

Climate change and adaptive land management in southern Africa

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Assessments
Changes
Challenges
and Solutions

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Analysis of Climate Data Application (ACD-App)

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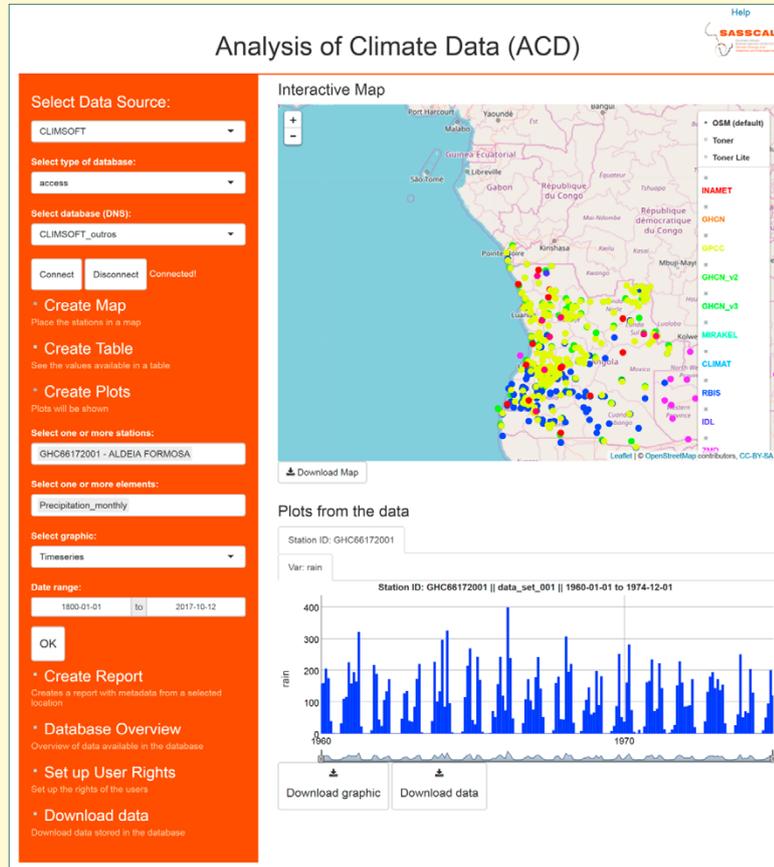
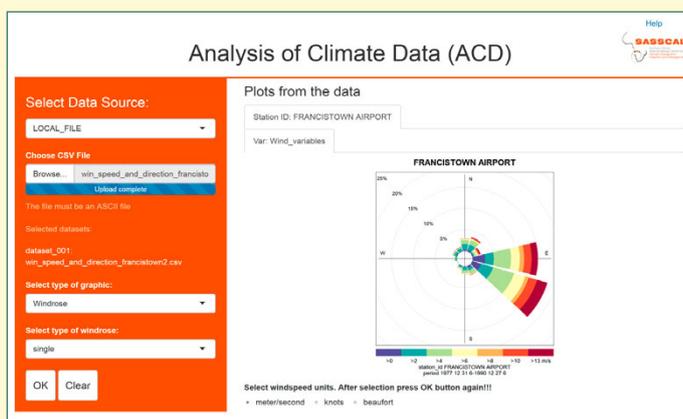


Figure 1: Screenshot ACD-App interface when CLIMSOFT is selected as data source. Here two of the features available are shown: (1) the map with the location of the weather stations and (2) the time series of precipitation for one Angolan weather station. In order to plot these graphics, the data have to be already available in the CLIMSOFT database.

rights for the ACD-App. Figure 1 shows a screenshot of the ACD-App with the options available when a user connects to a CLIMSOFT database.

Users who select the second option of an external file will be able to create graphics or download data stored in a text file (.txt) or comma-separated file (.csv). For the app to recognize the data, the file should contain, at least, the information related to (1) the station identifier, (2) the date or date and time at which the observation was done, and (3) the observation values of one or more elements (e.g., maximum temperature). A screenshot of the ACD-App once the external file option has been selected can be found in



To support the NMSs in regard to data quality management, we developed an open-source tool called Analysis of Climate Data Application (ACD-App) that allows users to interact with data archived in any CLIMSOFT database. The ACD-App was developed using Shiny, an open-source R package that provides a web framework for building web applications with R (<https://shiny.rstudio.com>). Its main aim was to facilitate qualitative quality control checks of climate datasets through a graphical visualization of climate data. However, the app has been improved over the years so that it also allows users to download of data from any CLIMSOFT database, create metadata reports of these data, and even create graphics from data stored in external ASCII files. Therefore, the ACD-App enables users to choose between working with data stored in a CLIMSOFT database or in an external ASCII file. If the first option is selected, users will be asked to connect to the CLIMSOFT database and, depending on the app-specific user rights, they will be able to (1) create a map that locates the weather stations, (2) download the climate data of one or more stations, (3) create PDF reports with metadata for a given location, (4) create graphics such as time series, histograms, or wind roses, (5) get an overview of the whole database, or (6) control the user

rights for the ACD-App. Figure 1 shows a screenshot of the ACD-App with the options available when a user connects to a CLIMSOFT database. Users who select the second option of an external file will be able to create graphics or download data stored in a text file (.txt) or comma-separated file (.csv). For the app to recognize the data, the file should contain, at least, the information related to (1) the station identifier, (2) the date or date and time at which the observation was done, and (3) the observation values of one or more elements (e.g., maximum temperature). A screenshot of the ACD-App once the external file option has been selected can be found in Figure 2. The ACD-App has been hosted in GitHub – an online code-hosting repository based on the GIT version control system (Dabbish et al., 2012) for download and further development: <https://github.com/sasscal-dwd-apps/ACD-App>. A detailed manual on how to install it and how to use it can be found here: <https://sasscal-dwd-apps.github.io/ACD-App/en/documentation.html>

Figure 2: Screenshot ACD-App interface when a local file is selected as data source. Here the wind rose for a Botswanan weather station is shown. In order to plot these graphics, the data should be saved in a file with ASCII format and include, at least, the station name or identifier, the date of measurement, and the observed values.