



Earthquake



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Deep ocean storms can shed light on

Now research led by the University of Tasmania has shown that vibrations in the Earth can be used to study patterns of deep ocean (outside the continental shelf) storms in the Southern Ocean.

The study, an international collaboration with the University, CSIRO and the University of Utah, was published recently in *Journal of Geophysical Research* and reports results from a long analysis of seismic signals generated by ocean storms with a focus on the Southern Ocean.

Dr Anya Reading, (lecturer in Physical Sciences/Earth Sciences at the University), said deep ocean storms (with strong winds and big waves) play an important role in the uptake of carbon dioxide.

“They are the ‘mixer’ that mixes carbon dioxide into the oceans – very important that carbon dioxide is stored in the oceans rather than building up in the atmosphere.”

Dr Reading said there is a concern across the world that climate change and extreme weather events are getting more frequent. Learning about these storms in the past has been difficult.

“There is a lot of activity in the oceans and it is important for understanding global systems.”

“However, it is difficult to get direct measurements of these storms from direct measurements alone, such as wind speed or direct observation.”

What can shed some light is seismic records.

“The reason that has worked in the past is that a seismic instrument, originally intended for the study of earthquakes, provides a long-baseline record of deep ocean storm occurrence.” Dr Reading said.

“This has great potential to help us understand the magnitude and severity particularly in remote locations with no direct meteorological observations.”

Dr Reading said the research team found that seismic records provided continuous information on storms that complemented satellite records, which observe from above, and direct weather observations, such as coastal monitoring.

Combining the three techniques provided a much fuller picture of deep ocean storm activity.

“There are decades of archive wealth of information on the oceans that can now be accessed with improved analysis techniques developed at the University.”

Dr Reading and her team will continue to develop this research using seismic records to detect shifting patterns of storm activity in the Southern Ocean back in time and to discover or find out more about changes in the storms making landfall.

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Full paper available here: *Dominant seismic sources in the Southern Ocean and*

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University of Tasmania, Communications and Media Office
Phone: 61 3 6226 2691 or 0447 537 375
Email: Media.Office@utas.edu.au