Australia to chair CEOS in 2016

• Via CSIRO, Australia has recently been invited to become Chair of the Committee on Earth Observation System (CEOS (http://www.ceos.org)) for 2016
• Dr Alex Held (tentative Chair)
• Developing budget and forward plan, in close consultation with central government and associated agencies.
• Suggestions welcome from WGCV for areas or activities which could be emphasized during the 2015-2017 term.
TCP in Earth Observation Informatics

- Transformational Capability Platform
- Recognises that EO is fundamental to Australia and that research across CSIRO and outreach needs to be better coordinated
- ~$10m annual investment in EO research in CSIRO (~$100m national investment)
- Aims to integrate capabilities and to provide a ‘capability portal’ for national and international engagement
- Key objectives:
  - Develop capability
  - Leverage infrastructure
  - Develop efficient networks
- Investment $1M for 2012-13, $1M+ for 2013-14, growing thereafter
“Salt Satellites”

• ABC Catalyst programme included CSIRO’s work on Satellite calibration using Lake Lefroy in Western Australia
• http://www.abc.net.au/catalyst/vodcast/default.htm
Joint TCP Workshop on Cal/Val

• March 26th 27th 2013
• Run jointly between Earth Observation Informatics and Sensors and Sensor Networks TCPs
• Brought together:
  • Latest thinking about future requirements in the remote sensing community
  • With new developments within the broader sensing community (low-power distributed sensing, robotics, miniaturisation, mobile sensing, signal processing, data management, wireless communications, etc)
• Used to set collaborative research directions for both TCPs in this area
Survey of Cal/Val capabilities

- Funded by Space Policy Unit via Australian Satellite Calibration Working Group
- Supporting the recommendation of the NEOS-IP 'That national EOS calibration and validation infrastructure be established'
  - Will assess:
    - Current capabilities and infrastructure for Cal/Val in Australia
    - Current activities in Cal/Val
    - Perform a SWOT analysis
    - Make recommendations on the path forward for Cal/Val activities in Australia
- Completed end June 2013
TCP supported Cal/Val project work

• Short term project will:
  • Undertake an up-to-date inventory of suitable vicarious calibration sites in Australia (geographic location physical characterisation, existing spectral characterisation, instrumentation). Evaluation as CEOS reference site.
  • Laboratory facilities for calibration of spectral instruments (calibration and maintenance, protocols, best practice guidelines), to build these into a national calibration facility for EO optical instrumentation
Several Terrestrial and Coastal CaL/Val Sites

- Lake Argyle Vicarious calibration
- Lake Lefroy Vicarious calibration
- SWATT transect
- TREND transect
- Rangelands plot network
- CSIRO LTER plots
- IMOS Water Quality Facility
- Alpine plots
- Lindenmayer and NSW plots
- Forestry plots
- Vicarious calibration
Southern hemisphere vicarious aquatic calibration and validation site LJCO

Lucinda Jetty Coastal Observatory (LJCO)
imos.org.au/ljco.html
http://aeronet.gsfc.nasa.gov/
Vicarious Calibration at Lake Lefroy

- **Location**
  - 60 km S of Kalgoorlie-Boulder and 550 km E of Perth), elevation ~350 m 31.2662° 121.716°

- **Landscape**
  - Salt lake (50 km X 10 km), crust comprised of predominantly sodium chloride and lesser amounts of gypsum and other salts, thickness of the salt crust is variable, from 2-3 cm (close to the lake edges) to 20-30 cm and potentially deeper (other parts)
  - Numerous smaller lake beds of clay-sand and aeolian sands dunes and mine dumps around the lake edge - could be used as spectrally differing calibration targets, could thus provide “brighter” targets for SWIR calibration

- **Access**
  - Kalgoorlie-Boulder ~25,000 people and has major air, rail and road links to capital cities in Australia. A bitumen road exists between Kalgoorlie-Boulder and the township of Kambalda on the northern edge of Lake Lefroy. Accommodation is available at Kambalda.
Lake Lefroy

- CIMEL permanently co-located
  - Beta Island (31° 15’ 18.54” S and 121° 42’ 19.2096” E), fenced off together with other existing St Ives instrumentation (weather station);
  - Part of AERONET network

- Main spectrometer
  - ASD Field Spec 3
    - Measurement of invariant target at set intervals (CSIRO, GFZ);
    - Constant measurement of invariant targets along transects (AIST);

- Other field instruments
  - Microtops
New Vicarious Calibration and Validation Investments by CSIRO:

Across VIS_NIR_SWIR_MIR_TIR and passive and active microwave:
- Miniaturisation: fast and cheap (UAV deployment!)
- Robotics: terrestrial and marine
- Sensor and sensor networks sophistication
- Laboratory: absolute calibration of field sensors.
Arnold Dekker | (BSc. MSc. PhD.)
Director Earth Observation & Informatics-Transformational Capability Platform
Tel +61-(0)2-62465821  Fax +61-2-62465988  Mob +61-(0)41941338
Adjunct Professor -University of Queensland

Alexander Held  PhD. | Director, AusCover Facility, Terrestrial Ecosystem Research Network - TERN | Team Leader Terrestrial Earth Observation | CSIRO | GPO Box 3023, Canberra ACT 2601, Australia | Tel. +61 (0) 2  6246 5718 | mobile 0419 427 313 | Fax. +61 (0) 2 6246 5988 | Email:Alex.held@csiro.au

Tim Malthus - Research Program Leader
CSIRO Land and Water
  t  +61 2 6246 5732
  E  tim.malthus@csiro.au
  w  www.csiro.au