IMPACTS WORLD 2013 - The International Conference on Climate Change Effects

**Committed unavoidable global warming and Northern hemisphere Food Security Implications to 2100.**

**Abstract**

Food security links to population health, security, economics and policy. This paper uses today's total minimum committed unavoidable global warming as a reliable guide to Northern Hemisphere food security vulnerability and impacts. A simple summation approach, for policy relevance and communication, includes the following unavoidable sources of warming in estimating unavoidable climate change commitment:

* shortest time between a rapid emergency emissions reduction to atmospheric stabilization
* climate system inertia (ocean heat lag)
* aerosol cooling (unmasking of deferred warming)
* positive climate system feedbacks

The lowest published ranges from all sources of unavoidable warming combined are taken and then linked to changes in food productivity from climate crop models. Drought, an additional effect, is considered over and above the crop model results. The focus is on Northern Hemisphere food security because it has been assumed to not be particularly vulnerable to global climate change impacts this century, according to past IPCC assessments. The paper relies mainly on the IPCC's 2007 Fourth Assessment Report, the National Research Council's 2010 Climate Stabilization Targets, and drought projections published in 2011. We find that past reassuring Northern Hemisphere assessments, from global temperature increase scenario projections and corresponding crop productivity yield projections, may no longer apply. An additional factor for assessment that we address is the rapid loss of Arctic albedo cooling and its impact on agriculture in the Northern Hemisphere. The conclusion is that Northern Hemisphere food security is a missing priority for the study of climate change impacts and vulnerability and attention for policy, indicating that urgent action must be taken to mitigate Northern Hemisphere food productivity losses that could occur in the short term. This is most relevant to the food security of the most vulnerable populations because of resulting effects on world food prices and food surpluses. The cross sectoral links are made.