Get used to heat waves: Extreme El Nino events to double
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"El Nino events are a multi-dimensional problem, and only now are we starting to understand better how they respond to global warming," said Dr Santoso. Extreme El Niño events develop differently from standard El Ninos, which first appear in the western Pacific. Extreme El Niño's occur when sea surface temperatures exceeding 28°C develop in the normally cold and dry eastern equatorial Pacific Ocean. This different location for the origin of the temperature increase causes massive changes in global rainfall patterns.

"The question of how global warming will change the frequency of extreme El Niño events has challenged scientists for more than 20 years," said co-author Dr Mike McPhaden of US National Oceanic and Atmospheric Administration.

"This research is the first comprehensive examination of the issue to produce robust and convincing results," said Dr McPhaden.

The impacts of extreme El Niño events extend to every continent across the globe.

The 1997-98 event alone caused $35 US billion in damage and claimed an estimated 23,000 human lives worldwide.

"During an extreme El Niño event countries in the western Pacific, such as Australia and Indonesia, experienced devastating droughts and wild fires, while catastrophic floods occurred in the eastern equatorial region of Ecuador and northern Peru," said lead author, CSIRO's Dr Wenju Cai

In Australia, the drought and dry conditions induced by the 1982-83 extreme El Niño preconditioned the Ash Wednesday Bushfire in southeast Australia, leading to 75 fatalities.

To achieve their results, the team examined 20
climate models that consistently simulate major rainfall reorganization during extreme El Niño events. They found a substantial increase in events from the present-day through the next 100 years as the eastern Pacific Ocean warmed in response to global warming.

"This latest research based on rainfall patterns, suggests that extreme El Niño events are likely to double in frequency as the world warms leading to direct impacts on extreme weather events worldwide."

"For Australia, this could mean summer heat waves, like that recently experienced in the south-east of the country, could get an additional boost if they coincide with extreme El Ninos," said co-author, Professor Matthew England from CoECSS.

More information: http://dx.doi.org/10.1038/nclimate2100

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