

EARTH COULD BE TWICE AS HOT AS PREDICTED

Large areas of the polar ice caps could collapse and sea levels may rise six metres

GENEVA: The Earth may end up being twice as warm as projected by climate models, even if the world meets the target of limiting global warming to under two degrees Celsius, according to findings of a study.

The study, published in the journal *Nature Geoscience*, showed that sea levels may rise six metres or more even if Paris climate goals are met.

The findings are based on observational evidence from three warm periods over the past 3.5 million years when the world was 0.5-2 degree Celsius warmer than the pre-industrial temperatures of the 19th Century.

The study revealed how large areas of the polar ice caps could collapse and significant changes to ecosystems could see the Sahara Desert become green and the edges of tropical forests turn into fire dominated savanna.

"Observations of past warming periods suggest that a number of amplifying mechanisms, which are poorly represented in

climate models, increase long-term warming beyond climate model projections," said Hubertus Fischer from the University of Bern in Switzerland.

"This suggests the carbon budget to avoid 2 degree Celsius of global warming may be far smaller than estimated, leaving very little margin for error to meet the Paris targets," he said.

To get their results, the researchers looked at three of the best-documented warm periods, the Holocene thermal maximum (5,000-9,000 years ago), the last interglacial (1,29,000-1,16,000 years ago) and the mid-Pliocene warm period (3.3-3 million years ago).

The warming of the first two periods was caused by predictable changes in the Earth's orbit, while the mid-Pliocene event was the result of atmospheric carbon dioxide concentrations that were 350-450ppm — much the same as today. Combining a wide range of measurements from ice cores, sediment layers, fossil records, dating using atomic isotopes and a host of other established paleoclimate methods, the researchers pieced together the impact of these climatic changes.

In combination, these periods give strong evidence of how a warmer Earth would appear once the climate had stabilised. By contrast, today our planet is warming much faster than any of these periods as human caused carbon dioxide emissions continue to grow.

Even if our emissions stopped today, it would take centuries to millennia to reach equilibrium.

