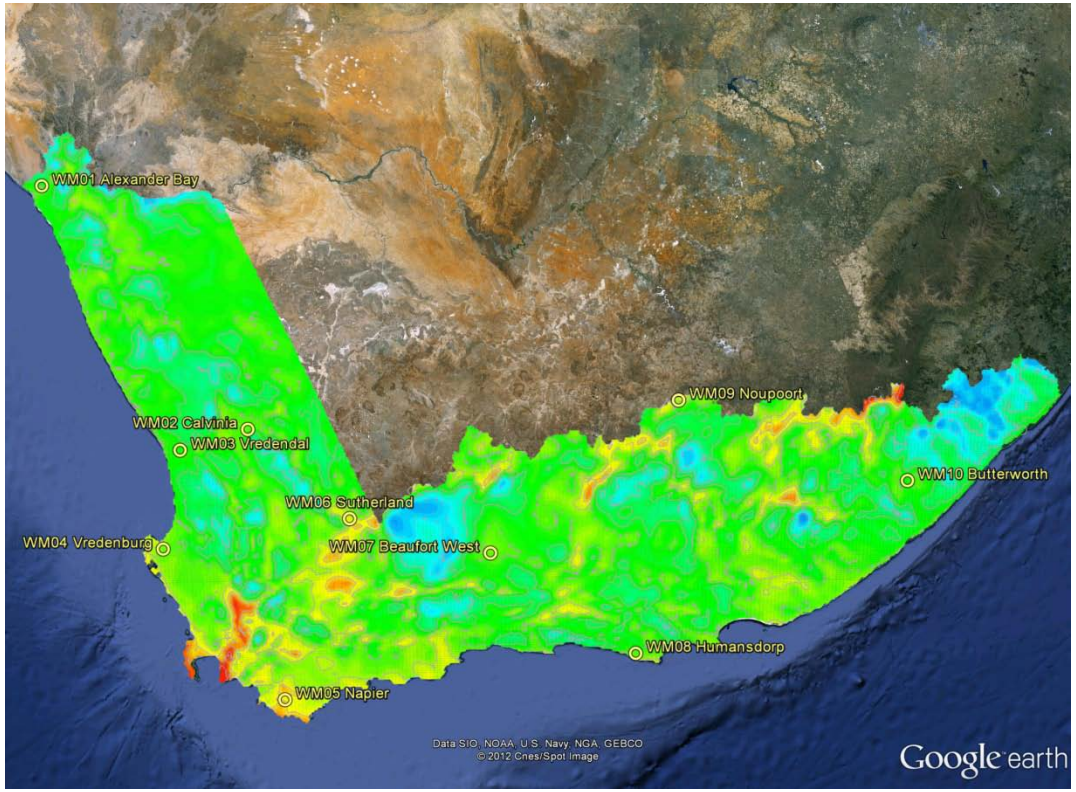
Application of Wind Atlas for South Africa

Niels G Mortensen and the WASA team



Outline

Application of Wind Atlas for South Africa

- How to use the Wind Atlas for South Africa?
  - WASA web sites, Tadpole, WAsP data, guidelines
  - Wind farm case studies and examples
  - Resource mapping in sample areas
  - Phase II microscale modelling
- Q&A
- Questionnaire introduction and feedback *(Eugene, CSIR)*
- Take a look at the information available!

Software clinic

- Attendees are invited to use the “First Verified Numerical Wind Atlas for South Africa”

WASA project web sites

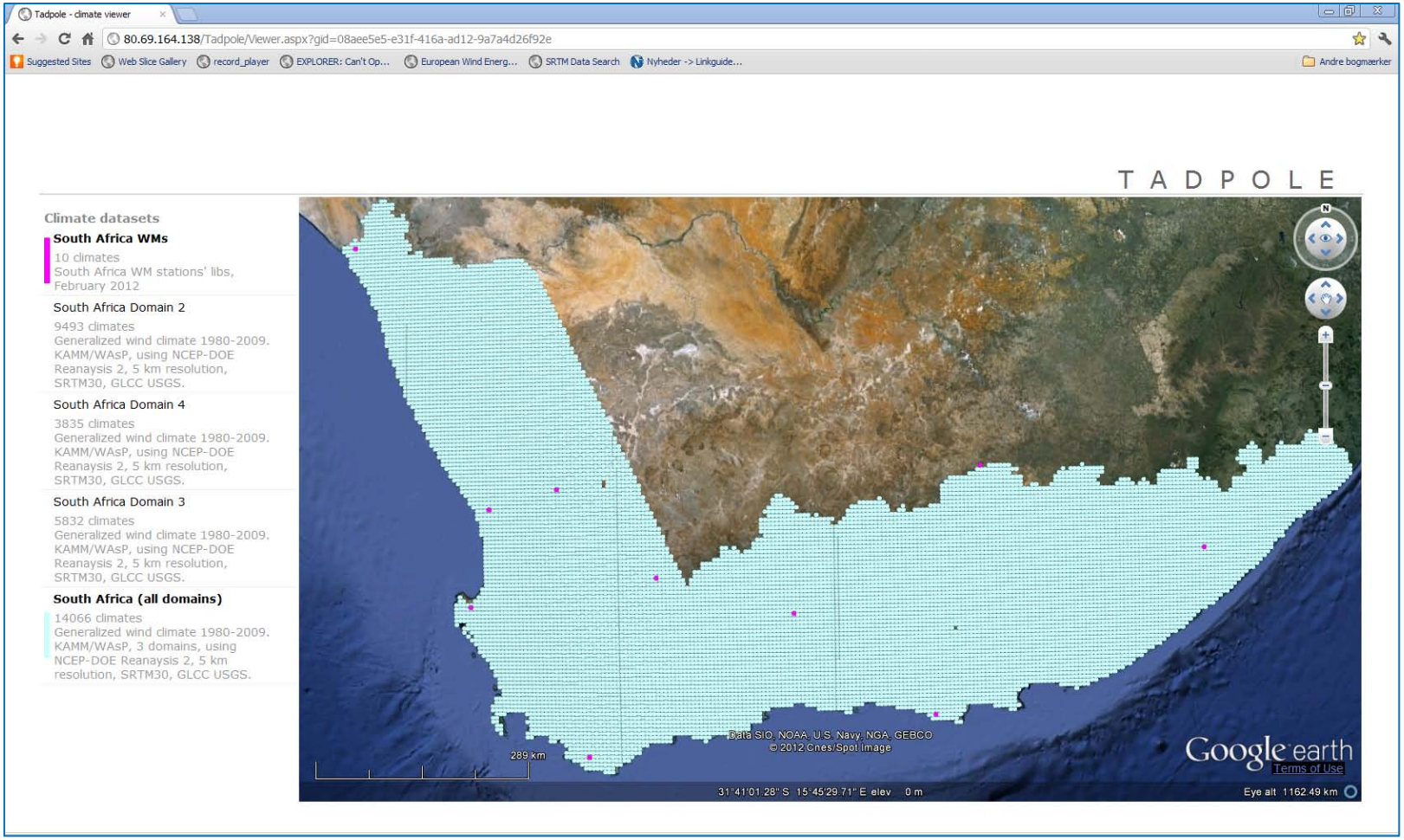
- General information about WASA project
  - **www.wasaproject.info**
  - **www.saneri.org.za/wind_atlas.htm**
- WRF wind forecasts are available on
  - **veaonline.risoe.dk/wasa**
- CSIR online – display of measured data
  - **www.wasa.csir.co.za**
- WASA met. data download site (monthly files)
  - **wasadata.csir.co.za/wasa1/WASAData**
- WASA wind atlas download site **NEW!**
  - **wasadata.csir.co.za/wasa1/WASAData**

WASA Wind Atlas download site

- First Numerical Wind Atlas – Tadpole
  - The Tadpole web interface uses the Google Earth plug-in
  - Google Chrome 1.0+, Internet Explorer 7+ (32-bit) and Firefox 2.0+
- Observational Wind Atlas
  - WAsP data and workspaces
- Case studies
  - Wind farm and wind resource mapping examples
- Reports and guidelines
  - WASA reports and general WAsP guidelines
- Map data and tools
  - SRTM 3 elevation data, SWBD water body data, Google Earth
- Software
  - Using WAsP as a data viewer (reader) and for microscale modelling

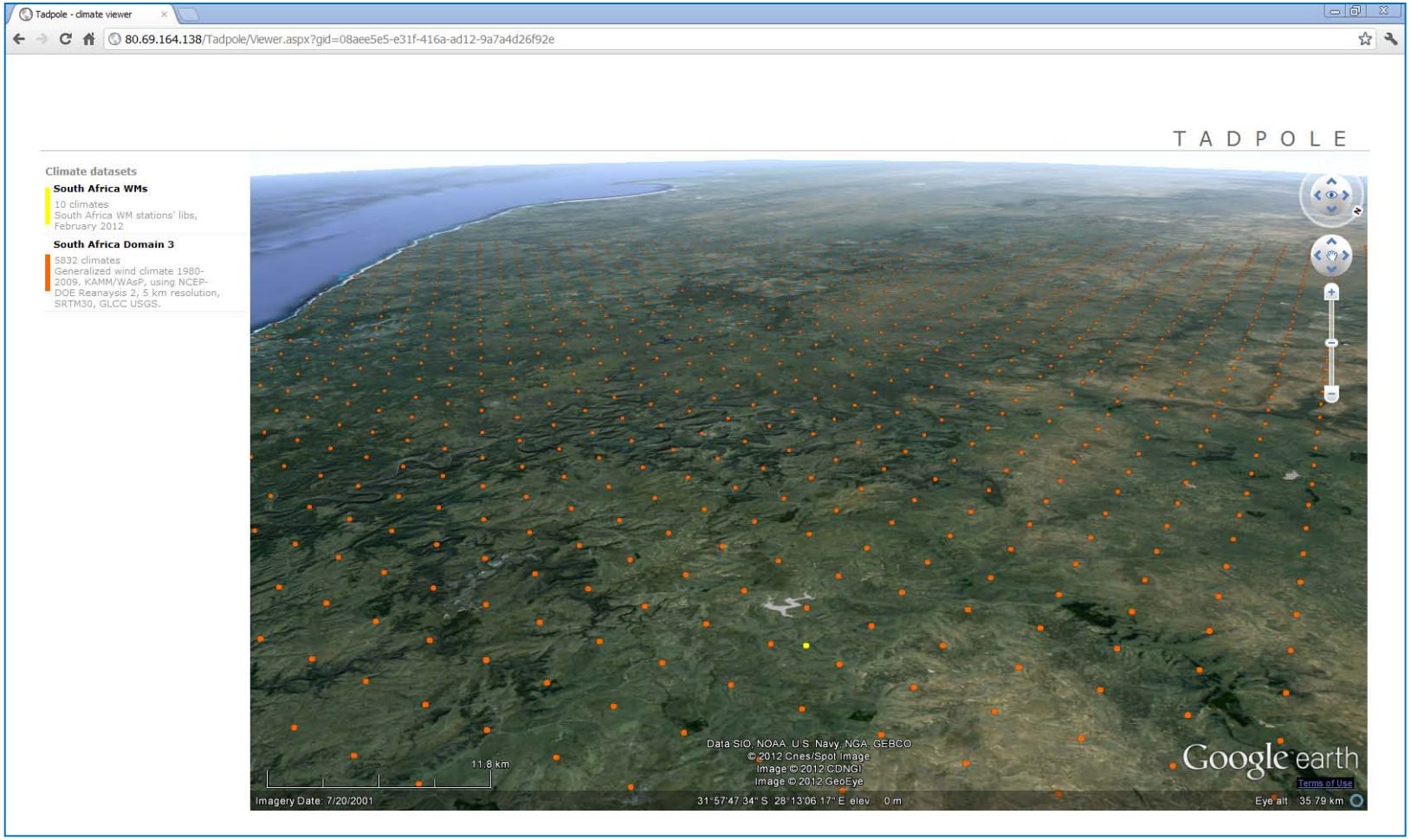
Numerical wind atlas

Tadpole: interface to wind atlas results



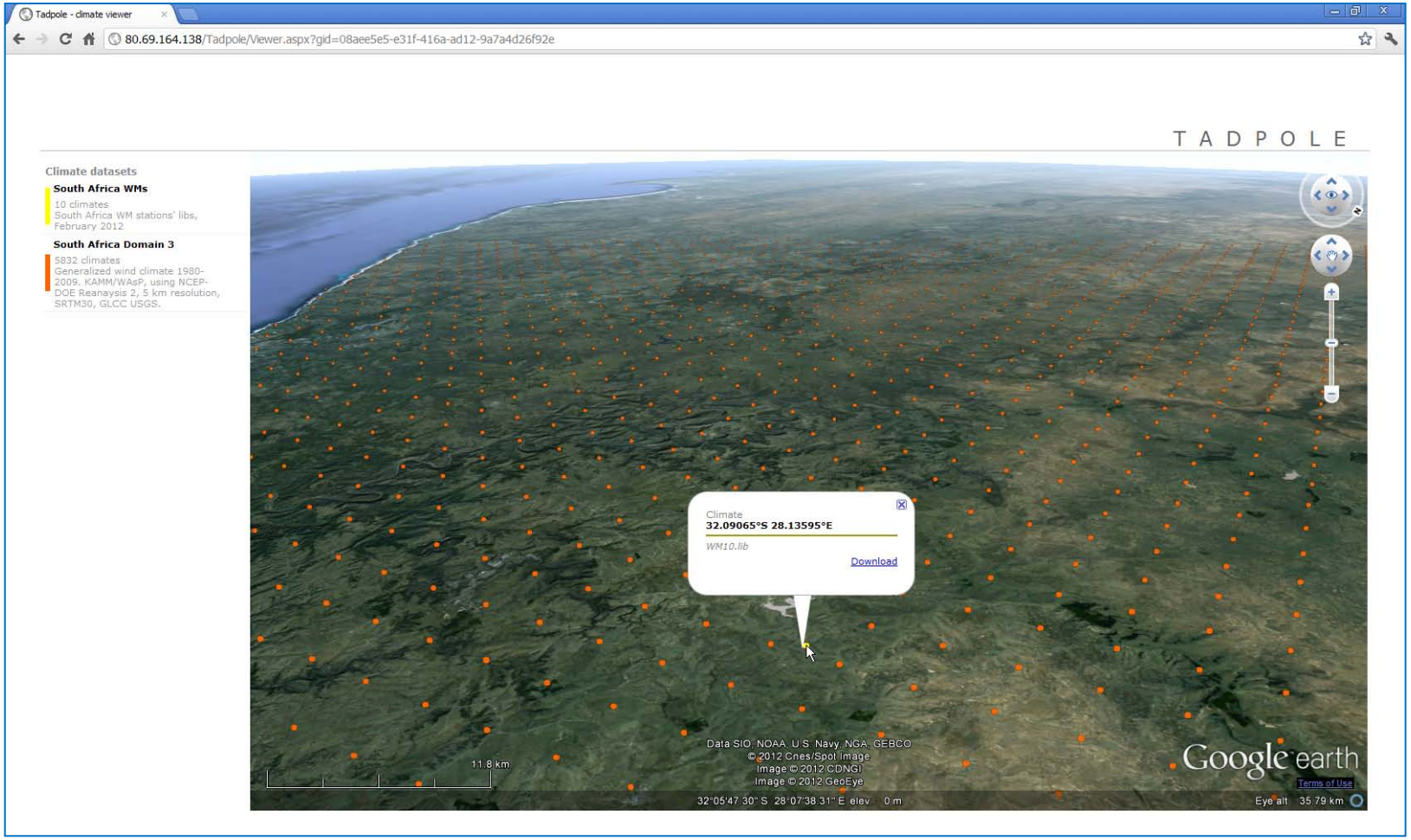
Numerical wind atlas

Tadpole: WM10 (●) and mesoscale grid points (●)



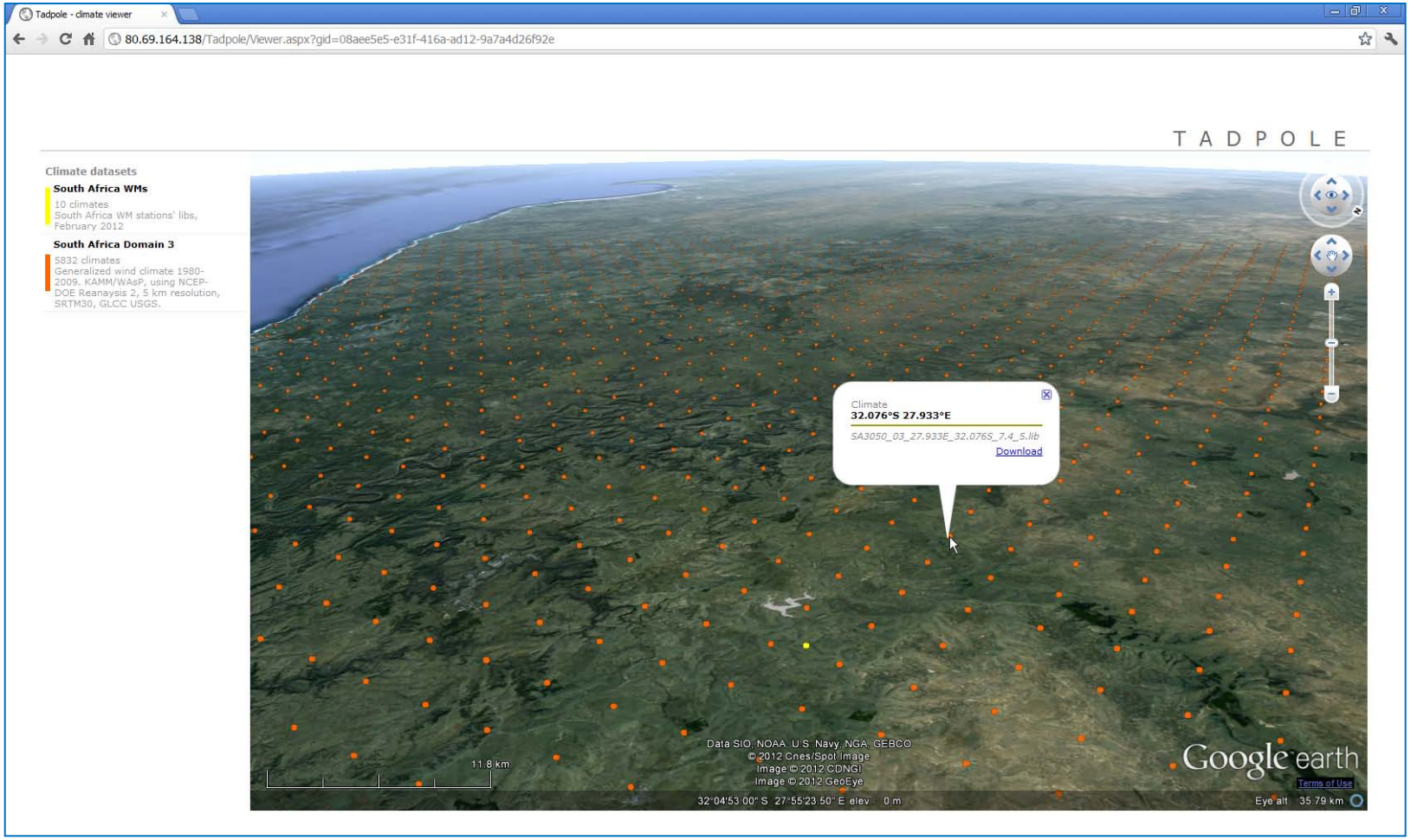
Numerical wind atlas

Tadpole: download of data from WM10 (just click!)

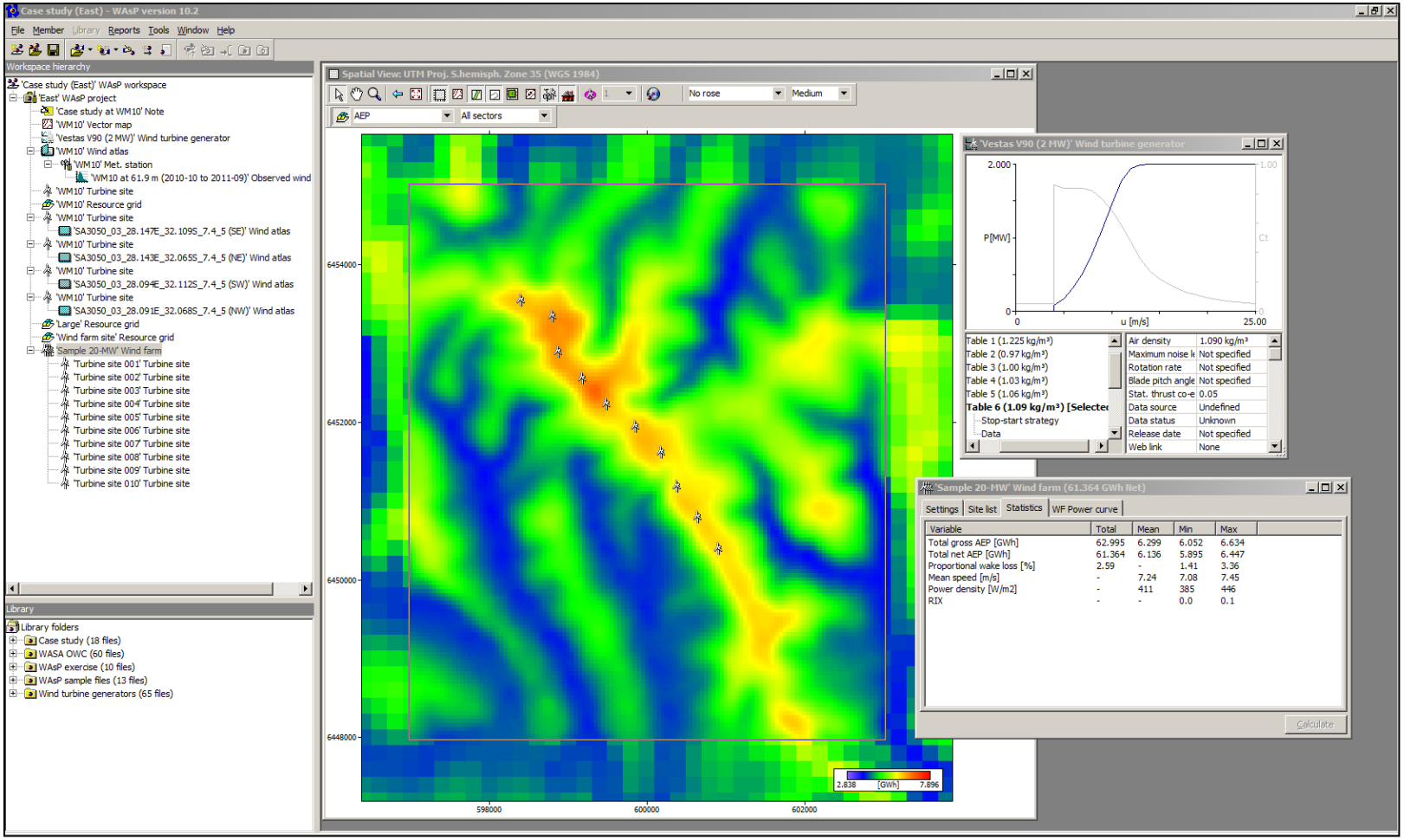


Numerical wind atlas

Tadpole: download of data from NWA grid point

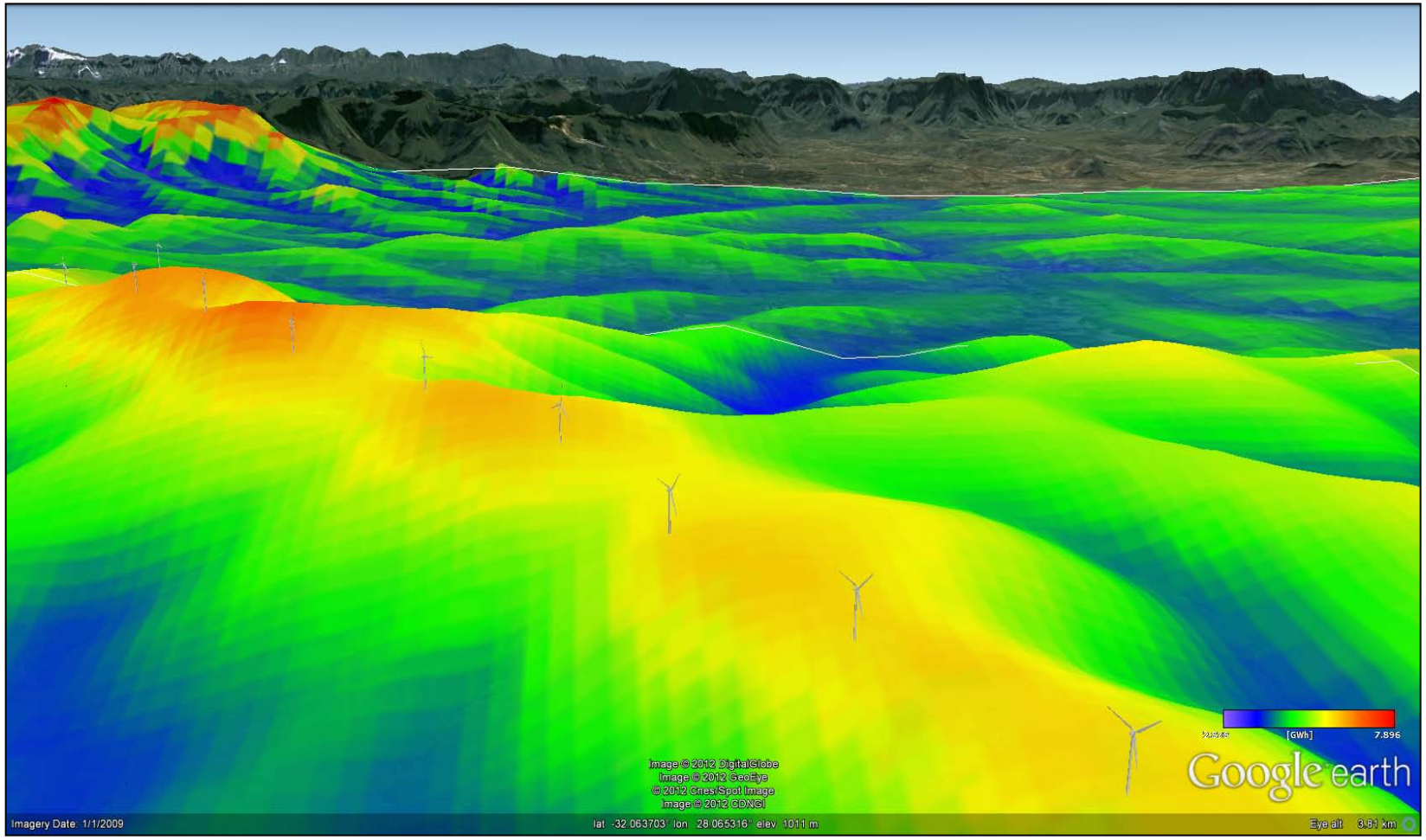


Case study 1
Sample wind farm project in WAsP



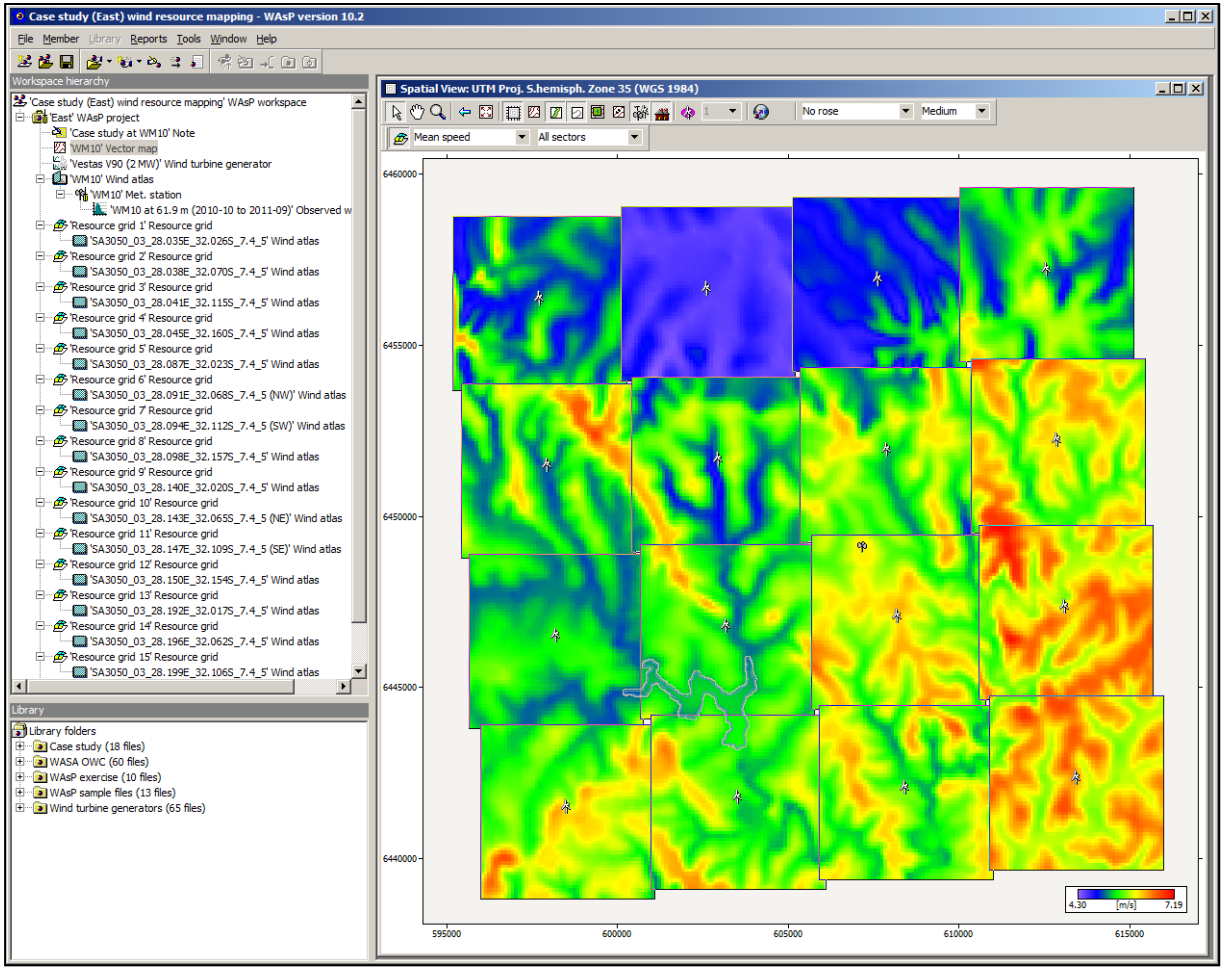
Case study 1

Sample wind farm project in Google Earth



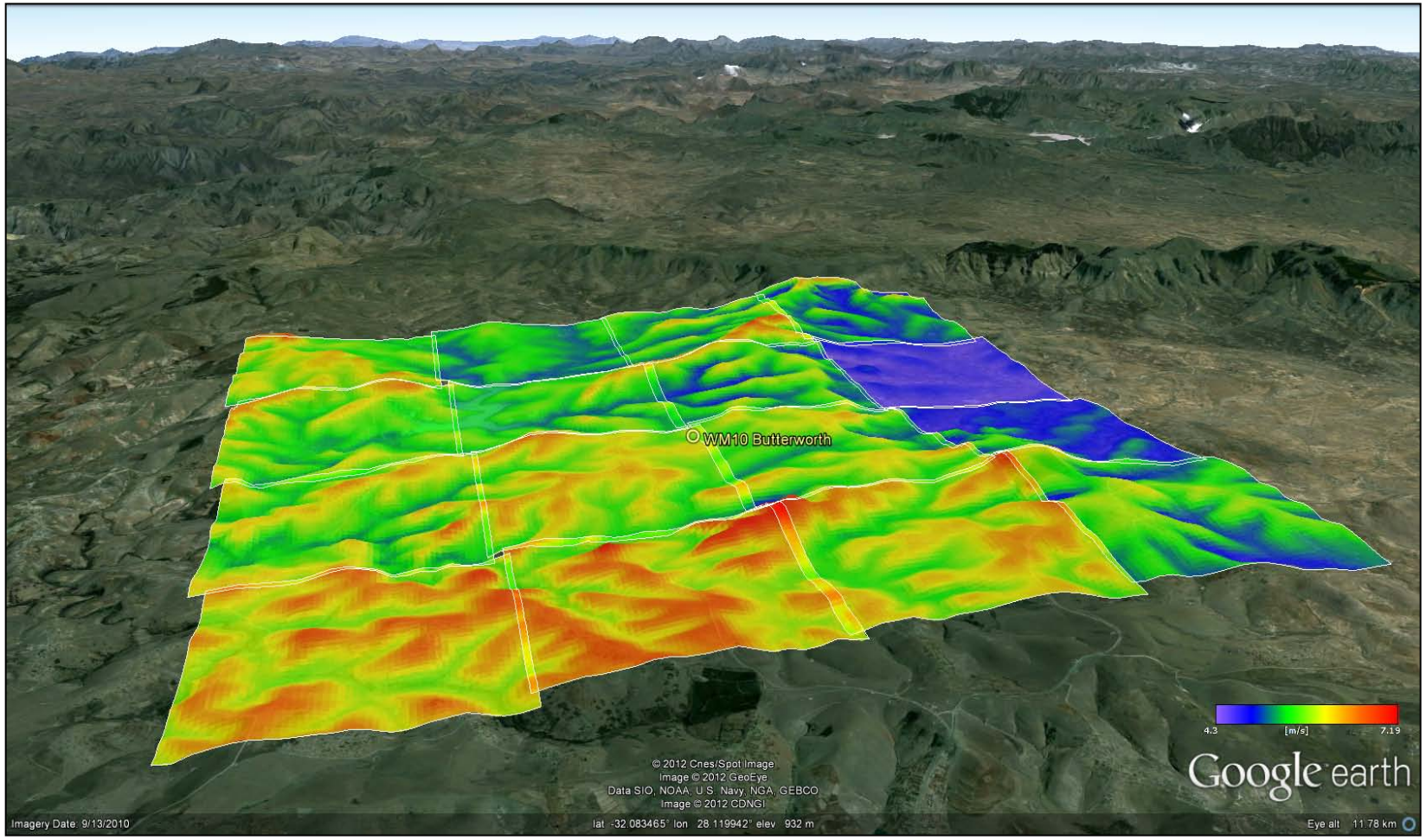
Case study 2

Resource mapping using the numerical wind atlas



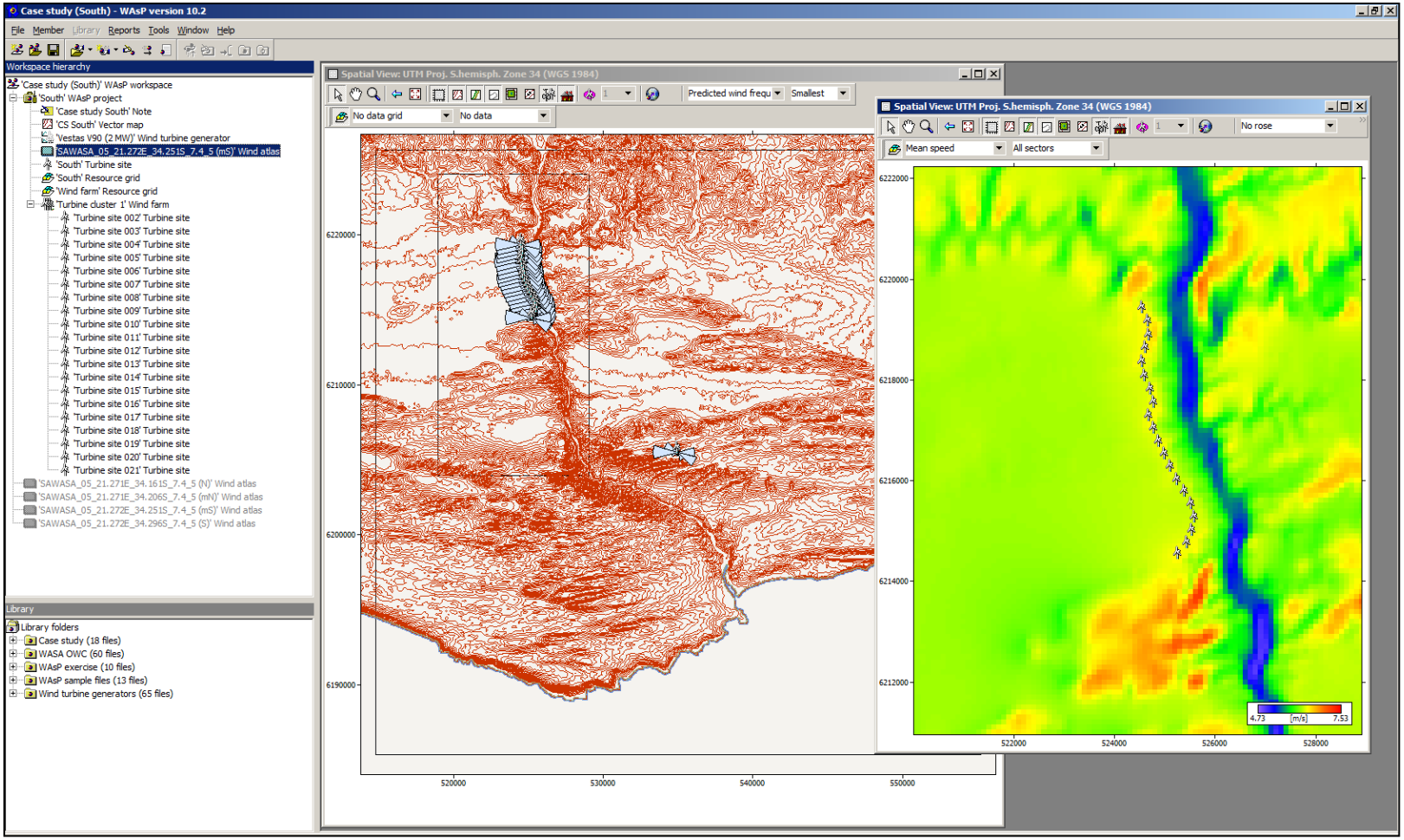
Case study 2

Resource mapping using the numerical wind atlas



Case study 3

Designing a new project, including met. mast



Case study 3

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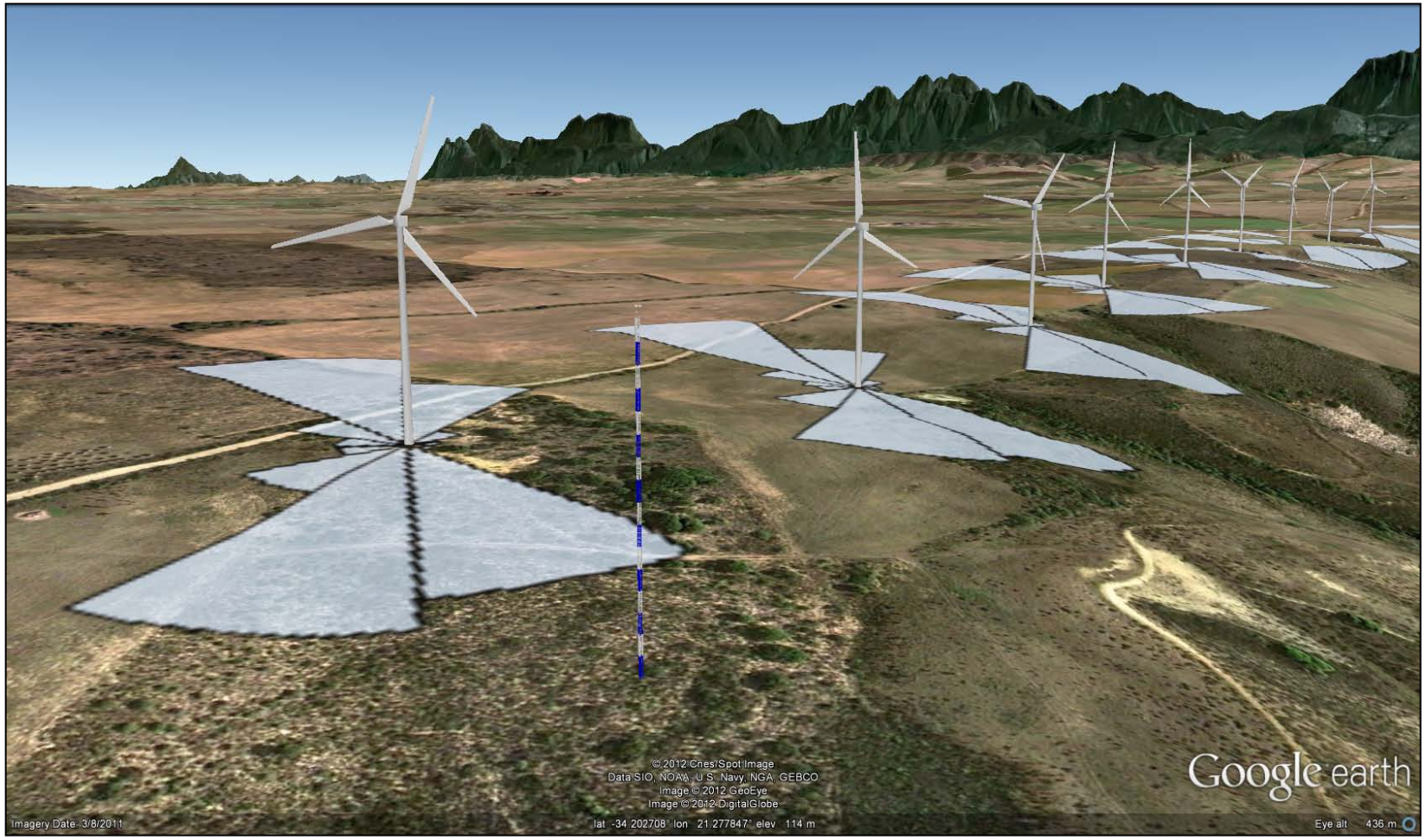
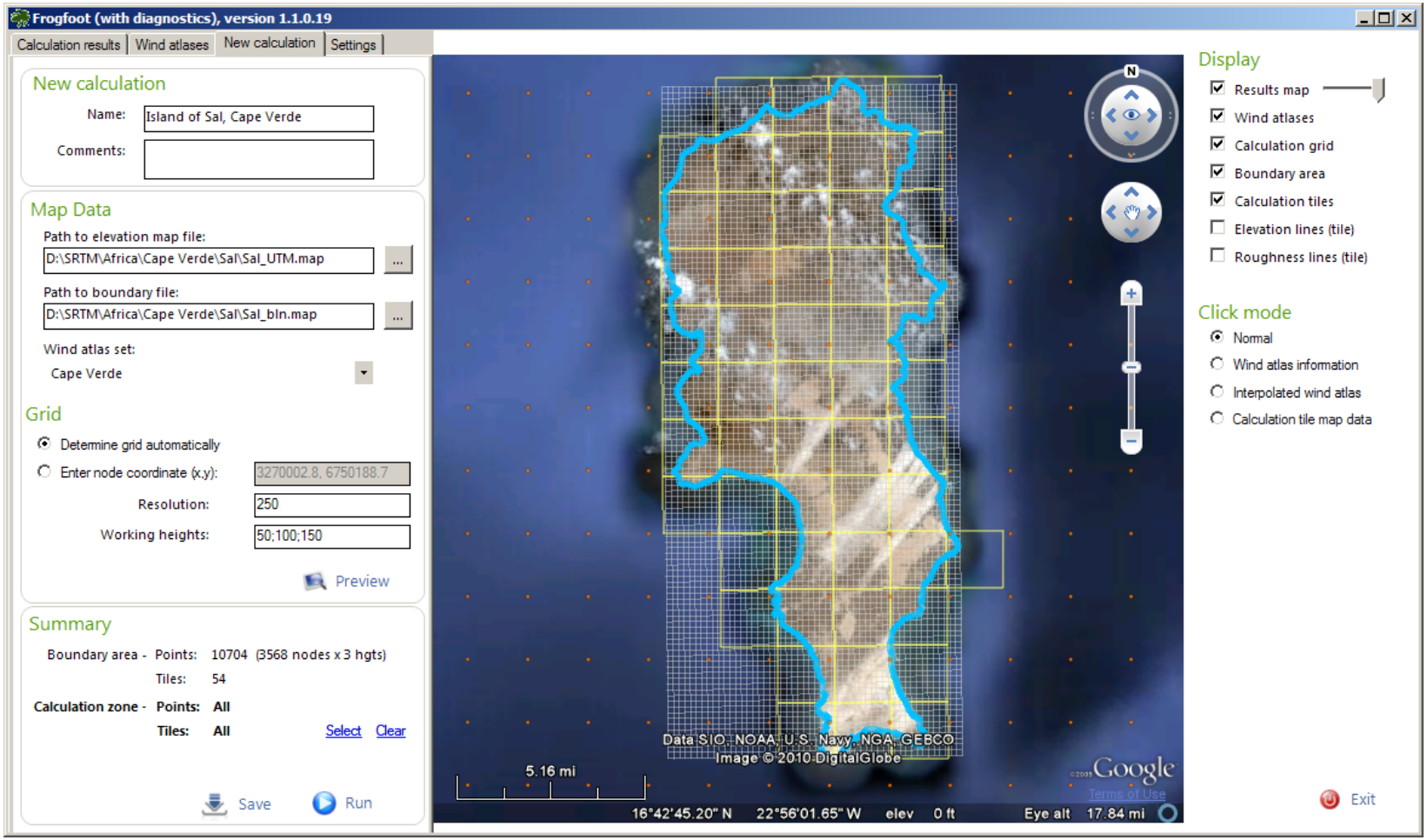
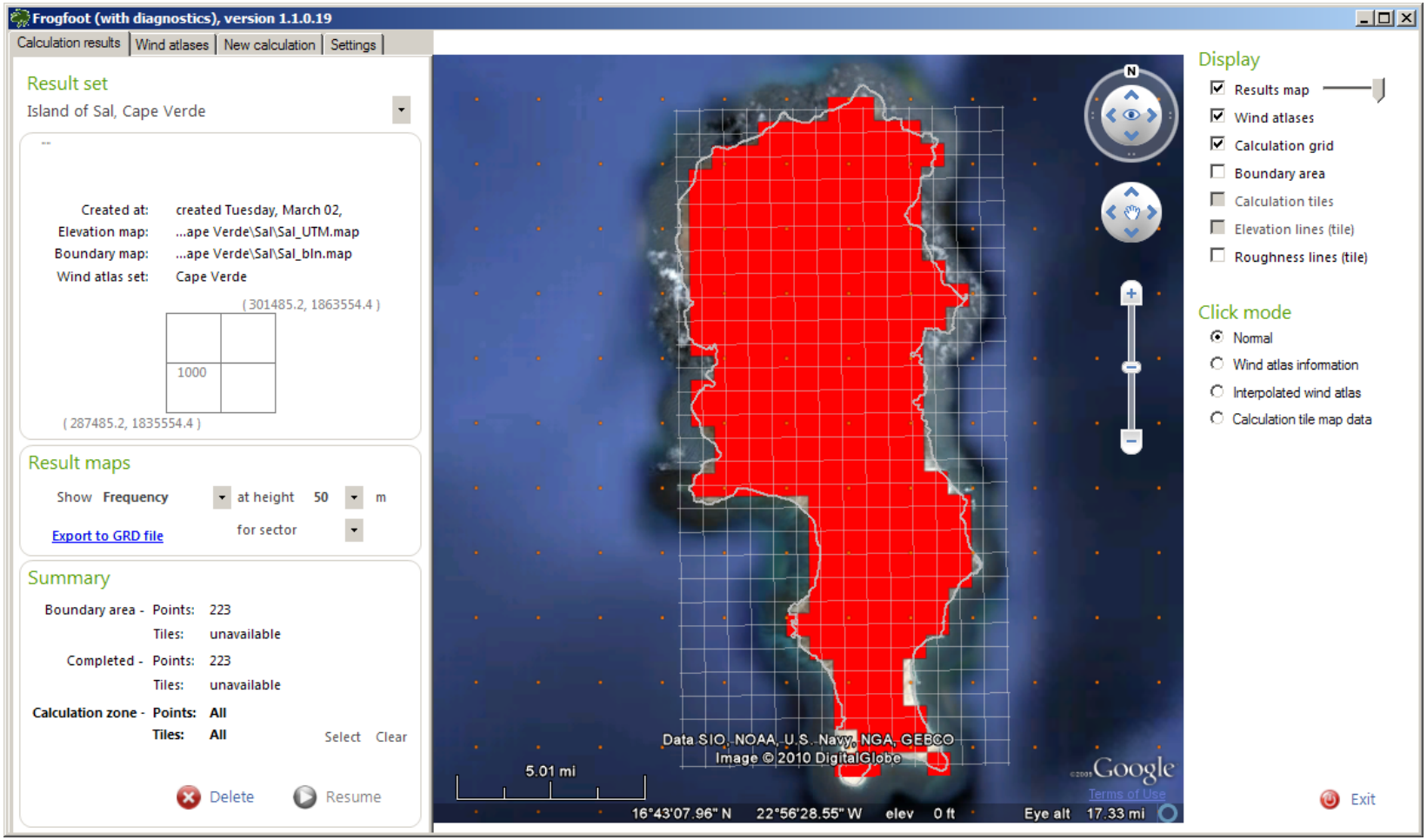


Phase II
Microscale modelling over large areas

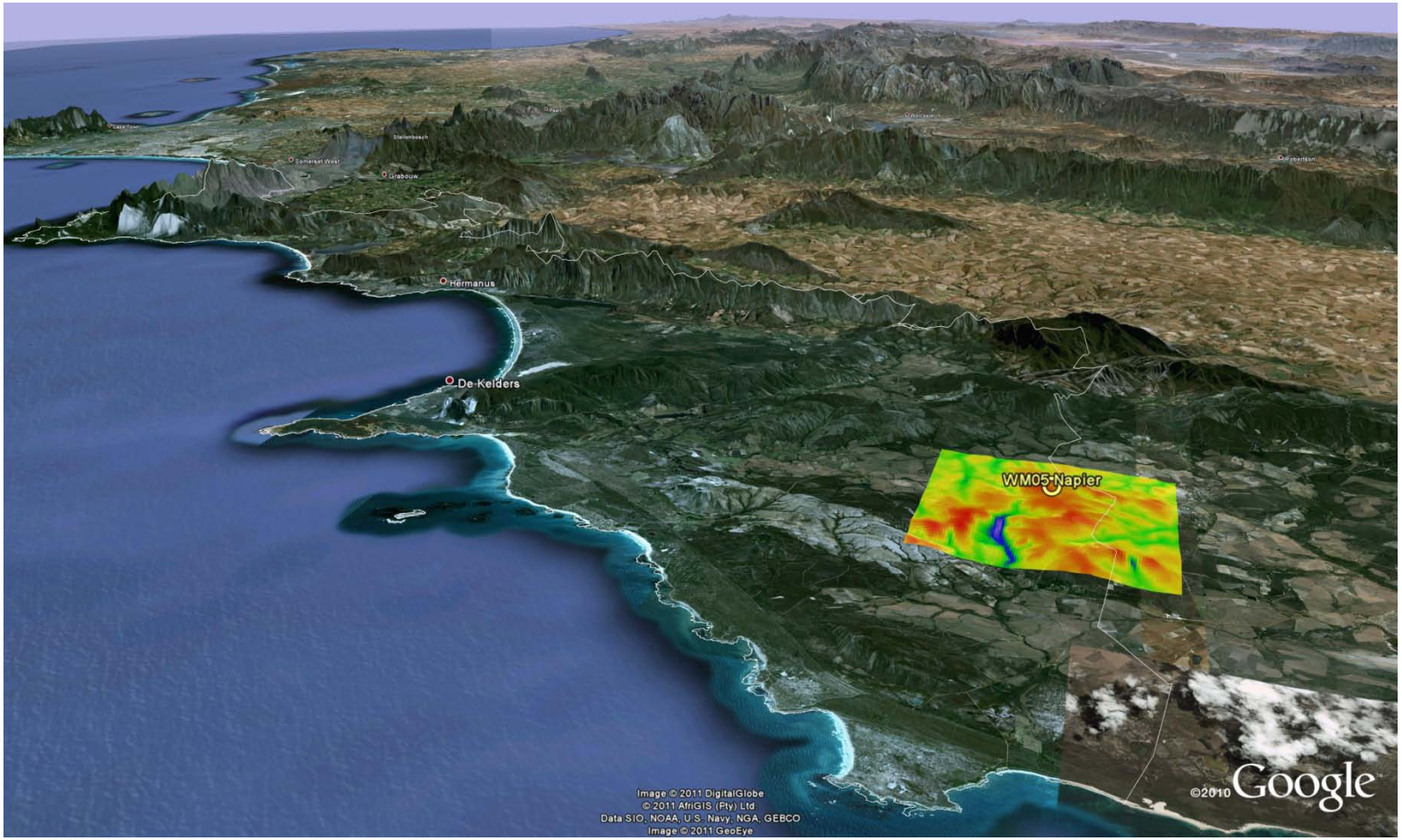


Phase II
Automated setup and modelling (Frogfoot)



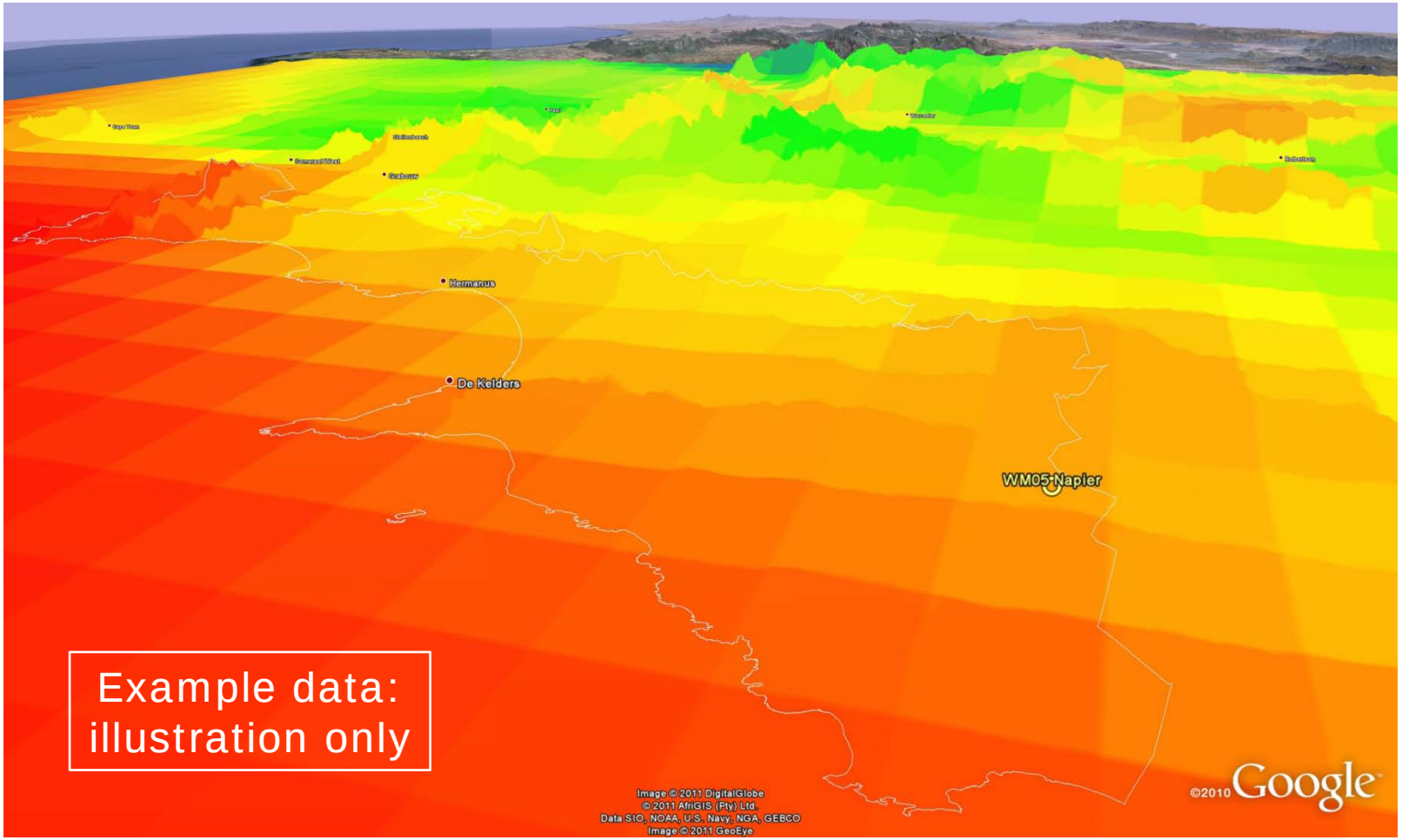
Overstrand example

Microscale modelling results @ WM05



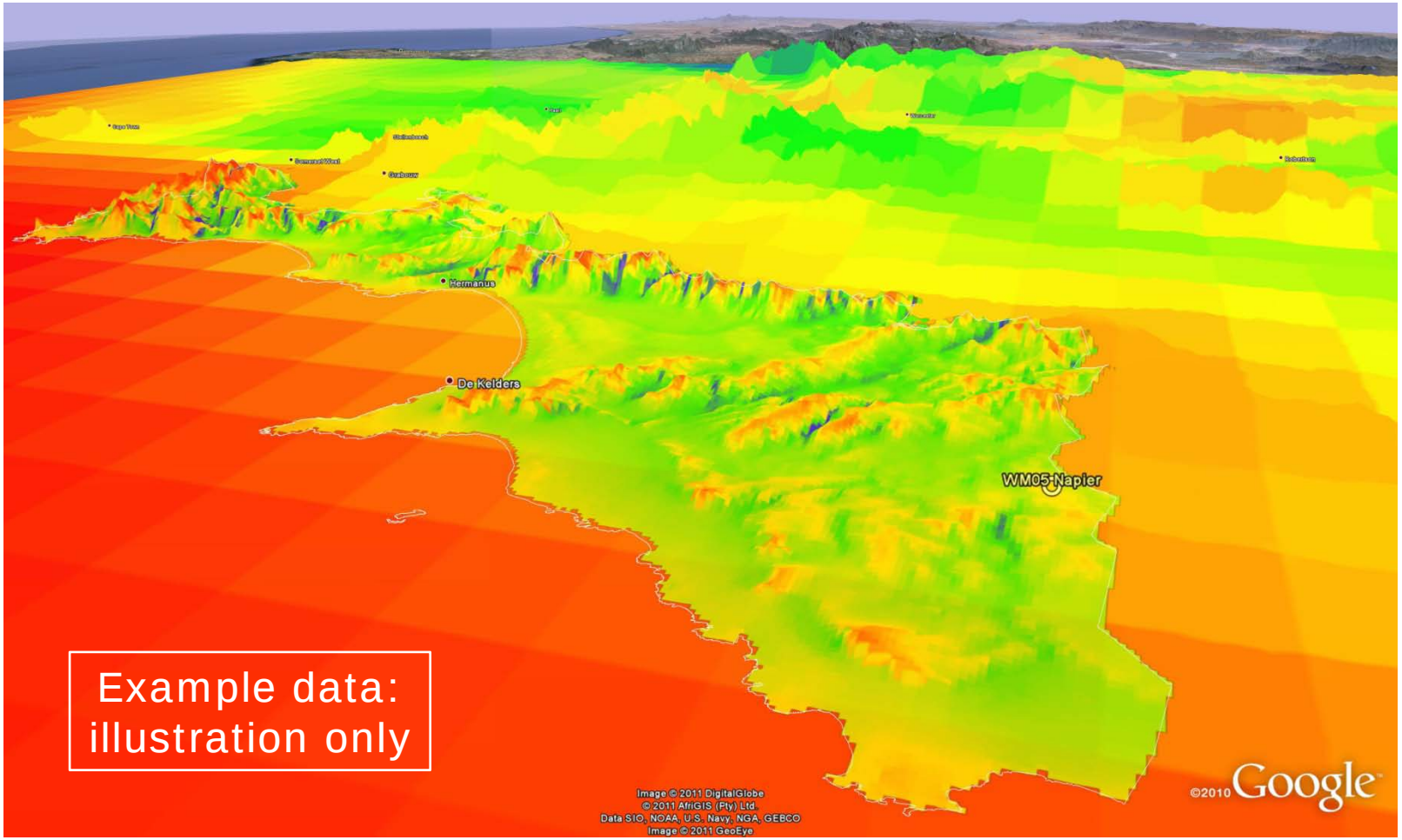
Overstrand example

Mesoscale modelling results in 5×5 km² grid



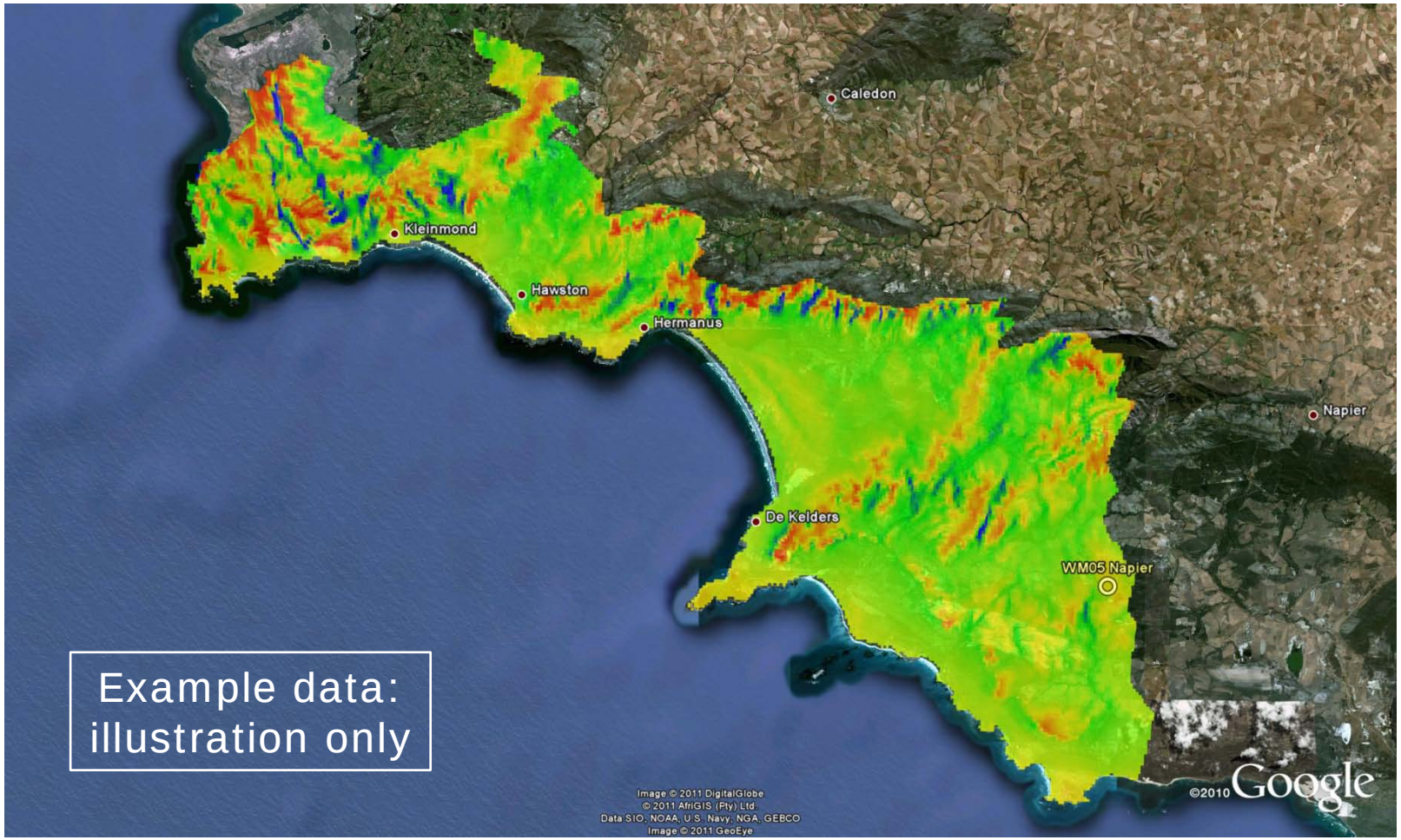
Overstrand example

Meso- and microscale results



Overstrand example

Wind resource mapping in Phase II



User feedback is important!

- All data, model results and descriptions are available in public domain!
- WASA numerical wind atlas can provide a first estimate of the wind resource anywhere in the WASA study area.
- If and when you apply the numerical wind atlas (or the mast data), we would like to learn about your experiences.
- One way of providing feed back is to fill out the WASA Questionnaire:
  - Questionnaire