

## **AN INVENTORY OF LONG-TERM ENVIRONMENTAL DATASETS IN SOUTH AFRICA**

By

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The South African Environmental Observation Network (SAEON) has been implemented to establish long-term monitoring of environmental indices, understand ecosystem function, monitor environmental and land use changes, and determine the impact of these changes on the human society of South Africa. SAEON is a National Research Foundation (NRF) initiative and is funded by the Department of Science and Technology (DST). SAEON has international links with similar projects, namely the Long Term Ecological Research sites (LTER) and the Environmental Long-Term Observatories of Southern Africa (ELTOSA).

Field centres or nodes, established across the range of habitat types or biomes in South Africa, will be responsible for monitoring these changes. Each node will act as a central facility within a multi-tiered network of environmental monitoring sites, to collect, store and assess data, provide scientific coordination, act as a logistical and administrative platform, contribute towards education and outreach, and deliver information products. SAEON has already launched the Ndlovu (Lowveld savannah) and Fynbos nodes. Marine and coastal nodes are in the process of being implemented. In the next couple of years, nodes for the arid lands, grasslands and forests will be planned.

SAEON invites individuals or institutions carrying out long-term environmental research to consider joining the network.

This will facilitate the coordination, administration, sharing and use of long-term datasets on a national scale, and help secure the datasets for posterity. To find out more about SAEON, go to their website (<http://www.saeon.ac.za/>).

While a number of new environmental monitoring projects are to be instigated, there are many existing studies, while some relevant projects are lying dormant. In order to determine which environmental datasets already exist, their status and their value in terms of SAEON's objectives, information regarding them is needed. Therefore, one of the aims of my SAEON-supported post-doctoral fellowship is to create an inventory of long-term environmental datasets (active as well as dormant) existing in South Africa. Datasets of relevance include comprehensive baseline studies covering any aspect of the environment, such as flora and fauna, climate, geology, water, soil, oceanography, land-use, socio-economics, etc. The inventory will be in the form of metadata.

What is metadata? The metadata of a dataset is not the data itself, it merely describes the data within. As a simple analogy, the information on a tinned food label represents the metadata of the product (e.g. manufacturer, mass, ingredients). The kind of metadata that I am collating includes the following:

- Contact(s) for the dataset (e.g. name of the organization and contact details of the person in charge of the dataset)
- Dataset information (e.g. title, brief description, purpose, keywords, key publications, temporal and spatial coverage, whether the dataset is dormant or active, digital or non-digital)
- Data quality (e.g. a description of how accurate are the data, what gaps exist)
- Access and use of the dataset (e.g. access/use constraints and conditions, how to get a copy of the dataset, how to

cite the dataset)

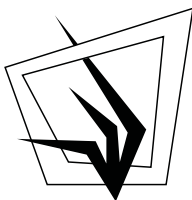
- Metadata author details (contact details for the person who produced the metadata)

To assist you in providing me with metadata for your long-term datasets, I have created a user-friendly 'metadata form' for you to complete. I am currently updating this form after receiving feedback from initial recipients. Once it has been updated (before the end of August) you can obtain a copy directly from me ([smecener@adu.uct.ac.za](mailto:smecener@adu.uct.ac.za)) or you can download it from the metadata project website

(<http://web.uct.ac.za/depts/stats/adu/saeon.htm>).

The metadata base will be made available on the SAEON website as a search interface, thereby assisting researchers (local and international) in locating datasets of interest and establishing contact with the owners/managers of the data. Potentially, collaborative studies can be formed in this way.

The datasets identified for the inventory shall be assessed for their national importance, from the perspective of their usefulness to a broad spectrum of potential long-term environmental researchers. Comprehensive baseline studies will be selected and evaluated with regards to their usefulness to SAEON, and specifically regarding their relevance to the nodes. Important criteria include the usefulness of datasets for understanding ecosystem function, monitoring environmental change, and determining impacts of climate or land use changes on the environment and on society.



## **SOIL DEGRADATION IMPACT ON SEEDBANK SUSTAINABILITY**

By

G.J. van Rensburg & H.A. Snyman

Seedbank evaluation is important in understanding plant community development and successional patterns which can be used in identifying factors regulating population dynamics. Seedbank composition along a degradation gradient was evaluated on an Arcadia soil type at Soetdoring Nature Reserve, 42 km north-west of Bloemfontein, in a semi-arid climate with an average annual rainfall of 550 mm. Twenty soil samples were collected up to a depth of 50 mm in late June 2000. The treatments included bare soil, veld in good, moderate and poor condition, which represented a degradation gradient. Seed germination trials were conducted in the greenhouse to determine germinability and botanical composition of the seedbank. Four grass species were identified in the seedbank (*Aristida congesta*, *Chloris virgata*, *Themeda triandra* and *Tragus racemosus*). *Aristida congesta* occurred in all treatments except veld in a good condition and was the only species that germinated on the bare soil. *Tragus racemosus* occurred in both the poor and moderate veld, while *Chloris virgata* occurred only in moderate veld. *Themeda triandra* occurred in both the moderate and good veld condition, but was the only species in the good veld. The decline of seedbank germinability along a degradation gradient can be attributed to the reduction of seed production, increase in soil surface temperature, increased soil erosion, decrease in soil water content and changes in the soil characteristics and climate. Therefore, further research is necessary in solving some of these plant-soil interactions.