Pioneering soundings with reduced plastic

Case Study

The client:

Australia Bureau of Meteorology

Vaisala solution:

Radiosonde RS41 E-models

Providing trusted weather observations for a sustainable future

As Australia's national weather, climate and water information agency, the Bureau of Meteorology collects upper air meteorological data across the Australian mainland, offshore islands and external territories.

Radiosondes reach into the upper atmosphere where they provide critical weather data, and are essential for weather forecasting and numerical modeling worldwide.

THE CHALLENGE:

Maintain critical soundings while respecting the environment

The Bureau releases about 15,000 radiosondes per year from 38 sounding stations. This upper air observation network is geographically diverse, spread across the Australian mainland, offshore islands, and Antarctic and sub-Antarctic stations.

Many of the stations are by the ocean or close to environmentally sensitive areas such as the Great Barrier Reef.

Sustainability is vital in Australia, and the Bureau is very aware of the impact the network can have on the environment. Since radiosonde flights continue to form a critical component of weather prediction the organization was on the lookout for radiosondes that would reduce waste in case they could not be retrieved.

THE APPROACH:

Industry-first performance and biodegradability

The Bureau of Meteorology has been working to incorporate sustainable materials into their soundings since 2019. For example, they have been using blue sounding balloons (which

"The Bureau recognizes that radiosondes contribute significantly to numerical weather prediction, and we need to make sure we've done all we can to reduce their impact. The Radiosonde RS41 E-models are impressive for their biodegradable materials and performance. We plan to use them in all of our stations."

Andrew Winchester
Asset Manager – Upper Air Network, Bureau of Meteorology

marine wildlife are the least likely to ingest) and biodegradable parachutes since 2019.

When the Bureau learned that Vaisala was developing radiosondes with biodegradable materials, they enthusiastically took on the challenge of testing the new products.

First, the Bureau conducted early performance trials of Vaisala BioTwine™ — plastic-free and biodegradable unwinder twine. Results showed the measurement accuracy of the RS41 radiosonde is not affected by the change in string material.

Next, they conducted biodegradability and performance trials of Vaisala Radiosonde RS41 E-models — an industry first in biodegradable materials. Radiosonde RS41 E-models include BioTwine as well as Vaisala BioCover™, patent-pending, plastic-free and biodegradable radiosonde cover and insulation.

The results of the trials showed that Radiosonde RS41 E-models are not only a major step forward in using biodegradable materials, but their performance is just as accurate and reliable as the worldclass Vaisala Radiosonde RS41.

THE RESULTS:

A major step forward in reducing plastic waste

The Bureau of Meteorology has been impressed by the RS41 E-model's uncompromising performance and truly biodegradable unwinder twine and cover, and found it easy to replace standard radiosondes with the new ones. Building on the successful initial trials, the organization has expanded trials to three network sites and plans to use the radiosondes at all of their stations.

The Bureau is actively collaborating with suppliers to explore opportunities for enhancing sustainability within its network, considering the anticipated increase in balloon flights to meet Global Basic Observing Network requirements.

As they continue to foster relationships with providers to drive ongoing sustainability improvements, the organization is sharing knowledge with the meteorological community to collectively transition towards greener data collection systems.

Why Vaisala?

As the global leader in weather and environmental measurements, Vaisala provides trusted weather observations for a sustainable future. With over 85 years of experience and customers in 170+ countries, from the North and South Poles to Mars, we help provide the most reliable and accurate weather and climate information for better and safer daily lives.

Our instruments and intelligence are known as the gold standard for precision and reliability. As a sustainability leader we enable meteorology professionals to better understand, forecast and explain climate change. We continue to channel our curiosity into climate action and new ways of enabling a better planet for all.

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