What caused the Chennai Floods?

What do the reseachers say?

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Researchers have found that the extreme **El Nino conditions** and the **warming trend in the Bay of Bengal** have contributed equally to the unprecedented heavy rainfall in Chennai between November 30 and December 2, 2015.

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What is El Nino?

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- El Nino and La Nina events are a natural part of the global climate system.
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- El Nino events are associated with a warming of the central and eastern tropical Pacific, while La Nina events are the reverse, with a sustained cooling of these same areas.
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- These changes in the Pacific Ocean and its overlying atmosphere occur in a cycle known as the **El Nino–Southern Oscillation (ENSO).**
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- El Nino occurs when the normal trade winds weaken (or even reverse), which lets the warm water that is usually found in the western Pacific flow instead towards the east.
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- This warm water displaces the cooler water that is normally found near the surface of the eastern Pacific, setting off atmospheric changes that affect weather patterns in many parts of the world.
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- These consequences include increased rainfall across the southern tier of the US and in Peru, and drought in the West Pacific and sometimes associated with brush fires in Australia.
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How El Nino affects Indian Monsoon?

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- **El Nino can affect the Indian monsoon through atmospheric circulation.**
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- Whenever the El Nino signal shows up in atmospheric circulation, the local sea surface temperature can also change.
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- It generally causes less than normal rainfall in the case of the southwest monsoon.
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- In contrast, it brings about **above-normal rainfall during the northeast monsoon.**
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- This is because of the difference in seasonal wind patterns between the two monsoons.
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- The 2015 El Nino event turned out to be an extreme El Nino event.
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- Thus, the recent study suggests that the extreme El Nino that occurred in 2015 played an important role in Chennai’s heavy rainfall.
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What is the correlation?

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- Another factor that has played an important role is the consistent warming of the Bay of Bengal off the coast of Tamil Nadu and Andhra Pradesh.
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- The researchers indicates that the Bay of Bengal sea surface temperature positively and significantly correlated with northeast monsoon rainfall.
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- The magnitude of correlations of northeast monsoon rainfall with El Nino conditions and the Bay of Bengal warming are nearly similar.
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Source: The Hindu

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