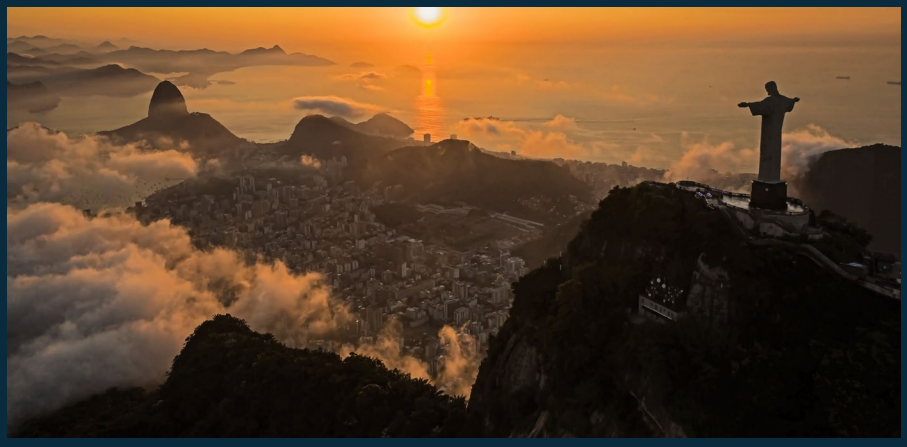
Rio's radar revolution: Enhancing weather predictions with X-band technology

VAISALA

Case Study



The client:

Rio Operations Center

Vaisala solution:

X-band Weather Radar WRS400

THE CHALLENGE:

Heavy seasonal rains and terrain blocking radar signal

Rio de Janeiro, known for its tropical climate and complex topography, faces significant weather challenges. Severe weather events from the South Atlantic Convergence Zone, mesoscale convective systems, and southern cold fronts bring heavy rain, hail, harsh winds and lightning.

These factors can lead to flooding and landslides, highlighting the need for improved data collection methods.

The Rio Operations Center (ROC) meets the city's weather and other challenges by taking advantage of state-of-the-art technology. Rio's mountainous terrain created observation gaps left by their old existing radar, which complicated accurate weather monitoring. For example, the city is growing to the west, and a mountain blocked radar signal in that direction. The city needed to fill these data gaps to effectively protect lives and infrastructure.

THE APPROACH:

Dual-polarization weather radar that fills data gaps

The ROC deployed the Vaisala X-band Weather Radar to fill crucial gaps with higher-resolution weather observation data.

The X-band radar features dual polarization technology which improves the quality of observation data and aids in identifying precipitation types. The weather radar provides

"The new X-band radar eliminated an old area of shadow in Rio and increased the municipality's predictive capacity. We have even been able to detect a hailstorm that was approaching the city two hours in advance. We are very pleased with the results achieved and have made the images generated by the radar available to all Rio citizens via the COR.Rio app"

Marcus Belchior
CEO, Rio Operations Center

the exact path and precipitation level of a storm, precipitation type and amount, and ground-level disturbances such as microbursts and tornadoes.

This technology significantly improves data quality and leads to more accurate warnings for hazardous weather such as heavy rain. The compact and solid-state design ensures ease of installation and low lifetime maintenance.

THE RESULTS:

Greater weather resilience with high-resolution data

With the X-band Weather Radar in place, Rio de Janeiro has significantly improved its ability to monitor and respond to weather-related emergencies. The ROC's cross-disciplinary team has access to 24/7 accurate and reliable radar information, empowering the team to coordinate actions quickly and effectively.

The radar's high-resolution data allows for better anticipation of severe weather events, enabling the ROC to alert relevant sectors and take urgent measures to mitigate risks. This has enhanced the city's capacity to respond to extreme weather events such as heavy rains and landslides, ultimately reducing the impact on the population and infrastructure.

Why Vaisala?

As the global leader in weather and environmental measurements, Vaisala empowers businesses and community leaders to build resilience to climate change and extreme weather events. Our nearly 90 years of expertise is grounded in science, innovation and our unwavering commitment to constantly evolving.

We boldly demonstrate that a culture of resilience and a connection to nature can create new ways of smarter, resilient living. We are champions for smarter, safer and more sustainable urban communities.

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