

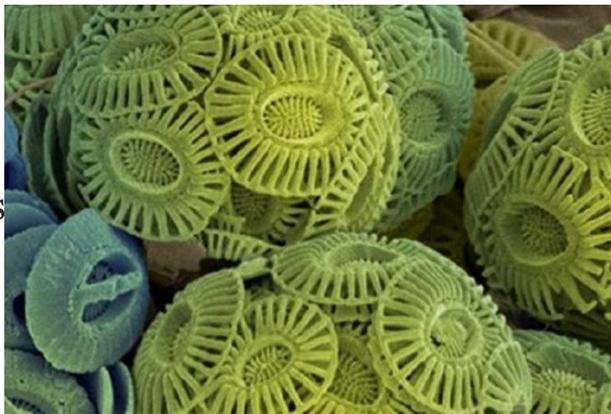


## Coccolithophores

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### Why in News

Recently, the **National Centre for Polar and Ocean Research** (NCPOR) has carried out the study of **Coccolithophores** (microscopic ancient marine algae) and found that there is a **decrease in the concentration of oceanic calcium carbonate ( $\text{CaCO}_3$ )** in the southern Indian ocean.



### Key Points

- **Coccolithophores** are **single-celled algae** living in the **upper layers of the world's oceans**.
- They **calcify marine phytoplankton** that produce up to 40% of **open ocean calcium carbonate** and are responsible for **20% of the global net marine primary productivity**.
- They **build exoskeletons from individual  $\text{CaCO}_3$  plates** consisting of chalk and seashells.
- Though **carbon dioxide ( $\text{CO}_2$ ) is produced** during the formation of these plates, coccolithophores help in removing it from the atmosphere and ocean by **consuming it during photosynthesis**.
- At **equilibrium**, they **absorb more  $\text{CO}_2$  than they produce**, which is **beneficial** for the ocean ecosystem.

- **Abundance and diversity enrichment** of coccolithophores in the southern Indian Ocean is **highly dependent on time** and **influenced by** various environmental factors such as **silicate concentrations, calcium carbonate concentration, diatom abundance, light intensity and availability of macro and possibly micronutrient concentrations (marine pollution)**.
  - **Diatoms** are **single-celled algae** which occur after **sea ice breakdown with climate change and ocean acidification**.
  - Diatoms **increase the silicate concentration** in the waters and which in turn **decreases  $\text{CaCO}_3$**  and **reduces coccolithophores diversity**.
  - It will affect the growth and skeleton structure of coccolithophores, with potential significance for the world ocean ecosystem.
- The study points to **climate change** as a **major reason for the altered coccolithophore calcification rate** which is important for bringing positive changes in the marine ecosystem and the **global carbon cycle**.

**Source: PIB**