The Intergovernmental Panel on Climate Change states that global warming is likely to be between 2°C and 4.5°C by 2100. The IPCC predicts a significant loss of biodiversity in the Wet Tropics rainforests by 2020.

(Fourth Assessment report 2007)

The impacts of global climate change of 2°C or more in the Wet Tropics forests are likely to cause the extinction of numerous vertebrate species due to loss of their core habitat.

(Williams, Bolitho and Fox 2002)

We can act now to help the Wet Tropics environment and community adapt to the impacts of climate change.
Overall, the Wet Tropics can expect:

- a warmer climate – an increase of 1°C to 4.2°C and up to 41 days over 35°C by 2070
- generally similar wet season rainfall but longer drier, dry seasons
- more El Niño drought years and variability of rainfall
- more frequent and intense cyclones and heavy rainfall
- rising sea levels (18cm to 59cm higher by 2100) with more lowlands affected by saltwater intrusions or storm surges
- more fires and more intense fires due to the hotter, drier weather.

- raised cloud levels, decreasing the moisture levels needed by a wide range of plants and animals such as suspended mosses and epiphytes, microhylid frogs, litter skinks, soil invertebrates and soil microbes
- some tougher foliage with less nutritional value due to increased CO₂ levels. This will affect leaf-eaters (folivores) such as endemic ringtail possums and many insects
- changes in the distribution of arboreal folivores, forcing some species off their nutrient-rich, basaltic soils to a higher, cooler climate with poorer granitic soils.

---

Impacts on the World Heritage Area

The Wet Tropics has Australia’s greatest diversity of animals and plants within an area of just 0.26% of the continent. Many of these plants and animals are endemic (found nowhere else in the world). The environmental impacts of climate change in the Wet Tropics will depend on the degree of global warming and the resilience of ecosystems. An increase of 2°C or more will cause:

- a 50% decline in cool mountain rainforest habitats
- the possible extinction of numerous upland, endemic vertebrate species due to loss of their core habitat
- major changes in ecosystems due to increased intensity and frequency of fires
- increased threats to ecosystems from the invasion of feral animals, weeds and pathogens

![Species richness of WT endemic terrestrial vertebrates as temperature increases](chart)

<table>
<thead>
<tr>
<th>Current</th>
<th>+1°C</th>
<th>+3.5°C</th>
<th>+5°C</th>
<th>+7°C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Williams, Bolitho and Fox 2002]
What we can do now

Ecosystem health and resilience can be addressed locally and immediately.

**Landscape linkages and forest health:**
- Conserve cool climate refugia within the landscape
- Improve forest health and connectivity
- Plant wildlife corridors
- Control weeds and feral animals
- Manage fire regimes
- Restore waterways

**Carbon trading:**
- Pursue opportunities to enhance biodiversity conservation and landscape linkages through carbon trading and offsets

**Research:**
- Identify significant plants and animals that will be affected by climate change
- Improve models to forecast the extent and impacts of climate change
- Monitor ecosystems to detect early signs of change
- Identify important genetic resources

**Education:**
- Promote increased community awareness about climate change and mobilise behavioural change.

**Cloud stripping**
Rainforests efficiently strip moisture from the clouds – an important source of water for our creeks and rivers, particularly in the dry season. With 3.0°C of warming the height of the cloud base is predicted to rise from 600m to about 900m. Effective cloud stripping area in the Wet Tropics will decrease by as much as 40%. This means that overall water yields will be significantly lower.

*(McJannet and Reddell, 2004)*
Community impacts

The environmental impacts of climate change may be accompanied by significant socioeconomic challenges for the Wet Tropics community:

- An increasing population will rely on a more variable water supply and a drier climate
- Tourism may suffer if the major natural attractions – the reef and rainforests – are damaged
- Stronger and more frequent cyclones may have major impacts on infrastructure and communities
- The agricultural and pastoral industries are likely to have to adapt to greater variability in the weather and longer drier seasons
- The incidence and range of tropical diseases may increase
- Increased sea levels and flooding of lowland areas may affect urban developments and transport corridors.

Reducing emissions

Reducing greenhouse gas emissions means wise and sparing use of energy and can also help conserve our natural assets such as water and forests. It is important to remember that there is a 20 year time lag between emissions and their impact on the climate – we are currently dealing with the effect of emissions 20 years ago.

An audit of Wet Tropics greenhouse gas emissions in 2007 showed that per capita emissions were significantly lower than for Queensland and Australia. However average per capita emissions were still higher than for many industrialised countries.

Further reading

Wet Tropics Management Authority

This brochure is a summary of Climate Change in the Wet Tropics: Impacts and Responses, State of the Wet Tropics Report 2007–2008.

Intergovernmental Panel on Climate Change
www.ipcc.ch

Queensland Government - Office of Climate Change
www.climatechange.qld.gov.au

Australian Department of Climate Change
www.climatechange.gov.au

UNESCO
http://whc.unesco.org/en/series/22