

# Antarctic polar ice cap is 33.6 million years old

London, May 29 (PTI)

**The Antarctic continental ice cap came into existence some 33.6 million years ago, according to new data from an international expedition.**

The expedition was led by the Andalusian Institute of Earth Sciences (IACT) - a Spanish National Research Council-University of Granada joint centre.

Before the ice covered Antarctica, Earth was a warm place with a tropical climate. In this region, plankton diversity was high until glaciation reduced the populations leaving only those capable of surviving in the new climate.

The Integrated Ocean Drilling Programme international expedition obtained this information from the paleoclimatic history preserved in sediment strata in the Antarctic depths.

"The fossil record of dinoflagellate cyst communities reflects the substantial reduction and specialisation of these species that took place when the ice cap became established and, with it, marked seasonal ice-pack formation and melting began," said Carlota Escutia, IACT researcher who led the expedition.

The appearance of the Antarctic polar icecap marks the beginning of plankton communities that are still functioning today.

This ice-cap is associated with the ice-pack, the frozen part that disappears and reappears as a function of seasonal climate changes.

When the ice-pack melts as the Antarctic summer approaches, this marks the increase in primary productivity of endemic plankton communities, researchers found.

When it melts, the ice frees the nutrients it has accumulated and these are used by the plankton. Escutia said "this phenomenon influences the dynamics of global primary productivity."

Since ice first expanded across Antarctica and caused the dinoflagellate communities to specialise, these species have been undergoing constant change and evolution.

However, Escutia believes "the great change came when the species simplified their form and found they were forced to adapt to the new climatic conditions."


Pre-glaciation sediment contained highly varied dinoflagellate communities, with star-shaped morphologies.


When the ice appeared 33.6 million years ago, this diversity was limited and their activity subjected to the new seasonal climate.

The study was published in the journal Science.



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