Tide gauge network to be updated after 30 years at sea

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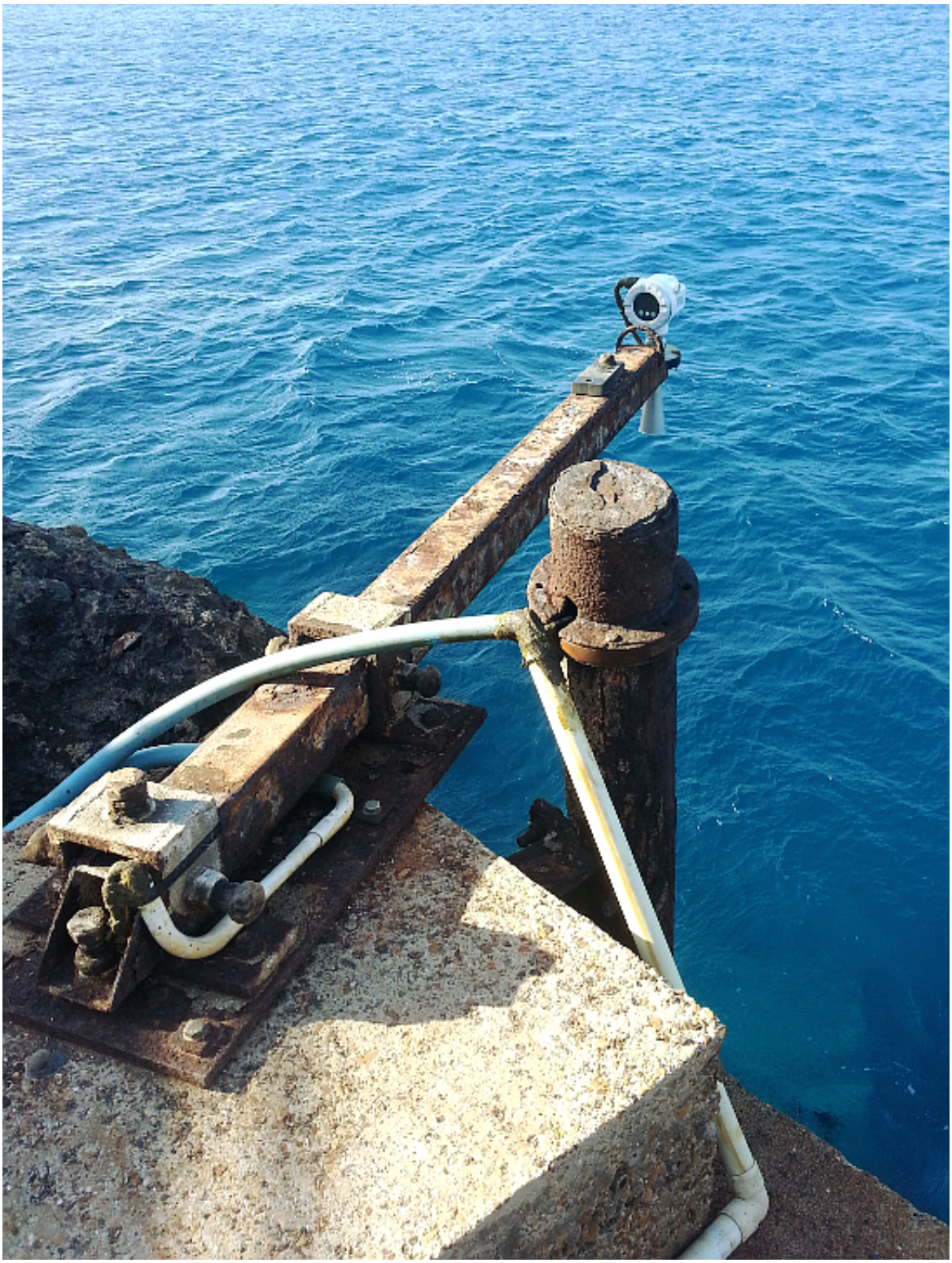

Tide Gauge at Ascension Island

The National Oceanography Centre (NOC) has been awarded funding to upgrade the South Atlantic Tide Gauge Network. This network has now been continuously operating in some of Earth's most remote places for 30 years, including open ocean islands, such as Ascension, and the hostile Antarctic environments of Rothera and Vernadsky.

This, NOC operated, South Atlantic Tide Gauge Network has already allowed scientists to monitor year-to-year fluctuations in the world's largest ocean current - the Antarctic Circumpolar Current or ACC. This current connects all of the major oceans basins and redistributes heat, freshwater, and nutrients around the global ocean.

Prior to the installation of this network there was a lack of information on sea level variations in the Southern Atlantic and a general bias in tide gauge records towards the more densely-populated Northern Hemisphere. Over the last few decades, data from the South Atlantic gauges have helped to improve estimates of global sea level change, such as those reported by the Intergovernmental Panel on Climate Change (IPCC).

Dr Angela Hibbert from the NOC, and the scientific leader of the South Atlantic Tide Gauge Network, explained why long term monitoring of the ocean is important: "Thirty years on, and this data set is just starting to yield interesting results. Since changes in global sea level also occur on decadal and longer timescales, the network will not reveal information on these changes until the dataset is about fifty years old."

This year the National Environmental Research Council (NERC) announced that it will provide funding to upgrade the network with customised radar gauges and Global Positioning System (GPS) sensors. These GPS sensors will allow scientists to distinguish changes in absolute sea level from changes in land level, both of which are contained in tide gauge records. There is a need for more accurate records. Vertical land

movements can be caused by sediment compaction, groundwater extraction, glacial rebound or tectonic movements.

Professor Kevin Horsburgh, Head of Marine Physics and Ocean Climate research at the NOC, said "We know from satellite measurements that global average sea level is rising at about 3mm per year but there is enormous variability from one place to another. There is a need for more accurate estimates at the regional scale and it is essential to measure vertical land movement. Installing GPS technology on our South Atlantic network is a big step towards understanding regional sea level changes in the Southern Hemisphere."

Provided by National Oceanography Centre, Southampton