# GREAT BARRIER REEF *foundation*

## Future Reef MAP

#### The Great Barrier Reef

The iconic Great Barrier Reef is a vast area, spanning more than 2300 km along the Queensland coast.

The coral and marine species that make the Reef so special, live in many and varied habitats across this vast area.

#### Ocean acidification: a threat

Ocean acidification, caused by increasing levels of carbon dioxide entering the world's oceans, threatens the Reef.

This increasing acidity makes it harder for corals to grow and retain their strength, disrupting the delicate balance between growth and erosion on the Reef.

#### Future Reef MAP: knowledge for Reef managers

The innovative Future Reef MAP project is helping to build a comprehensive picture of how ocean chemistry is changing across Reef habitats.

Delivering data on a scale and frequency not previously possible, the Future Reef MAP project—a partnership between RioTinto Alcan, CSIRO and the Great Barrier Reef Foundation—will empower Reef managers with information on where, when and how ocean acidification is having the highest impact. This knowledge will assist Reef managers to assess the level of the ocean acidification threat and make appropriate decisions.

#### How it works

The Rio Tinto vessel, the RTM Wakmatha, travels the length of the Reef, from Weipa to Gladstone, on a regular basis.

The \$1 million Future Reef MAP project, uses a custombuilt ocean sensor, installed on the RTM Wakmatha, to continuously collect ocean chemistry data along the length of the Reef during its regular voyages. Elevated carbon dioxide in the atmosphere increases carbon dioxide in the ocean, and shifts the ocean's chemistry

Ocean acidification disrupts the delicate balance between reef growth and reef erosion





The RTM Wakmatha regularly travels the length of the GBR, between Weipa and Gladstone.

The sensors sample surface waters every 1-2 minutes, taking measurements of carbon dioxide, pH, temperature, salinity and dissolved oxygen. Data is transmitted to a server in near-real-time via communication equipment installed on the bridge of the vessel. Water samples are also collected and returned to shore for analysis.

The first milestone of the three year project was to install the sensor system on a specially built platform inside the ship. It took engineers 12 months to design, build and install the mezzanine platform the sensor will sit on, to ensure it met safety standards.

With sensors now installed, the ship has begun collecting this valuable ocean acidification data.

Ocean pH affects the chemical stability of calcium carbonate in seawater—a vital compound in reefbuilding limestone skeletons

Future Reef MAP is a collaboration between:

### **RioTintoAlcan**



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