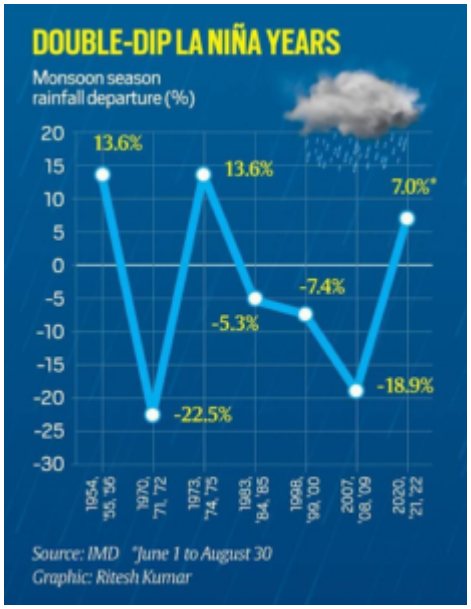
La Ninã & its impact on Indian Monsoon

September 2, 2022

In news– In what may be termed as an uncommon ocean phenomenon, the prevailing La Ninã conditions over the equatorial Pacific Ocean have entered the third consecutive year.

Key updates-

- **Since the 1950s, La Ninã lasting for more than two years has been recorded only on six instances** (see graph below), data by the India Meteorological Department (IMD) stated.



- Meteorologists at Australia's Bureau of Meteorology (BoM), the US's National Oceanic and Atmospheric Administration (NOAA), and India's Monsoon Mission Climate Forecast System (MMCFS) confirmed that La Ninã conditions are here to stay till the end of 2022.
- **This was in contrast to the forecasts issued by these multiple agencies in April this year,** which had said La Ninã would dissipate by August and conditions would turn

neutral thereafter.

- In June 2022, the World Meteorological Organization had termed the persisting **La Niña conditions as 'stubborn'.**
- **The Indian Meteorological Department** termed the continuing La Niña as "abnormal", and said, "It is surprising that it has continued for the last three years. It may be good for India but not for some other countries.
- It said that climate change could be a factor driving such anomalous conditions.
- During past events of La Niña, India's Northeast monsoon rainfall remained subdued. But the 2021 season remains an exception in recent years.
- Between October and December 2021, the southern Indian peninsular recorded a whopping 171 per cent surplus – the wettest winter monsoon ever recorded since 1901, data from the IMD stated.
- As SST values dipped to the lowest twice during the last two years, scientists are identifying the 2020 – 2021-2022 as the **'double-dip' La Niña**.

What are El Niño and La Ninã?

- La Niña is an oceanic and atmospheric phenomenon that is the **colder counterpart of El Niño,** as part of the broader El Niño–Southern Oscillation (ENSO).
- The ENSO is one of the key climate drivers for which the sea surface temperatures (SST) along the central and equatorial Pacific Ocean are constantly observed.
- It is important, as ENSO conditions can alter both the temperatures and rainfall globally, due to its strong interference on the global atmospheric circulations.
- **It has three phases – El Niño, neutral and La Ninã.**
- El Niño is when the SSTs along the central and equatorial Pacific Ocean are abnormally warmer than

normal. **La Niña, on the other hand, is when cooler SSTs prevail over these regions.**

El Niño & La Niña impact on Indian monsoon-

- In the Indian context, **El Niño years have seen below normal monsoon rainfall and caused extreme heat**, even though it may not be the single factor or have direct relations.
- For example, in 2014, India received 12 per cent deficient rainfall during June to September.
- **La Niña years, on the other hand, are known to favour the Indian summer monsoon.**
- For instance, in 2022, **India has received 740.3 mm of rainfall,** which was quantitatively **7 per cent above the seasonal average** till August 30. Out of the 36 states/Union Territories, 30 have received rainfall categorised as either 'normal', 'excess' or 'large excess'.
- **La Niña conditions favour cyclone formation.** La Niña years are infamous for frequent and intense hurricanes and cyclones in the Atlantic Ocean and the Bay of Bengal.
- Over the North Indian Ocean too – covering the Arabian Sea and the Indian Ocean – chances of more **cyclones are likely due to multiple aiding factors, including high relative moisture and relatively low wind shear over the Bay of Bengal.**