WHAT IS CLIMATE CHANGE AND HOW IS IT AFFECTING US?

A Climate Science Future for South Africa

WHAT IS CLIMATE CHANGE?

Climate refers to the long-term changes of weather patterns that affect our lives on a daily basis. Climate scientists study and measure these changes. The long-term averages of atmospheric and ocean variables assist with determining whether any trends in climate can be detected over time. If averages are taken over a sufficiently long period of time (twenty years or longer), variability in climate caused by aspects such as El Niño and La Niña events should even out, so that the climate remains more or less stable. However, if systematic trends in climate can be detected, we would know that something fundamental is changing in the earth's climate system. While a changing climate can be due to natural processes such as changing amounts of solar radiation or volcanic eruptions, there is very strong evidence that climate change over the past century and a half (since the start of the Industrial Revolution) is due to the use of oil, coal and gas.

SOUTHERN AFRICA: A CLIMATE CHANGE 'HOT SPOT'

The southern African region is more vulnerable to climate change compared to other parts of the word, for three reasons. First, it will be exposed to comparatively 'stronger' climate change. The southern African interior has warmed at about twice the rate of global warming over the last five decades, and climate models suggest that this pattern of above-average regional warming will continue for the rest of the century. Second, it lacks 'coping capacity'. Southern Africa is made up of developing countries which do not yet have very sophisticated disaster management systems and infrastructure, nor money to spend on climate adaptation and our economies are very sensitive to changes in the climate (agriculture and tourism industries). Thirdly, southern Africa is a dry and warmer region that is not only projected to become drastically warmer, but also drier. When a dry and warm region becomes even drier and warmer, the options for climate change adaptation are limited.

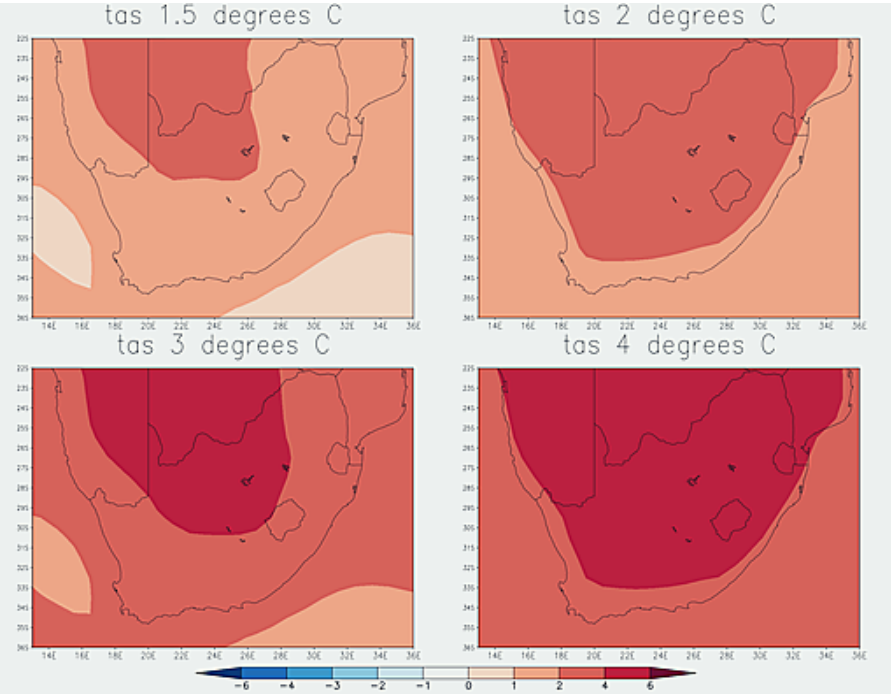
WHAT EXTREME WEATHER IMPACTS CAN SA EXPECT?

With 3°C of global warming, the increase in multi-year droughts and heat-wave duration and frequency is projected to be so severe that it may contribute to the collapse of both the maize crop and cattle industry in large parts of southern Africa.

Although southern Africa is likely to become generally drier under future climate change, and it is plausible that extreme rainfall events will occur more frequently across the region.

FIGURE

Projected increases in temperature (°C) over southern Africa under different levels of global warming



IMPLICATIONS OF CLIMATE CHANGE FOR SOUTH AFRICA

The chain of impacts resulting from extreme climate events are messy and complex. For example, although agriculture accounts for a relatively small contribution to economic output in South Africa, the impacts of unfavourable climate are felt by a large number of people, via agricultural employment, as well as by rising food prices and hunger. Other examples, include extreme rainfall flooding impacting poor communities living next to rivers.

RESPONDING TO CLIMATE CHANGE

Responses to climate change include both mitigation and adaptation. Mitigation is "a human intervention to reduce the sources or enhance the sinks of greenhouse gases", while adaptation is "the adjustment process to actual or expected climate and its effects." Mitigation and adaptation pathways are not politically neutral. They have to be about 'transformation' in the personal, practical and political spheres of our lives. The focus is on changing the design of practices that are fundamentally making us vulnerable to climate risks in the first place. Examples of transformations may include transitioning to socially and community owned renewable energy, enhanced access to climate jobs and building a new food system based on food sovereignty system.

All information in this pamphlet is drawn from Scholes, B., Engelbrecht, F. & Vogel, C. 2020. 'Climate Change: Effective action based on Enhanced understanding,' Emancipatory Futures Studies, Climate Science Think Piece, Wits. Access the full article here: https://www.safsc.org.za/wp-content/uploads/2020/06/Climate-Science-Doc_June-2020.pdf