



Orange-Senqu River Awareness Kit

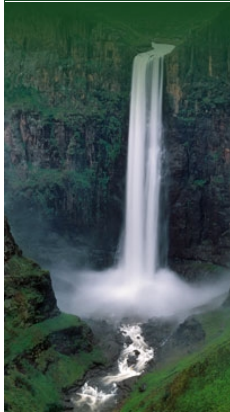

[THE RIVER
BASIN](#)
[PEOPLE AND
THE RIVER](#)
[GOVERNANCE](#)
[RESOURCE MANAGEMENT](#)

The River Basin

→ Climate and Weather:
Climate Change



- Introduction
- ▶ Geography
- ▼ **Climate and Weather**
- Principles of Climate and Meteorology
- Climate of the Orange-Senqu River Basin
- **Climate Change**
- Climate Change in southern Africa
- Climate Change Downscaling
- Water for the Future Report
- ▶ Hydrology
- ▶ Water Quality
- ▶ Ecology and Biodiversity
- References



Global climate change and the subsequent regional and sub-regional impacts are believed to be incited by anthropogenic (man-made) emissions of greenhouse gases (GHGs). The primary GHGs are carbon dioxide, methane, sulphur dioxide and nitrous oxide. Increases in population and development since the industrial revolution have led to increases in atmospheric concentrations of GHGs.

As a result it is predicted that global temperatures will further increase. Higher temperatures will lead to changes in precipitation and atmospheric circulation, which are, however, hard to accurately predict with existing atmospheric models.

There is growing evidence of changes in temperature, precipitation and streamflow over many parts of southern Africa. Potential evaporation appears to have increased over much of the interior of southern Africa in recent decades. These temperature changes will have profound effects, both direct and indirect, on hydrology and water resources. Large parts of southern Africa are expected to experience some of the most variable rainfalls and stream flows in the world, presenting major challenges to managers of water resources. In fact, the IPCC has identified southern Africa as one of the regions of the world most vulnerable to anticipated climate change impacts (IPCC 2001).

Climate change raises serious concerns about the sustainability of current development trends in southern Africa, including the Orange-Senqu basin. There might be far reaching consequences for: water supply and quality, food security, the composition of floral and faunal wildlife (biodiversity), the wetlands as ecological reserves, the quality of agricultural land (land degradation), rural incomes and sustainable industrial development.

To access a primer on climate change and explore some of the potential impacts on planet Earth, please refer to the [Google Earth](#) section of the River Awareness Kit.



Climate change will alter the availability of water.

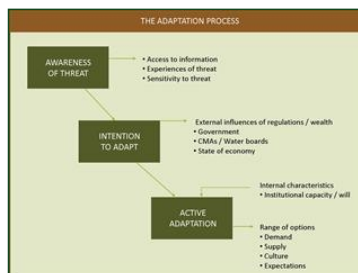
Source: Vogel 2009
(click to enlarge)

Climate Change Adaptation

All the issues mentioned will have profound implications for human populations, particularly those living in already water stressed regions, like southern Africa, where high demand and growing development issues combined with near-closure of basins increase vulnerability.

What is clear from current work in this area is that society as a whole will soon need to make fundamental changes in order to deal with the predicted impacts of climate change; from the individual level to large-scale infrastructure and national and regional policy.

It is important for governments to acknowledge the potential threat climate changes poses, and raise awareness of the issue through mainstreaming and education. Societies and political decision makers have to develop strategies to the proceeding climate change.



The climate change adaptation process.

Source: Schulze 2008
(click to enlarge)

For further reading on climate change adaptation, please refer to the [GTZ 2009](#) and [PETERMANN 2008](#) in the Document Library.



Basin Map

Explore the sub-basins of the Orange-Senqu River

enter

Video Tour

Tour video scenes along the Orange-Senqu River related to the River Basin

enter

Geography Maps

Investigate land cover and terrestrial ecoregions in the basin

enter

Water Cycle

Examine how the hydrologic cycle moves water through and around the earth

enter

Food Web

Explore the interactions of living organisms in aquatic environments

enter

Feedback

[send a general website comment](#)

[report a specific problem with this page](#)

[Next: Climate Change in southern Africa](#) ►

You are here: [Home Page](#) > [The River Basin](#) > [Climate and Weather](#) > Climate Change