement needs. Our extensive expertise and global presence – with solutions in over 120 countries – makes us your global maritime weather expert.

Vaisala equipment is designed to last, and much of it is modular and upgradeable so systems can be expanded and enhanced to suit your evolving research needs. Moreover, we value long-term relationships with our customers and provide support throughout the entire solution's life cycle.



Photo credit: Aranda

# Confidence starts with proven technology

Take confidence knowing that reliable and accurate sensors form the backbone of your marine weather system to help your vessel to operate safely in all weather conditions. Vaisala weather sensors – featuring our world-class WINDCAP®, RAINCAP®, HUMICAP® and BAROCAP® technologies – are designed to stand up to whatever the weather throws at them.

## Common EMS components for marine research vessels

### Wind

Vaisala WINDCAP® Ultrasonic Wind Sensor WMT700

- WMO and ICAO compliant with DNV Type Examination certificate
- Heated model ensures performance in arctic weather conditions
- Maintenance free



### Remote wind monitoring

Vaisala WindCube® Scan Explore Edition

- Provides precise spatial wind data 360° at ranges up to more than 10 km
- Industry leading warranty and maintenance package
- Harsh weather resistance with extreme temperature reliability
- 4G connectivity for remote deployment
- Advanced scanning head with heated lens



### Pressure

Vaisala BAROCAP® Digital Barometer PTB330

- Redundant sensors ensure reliable and accurate readings
- Height and altitude-corrected pressure (QFE, QNH)
- Low hysteresis, high repeatability and long-term stability



### Temperature & humidity

Vaisala HUMICAP® Humidity & Temperature Probe HMP155

- Patented warmed humidity probe technology ensures quick recovery in high-humidity marine environments
- Superior long-term stability even in gaseous chemical environments thanks to chemical purge technology



### Visibility & present weather

Vaisala Visibility and Present Weather Sensor PWD20/22

- Provides superior visibility measurement and detects multiple precipitation types
- High accuracy and low maintenance in a weatherproof design
- Proven forward-scatter measurement principle measures Meteorological Optical Range (MOR)



## Cloud height & coverage

### Vaisala Ceilometer CL31

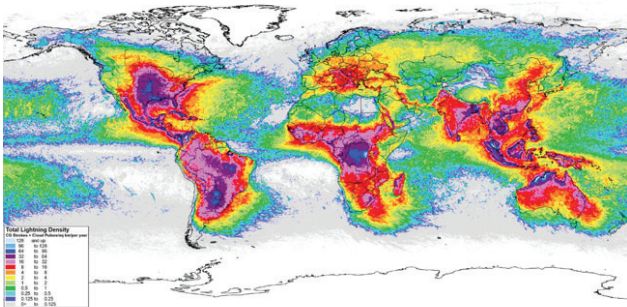
- Excellent cloud detection performance during precipitation
- Uses pulsed diode laser lidar (light detection and ranging) technology
- Single-lens optics enable low-cloud detection



## Lightning

Vaisala Global Lightning Dataset (GLD360), part of our Xweather family of subscription based products

- Global, accurate real-time lightning detection sensor network owned and operated by Vaisala
- Accurate early detection and tracking of severe weather
- No hardware required: Available as a data feed or with web-based Vaisala Thunderstorm Manager



## Weather forecast

### Vaisala Weather API

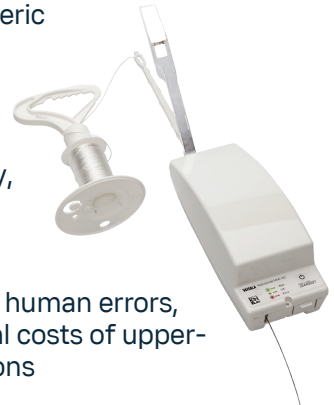
- Searchable historical database for interpolated conditions at any point on the planet going back to 2011
- Near real-time current observations and conditions in any location
- Forecasts available globally for up to 15 days, plus a 60-minute precipitation forecast



## Upper-air observations (soundings)

### Vaisala Radiosonde RS41

- High-quality atmospheric sounding data for the most accurate weather forecasting
- Measures temperature, humidity, pressure, and wind speed and direction
- Streamlines launch preparations, reduces human errors, and lowers operational costs of upper-air weather observations



## Waves

Oceanographic sensors with accurate data across a range of parameters and purpose

- Wave radar for wave height, period, direction, sea level, air gap and tide measurement
- Sensors for sea conductivity, temperature and salinity
- Ocean current meters and profilers
- Motion reference units



## Data gathering & processing

### Maritime Observation System AWS430

- Multi-sensor data gathering with possibility to add additional sensor options
- Supports all NMEA and IEC requirements for data communication
- Withstands corrosive conditions, vibrations and shocks as well as freezing conditions in extreme-weather environments



## Get the most accurate weather data for your research expedition

Vaisala has the experience to help you plan, install, operate and maintain the EMS that's just right for your needs.

Whether you require a complete system for turnkey delivery, an upgrade to your present capability, or just want the option of a low cost data-only service, we have the know-how to design full solutions. Every step is handled with expertise, from site surveys to determine the ideal equipment location to implementation and commissioning at research vessels.

## Why Vaisala?

Weather and environmental insights are the greatest catalysts for successful maritime operations— from sensors to systems and digital services, Vaisala provides actionable insights that empower stakeholders to confidently meet challenges and harness new opportunities.

Our globally trusted maritime weather solutions enable remarkable efficiency gains, digital transformation, the protection of people and investments while supporting sustainable and responsible operations.

We are scientists and explorers driven by passion, relentless curiosity, and the desire to create a better world. Backed by 85+ years of unmatched scientific leadership, our solutions increase maritime weather awareness and drive innovation.

