



energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA



Empowered lives.
Resilient nations.



EMBASSY OF DENMARK



sanedi
South African National Energy
Development Institute.

Wind resource maps for WASA domain, South Africa

Metadata and further information

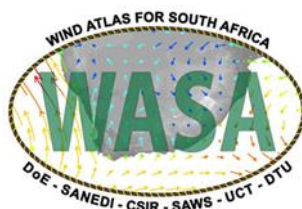
April 2014

METADATA	
Data set name	Wind resource maps for the WASA domain, South Africa
Data set date	April 2014
Data provider	SANEDI
Contact persons	Thembakazi Mali or Andre Otto
Contact details	ThembakaziM@sanedi.org.za or andreo@sanedi.org.za
Data type	Raster data sets with a grid cell size of 0.0025°
Data format	ArcGIS ASC
File name(s)	<province identifier> <resolution> <parameter>.asc
Data origin	Raster data sets with grid cell sizes of 250 m for NC, WC and EC

DATA PARAMETERS	
Mean wind speed	Mean wind speed U [ms^{-1}] @ 100 m above ground level
Mean power density	Mean power density P [Wm^{-2}] @ 100 m above ground level
Terrain elevation	Elevation of terrain at modelling site in [m] above mean sea level
Ruggedness index RIX	Site RIX value calculated by WAsP (standard parameter setup)

COORDINATE SYSTEM	
Projection	Plate Carrée, longitude and latitude system
Zone number	n/a
Datum	World Geodetic System 1984 (WGS 84)

TECHNOLOGY	
Calculation software	WAsP Resource Mapping System with WAsP engine version 11
Wind-climatological input	Verified Numerical Wind Atlas for South Africa (WRF-based)
Elevation data input	100-m elevation grid derived from SRTM version 3 (GL3)
Roughness data input	1-km resolution GLCC data, vectorized by DTU Wind Energy
Air density input	Standard atmosphere approximation with elevation variations only





energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA



Empowered lives.
Resilient nations.



EMBASSY OF DENMARK



sanedi
South African National Energy
Development Institute.

DETAILED NOTES

Purpose

This data set was created for the WASA project and the Department of Energy, South Africa. The wind resource maps were designed specifically for inclusion in GIS-based strategic environmental assessments (SEA) for wind power in Western Cape and parts of Northern and Eastern Cape.

Methodology

Reference is made to the information and documentation available from www.wasaproject.info and www.wasa.csisr.co.za.

Limitations

The data set is limited by the operational envelopes of the wind atlas methodology and the WASP models. The accuracy depends on a) the accuracy of the VNWA, which has been verified against the data from 10 WASA measurement masts, b) the WASP microscale modelling and c) the input topographical data.

In complex terrain ($RIX > 5\%$), the wind resources may be significantly over-estimated by the WASP microscale modelling. Above and close to built-up areas like cities, towns and villages, the results are less reliable. Close to and above forested areas, the results are also less reliable and should be interpreted and used accordingly.

The data set was designed specifically for planning purposes and should be used with utmost care for design, development and detailed assessments of actual wind farms; where local, on-site measurements are strongly recommended. The wind resource maps are subject to change without notice if and when more accurate and reliable data, models and procedures become available.

Available documentation

The wind atlas methodology is described in the European Wind Atlas (1989); the application of WASP in the program documentation, see www.wasp.dk. The Verified 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 <http://wasadata.csisr.co.za/wasa1/WASAData>

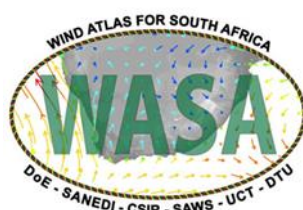
Acknowledgements

WASA project for Frogfoot application and provision of wind-climatological and topographical data. WASP development teams at DTU Wind Energy and World in a Box Oy for Frogfoot development.

DISCLAIMER

In no event will SANEDI and the WASA Implementation team or any person acting on behalf of SANEDI be liable for any damage, including any lost profits, lost savings, or other incidental or consequential damages arising out of the use or inability to use the information and data provided in this data set, even if SANEDI has been advised of the possibility of such damage, or for any claim by any other party.

The principles, rules, exclusions and limitations provided in the Disclaimer on the WASA download site apply to the data set described here as well, even though this data set may not be distributed via the web site. By using this data set, you agree that the exclusions and limitations of liability set out in this disclaimer are reasonable. If you do not think they are reasonable, you must not use this data set.





energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA

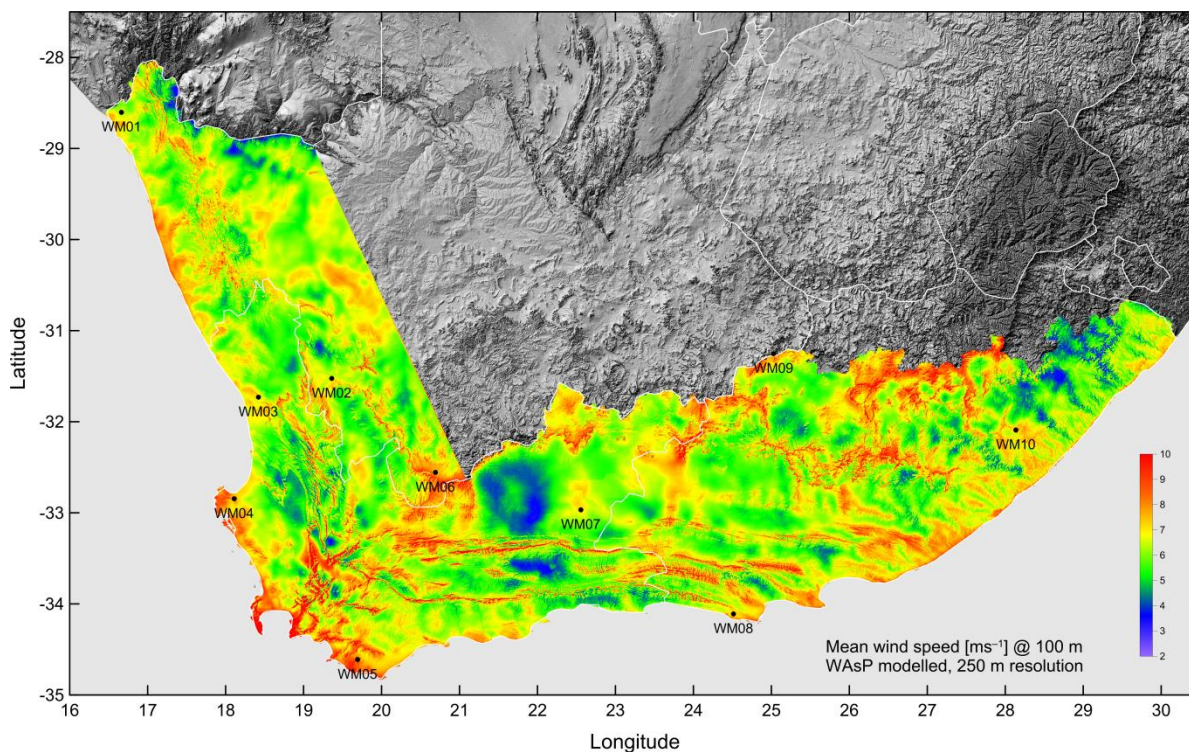


Empowered lives.
Resilient nations.

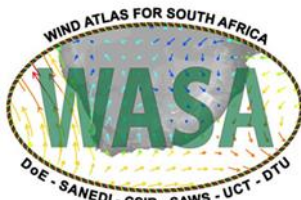
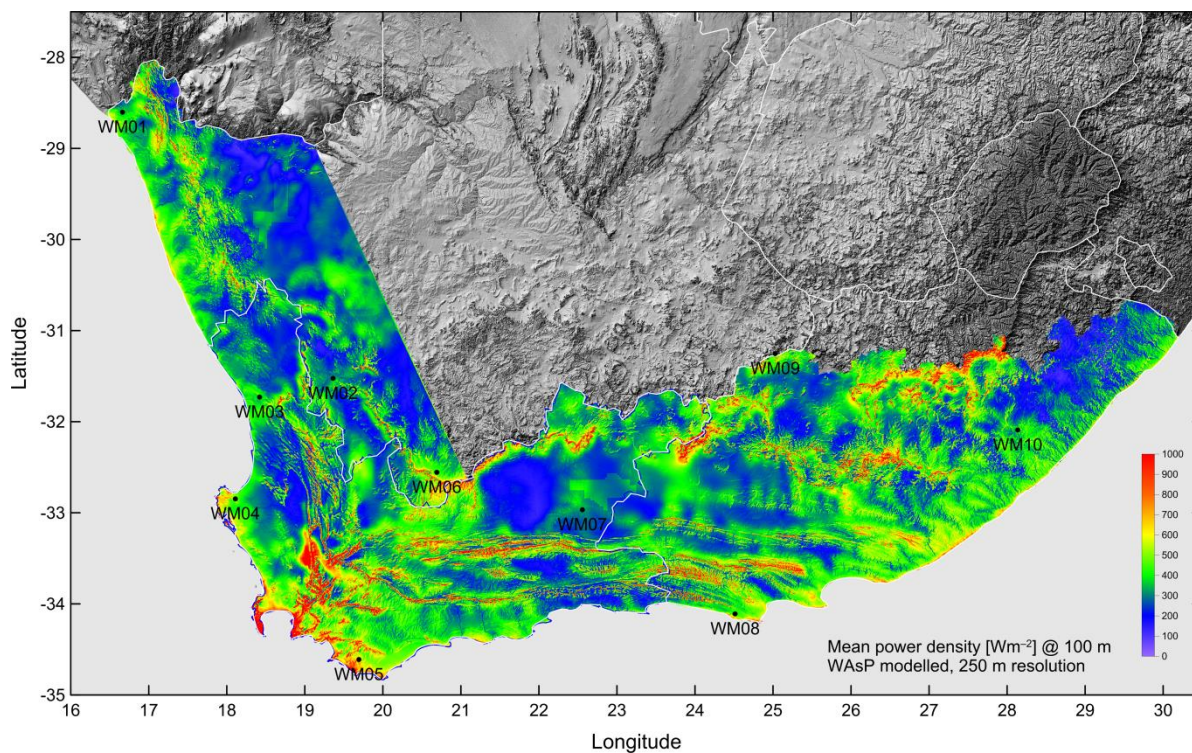


sanedi
South African National Energy
Development Institute.

Mean wind speed (WRF based)



Mean power density (WRF based)





energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA

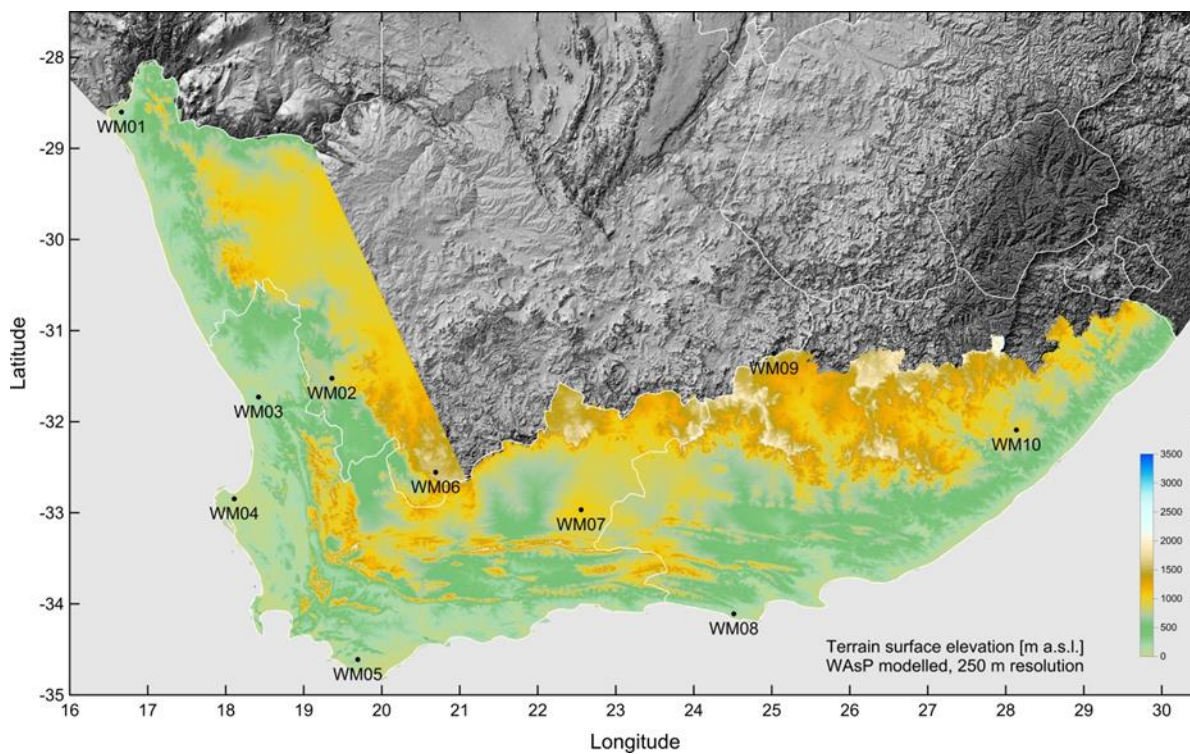


Empowered lives.
Resilient nations.



sanedi
South African National Energy
Development Institute.

Terrain elevation



Ruggedness index

