National Research Foundation
South African Environmental Observation Network

P.O. Box 2600
Pretoria 0001
South Africa
www.saeon.ac.za

Expanded Freshwater and Terrestrial Environmental Observation Network (EFTEON) Call for Landscape Nominations

Nomination Form

Call for nomination of landscapes for the installation of long-term ecological research infrastructure

https://efteon.saeon.ac.za/

Introduction

The Expanded Freshwater and Terrestrial Environmental Observation Network (EFTEON) is a Research Infrastructure (RI) that is being developed under the South African Research Infrastructure Roadmap (SARIR) program of the Department of Science and Technology (http://bit.ly/2u18qNX). EFTEON is conceived as a modular, highly-networked RI to support studies on coupled ecological social systems in South Africa.

The design concept is based on distributed landscapes, each with responsibility for representing an important South African Ecosystem/Human complex. The landscapes are intended to include representatives of major biomes in South Africa and human transformed ecosystems such as urban areas and agricultural systems. The landscapes are supported by a central co-ordination and data management facility (shared with the Shallow Marine and Coastal Research Infrastructure (SMCRI) and general SAEON operations). Each of the landscapes is proposed to have a heavily instrumented core site for fresh water and terrestrial observations and a network of instrumented subsidiary sites, to provide supporting data at a broader spatial scale. A

Critical Zone Observatory approach is implicit in the EFTEON design with a realm of interest extending from the ground water to the atmospheric boundary layer.

Each of the landscapes will have:

- A standard set of automated instruments, measuring:
    - The exchange of carbon, water and energy through the use of eddy covariance measurements
    - The water cycle (flow and quality) at connected freshwater monitoring locations
    - Meteorological measurements
- A suite of standard repeated manual measurements, covering:
    - Biodiversity
    - Productivity
    - Ecosystem condition, and
    - Ecosystem service provision and use
- Collection of a comprehensive set of remotely sensed data, and
- Socio-ecological data for each landscape

EFTEON is expected to offer a number of free and discoverable datasets and data products for the scientific community, such as:

- Long term, time series measurement data of:
    - The fluxes of energy, carbon dioxide and water,
    - Measurements of meteorology, soil moisture, soil temperature
    - River flow, daily groundwater recharge, continuous stream chemistry
    - Documentation of vegetation, soil and disturbance parameters.
- Landscape scale observations of land use and land cover
- Socioecological studies of ecosystem services use, land use decision processes and interactions between social and ecological drivers on ecosystem processes and function,
- Inputs and disturbances, such as deposition, ecosystem service use or fires
- Population dynamics of representative and important species in the landscape for both terrestrial and freshwater ecosystems.

EFTEON contributes to global research infrastructures by providing a terrestrial research infrastructure for socially-relevant ecosystems research based in Africa and

the southern Hemisphere, strongly linked to coastal and marine ecosystems research and global environmental data systems.

Principles for the landscape selection

To meet the intended outcomes for the RI a number of principles need to be met

- **Long Term Environmental Research Platform:** The EFTEON RI is intended for long term continuous operation and the primary purpose of the network is to provide long term environmental data for the national and global research community. Site operations need to undertake measurements and observations that are of value at both the short and long term. Selected sites need to be available for multi-decade (>20 year) operation.
- **Research Platform:** The EFTEON RI is intended as a research platform with an open data and open platform use policy, in order to facilitate the use of the infrastructure and data by other researchers, both of national and international origins.
- **Spatial diversity coverage:** Sites selected for the network are to represent the major biomes and human transformed ecosystems and their embedded aquatic systems. A focus on lived-in landscapes and landscapes in transition (climate change or land use change).
- **Historic observational and experimental datasets:** Incorporation of existing research and linking to existing socio-ecological datasets. The leverage of long term social-ecological and earth system data sets would be considered an advantage in the selection of the sites. EFTEON will place a strong emphasis on data archiving and provision, and data archaeology to ensure long term availability and continuity of datasets
- **Experiments and manipulations:** Where appropriate, implement and sustain appropriate simple experiments to help elucidate a process level understanding of ecosystem changes

Call for landscape nominations

In order to roll out the EFTEON RI in an open and transparent way that meets the current and future needs of the South African and global research community a call is being made for community input to the identification and selection of long term EFTEON research landscapes.

Structure of the Call for Research Landscapes

The call for the selection of EFTEON research landscapes is proposed to take place through a three (3) stage selection process

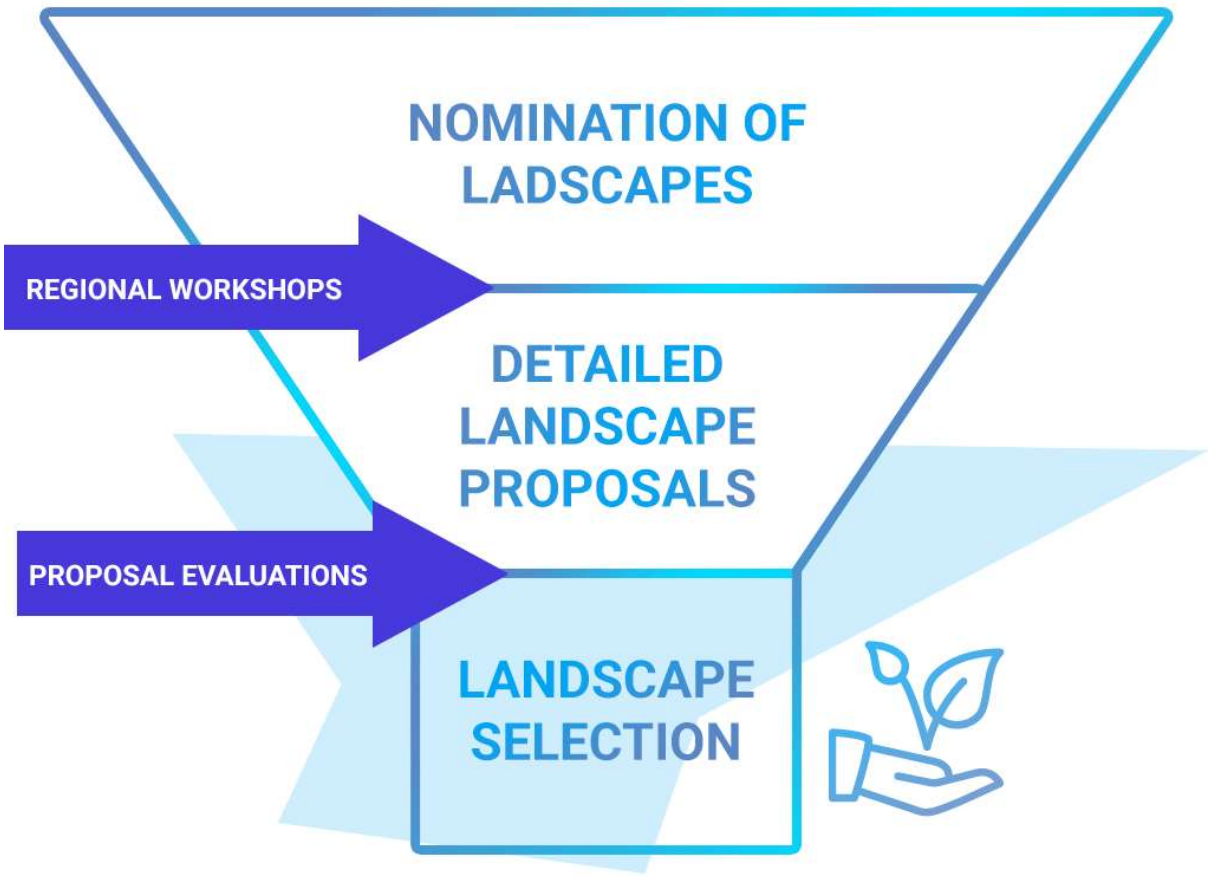

Figure 1 Schematic of the landscape selection process

Stage 1: Community wide nominations suitable landscapes.

During this stage of the selection process an open call is made for researchers or existing facilities to propose potential locations for the establishment of EFTEON sites. During this phase it is hoped that a broad range of sites are proposed and that motivation for the use of the sites is provided through highlighting the site value, based on the science questions that could be answered.

The nomination form is available here **https://efteon.saeon.ac.za/**

The nomination process will remain open until **15 March 2020**

Stage 2: Regional workshopping.

A number of regional workshops will be held **between March and May 2020** to consolidate the number of nominated landscapes within regions, to invite the stronger landscapes to prepare full proposals and identify champions to lead the development of each full proposal.

Stage 3: Proposal development.

Between **May and August 2020** proposals are to be developed, EFTEON will provide some assistance in terms of hosting meetings and continued engagement with the proposal developers.

Evaluation of proposals will be conducted by a committee made up of members of the EFTEON Thematic Technical Committees (Atmospheric Science and Meteorology, Biodiversity, Biogeochemistry, Hydrology, and Socio-Ecological Systems), against criteria based on 1) the general situational characteristics of the landscape, 2) the landscape location in the face of change (climatic, land use and other) and 3) logistical and operational suitability.