

Wind Time series for WASA3 domain, South Africa

Metadata and further information

May 2021

Introduction

Purpose

This data set was created for the WASA project and the Department of Energy, South Africa. The wind time series were designed to give information on annual, seasonal and diurnal variations of wind speed and direction for across South Africa.

Methodology

Reference is made to the information and documentation available from www.wasa.csir.co.za.

Download Speeds and Functionality

When a point is selected the portal extracts the data for that point from the full WASA3 dataset. This process can take 15 minutes or longer. Once the data are extracted the user user will receive an email notifying them that the data is ready to be downloaded. At this point the data are also cached. If another user selects the same point, as the data is cached, the download will be almost immediate.

Limitations

The operational envelopes of the wind atlas methodology and the WRF model limit the accuracy of the data set.

The timeseries data were designed to be used for:

- Study the annual, seasonal and diurnal variations in wind resources
- As input to power system modelling
- Study the geographical cross correlation of wind across South Africa
- Used for long-term correction of the wind resources given by the WRF wind climate files ("lib" files)

These timeseries data are not intended for wind resource calculations except for the above. For wind resource calculations users are referred to the Verified Numerical Atlas and Guide on the download site and Metadata Wind Resource Map (WRF).

Available documentation

The Numerical Wind Atlas for South Africa is a product of the Wind Atlas for South Africa project and is described further on the WASA download pages.

METADATA	
Data set name	Wind time series for WASA3 domain, South Africa
Data set date production	June 2021
Data provider	UCT and DTU Wind Energy
Contact persons	Chris Lennard (UCT)
Contact details	lennard@csag.uct.ac.za (UCT)
Data type	Time series of wind speed, wind direction and 2-meter temperature
Data format	ASCII
File name(s)	TS_<latitude>_<longitude>.csv
Data origin	WRF WASA3 model simulation at 3 km x 3 km grid spacing covering WASA3 domain
Time period covered	01 January 1990 to 31 December 2019
Time resolution	Every 30 minutes
File size	To be determined

DATA PARAMETERS	
Latitude	Latitude in decimal degrees (first line in file)
Longitude	Longitude in decimal degrees (first line in file)
Column names	Times, T2, WSPD_0, WDRO_0, WSPD_1, WDRO_1, WSPD_2, WDRO_2 (second line in file)
Date and time	Times: YYYY-MM-DD_HH:MM:SS, where time is in UTC hours
T2	Temperature at 2 meters (degrees Kelvin)
WSPD_0	Wind speed at 20 meters [ms/s]
WDRO_0	Wind direction at 20 meters [ms/s]
WSPD_1	Wind speed at 60 meters [ms/s]
WDRO_1	Wind direction at 60 meters [ms/s]
WSPD_2	Wind speed at 100 meters [ms/s]
WDRO_2	Wind direction at 100 meters [ms/s]

COORDINATE SYSTEM

Projection	Lambert conformal projection
Centre of grid	-28.70254°N, 24.75159°E
Grid rotation	Standard longitude: 10°W

TECHNOLOGY	
Calculation software	WRF Version 3.8.1 (see mesoscale report for more details)
Data post-processing	DTU Wind Energy and UCT-CSAG software.

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