

# The Moral Challenge of Climate Change

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## Abstract

Typhoon Songda moved through South Korea and Japan in early September, 2004. It was an unusually large and powerful typhoon. Record wind gusts of 214 km/h, as fast as the famous Japanese Shinkansen train, hit Hiroshima. Part of the reason for the strength of the typhoon was unusually high sea surface temperature in the western Pacific. Is this a taste of what we can expect with global warming? Exactly what are the facts about global warming, and its impacts on climate and weather? And how should we respond to the challenge of global warming? This paper explores some of the facts and presents a moral argument for the need to respond, briefly discussing mitigation strategies, such as the Kyoto Protocol, and adaptation strategies, including the need for targeted help for the poor in island states and low lying areas such as Bangladesh.

**Key words:** Climate change impacts, global warming, adaptation, mitigation

## 1. Introduction

Typhoon Songda (Fig. 1) was a major storm that caused loss of life, injury, and widespread disruption and damage to transport links, crops, and other infrastructure in South Korea and Japan. On the morning of September 7, 2004, it caused record wind gusts of 214 km/h, as fast as the famous Japanese Shinkansen train, in Hiroshima. Part of the reason for the strength of the typhoon was unusually high sea surface temperatures in the western Pacific. In addition, the typhoon was the eighth of the season to hit Japan, another record.



Fig. 1. Typhoon Songda, September 7, 2004.

The frequency and magnitude of extreme storms such as Typhoon Songda are expected to increase with global warming (Giorgi et al. 2001). The unusually high sea surface temperatures associated with Typhoon Songda are one important mechanism by which this can occur. Another is that extreme rainfalls are linked to the moisture holding capacity of the atmosphere

(Allen & Ingram 2002). The moisture holding capacity of the atmosphere will increase with global warming.

What if Typhoon Songda is just a small storm compared to what we can expect with global warming? And how should we respond to the challenge of global warming? This paper explores some of the facts and proposes a response.

## 2. Facts about “Global” Warming

The Intergovernmental Panel on Climate Change (IPCC) reports that global warming of between 2 and 6 degrees is likely by 2100 (Cubasch et al. 2001; see Figure 1). This is associated with sea level rise of between 9cm and 88cm. The increase in temperatures, which has been linked to the anthropogenic emission of carbon dioxide and other greenhouse gases, will also lead to changes in precipitation and other climate variables. As a result, the frequency of occurrence of extreme events such as typhoons is also expected to change. The nature and magnitude of these changes is complex and varies regionally. To cite an extreme example, if measured changes in salinity the north Atlantic continue, there is a chance that the ocean conveyor belt that transports warm water northwards to Europe could slow down or stop (Alley et al. 2003; Gagosian 2003), triggering a mini ice-age over Europe resembling that depicted in the recent Hollywood movie, *The Day after Tomorrow* (average temperature decreases of three to five degrees have been modeled), while other regions (such as New South Wales in Australia; see below) are simultaneously experiencing warming.

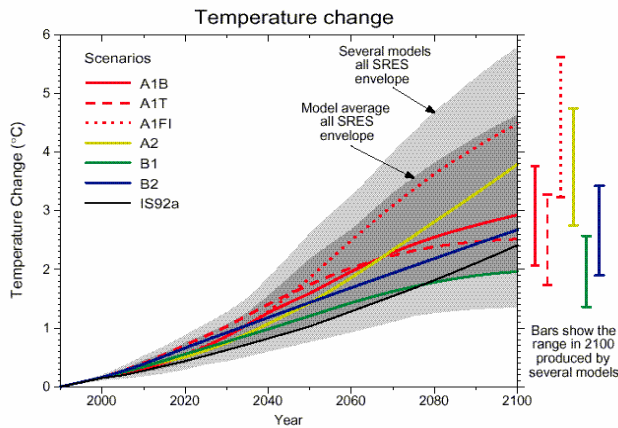


Fig. 2. Global warming relative to 1990 for several GCMs and emissions scenarios.

## 2. Facts about “Regional” Warming: an example from New South Wales, Australia

The following is an extract from a speech presented by the Premier of New South Wales, Mr. Bob Carr, to the World Energy Congress, held in Sydney in early September 2004 (Carr, 2004). Mr. Carr, citing from a report by CSIRO to the New South Wales Government, stated that:

- The frequency of extremely high tides in Sydney (more than 2.2 metres) has tripled since 1950.
- The average sea level of the Australian coastline has risen nearly 10 centimetres since 1920 and is projected to continue, with serious implications for some waterside communities.
- The average maximum temperature has risen by 0.75 degrees and the average minimum temperature has risen by 0.85 degrees over the past 50 years.
- From 1957 to last year there has been an increase on average of 4.7 days per year exceeding 35 degrees and an increase on average of 12 nights per year exceeding 20 degrees.

Mr. Carr cites the report’s conclusion: “the most obvious explanation for warming in NSW since 1950 is the enhanced greenhouse effect”. And regarding future changes Mr. Carr said, “The research paints a picture of more frequent and more severe droughts; more risk of natural disasters such as bushfires; more variability in weather conditions, including storms; rising ocean levels; and hotter weather. And that’s bad news for our farmers, bad news for our emergency services and bad news for the environment.”

Regional changes such as those for New South Wales will occur in different locations throughout the globe, but the exact nature of such changes depends on many regional factors.

## 3. Some moral challenges

At the 3<sup>rd</sup> World Water Forum, held in Kyoto in March 2003, the Vice President of the World Water Council, Mr. Bill Cosgrove, said “The cost of disasters increased dramatically over the past 40 years. We are facing droughts, floods and storms on a scale never seen before. Each year it is going to get worse. The poorest countries are among the most vulnerable.” This vulnerability occurs because of two reasons. Firstly, poor countries tend to be located in regions that are vulnerable to natural disasters; for example, island nations will be very vulnerable to sea level rise, and Bangladesh is located in a major river delta. Secondly, the ability of poor countries to adapt to change is limited, because of a lack of resources.

Going hand in hand with the vulnerability of poor countries is what many would describe as the culpability of rich countries. Global warming can be largely attributed to the emission of carbon dioxide and other greenhouse gases (Stott 2003). It is well known that developed countries are the highest per capita emitters of carbon dioxide (Fig. 3).

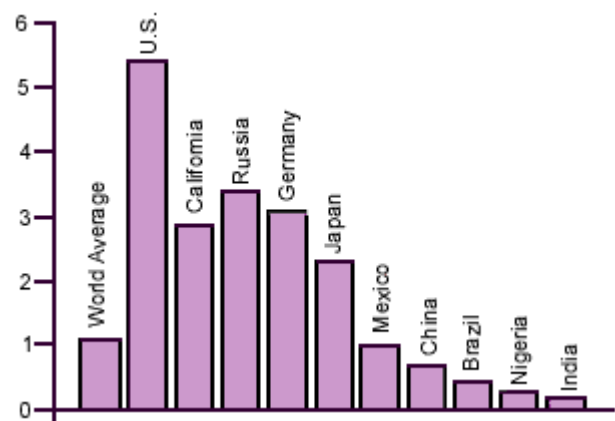


Fig. 3. Per capita carbon emissions for selected countries. Source: [www.ioe.ucla.edu/publications/report01/GreenhouseGas.htm](http://www.ioe.ucla.edu/publications/report01/GreenhouseGas.htm)

The link between this pollution and climate change, in light of the potential impacts of the poor, presents us with a moral challenge. In the words of Mr. Lionel Hurst, Ambassador for Antigua and Barbuda, at the World Water Forum in Kyoto, March 2003: “Greenhouse-gas-driven climate change presents the wealthiest of the world with a moral challenge greater than colonialism or slavery. Western countries have failed. We find that the innocent actions of wealthy individuals are (collectively) morally wrong.” Perhaps we should be careful not to have a selfish and proud attitude towards the environment. Selfish use of resources can be wasteful and polluting, and lead to high levels of greenhouse gas emissions. If this pollution hurts our neighbour, then it is not only selfish, it is wrong.

In the words of Dr. Tim Mitchell:

“The changes we are introducing through our pollution are morally questionable because of their consequences. Put simply, in the rich part of the world we have polluted in order to get rich. Yet the most severe consequences are likely to fall upon the poor, because they usually cannot afford to adapt. This introduces two parallel ethical issues. Firstly, now that we know the consequences, should we continue to pollute? Secondly, given that we may be responsible for hurting our fellow humans, should we help them? While it is not wrong to change the atmosphere, it is wrong to change it more than we need, certainly if it is at the expense of poor people. Making money at the expense of the weak is condemned (Luke 20:47), and to assist the weak is praised (James 1:27). Yet continuing as we are will make us richer at the expense of the poor.”

Source: <http://www.cru.uea.ac.uk/~timm/papers/en/en-article.htm>

### 3. What is the answer?

Our response to global warming should include both mitigation by reducing greenhouse gas emissions, and adaptation, learning to live with a changed climate. The Kyoto Protocol can be seen as a useful first step along the path of mitigation. Global action to reduce greenhouse gas emissions could reduce the negative impacts, and local actions will also help. And adaptation, such as new crop varieties, better management of existing water resources, and the ability to respond rapidly to disasters can be seen as necessary in a changing world. However, this changing world will also require developed countries to live up to their moral responsibility to help their poorer neighbours who are struggling to cope with these changes.

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