

Permafrost Thaw Could Exacerbate Climate Change

by NEEL PATEL under mentor CHRISTIE WILCOX

1 February 2012 – The main driver behind global climate change is often thought to be fossil fuel emissions, but the results of a survey of 41 international scientists published in *Nature* this December stresses the role of another factor. Led by University of Florida scientist Edward Schuur and University of Alaska Fairbanks graduate student Benjamin Abbott, the survey suggests that intense permafrost thaw could potentially increase greenhouse gases by nearly 150 percent.

Arctic warming is driving permafrost thaw at faster rates than previously estimated. Although this process releases about the same amount of carbon as does deforestation, the release of methane by the thaw has a bigger impact on temperature increases.

“Permafrost thaw will cause increased decomposition of ancient plant and animal matter preserved in soils,” explained Abbott. “It’s like if you unplug a refrigerator, things will rot faster as they warm up.” Negative impacts on infrastructure built on permafrost, such as degradation of buildings and roads, can also be expected.

The pair asked climate experts what predictions could be made about permafrost thaw rates, how much carbon



Defrosting the earth. Methane released from permafrost plateaus like the one shown above may accelerate carbon emissions and affect soil composition.

Image: “Low Clouds on the Tibetan Plateau” by preston.rhea available under Creative Commons license at <http://www.flickr.com/photos/prestonrhea/4739845104/>.

would be released, and what percentage of that would be methane. They estimate that by 2100, the amount of carbon released will be 1.7 to 5.2 times larger than what other models have reported. Northern soils, believed to hold around four times as much carbon as what has been emitted

by all human activity, and twice as much as what currently resides in the atmosphere, hold “more organic carbon than all living things combined,” Abbott explained. “It’s kind of mind boggling.”

Schuur and Abbott hope that scientists will integrate the data retrieved from the study in developing future models of climate change that will emphasize the need for changes in human activity.

“We know about a lot of processes that will affect the fate of arctic carbon, but we don’t yet know how to incorporate them into climate models,” said Abbott. “We’re hoping to identify some of those processes and help the models catch up.” ■

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