Extreme Rainfall events - Central Indian Region

What is the issue?

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- There is an increase in occurrence of extreme rainfall events in the central Indian region in recent years.
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- Reports suggest that an increased supply of moisture from Arabian Sea could be the reason.
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What are the observations?

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- There is a trend of weakening summer monsoon winds between 1950 and 2015.
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- Resultantly, there has been an average 10% decline in overall summer monsoon rainfall over central India.
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- However, the frequency and intensity of **extreme rainfall events** during the same period in this region has been on the rise.
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- There has been a three-fold increase in the number of widespread extreme events in this region since 1950s.
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- Importantly, the northern Arabian Sea gets 1-2°C warmer, 2-3 weeks prior to extreme events.
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- As a result, there is 20-40% more evaporation and increased moisture levels over the Arabian Sea before an extreme event.
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- Notably, Arabian Sea supplies more moisture to the extreme rainfall events than the Bay of Bengal and the central Indian Ocean combined.
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What are the causes?

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- **For Weakening monsoon** - Studies have observed that central Indian Ocean had considerably warmed over the years.
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- On the other hand, the Indian peninsular region had not warmed up compared to other regions in the tropics.
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- This is leading to a phenomena of reduced land-sea temperature difference.
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- This reduced temperature difference and possibly the cooling caused by aerosol are causes behind weakening of the monsoon winds.
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- **For increased moisture** - At the same time, the northern Arabian Sea is becoming increasingly warm.
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- This is leading to increased moist air over it.
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- Also, the warm temperatures result in large fluctuations in the monsoon winds leading to occasional surges.
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- Consequently, there is an increased moisture transport during such surges.
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- As monsoon winds blow northeastwards from Arabian Sea into India, this increased moisture causes extreme rainfall events in central India.
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Source: The Hindu

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