

Site Surveys for IACT Arrays in Australia

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A very preliminary overview to identify sites for more in-depth surveys

Emphasis on climate, a little on environment and infrastructure

TeV Cherenkov telescopes at Woomera since 1988, so

Why NOT Woomera?

- Is Woomera best: Climate
Latitude (31S)? Crab, Northern sky
- Dept of Defence land: no guarantee of non-interference
- Federal Bureaucracy: State government more supportive

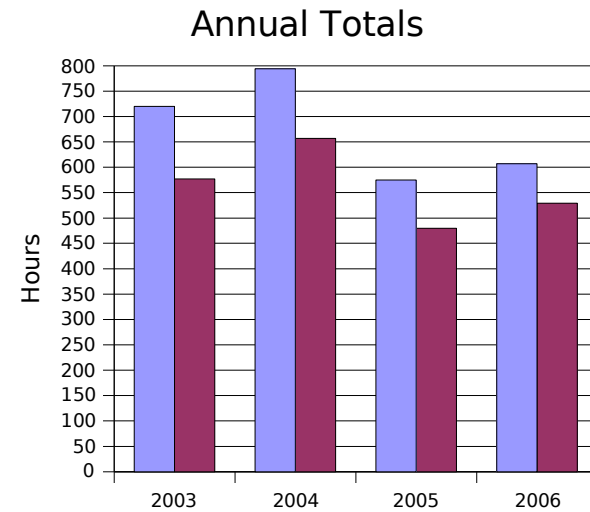
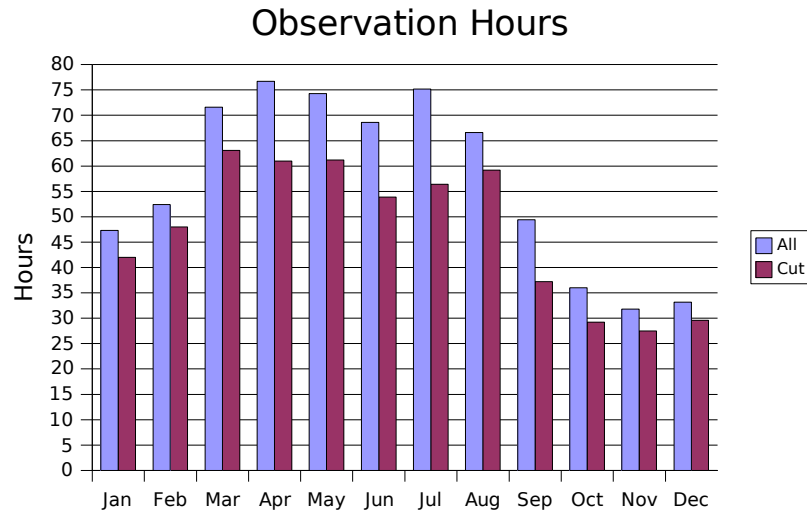
GPS Interference Trials

GPS interference trials are undertaken on a regular basis in the WPA by a number of Australian and overseas organisations including the RAAF, the Defence Science and Technology Organisation (DSTO), the Civil Aviation Safety Authority (CASA) and the Air Force Operational Test and Evaluation Center (AFOTEC) of the United States Air Force (USAF). The WPA is one of the few places in the world where such trials are possible without disrupting civilian GPS users. The purpose of the trials is to assess the vulnerability of GPS signals to interference, and to test counter-measures including the use of GPS Jammer Locators and adaptive signal processing techniques. The trials involve ground and airborne elements, with aircraft operations being conducted from Woomera Airfield (picture shows antenna mounting on the control tower at Woomera Airfield).



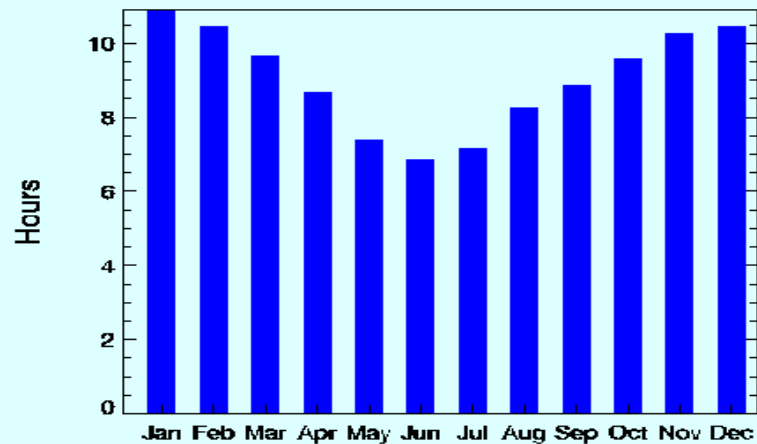


Woomera – CANGAROO observations



Actual/Planned $\approx 70\%$ (M. Mori)

Average daily sunshine hours - January to December
Woomera

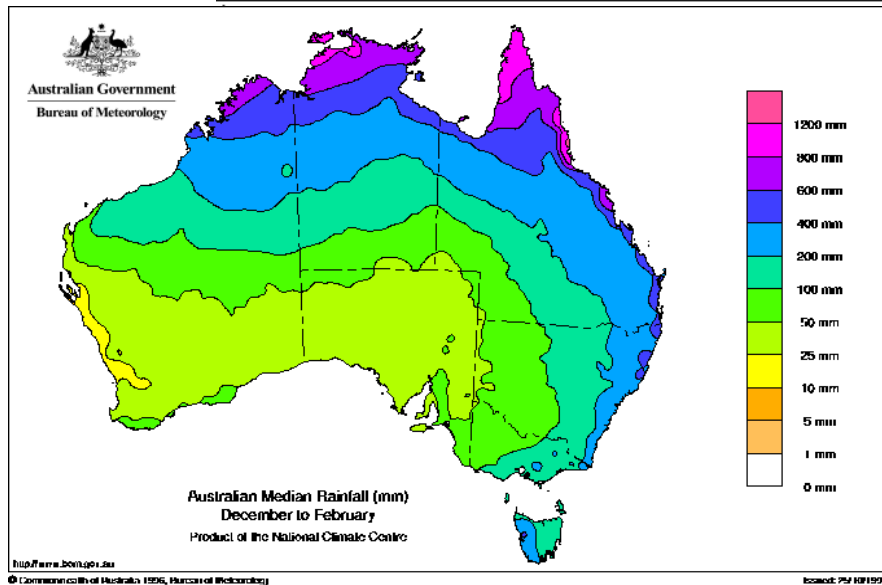
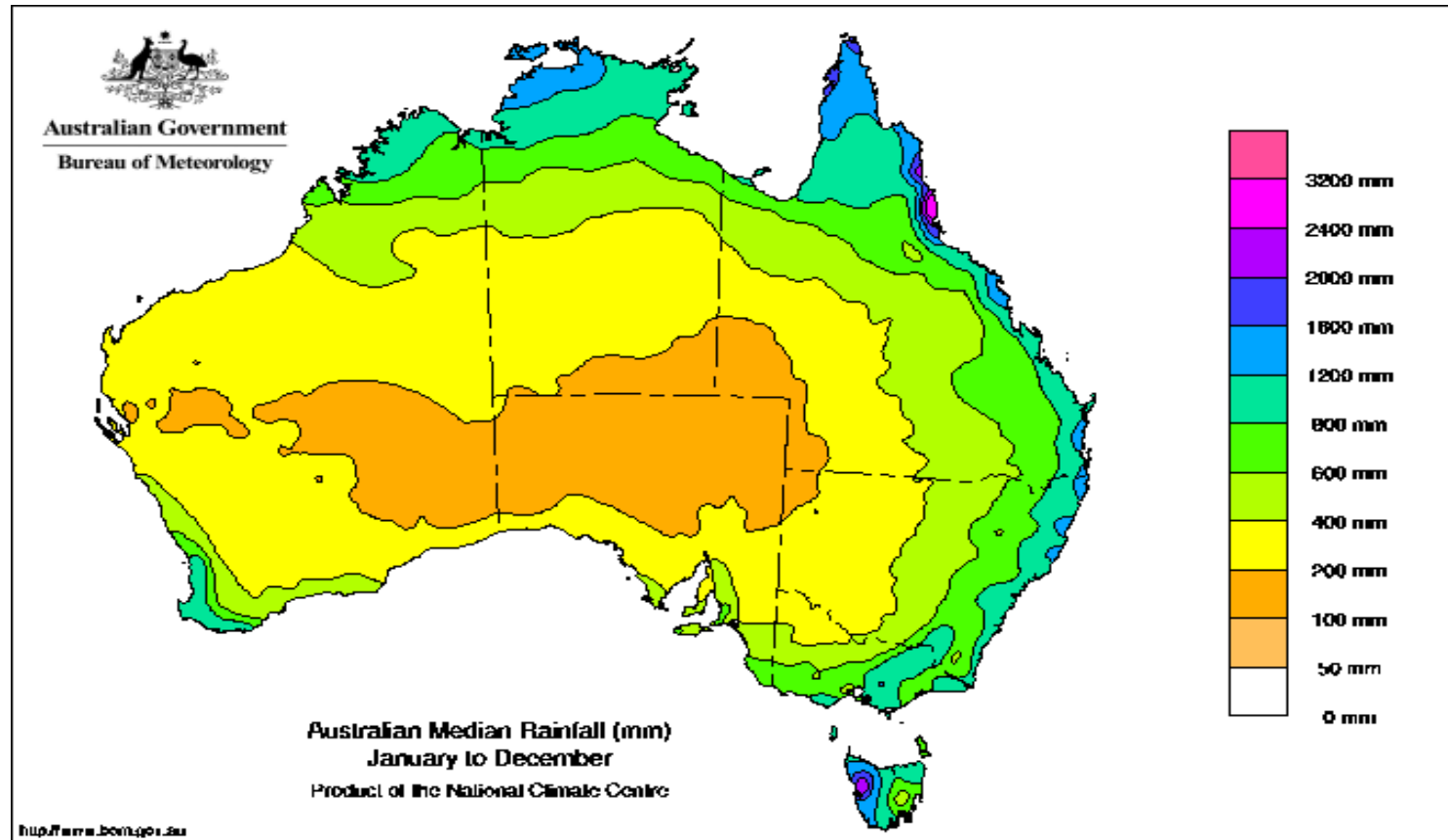


Commonwealth
Bureau of Meteorology

Based on at least 49 years of records with
99 % complete data

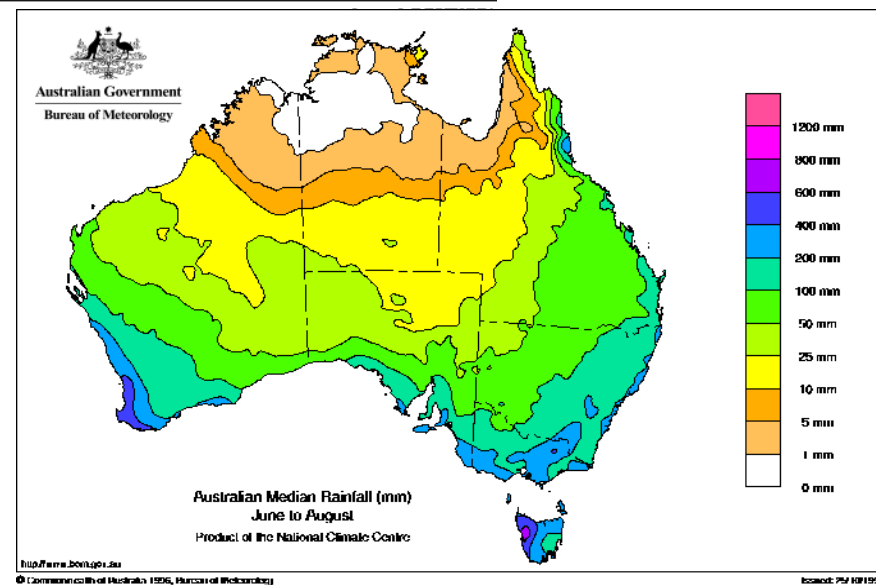
Daylength 10 – 14 hours
 $\Rightarrow \sim 70\%$

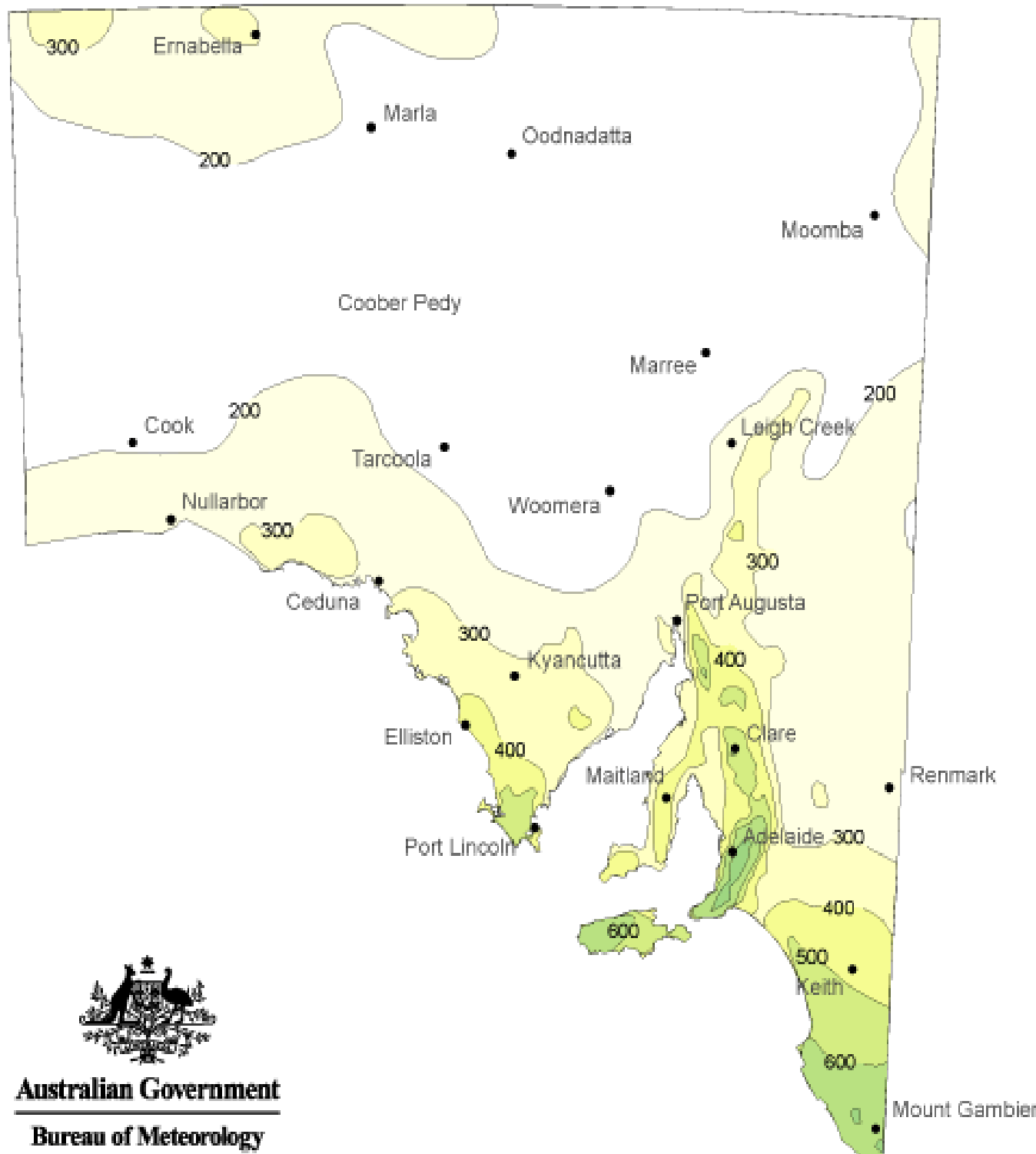
For a quick look, use rainfall as a proxy for cloud



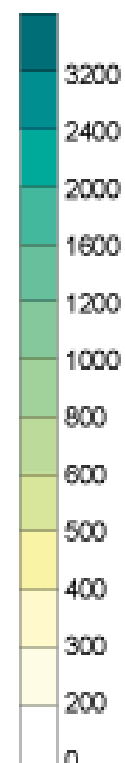
← Summer

Winter →



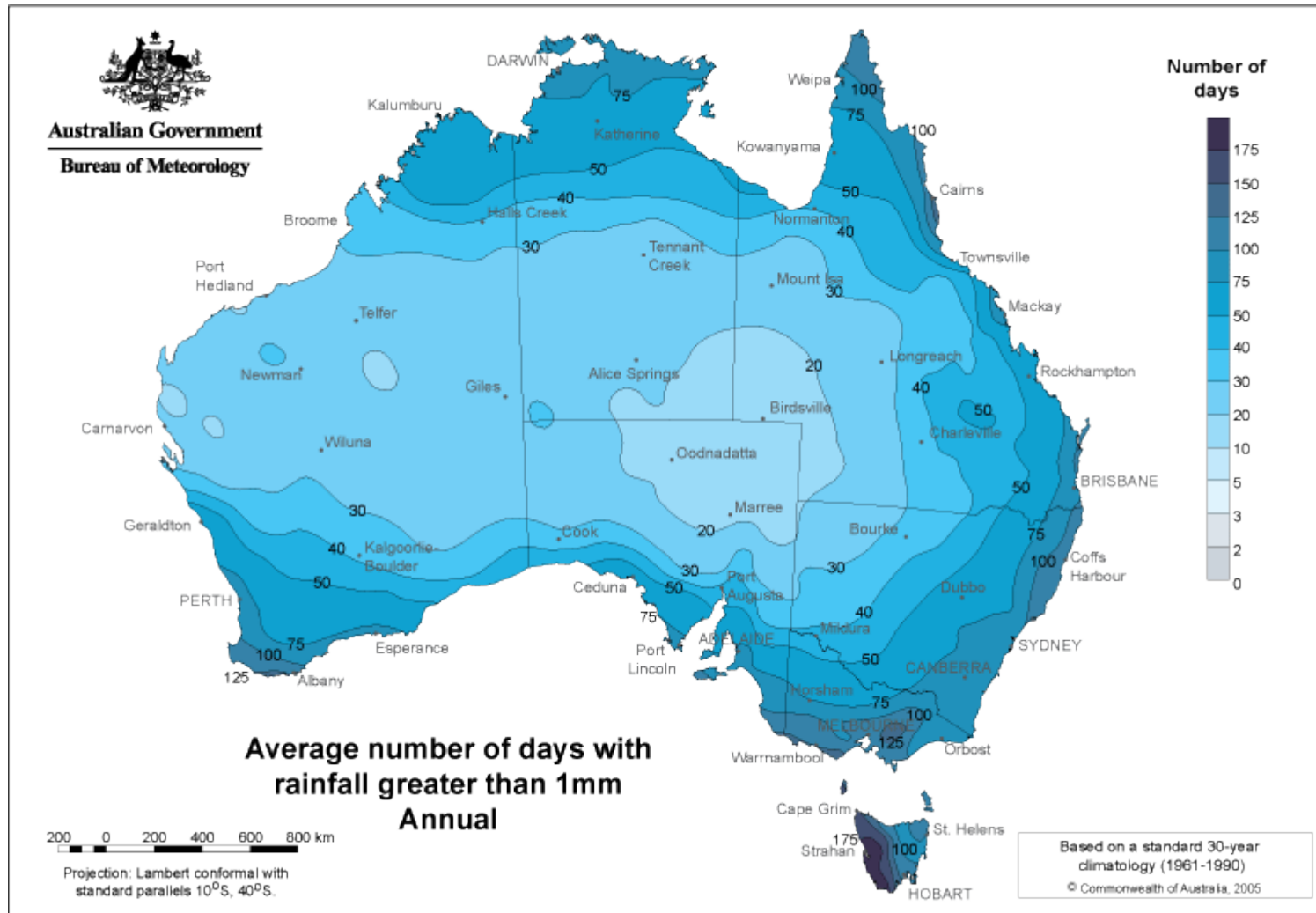


Millimeters



Average rainfall Annual

Rain: 'how often' says more than 'how much'

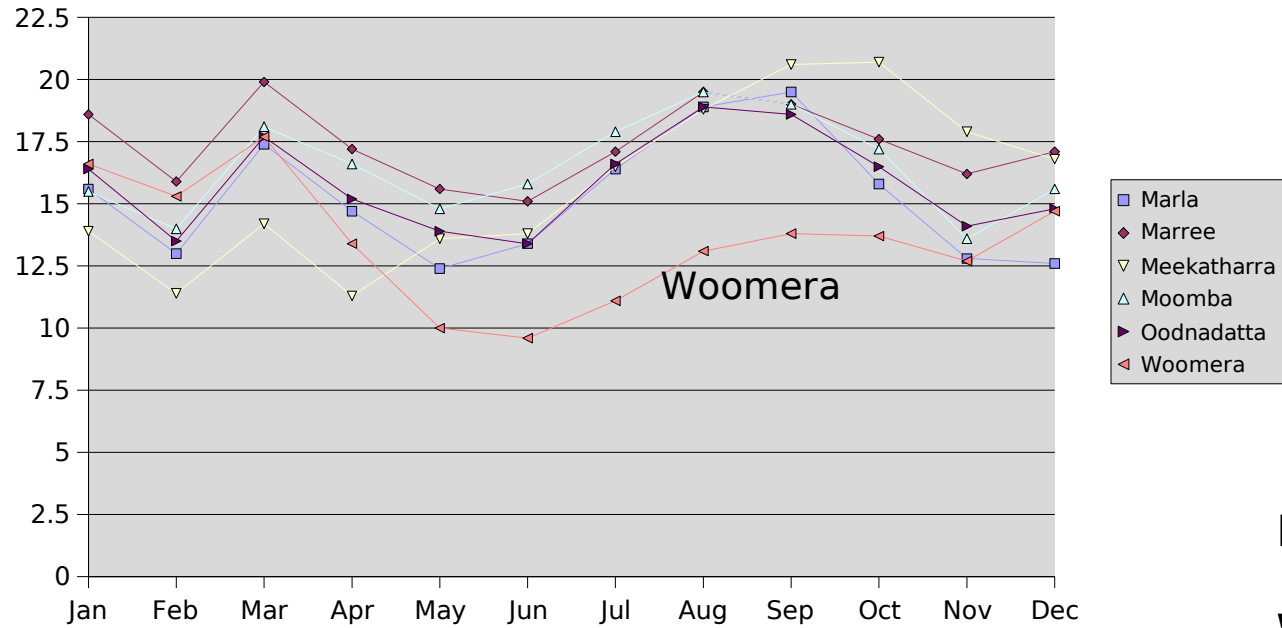


Look at a few sites



Some real cloud data

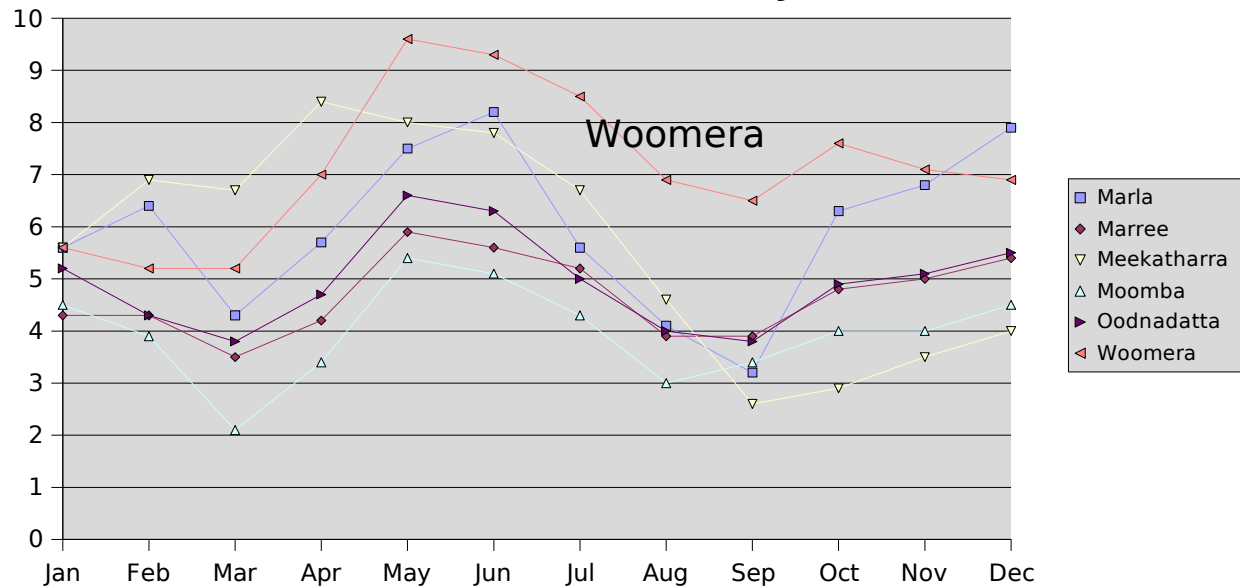
Clear Days



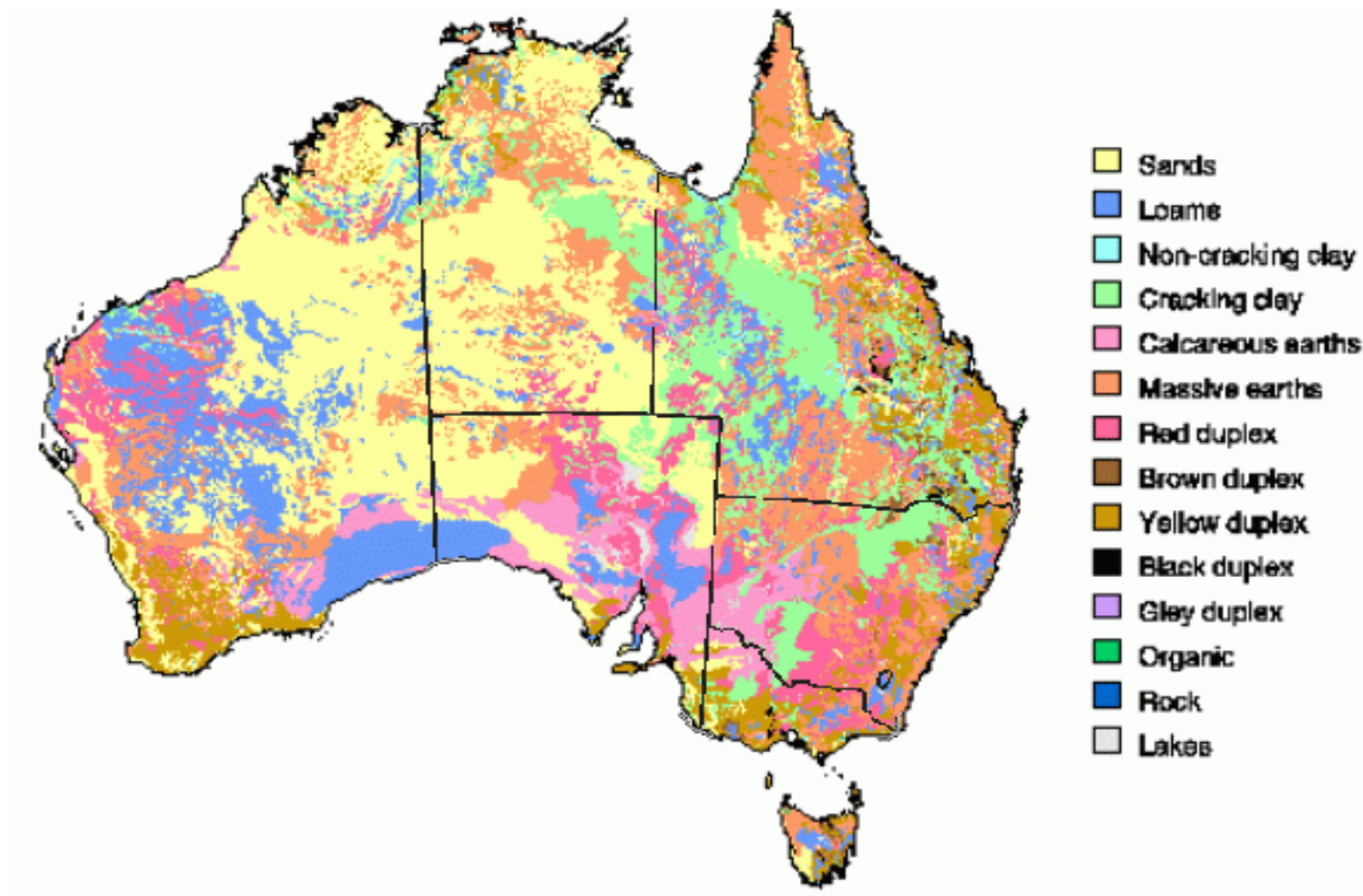
Day-time cloud

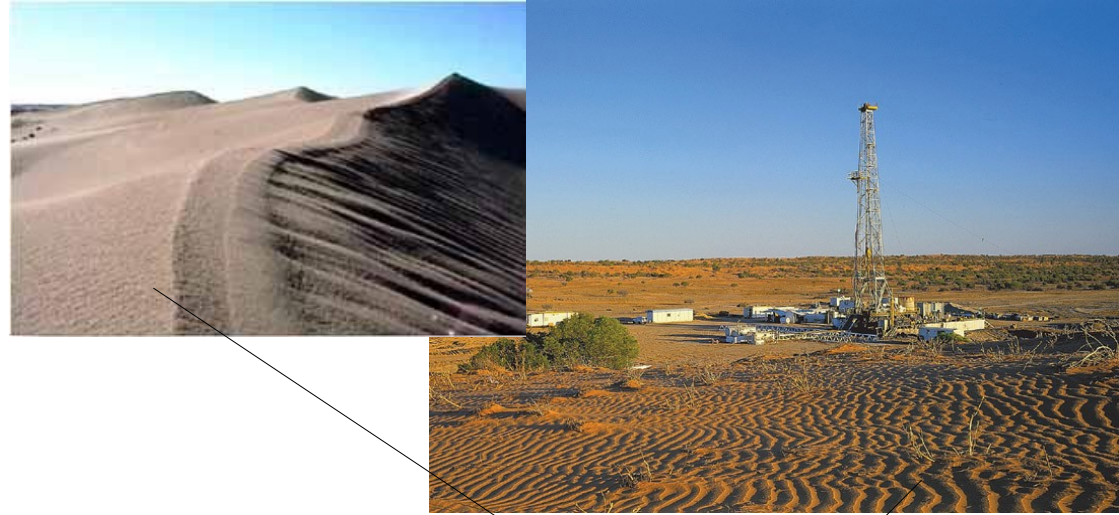
Woomera not so good?

Cloud Days



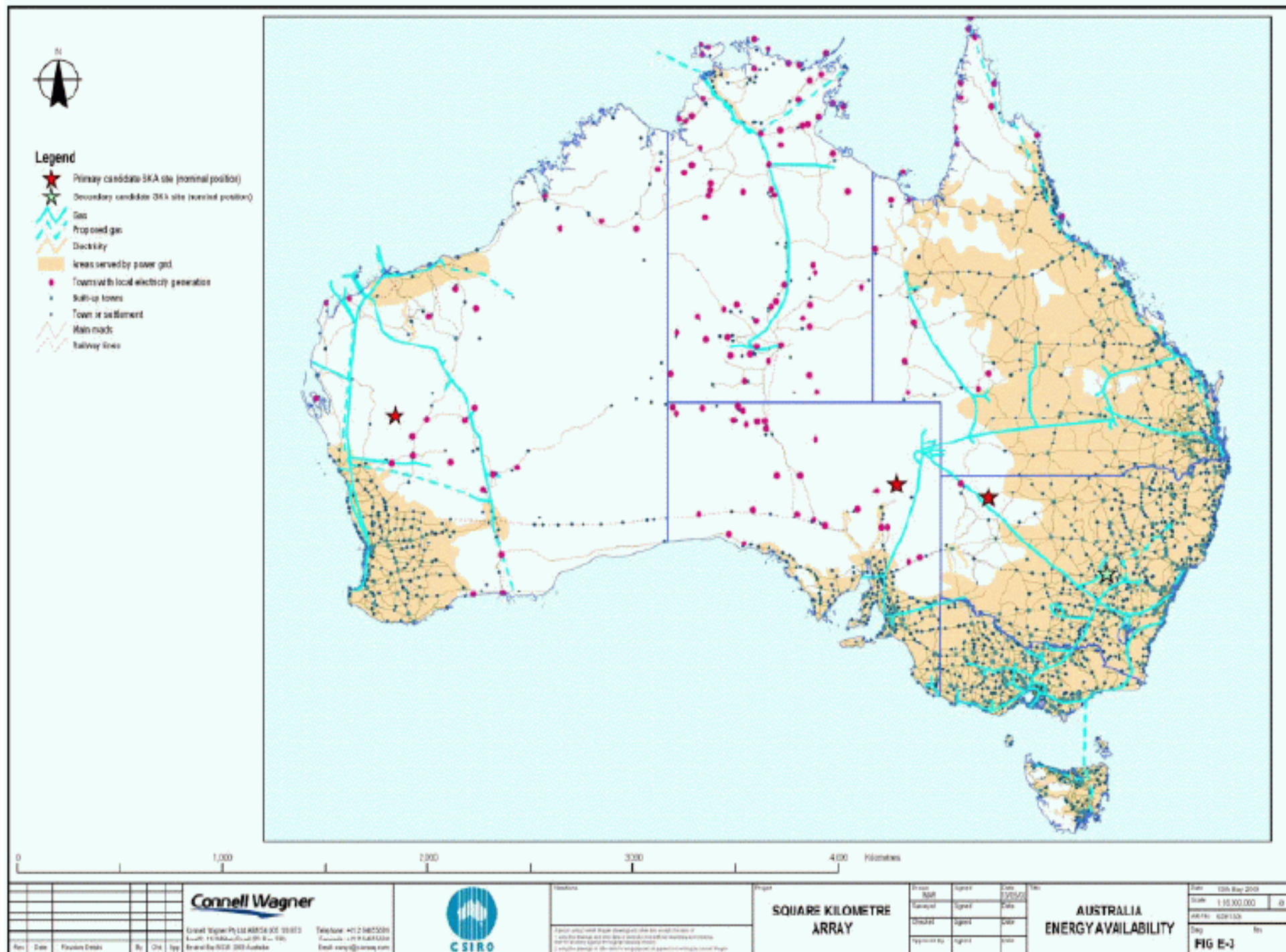
What's down below?



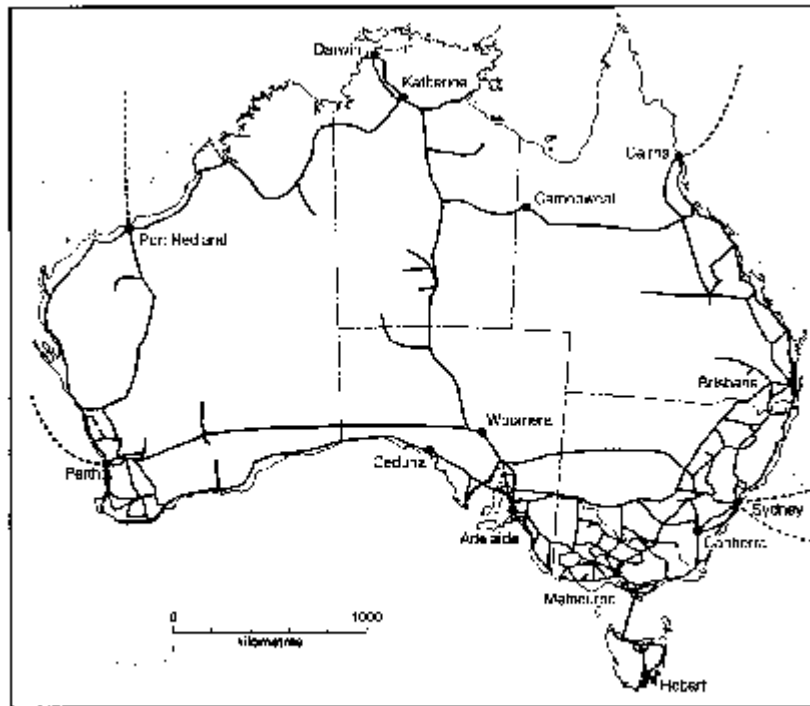


Mileura: SKA short-listed site

Electrical Power



Optical fibre network



Roads



CONCLUSION:

Woomera may not have the best viewing conditions

Other sites may present infrastructure problems (=costs)