

**The text that follows is a PREPRINT.**

Please cite as:

Fearnside, P.M. 2010. *Climatic Change* as an integrating force in the pursuit of science.  
*Climatic Change* 100 (in press)

ISSN: 0165-0009

Copyright: Springer.

The original publication will be available at [www.springerlink.com](http://www.springerlink.com)

## CLIMATIC CHANGE AS AN INTEGRATING FORCE IN THE PURSUIT OF SCIENCE

**Philip M. Fearnside**

Instituto Nacional de Pesquisas da Amazônia (INPA)

Avenida Andre Araujo, 2936

C.P. 478

69011-970 Manaus, Amazonas

BRAZIL

Tel: +55-92-3643-1822

Email: [pmfearn@inpa.gov.br](mailto:pmfearn@inpa.gov.br)

The journal *Climatic Change* has much to be proud of as it reaches the landmark of Volume No. 100. Certainly Steve Schneider deserves tremendous credit for being the force behind this all these years. The journal has been essential in making the study of climatic change the interdisciplinary area that it is, rather than being restricted to the workings of atmospheric physics and chemistry. As I look at my collection of *Climatic Change*, which stretches for about three meters my bookshelf, it is humbling to realize the volume and diversity of information involved, as compared to the portion that I (or any other individual) can deal with directly. Despite the limits imposed by information overload, one can't help but have one's horizons broadened by reading *Climatic Change*.

Volume 2 of *Climatic Change* brought the classic paper by Wolfgang Seiler and Paul Crutzen (1980) on carbon emissions from biomass burning. This has led to a long series of studies, which still continue, to better quantify these emissions and their impact on global warming. I have been involved in this for many years, and *Climatic Change* has had an important role in reducing the uncertainty surrounding this most uncertain and controversial slice of global greenhouse emissions.

The journal has been important in not shying away from debating topics from the popular literature and bringing out the different views on these issues from the scientific community. The treatment of the Lovelock and Margulis "Gaia" theory is an example (5(3), 8(1), 22(4), 66(3), 95(1-2)). Another is the debate over the "Hockey stick" model of temperature rise (85(1-2)), and the question of attribution of warming to greenhouse gases, including the disagreements surrounding the summer of 1988 (13(2), 15(3)).

The question of methane emissions from hydroelectric dams provided a memorable exchange between myself and a group led by the then head of ELETROBRÁS, the Brazilian government agency responsible for hydroelectric power (66(1-2), 75(1-2)). Unfortunately for the climate, significant methane emissions from the turbines and spillways of hydroelectric

dams, especially in tropical areas, have since been confirmed at a growing number of dams, such as Petit Saut in French Guiana (Abril et al. 2005) and Balbina in Brazil (Kemenes et al. 2007).

The number of contentious issues covered by *Climatic Change* is very great indeed. While any reader of the journal would choose a different list, for me this important role of the journal is illustrated by the following sampling of topics: time and discounting (37(2), 41(3-4), 59(3), 82(1-2), 84(3-4)), global warming potentials and other indices for comparing the different greenhouse gases (17(1), 44(4), 58(3)), the role of uncertainty in climate policies (14(3), 46(4), 61(1-2), 81(3-4), 83(4), 88(3-4), 92(1-2), 96(3)), the risk of abrupt climate change, including potential collapse of the Atlantic thermohaline circulation (26(4), 47(1-2), 54(3), 87(3-4)), the definition of “dangerous interference” with the global climate system 26(4), 53(4), 68(3), 73(3), 82(1-2)), integrated assessment (41(3-4), 56(1-2)), the impact of tropical deforestation (21(3), 35(3), 44(3), 46(1-2), 49(3), 71(3), 83(4), nuclear winter (10(1), 12(3)), geoengineering (33(3), 74(1-3)), and the role of scientists in communicating through the popular press (13(2), 16(1), 86(1-2)).

The subject of climatic change has now become a topic of daily media coverage and worldwide public discussion. A great deal has happened over the journal’s life, including the advent of the Intergovernmental Panel on Climate Change (IPCC), the United Nations Framework Convention on Climate Change (UN-FCCC), the Kyoto Protocol, and an explosion of research on subjects related to climate. It is a far cry from the situation when the journal began. It is, of course, climatic change itself, rather than the journal *Climatic Change*, that is mainly responsible for the change in public perception. The journal has a valuable role in providing a forum that has academic respectability where such a broad and interdisciplinary topic can be debated and the lessons for society can be distilled from the vast body of information involved.

**Acknowledgements** I thank Conselho Nacional do Desenvolvimento Científico e Tecnológico (CNPq: Proc. 305880/2007-1), Rede GEOMA and Instituto Nacional de Pesquisas da Amazônia (INPA: PRJ13.03) for financial support.

## References

- Abril, G, Guérin, F, Richard, S, Delmas, R, Galy-Lacaux, C, Gosse, P, Tremblay, A, Varfalvy, L., dos Santos, MA, Matvienko, B (2005) Carbon dioxide and methane emissions and the carbon budget of a 10-year old tropical reservoir (Petit Saut, French Guiana). *Global Biogeochemical Cycles* 19:GB4007, doi: 10.1029/2005GB002457.
- Kemenes, A, Forsberg, BR, Melack, JM (2007) Methane release below a tropical hydroelectric dam. *Geophysical Research Letters* 34:L12809, doi: 10.1029/2007GL029479.55.
- Seiler, W, Crutzen, PJ (1980) Estimates of gross and net fluxes of carbon between the biosphere and the atmosphere from biomass burning. *Climatic Change* 2: 207-247.