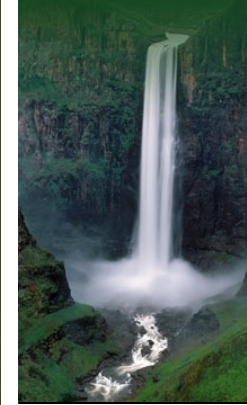




Orange-Senqu River Awareness Kit

The River Basin → Hydrology: Groundwater:

- Introduction
- ▶ Geography
- ▶ Climate and Weather
- ▶ **Hydrology**
 - Principles of Hydrology
 - Water Cycle
 - Surface Water
 - Groundwater
 - SW/GW Interactions
 - Water Balance
 - Hydrology of the Orange-Senqu River Basin
 - Surface Water
 - Groundwater
 - ▶ **SADC Hydrogeological Mapping Project**
 - Water Use/Water Balance
 - Monitoring Flow
 - ▶ Water Quality
 - ▶ Ecology and Biodiversity
 - References



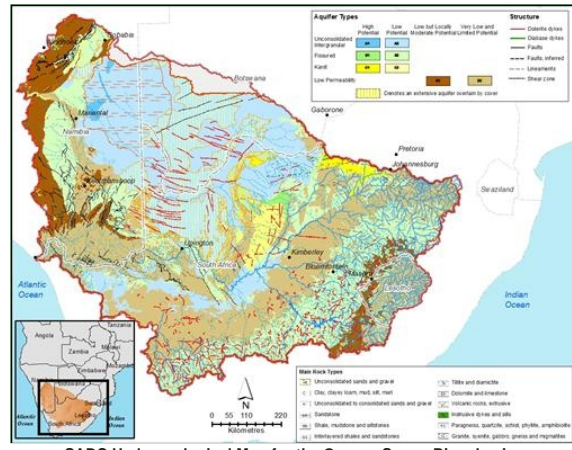
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SADC Hydrogeological Mapping Project

In response to a growing need for transboundary groundwater information, SADC, with support from International Cooperating Partners, has developed a SADC Hydrogeological Map. The map was developed as part of the **Regional Groundwater Management Programme in the Regional Strategic Action Plan for Integrated Water Resources Development and Management (RSAP-IWRM) (SADC 2009)**.

This map is intended to provide information on generalised hydrogeological characteristics for the entire SADC region, focusing on the extent and geometry of regional aquifer systems. The map is designed to be a tool for hydrogeologists and water resource planners, and non-specialists alike (SADC 2009).



SADC Hydrogeological Map for the Orange-Senqu River basin.
 Source: SADC 2010
 (click to enlarge)

Furthermore, the map is available through an internet portal as an interactive web-map application at: [An explanatory brochure and the Hydrogeological Mapping Procedures, Standards and Guidelines report are available in the Document Library.](#)

Development of the Hydrological Map

The team that developed the map used the SADC Geology Map (unpublished) as a base for illustrating lithographic distribution across the region. The 730 lithostratigraphic units were simplified to 29 classes relevant to hydrogeology:

- Unconsolidated sands and gravel
- Clay, clayey loam, mud, silt, marl
- Unconsolidated to consolidated sand, gravel, arenites, locally calcrete, bioclastites
- Sandstone
- Shale, mudstone and siltstone
- Interlayered shales and sandstone
- Tillite and diamictite
- Dolomite and limestone
- Volcanic rocks, extrusive and intrusive dykes and sills
- Paragneiss, quartzite, schist, phyllite, amphibolite
- Granite, syenite, gabbro, gneiss and migmatites

Source: SADC 2009.

Aquifer types were defined based on groundwater flow characteristics from the above lithological classes:

- Unconsolidated intergranular aquifers
- Fissured aquifers
- Karst aquifers
- Layered aquifers
- Low permeability formations

Source: SADC 2009.

Interactive

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](#)



Groundwater is an essential source of water for agriculture, including livestock.

Source: Vogel 2009
(click to enlarge)

Transboundary Aquifer Systems

In addition to mapping standard hydrogeological characteristics of the SADC region, the project also refined a set of agreed transboundary aquifers in the region. Although the natural extent of these aquifers still need to be verified, these data are extremely useful in the context of transboundary water resources management. The transboundary aquifers are listed in the table below.

Transboundary Aquifers in the SADC Region

Name	States
Karoo Sandstone Aquifer	Tanzania, Mozambique
Tuli Karoo Sub-basin	Botswana, South Africa, Zimbabwe
Ramotswa Dolomite Basin	Botswana, South Africa
Cuvelai and Ethosha	Angola, Namibia
Coastal Sedimentary Basin	Tanzania, Mozambique
Shire Valley Aquifer	Malawi, Mozambique
Congo Intra-cratonic Basin	D R Congo, Angola
Coastal Sedimentary Basin	D R Congo, Angola
Coastal Sedimentary Basin	Mozambique, South Africa
Medium Zambezi Aquifer	Zambia and Zimbabwe
Dolomitic	D R Congo, Angola
Sands and gravel aquifer	Malawi, Zambia
Kalahari/Karoo Basin	Botswana, Namibia, South Africa
Eastern Kalahari/Karoo Basin	Botswana and Zimbabwe

Source: SADC 2009

Next: An Overview of Water Use and the Water Balance in the Orange-Senqu River Basin ►