

## Scientists blown away by rising wind speeds

By Carl Holm for ABC Science Online

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**Wind speeds and wave heights over the world's oceans have been steadily increasing for the past quarter of a century, a new long-term study shows.**

The researchers at Swinburne University of Technology in Melbourne say the trend could also have an effect on the transfer of energy between the sea and the atmosphere - one of the great unknowns in climate change calculations.

The study, published today in Science Express online, uses satellite altimeter data taken from 1985 to 2008 to show wind speeds over the oceans have been steadily increasing.

The areas that show increased wind speeds in the study also show increased wave heights.

The lead author on the paper, Professor Ian Young who is now Australian National University vice-chancellor, says the study shows the largest increases are happening in extreme conditions.

"Extreme wind speeds have increased over most of the globe by approximately 10 per cent over the last 20 years, or 0.5 per cent every year," he says.

"Extreme wave heights have increased by an average of 7 per cent over the last 20 years.

"Off the southern coast of Australia, the highest 1 per cent of waves has increased in height from approximately five metres to almost six metres."

### Rising faster

The researchers say average wind speeds over most of the world's oceans have also increased by at least 0.25 per cent per year.

The trend is stronger in the southern hemisphere than the north; and the rate of increase is greater in extreme conditions, with wind speeds over the oceans rising by at least 0.75 per cent per year.

Windier conditions might be expected to create higher waves, the researchers say. But while they observed



*Wave heights and windspeeds at higher latitudes have been steadily increasing for the last 23 years (iStockphoto: Irina Belousa)*

- [Map: Swinburne University of Technology 3122](#)

that at higher latitudes the heights of the largest waves seemed to be increasing, they found no statistically significant increase in average wave height globally.

Co-author Professor Alexander Babanin says it is unclear yet how, or if, the trend relates to global climate change.

"All we can say is that there is an overall trend, but extrapolating that into the future has to be done with caution," he said.

But he says the record adds an important and often overlooked variable to climate change studies.

"If we talk about climate, usually we talk about temperature changing, we talk often about precipitation; but we talk much less about the winds and the waves," he said.

"They are environmental indicators of changes in the climate just as the temperature and precipitation and other parameters in the air-sea system."

Professor Babanin says the data are potentially useful because they can provide independent validation and verification of what happens to the climate.

"Suppose it's the case that the temperature is rising globally. It will not do that uniformly, because of land influences, because of the ocean circulation," he said.

"The ocean will be warmer in some parts and colder in other parts. That creates pressure differences and that creates winds.

"When you change the pressure patterns and if the temperature difference is getting bigger, pressure differences are getting bigger, the winds will perhaps grow higher, and the patterns of the winds may change."

Professor Babanin says it is the first study to deliver such a complete picture. Previous studies had relied on observations from ships at sea and wave buoys, which meant most data was collected close to shore and in major shipping lanes.

"So in terms of the uniform and consistent global coverage this is the first one of its kind," he said.

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