Wind Atlas for South Africa (WASA)
Western Cape and areas of Northern and Eastern Cape

Project brief Sept 2010
at official opening of data display and download websites

Immediate objectives

To improve knowledge and quality of wind resource assessment methods and tools, as well as to ensure availability of tools and data for planning and application for wind farm developments, off-grid electrification and extreme wind studies.

Main outputs

The project will provide an updated overview of the wind climate based on reliable wind data using contemporary models and the following main results:

Measurement stations, data acquisition systems and data for verification for a total of 3-years

First wind atlas according to standard proven and tested method after 1 year of measurements

Researched wind atlas after 3 years of measurements

All results in public domain

Roles

UCT – mesoscale modelling
CSIR – measurements and microscale modelling
SAWS – extreme wind assessment
SANERI – coordination and dissemination
Risø DTU – partner in all activities

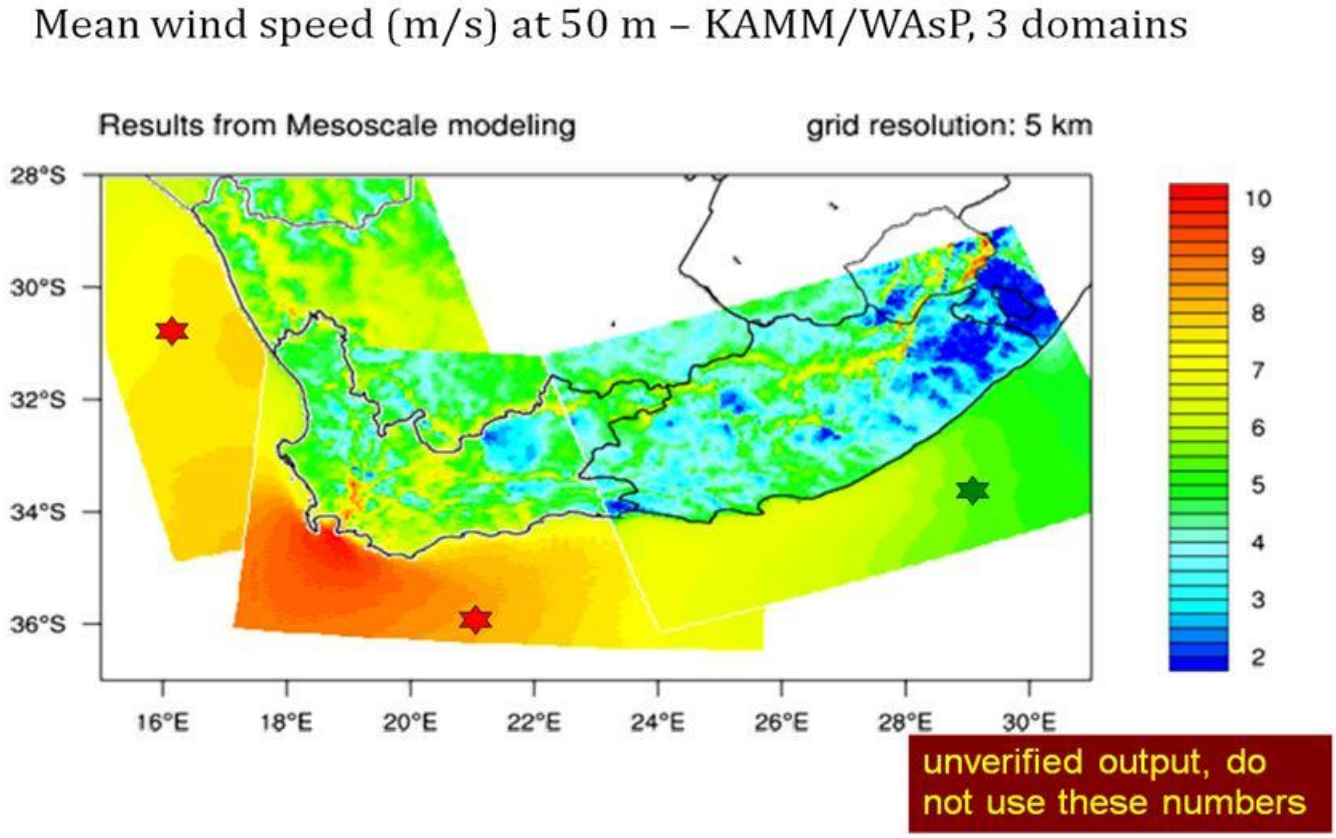
Project plan and selected initial highlights

Milestones according to work plan

30 June 2009	Project Commencement at contract signature
March 2010	First public project workshop presenting • Project plans, methods and tools • First unverified wind atlas
July/August 2010	10 WASA measurement stations in operation
September 2010	Wind data publishing monthly on web-site activated
February 2012	Midterm Workshop presenting • First wind atlas according to standard proven and tested method after 1 year of measurements
February 2014	Final Workshop and Wind Seminar presenting • Researched wind resource atlas • Extreme wind atlas

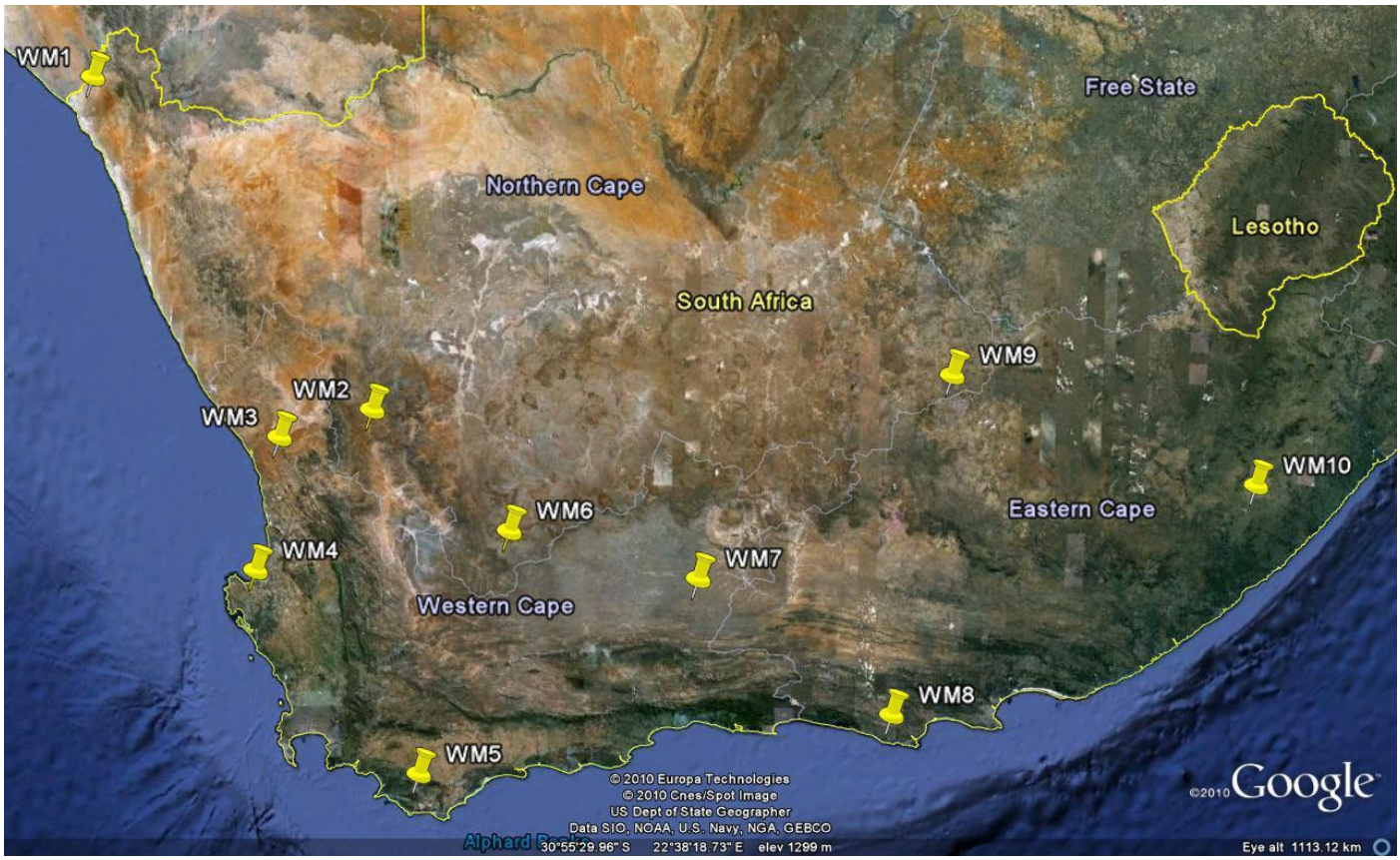
Work Package 1: Mesoscale modelling

Initial model set up and preliminary calculations have been made both at Risø DTU (KAMM) and at UCT (WRF). Work to refine model set up, terrain descriptions and parameterisation is ongoing while awaiting data for verification.

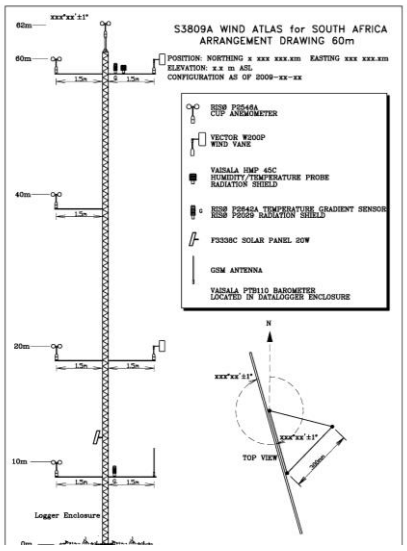


Work Package 2: Wind measurements

Ten lattice-type, 60-m wind masts installed at sites selected primarily for their use for verification of mesoscale modelling in the project areas of Western, Northern and Eastern Cape. Mast locations and numbering is shown in the map. Data comes into the server at CSIR every 10 minutes, and graphs are made available automatically for viewing online on the project web site **http://www.wasa.csir.co.za.**



Some photos from the installation work and a sketch of the instrumentation on the 10 measurement masts are shown below. Further details are also available on the project web site **http://www.wasa.csir.co.za**.



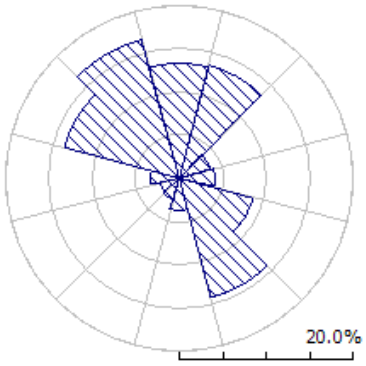
Monthly data files are made available for download for anyone entering their registration information. Registration includes your coordinates, affiliation and the intended type of use. About a week after the turn of the month, the wind data from each month (after some QA by the project team) will be made available from **http://wasadata.csir.co.za/wasa1/WASAData.**

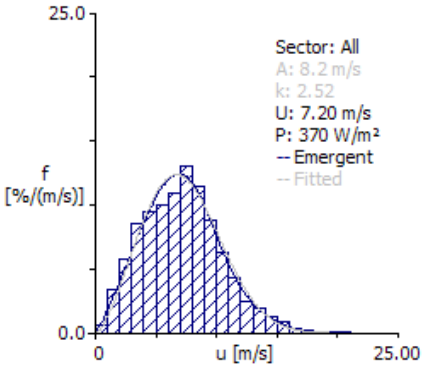
It should be noted that any use of the data is at own risk according to disclaimer on the web site.

Work Package 3: Microscale modelling

A microscale workshop for all project partners was held in November 2009, introducing and discussing tools and methods. WAsP and the Wind Atlas Method will be used for wind data analysis and wind resource mapping.

Land-use data have been extracted from CSIR's GIS systems for use in both WP1 and WP3. Further detailing of descriptions and studies of stations and surroundings at the 10 project masts will be made for the verification of the first wind atlas according to standard proven and tested method after 1 year of measurements. Databases of statistical distributions of observational wind atlases will be produced based on available input statistics.



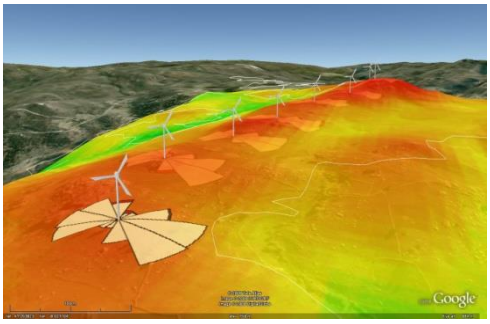


Work Package 4: Application

Wind Atlas for South Africa database availability will be ensured when available through links from **http://www.wasa.csir.co.za** and presented at Mid-term and Final Workshops.

The SAWEP Workshop on the Wind Atlas for South Africa (WASA) with Presentation and Demonstration of WASA methods, tools and products was held in Cape Town, 4 March 2010. You will find the presentations on **http://www.saneri.org.za/wind_atlas.htm**

Courses on how to apply the Wind Atlas for South Africa will be developed and made available.



Work Package 5: Extreme winds

PhD work initiated by SAWS and supported by this project since June 2009 will complete the thesis "Wind Climatology of South Africa relevant to the Design of the Built Environment" in 2010. The PhD research contains a.o. study of prevailing macroclimate, extreme value theory, statistical analysis of strong wind data with different approaches and methodologies, development of new 1:50 year maps. The WASA project will further develop and apply methods related to exploitation of the results of WP1,WP2 and WP3.

Work Package 6: Documentation and dissemination

The WASA project was presented at

- Wind Energy Seminar, Pretoria, 23 January 2009,
- Wind Power Africa 2010 conference, Cape Town, 13 May 2010.

Presentations and links to information are available at the SANERI web site **http://www.saneri.org.za**.

Acknowledgements

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South African National Energy Research Institute (SANERI) is the Executing Partner, coordinating and contracting contributions from the implementing partners: CSIR, UCT, SAWS, and Risø DTU.