MONASH University
Engineering

The Australian Airborne CAL/VAL Experiment for SMOS (AACES) Field Campaigns

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Australian campaigns for SMOS

SMOS Calibration

Investigation of potential on-orbit ground calibration targets for SMOS

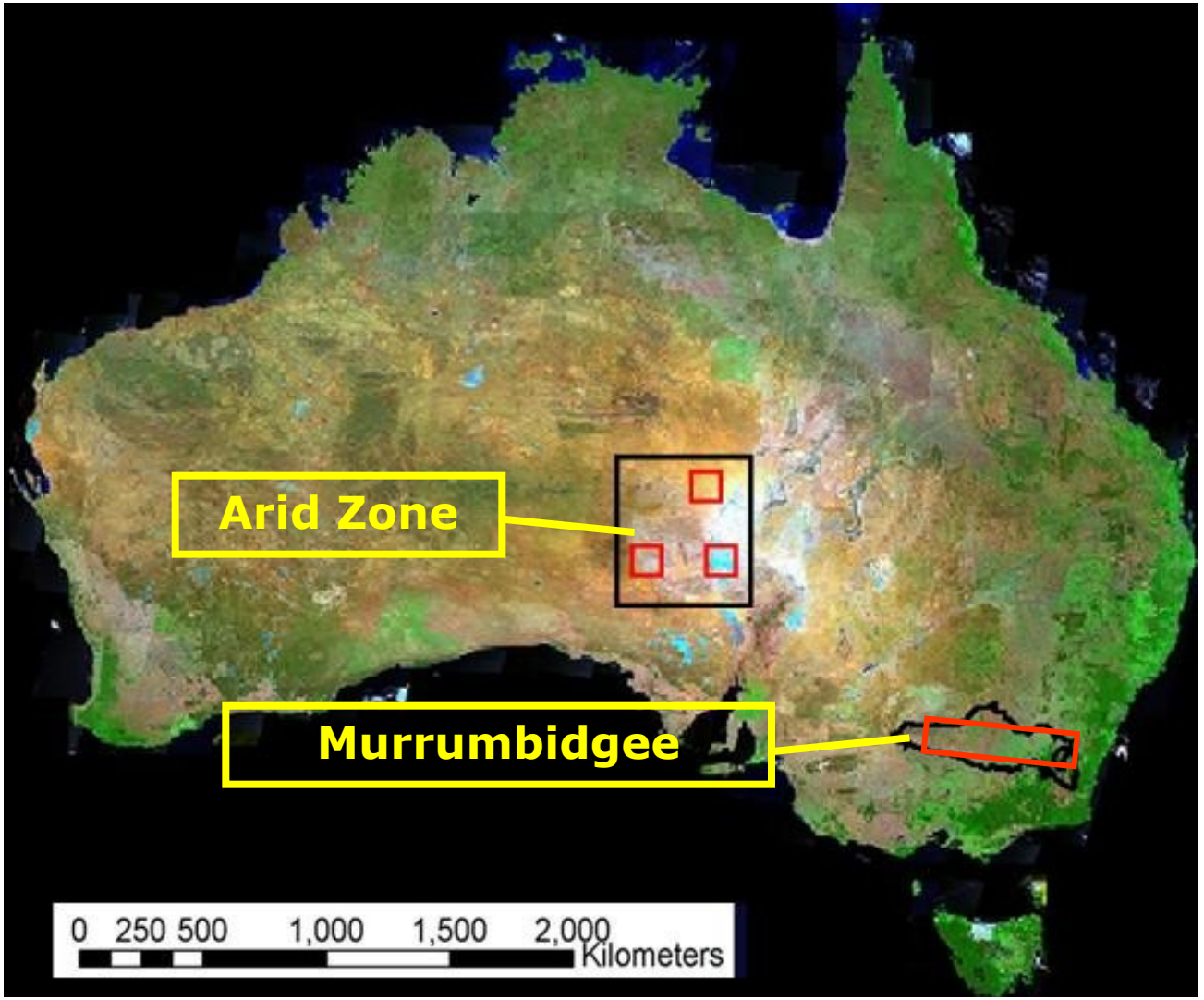
SMOS Validation

Evaluation of Level 1C SMOS Tb's

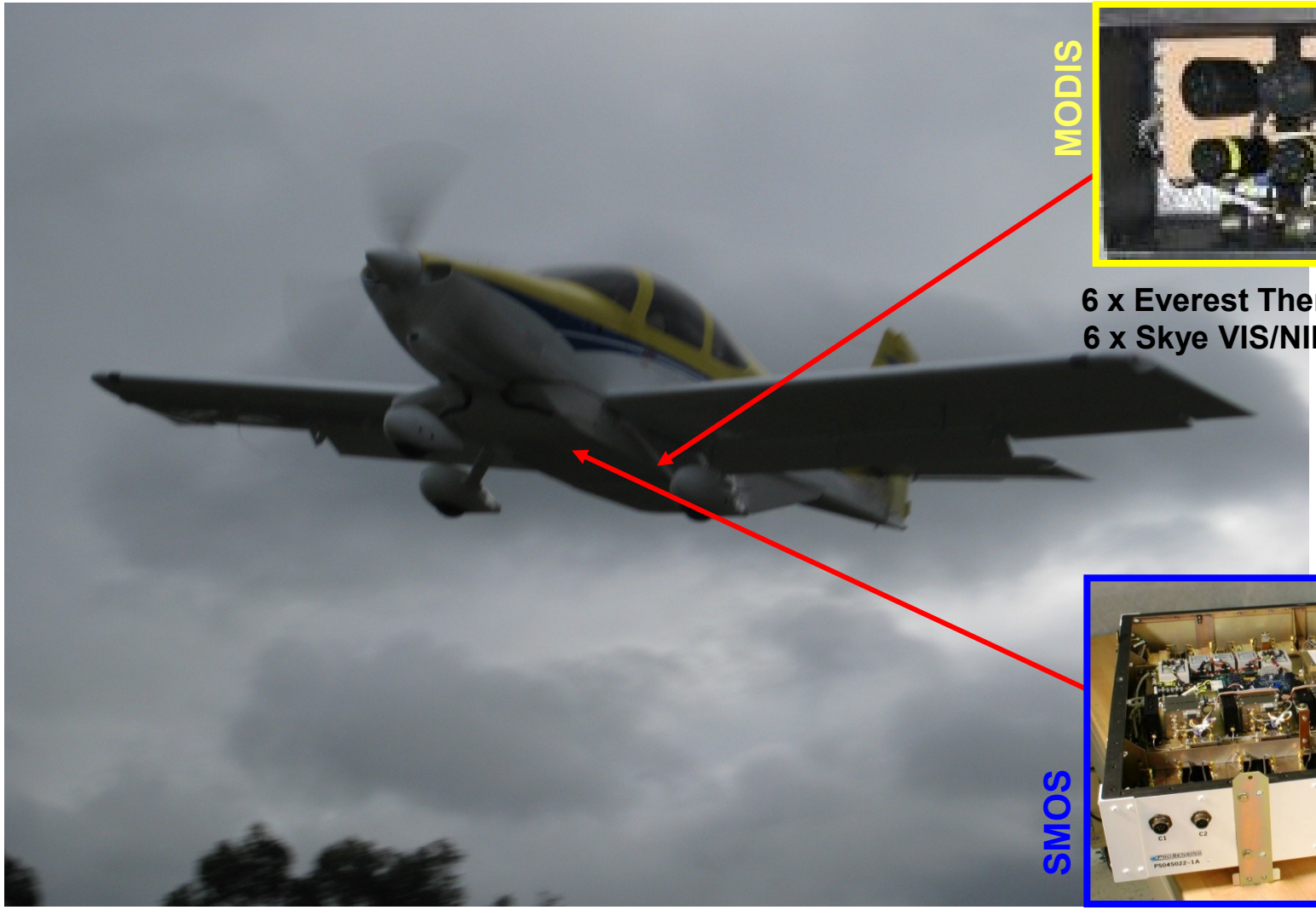
Evaluation of Level 2 SMOS soil moisture

See further presentation:
SAZE-Oz & AACES: Some first results

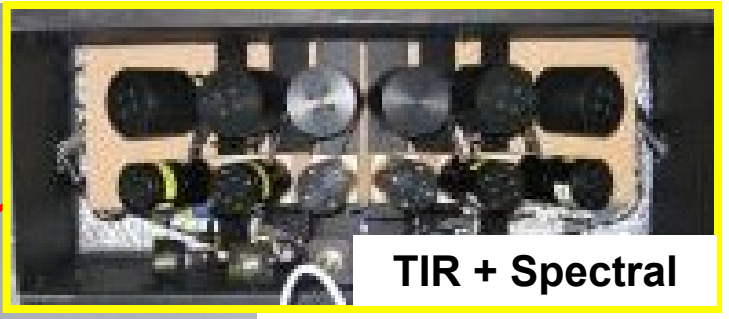
A Potential SMOS ground target …



An airborne SMOS/MODIS simulator



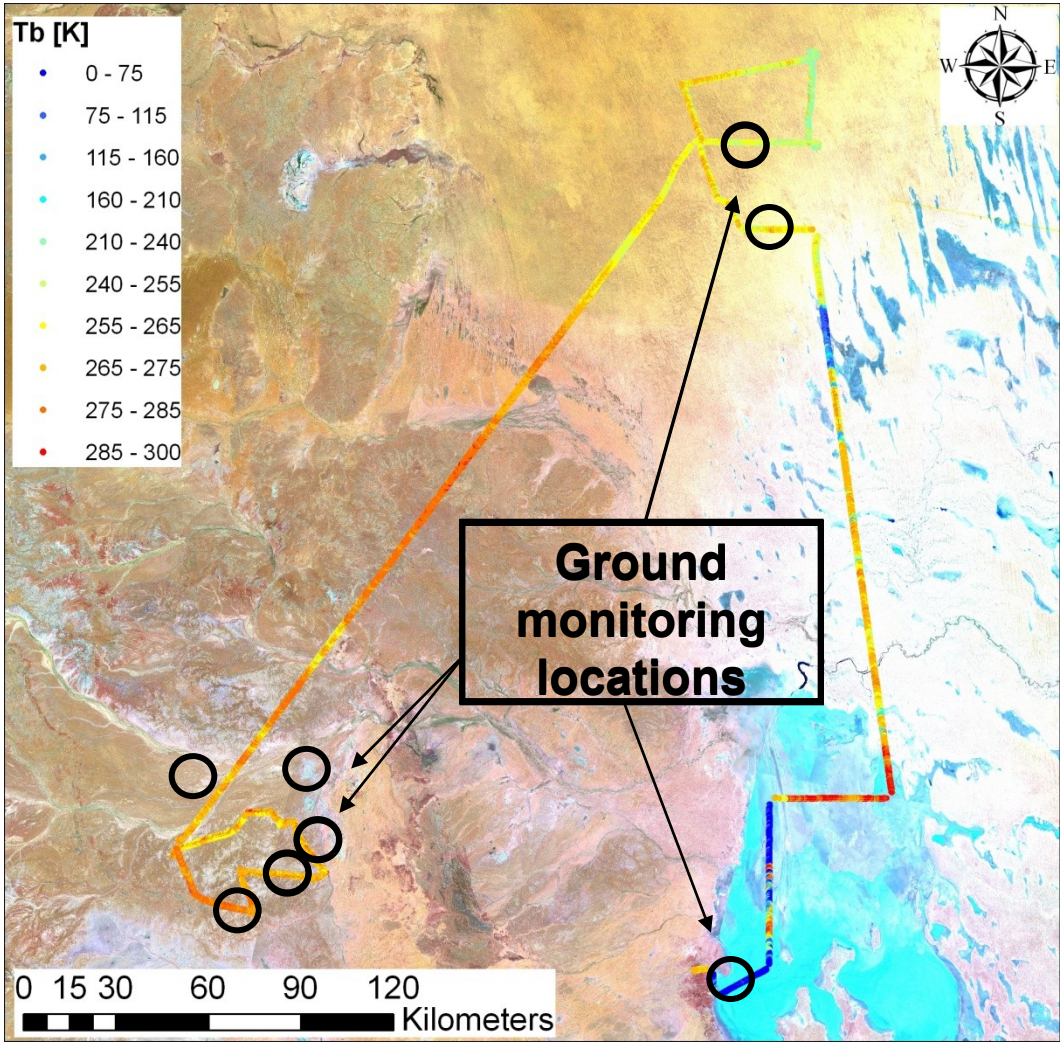
MODIS



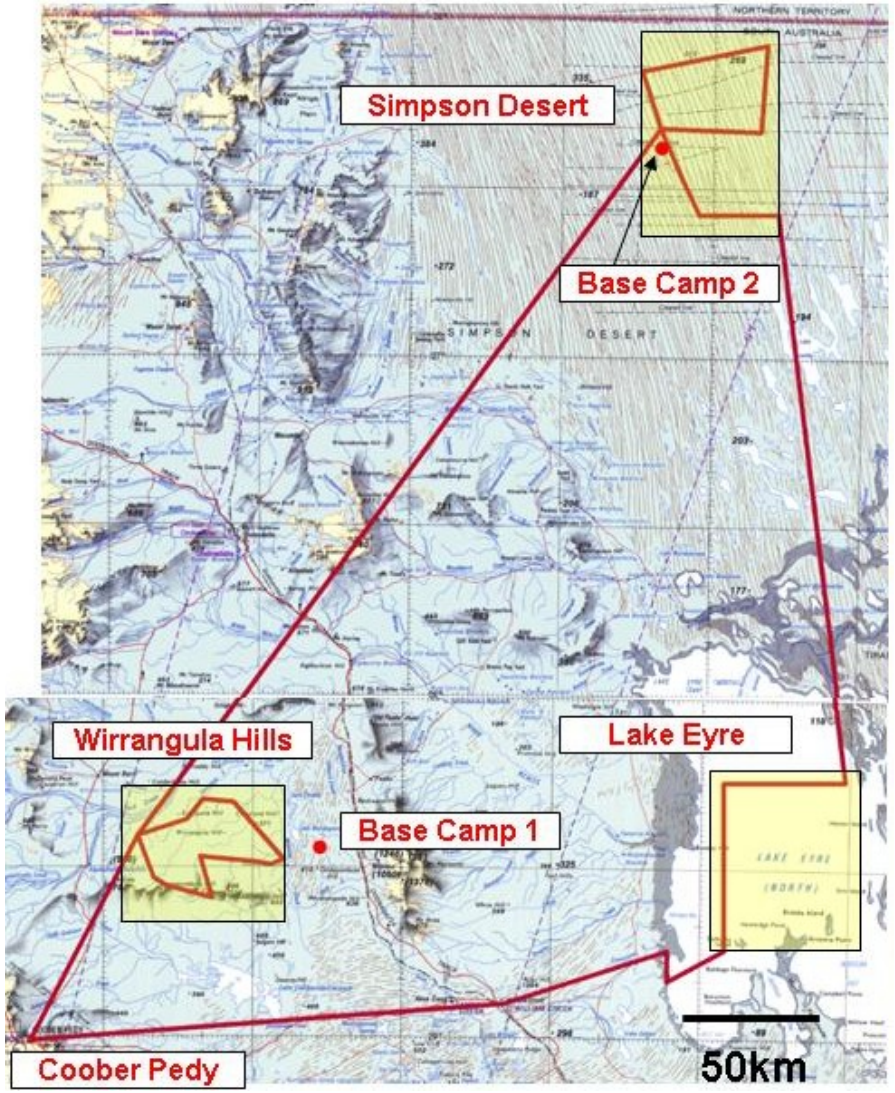
6 x Everest Thermal IR's
6 x Skye VIS/NIR/SWIR Spectrometers

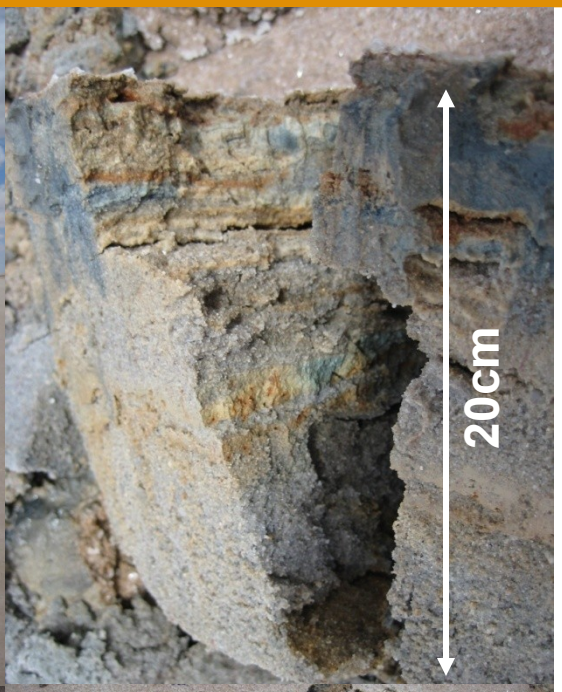
SMOS

Reconnaissance: 9 Nov 2008

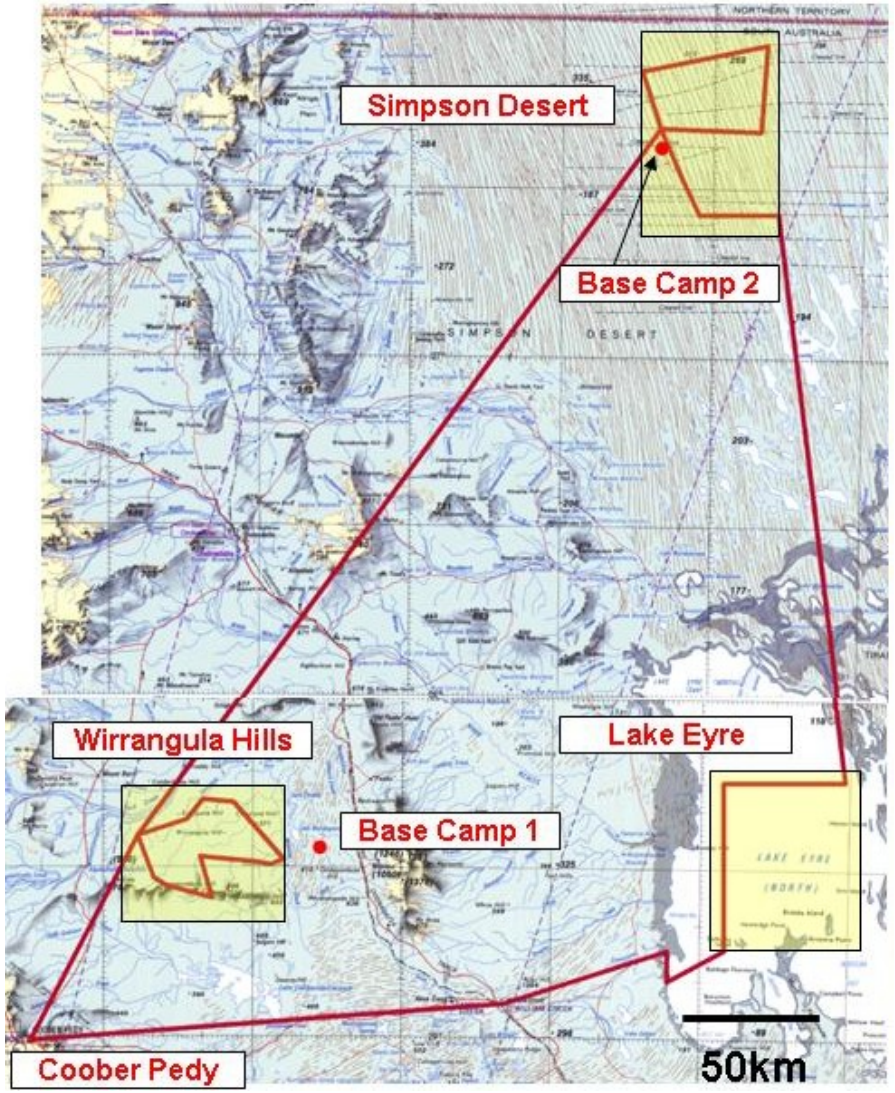


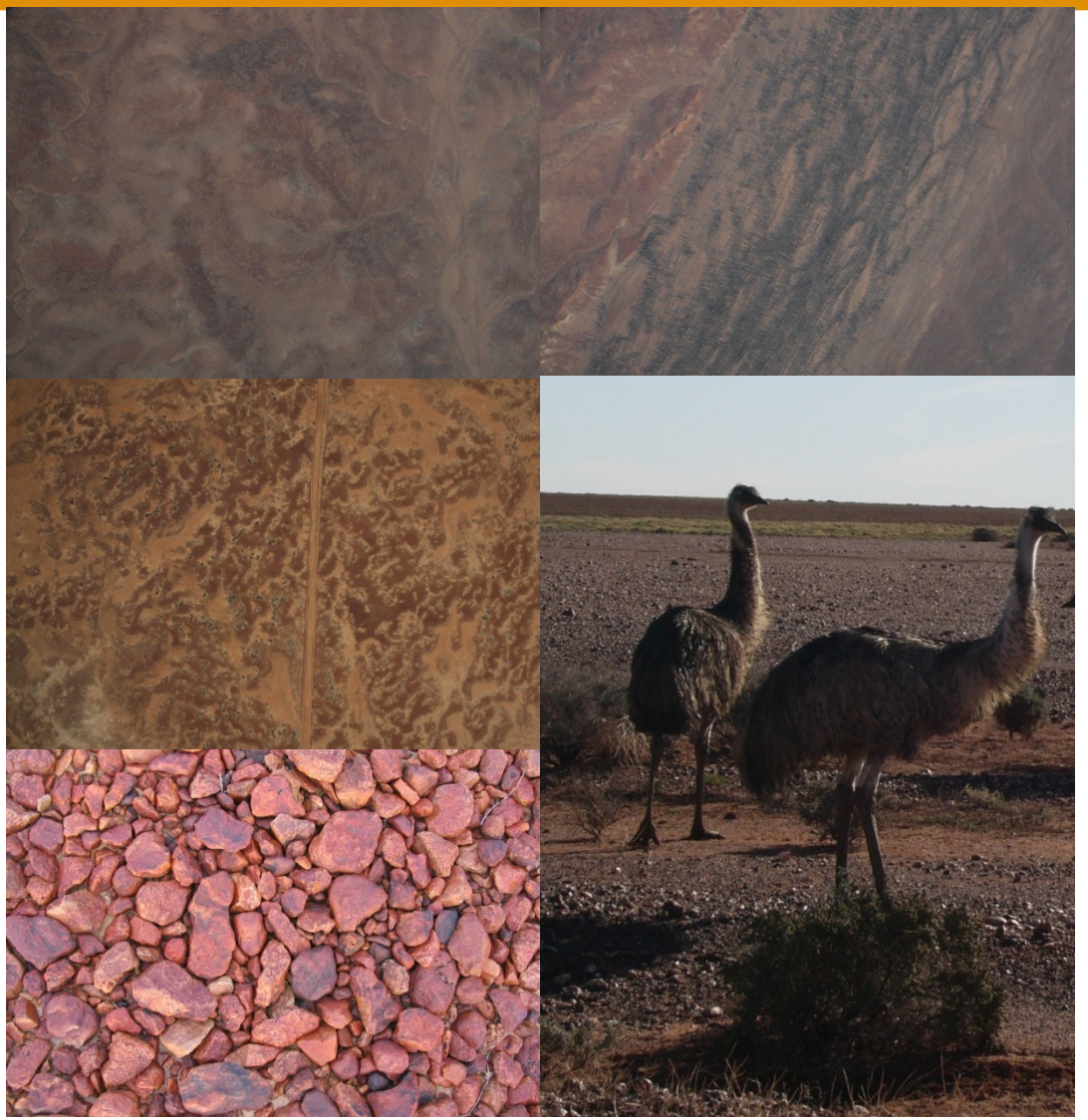
Lake Eyre: 10 Nov 2008



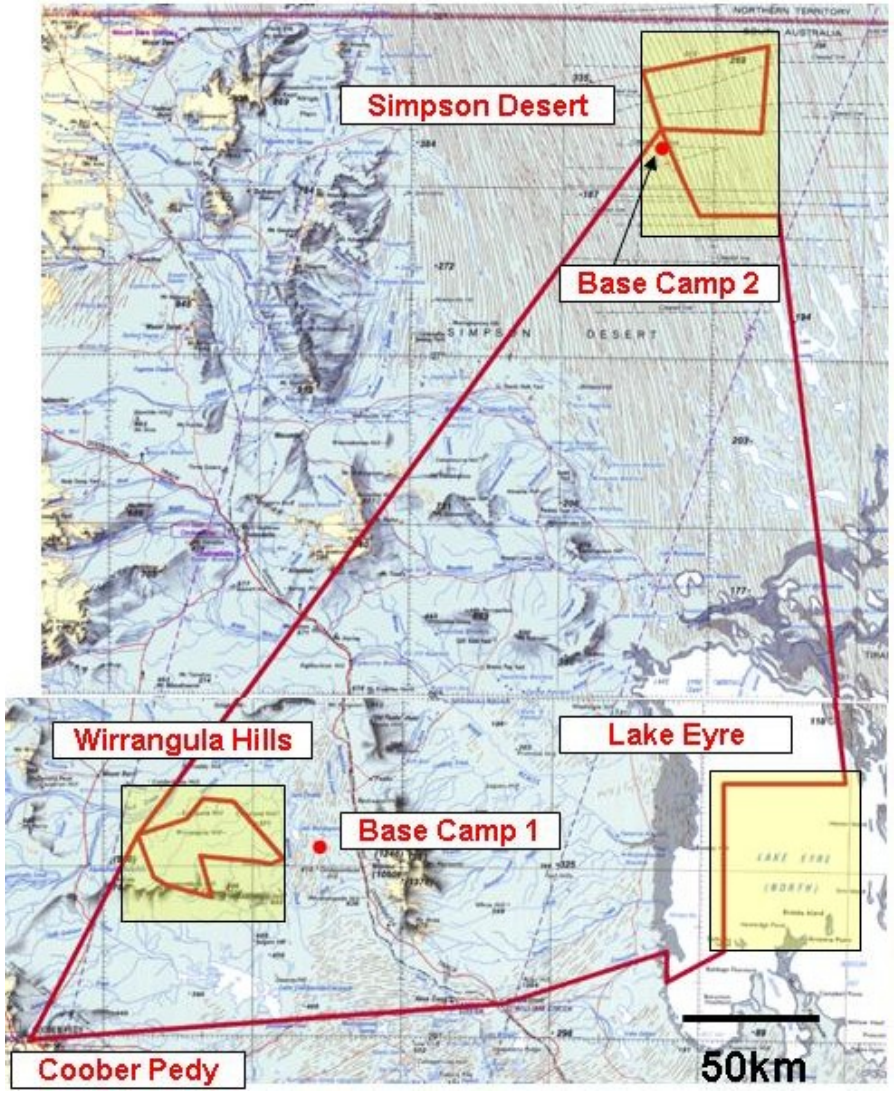


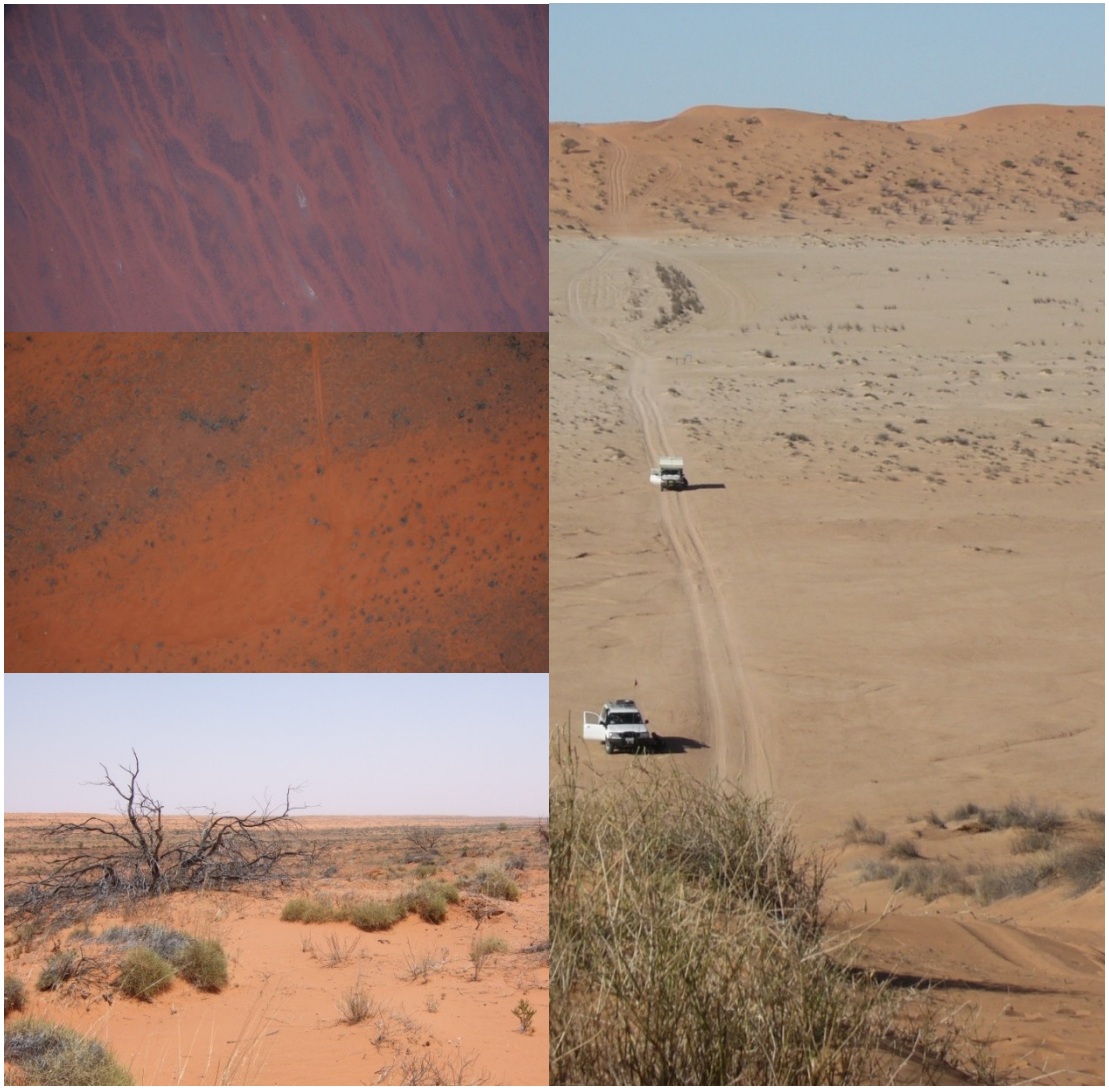
Wirrangula Hills: 12 Nov 2008 / 13 Aug 2009





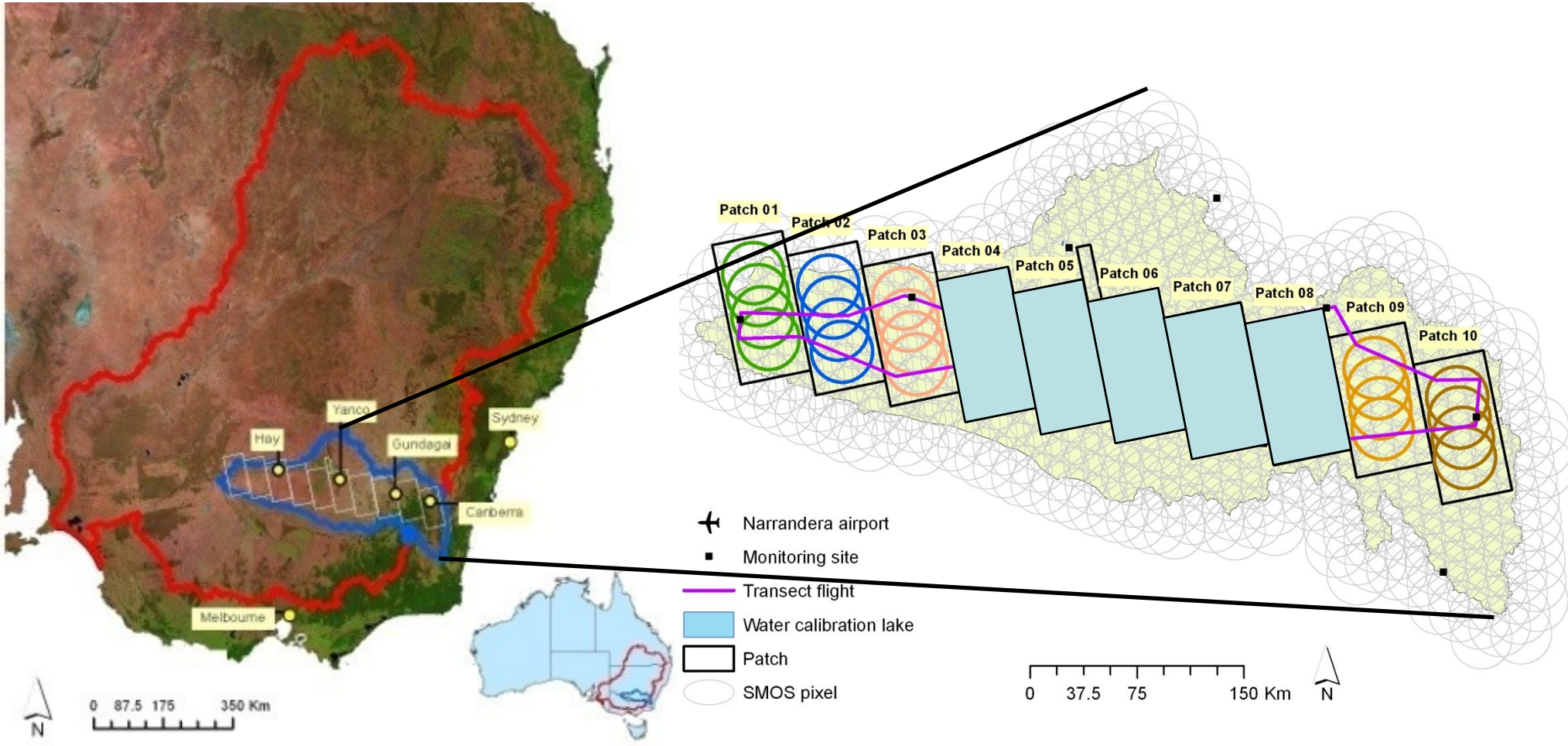
Simpson Desert: 14/15 Nov 2008 / 12 Aug 2009



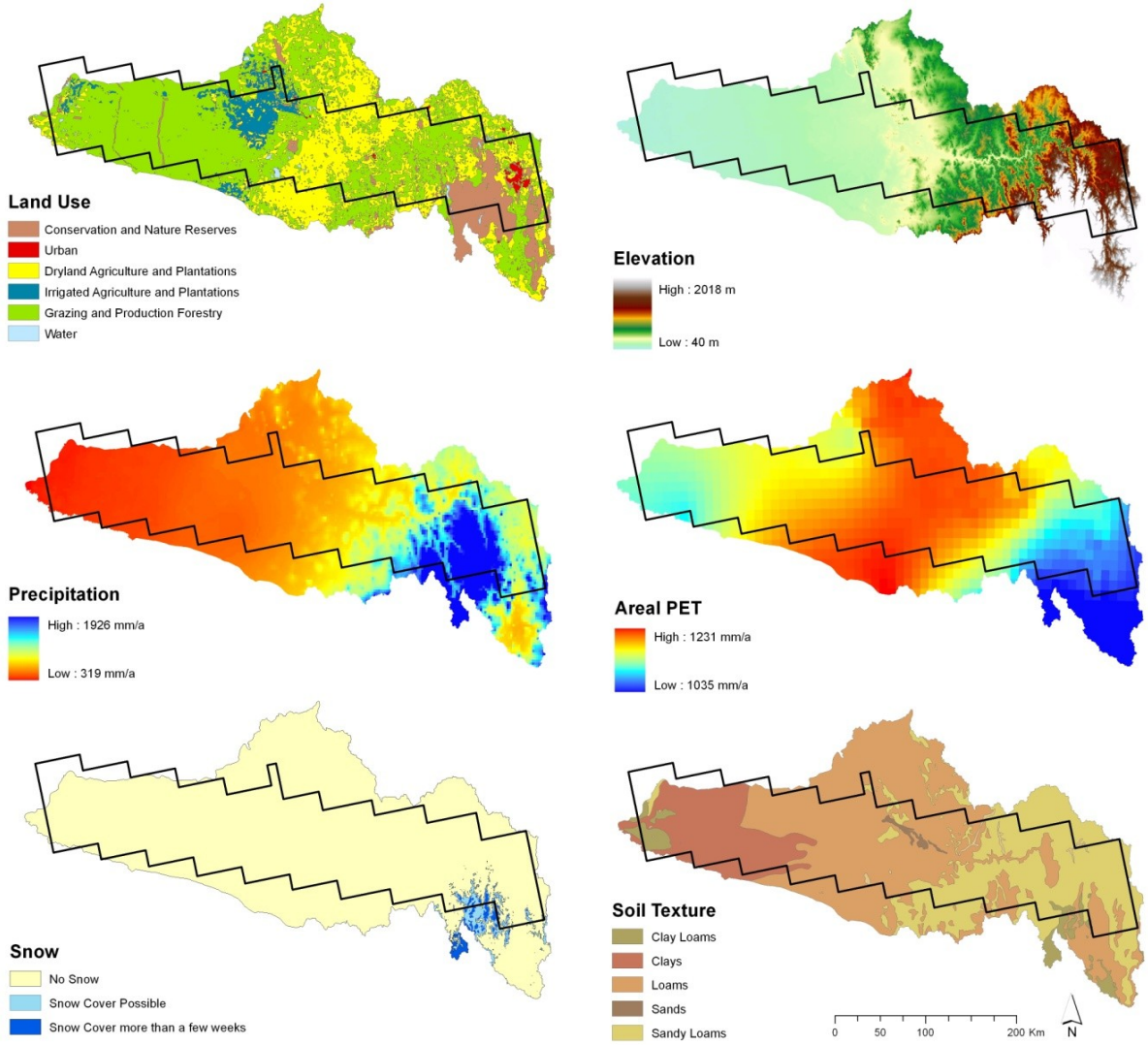


Australian Airborne Cal/val Experiments for SMOS

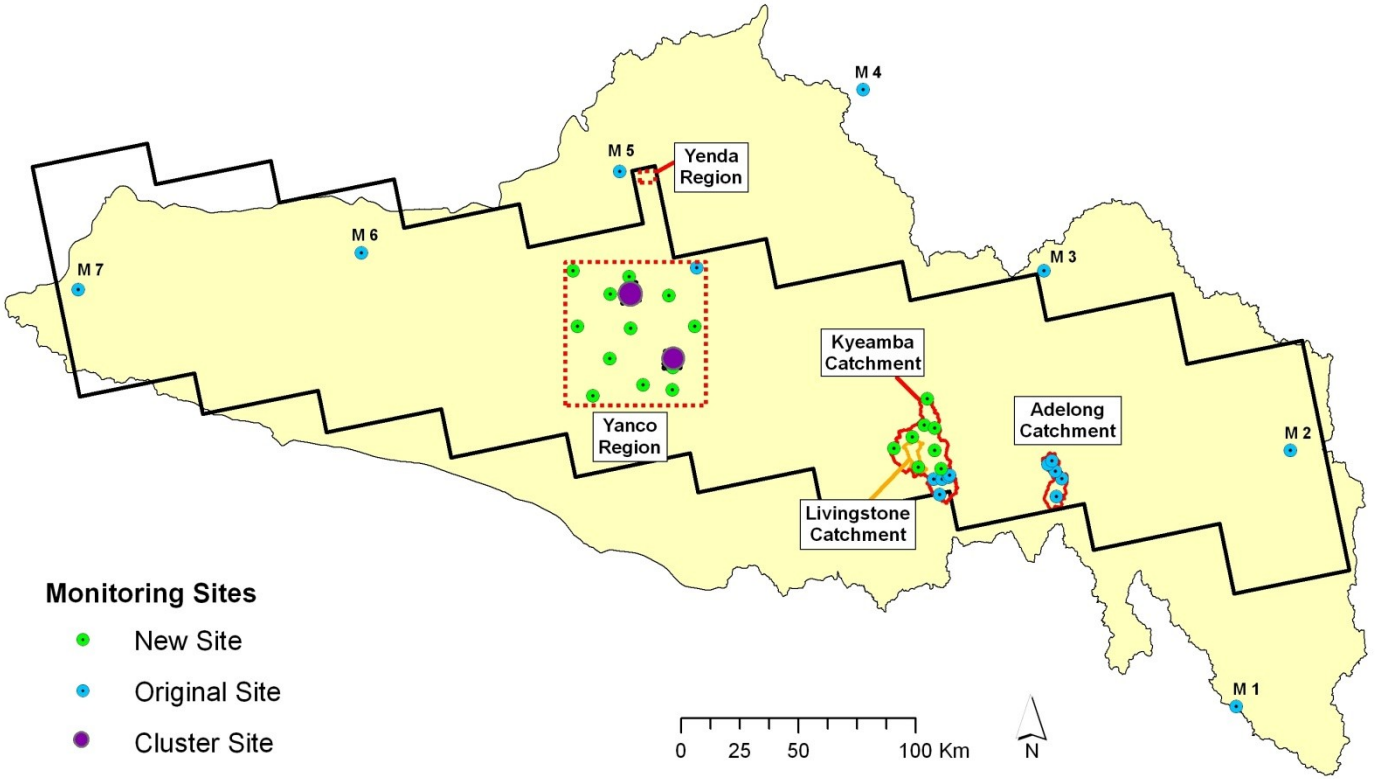
The Murrumbidgee catchment



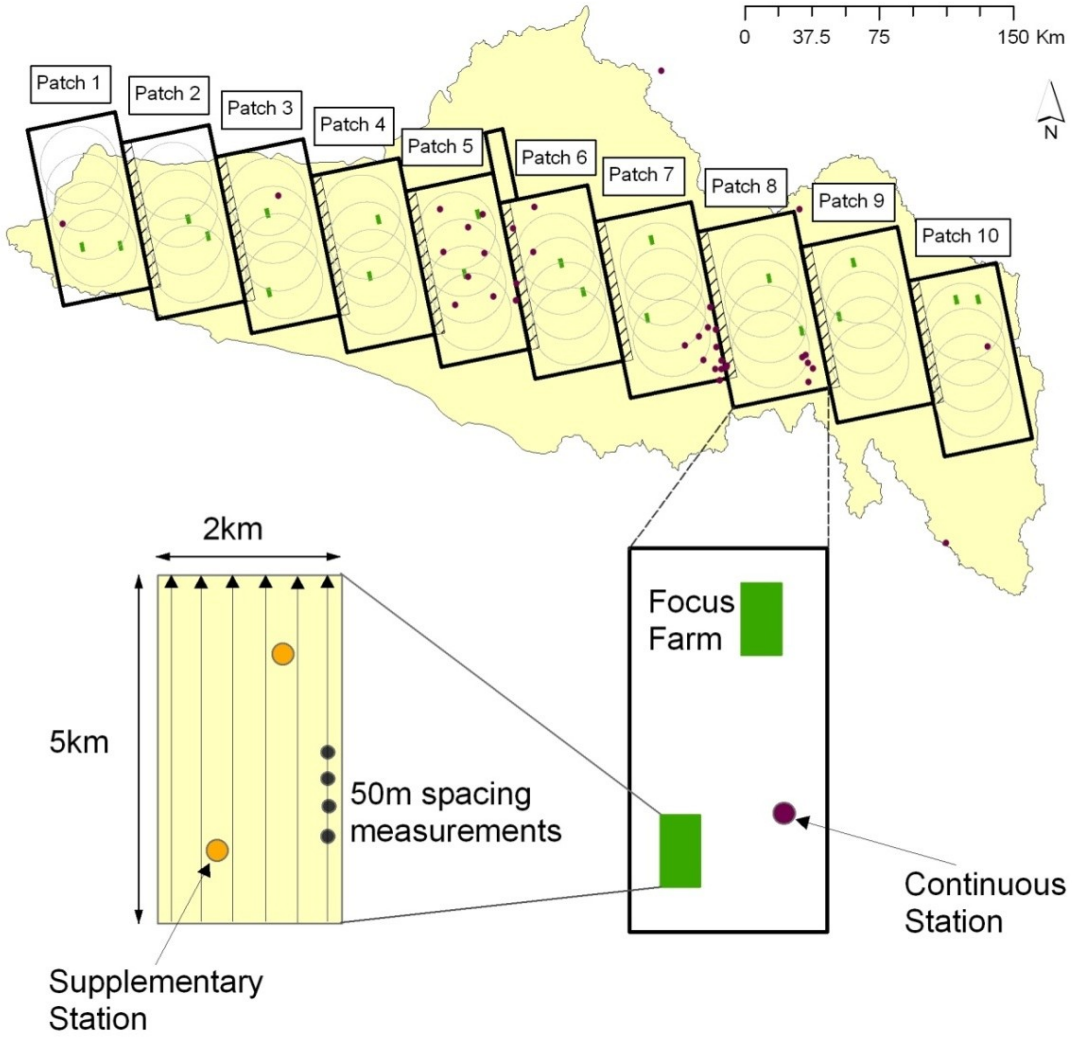
Catchment characteristics



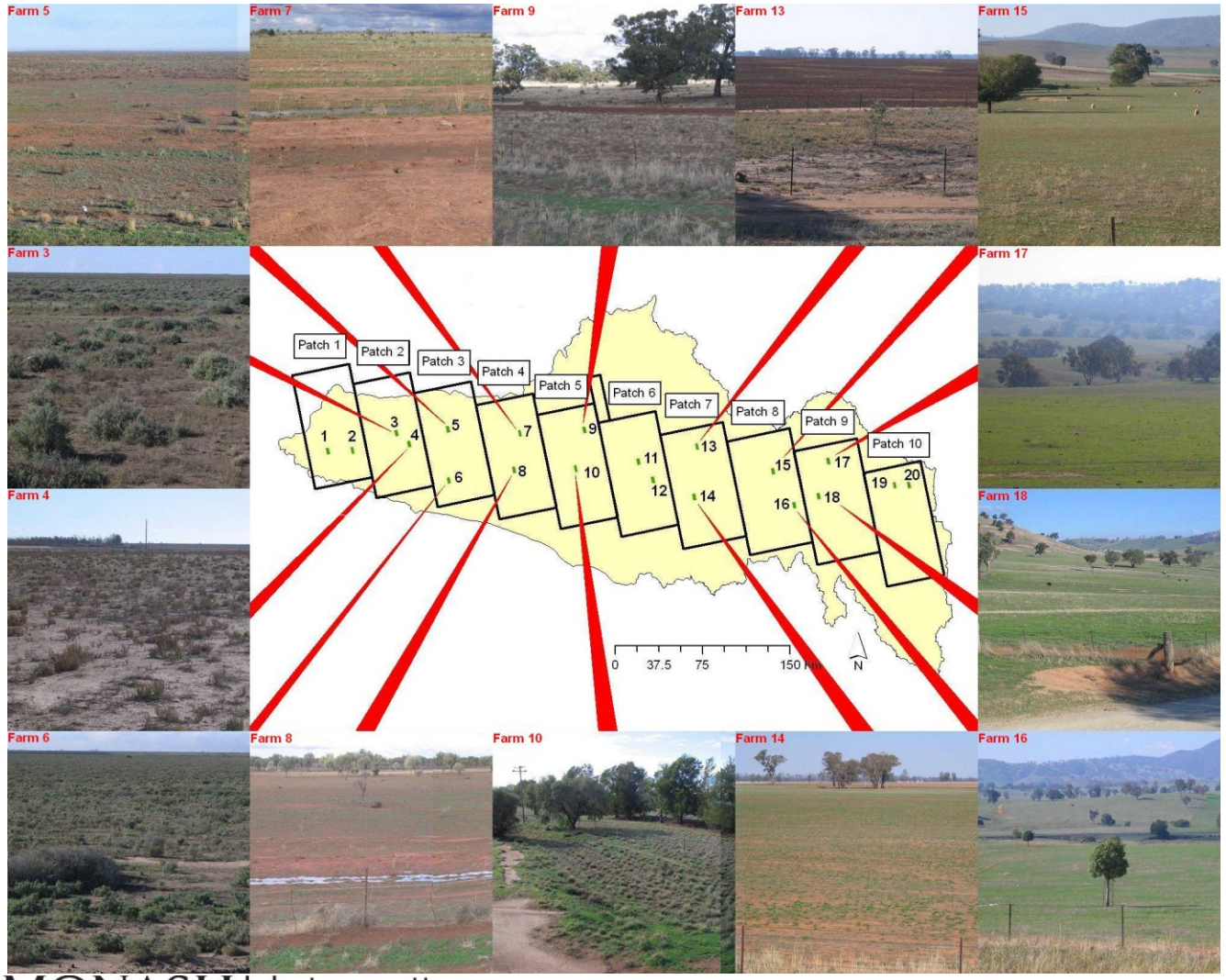
Permanent monitoring stations



Ground sampling strategy

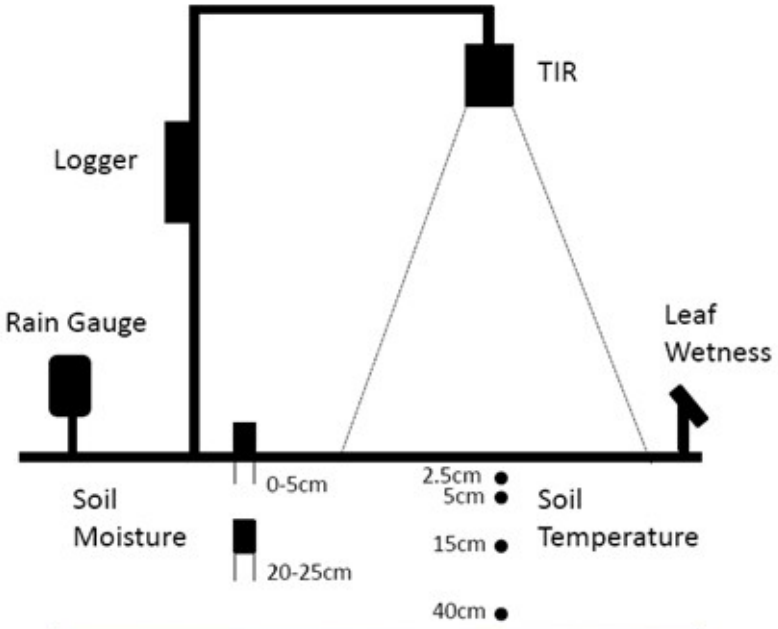


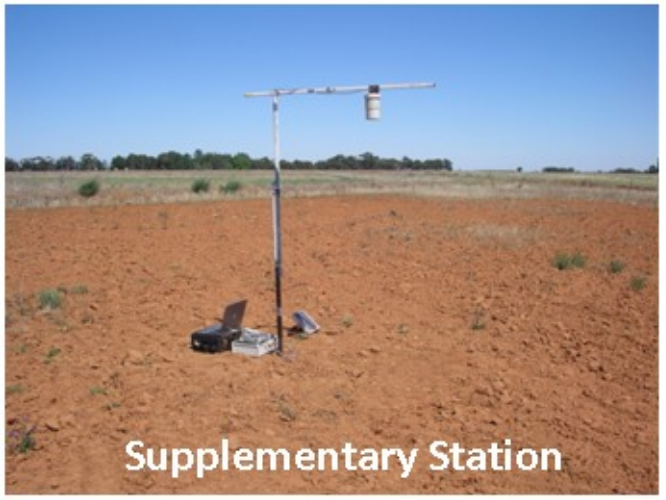
Farm surface conditions

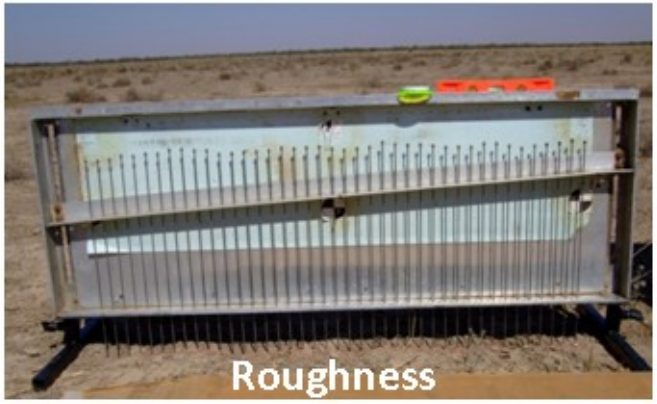


Ground Measurements

AACES field campaigns: supplementary data

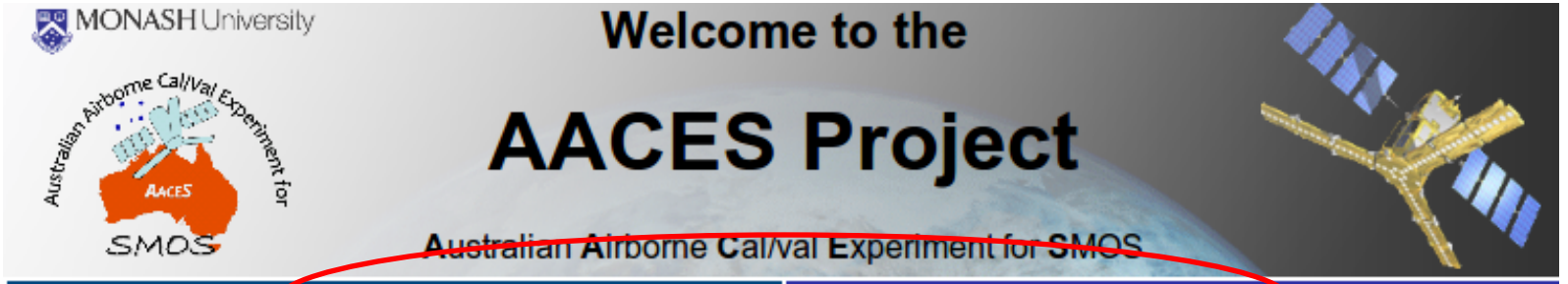






AACES field campaigns: validation data

www.moisturemap.monash.edu.au/AACES



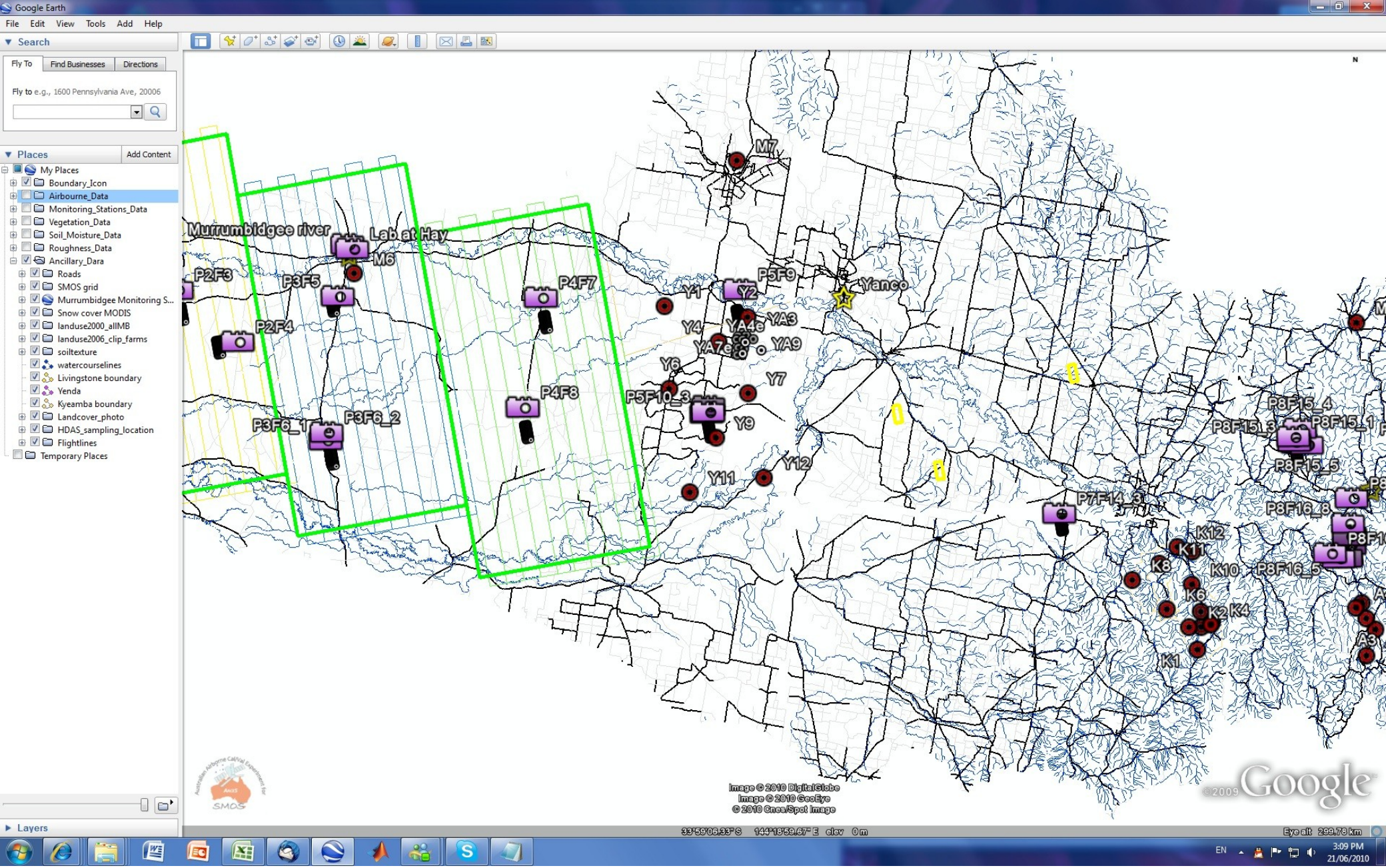
KML overviews available for AACES-1 & AACES-2

PLEASE NOTE: This data set should be acknowledged:

Peischl, S., Walker, J.P., Allahmoradi, M., Barrett, D., Gurney, R., Kerr, Y., Kim, E. LeMarshall, J., Rüdiger, C., Ryu D., and Ye N., 2009. Towards Validation of SMOS Using Airborne and Ground Data Over the Murrumbidgee Catchment. In Anderssen, R.S., R.D. Braddock and L.T.H. Newham (eds) *18th World IMACS Congress and MODSIM09 International Congress on Modelling and Simulation*. Modelling and Simulation Society of Australia and New Zealand and International Association for Mathematics and Computers in Simulation, July 2009, pp. 3733-3739. (pdf 576kB)

Experiment Overview

With the European Space Agency's (ESA) Soil Moisture and Ocean Salinity (SMOS) satellite successfully launched on 2nd, Nov. 2009, the first long-term space-borne passive microwave observations at L-band (~1.4 GHz) have become available. Consequently, SMOS is the first mission dedicated to global mapping of near-real-time surface soil moisture information. Though space-borne microwave instruments have measured global data at high frequencies (e.g. C- and X-band) for the last 20 years, this innovative L-band radiometer uses a new synthetic aperture concept that provides observations at multiple incidence angles. Consequently, the observed brightness temperature data and derived soil moisture product must both be validated. To achieve this, intensive field campaigns are being planned world-wide to support the satellite mission with reliable data from i) passive microwave airborne observations at L-band, ii) detailed ground measurements of surface soil moisture content and associated environmental parameters, and iii) long-term soil moisture monitoring network data from anchor sites (e.g. Murrumbidgee in Australia, Valencia in Spain, Upper Danube in Germany, Midi-Pyrenees in France etc.). With the SMOS launch being in the northern hemisphere autumn, Australia is particularly well positioned for conducting the first intensive SMOS validation campaign during its growing season.


Google Earth
File Edit View Tools Add Help
Search
Fly To Find Businesses Directions
Fly to e.g., 1600 Pennsylvania Ave, 20006
Places
Add Content
My Places
Boundary_Icon
Airbourne_Data
Monitoring_Stations_Data
Vegetation_Data
Soil_Moisture_Data
Roughness_Data
Ancillary_Dara
Roads
SMOS grid
Murrumbidgee Monitoring S...
Snow cover MODIS
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soiltexture
watercourselines
Livingstone boundary
Yenda
Kyeamba boundary
Landcover_photo
HDAS_sampling_location
Flightlines
Temporary Places
Layers
Murrumbidgee river
Lab at Hay
M6
M7
P2F3
P2F4
P3F5
P3F6_1
P3F6_2
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P5F9
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33°59'08.33" S 144°18'59.67" E elev 0 m
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21/06/2010

Acknowledgments

4 participants: Chinese Academy of Sciences

3 participants each: CESBIO, Vrije Universiteit Amsterdam, Australian Bureau of Meteorology

2 participants: Institute of Agrophysics Lublin

1 participant each: Polish Institute of Technology and Life Science, University of Hamburg/Max-Planck-Institute, Technical University of Denmark

DECC, CSIRO (instrument loan and field assistance)

ESA (part financial support of European participants)

Yanco Agricultural Institute (access to lab facilities and accommodation)

All farmers allowing access to their properties