

## Climate Change Fallout

Plant species are on the move. Animals are migrating. Some, such as polar animals would be pushed off the planet, and alpine animals would be pushed to higher altitudes with thinner air, and effectively off the planet. Some will get to seas, and others will get to urban frontiers where they will see their demise. Why? Animals and plants can only survive in certain climatic zones, and they will indeed 'move' to keep within zones. They have to. Unlike humans - the only species that controls their climate within four walls - plants and animals do not have a choice. Jim Hansen, the director of the NASA Goddard Institute for Space Studies indicates that studies of more than 1000 species of plants, animals and insects, including butterfly ranges charted by the public, found an average pole ward migration rate of 6 kilometres per decade in the second half of the 20th century. That is not fast enough. In the past 30 years the lines marking a given average temperature ('isotherms') have been moving pole ward at a rate of about 40 to 50 kilometres per decade. If emissions of greenhouse gases continue to increase, as in 'business-as-usual' (BAU) scenarios, the rate of isotherm movement will double in this century to at least 80 to 100 kilometres per decade. If we continue on this path, a large fraction of the species on Earth will go extinct. The Gran Canaria Group, whose members include major biodiversity conservation organisations and botanical gardens, says 1 in 4 of Earth's 40,000 plant species is already on the brink.

What else have we in store? The BAU scenario yields about 2-3°C global warming this century - that is if we continue without change. The last time that the Earth was that much warmer was three million years ago, when sea level was about 25 metres higher. Imagine a very significant part of our coastal capitals underwater. Sea walls and 'Venice-like cities' would be commonplace. And that's just Australia. The rise has begun with Global average sea levels rising at a rate of about 2mm a year between 1961-2003, and by an average of more than 3mm a year between 1993-2003. On the topic of species extinction, in the Earth's history several mass extinctions, of 50-90% of species, have accompanied global temperature changes of the order of 5°C.

Furthermore, some earthquake-generating faults could also be sensitive enough to respond to changes in the weather. In addition to more tropical cyclones and hurricanes, earthquakes and tsunamis cannot be written off. Climatic changes could also lead to more outbreaks of bubonic plague among human populations, a study suggests. Researchers have found that the bacterium that caused the deadly disease became more widespread following warmer springs and wetter summers.

So, if you thought you had to simply shield against temperature increases, water shortages and freak climatic incidents - that's only the start of what to me is starting to feel like a bad dream. I want to be woken up. Lets all wake up.

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