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DURHAM, N.H. -- Casting doubt on recent findings that show the upper tropical atmosphere has cooled since 1979 despite well-known warming at the surface, new research strongly indicates that the atmosphere in the western Pacific Tropics has warmed over the past 60 years.

These new findings by a University of New Hampshire-led study may help clear up some of the mystery surrounding predictions for global warming. Much of the remaining uncertainty in global scenarios for climate change hinges on the behavior of the upper tropical atmosphere, especially in the Western Pacific Tropics.

This study, lead by Michael Prentice, research associate professor of earth sciences at the UNH's Institute for the Study of Earth, Oceans, and Space, examines historical photographs, satellite images and topographic maps from Papua (formally known as Irian Jaya), a province in easternmost Indonesia, to identify changes in the size and character of high-altitude glaciers over time.

Due to the isolation of this region, very few temperature records are available. Since tropical glaciers are largely influenced by air temperature, it is possible to study temperature changes over time through the change in glaciers over time.

"Although information is scarce, there is enough temperature data available to make a strong case that the Papua glaciers have receded primarily due to warming," says Prentice. "The glacier-based data makes

a strong case for warming since the 1940s."

Prentice finds a 1.25° Fahrenheit warming in the mean annual temperature over the past 30 years. This translates to a quarter of a degree warming per decade, about the opposite of what weather balloons have indicated. Although the particular glaciers being studied are in just one part of Indonesia, they likely reflect atmospheric conditions across a wide section of the Western Pacific region, possibly an area of about 100,000 square miles.

"There is a discrepancy between this alternative research, which uses the record from high altitude natural systems responding to climate, and the direct climate record, such as balloon-recorded temperature," explains Prentice. This new evidence showing a warming trend casts some doubt on the adequacy of our airborne monitoring systems, and questions how much we really know about the extent to which the planet is warming."

The results of this University of New Hampshire study were presented at the recent 2002 American Geophysical Union annual meeting.

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