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### Transcript

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**AM - Thursday, 3 November , 2005 08:22:00**

**Reporter: Karen Barlow**

PETER CAVE: Australian scientists say that a rapid rise in global sea levels over the past decade is due to volcanoes accelerating the effects of manmade climate change.

The researchers from the CSIRO and the Antarctic Climate and Ecosystems Collaborative Research Centre have published their findings in the journal *Nature*.

They say that large explosive volcanoes first cool the sea, causing the water to retreat, then after a year they begin to rise again.

The theory explains changes to the ocean since the last major volcanic eruption at Mt Pinatubo in the Philippines in 1991.

Karen Barlow reports.

KAREN BARLOW: The Earth has more than 1,500 active volcanoes, and every day there's one erupting somewhere on the planet.

Fortunately, for life as we know it, not every explosion is a mountain-ripping monster.

The last one-in-10-year eruption was Mt Pinatubo in the Philippines 14 years ago, so volcanologists say the Earth is overdue for another big one.

Atmospheric changes after explosive volcanoes have long been recorded, but now Australian scientists are seeing sea level changes in the ocean different from rises caused by melting icecaps and generally warmer water.

Oceanographer and climate scientist, Dr John Church.

JOHN CHURCH: We have known that sea level has been rising for a long time. What we didn't understand was the decadal variability in the rate of rise, and nobody has really made the connection previously between the rapid fall in sea level and ocean heat content, I might add, following volcanic eruptions. Nobody's made that connection before.

KAREN BARLOW: Dr Church and his team looked at sea level data around three major eruptions of the last century – Pinatubo, Indonesia's Mt Agung in 1960 and Mexico's El Chichon in 1983.

Explosive volcanoes of such large magnitude can send gases and particles 20 kilometres into the atmosphere, reflecting shortwave solar radiation.

Dr Church says this cools the ocean.

JOHN CHURCH: Well I found that volcanic eruptions cause a rapid fall in sea level, immediately after the eruption of the first 12 or 18 months, and then there's a slow recovery from that fall in sea level over the next decade or so, perhaps even longer, and the sequence of eruptions from 1960 to 2000 occurred rapidly one after another that this offset some of the acceleration in the rate of sea level rise that would otherwise have been present.

KAREN BARLOW: Dr John Church says the effect explains a relatively rapid rate of sea level rise since 1993, compared to data from the previous four decades.

It also explains a masking of the effects of global warming.

However, Dr Church says this is not nature giving humans a helping hand.

JOHN CHURCH: It's certainly true that volcanoes offset some of the warming for a short period of time, but it's by no means any answer to the greenhouse effect. It's a very short impact, whereas greenhouse gases are in the atmosphere for a very long time.

KAREN BARLOW: Dr Church says the relationship between volcanoes and sea level is just part of the Earth's complex climate system, and he expects to see it in action soon, when the next big volcano goes off.

PETER CAVE: Karen Barlow reporting.

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