Scholarly Article About Global Warming

Article record from *Academic Search Complete*

Title: Stability of Antarctic Bottom Water Formation to Freshwater Fluxes and Implications for *Global* Climate.

Authors: Trevena, Jessica[1,2] *j.trevena@unsw.edu.au*
Sijp, Willem P.[1]
England, Matthew H.[1]

Authors listed, affiliation info available

Source: Journal of Climate; Jul2008, Vol. 21 Issue 13, p3310-3326, 17p

Article is long – 17 pages

Document Type: Article

Subject Terms: *OCEAN bottom
*HYSTERESIS
*OCEAN temperature
*CLIMATIC changes

Technical language in title and abstract – not for a general audience

Geographic Terms: ANTARCTIC Ocean
NORTH Atlantic Ocean

Abstract: The stability of Antarctic Bottom Water (AABW) to freshwater (FW) perturbations is investigated in a coupled climate model of intermediate complexity. It is found that AABW is stable to surface freshwater fluxes greater in volume and rate to those that permanently "shut down" North Atlantic Deep Water (NADW). Although AABW weakens during FW forcing, it fully recovers within 50 yr of termination of FW input. This is due in part to a concurrent deep ***warming*** during AABW suppression that acts to eventually destabilize the

PDF of Article Full Text

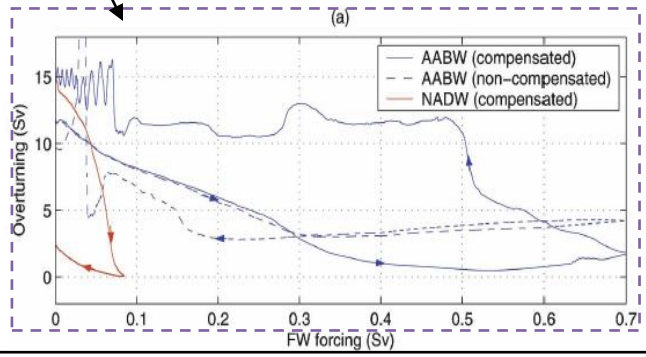
Stability of Antarctic Bottom Water Formation to Freshwater Fluxes and Implications for Global Climate

JESSICA TREVENA, WILLEM P. SIJP, AND MATTHEW H. ENGLAND
Climate Change Research Centre, University of New South Wales, Sydney, New South Wales, Australia

(Manuscript received 29 August 2007, in final form 10 December 2007)

ABSTRACT

Data or graphs included



Cover and articles plain, with few, if any pictures or ads

References or bibliography included at end of article

Ocean; and 3) a different vertical ocean structure with warm deep water underlying cold surface water in the high-latitude Southern Ocean. If we accept that the ... Antarctica are due, at least ... caused by this differing ... the persistence of the ... because of the Drake Pas... that the differing land mass geometry is the fundamental reason for the difference in behavior of NADW and AABW under identical FW perturbations.

It is interesting to note the remarkable steadiness of the high-latitude Southern Ocean temperature over the course of FW_{SO} (maximum zonal mean change, south of 63°S, of 0.2°C from section 3d). Ocean temperatures obtained. Hence, it is most likely that the feedbacks identified in this study would be present in full dynamics coupled climate system models.

Acknowledgments. R. J. Stouffer and three anonymous reviewers provided useful feedback on the original manuscript. This research is supported by the Australian Research Council and Australia's Antarctic Science Program.

REFERENCES

Bates, M. L., M. H. England, and W. P. Sijp, 2005: On the multi-century Southern Hemisphere response to changes in atmospheric CO_2-concentration in a Global Climate Model. *Me-*

Popular Article About Global Warming

Article record from *Academic Search Complete*

Title: PERMAFROST THREATENED BY RAPID RETREAT OF ARCTIC SEA ICE.

Source: Geographical; Aug2008, Vol. 80 Issue 8, p11-11, 3/8p

Document Type: Article

Subject Terms:
*PERMAFROST
*GLOBAL warming
*ATMOSPHERE -- Research
*SEA ice
ARCTIC regions -- Environmental conditions
ARCTIC regions

Abstract: The article reports that rapid sea ice loss could increase the rate of climate ***warming*** over northern Alaska, Canada and Russia, according to a study by Great Britain's National Snow and Ice Data Center and the National Centre for Atmospheric Research. The research which was published in the journal "Geophysical Research Letters" showed that Arctic land warmed 3.5 times faster than average during sea ice loss. How the increased temperature could cause permafrost and climate damage are discussed.

Article is short – less than 1 page

No author listed

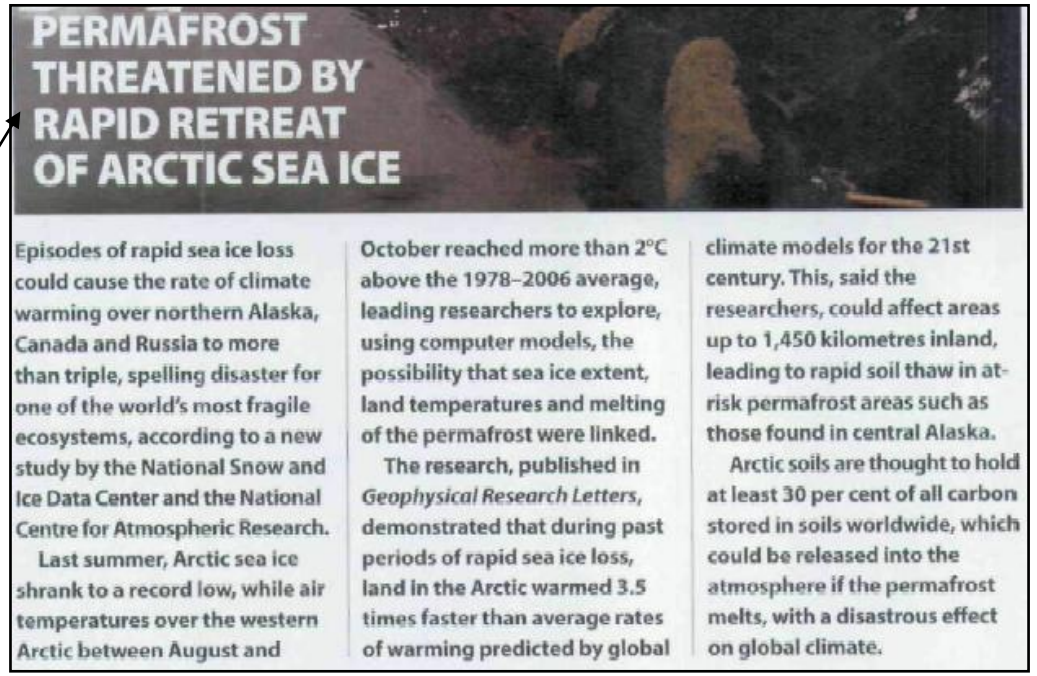
Language in abstract and title is non-technical. Can be understood by the general reader

PDF of article Full Text

Cover and article include color photos and ads

No references or bibliography listed

No data or graphs



PERMAFROST THREATENED BY RAPID RETREAT OF ARCTIC SEA ICE

Episodes of rapid sea ice loss could cause the rate of climate warming over northern Alaska, Canada and Russia to more than triple, spelling disaster for one of the world's most fragile ecosystems, according to a new study by the National Snow and Ice Data Center and the National Centre for Atmospheric Research.

Last summer, Arctic sea ice shrank to a record low, while air temperatures over the western Arctic between August and October reached more than 2°C above the 1978–2006 average, leading researchers to explore, using computer models, the possibility that sea ice extent, land temperatures and melting of the permafrost were linked.

The research, published in *Geophysical Research Letters*, demonstrated that during past periods of rapid sea ice loss, land in the Arctic warmed 3.5 times faster than average rates of warming predicted by global climate models for the 21st century. This, said the researchers, could affect areas up to 1,450 kilometres inland, leading to rapid soil thaw in at-risk permafrost areas such as those found in central Alaska.

Arctic soils are thought to hold at least 30 per cent of all carbon stored in soils worldwide, which could be released into the atmosphere if the permafrost melts, with a disastrous effect on global climate.