Climate Shifts in Kaas Plateau

For Prelims: Climate Shifts in Kaas Plateau, Holocene Epoch**, Southwest Monsoon, National Centre for Earth Sciences, United Nations Educational,** Scientific and Cultural Organization (UNESCO) **World Heritage.**

For Mains: Climate Shifts in Kaas Plateau.

Source: PIB

Why in News?

A recent study conducted by the **Agharkar Research Institute (ARI)** and the National Centre for Earth Sciences has shed light on significant climate shifts in the **Kaas Plateau** during the Early-Mid-Holocene and late **Holocene Periods.**

- The researchers studied the **sediments of a seasonal lake** to understand and decipher the **past climate of the Kaas Plateau.**

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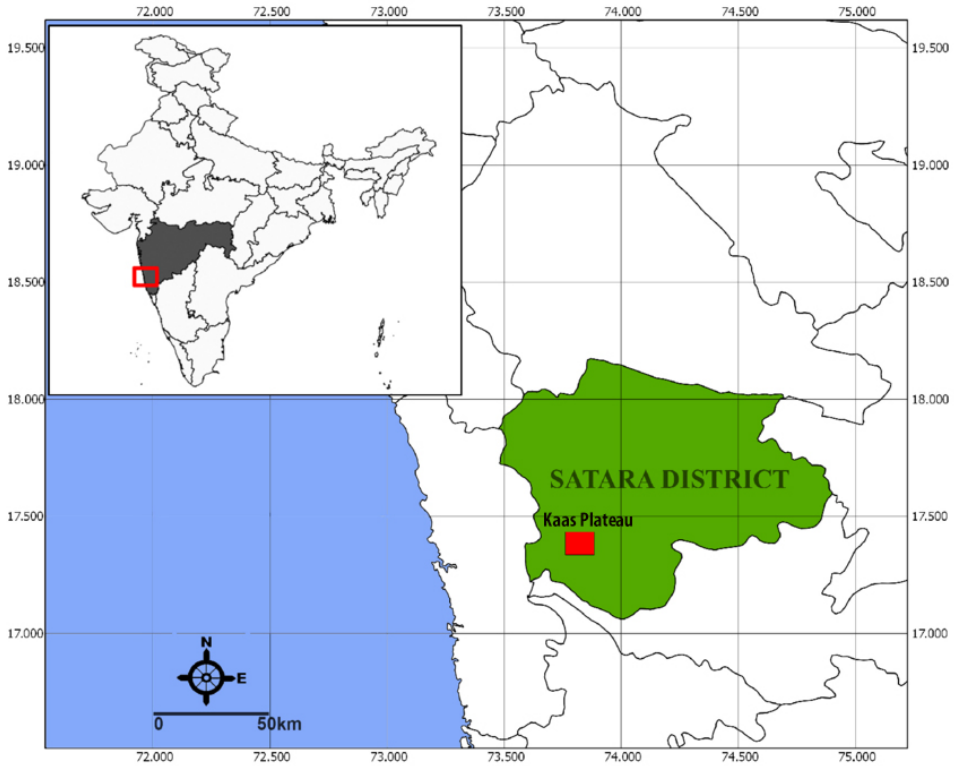

What is Kaas Plateau?

- The Kaas Plateau, located in Maharashtra's Satara district, is a **UNESCO** World Natural Heritage Site and a designated biodiversity hotspot.
- Known as Kaas Pathar in Marathi, its name is derived from the **Kaasa tree, botanically known as *Elaeocarpus glandulosus (rudraksha family).***
- The plateau have various seasonal flowers forming a **floral carpet over the entire lateritic crust during August and September.**

What are the Key Findings of the Study?

- **Ancient Lake and Environmental Preservation:**
  - The present "Flower Wonder" of the Kaas Plateau is located on an ancient lake that dates back to the **Early-Mid-Holocene period**, approximately 8000 years ago.
  - The seasonal lake has been preserved **over a long time and provided valuable insights** into the past climate of the region.
- **Climate Shifts during the Early-Mid-Holocene:**
  - Around 8664 years ago, there was a change in the climate from freshwater to drier conditions with low rainfall.
  - **Pollen and diatom data indicated a major shift** in the Indian summer monsoon activity during this time.
  - Despite the drier conditions, there were **intermittent humid periods suggested by a significant rise** in the number of diatoms.
- **Late Holocene Climate Changes:**
  - During the late Holocene, approximately 2827 years ago, there was a **decrease in rainfall** and a weakened **Southwest Monsoon.**
- **Recent Environmental Impact:**
  - Over the last 1000 years, there is evidence of **lake** Eutrophication, indicated by the presence of high numbers of planktonic and pollution-tolerant diatom taxa.
    - Eutrophication is the process of **a water body becoming overly enriched with minerals and nutrients** which induces **excessive growth of algae or algal bloom**, thereby, leading to oxygen depletion of the water body.
  - Human activities, including agriculture and cattle/livestock farming in the catchment area, likely contributed to this environmental impact.
- **Monsoon Intensity and Duration:**
  - The southwest monsoon intensified during the **Early Holocene, around 8000 years ago.**
  - The northeast monsoon relatively weakened around 2000 years ago.
  - It is likely that the 'Flower Wonder' of the Kaas Plateau existed for a longer duration, up to March-April, during the early–mid-Holocene (8000–5000 years), when the monsoon rainfall was more abundant, with more than 100 rainy days.