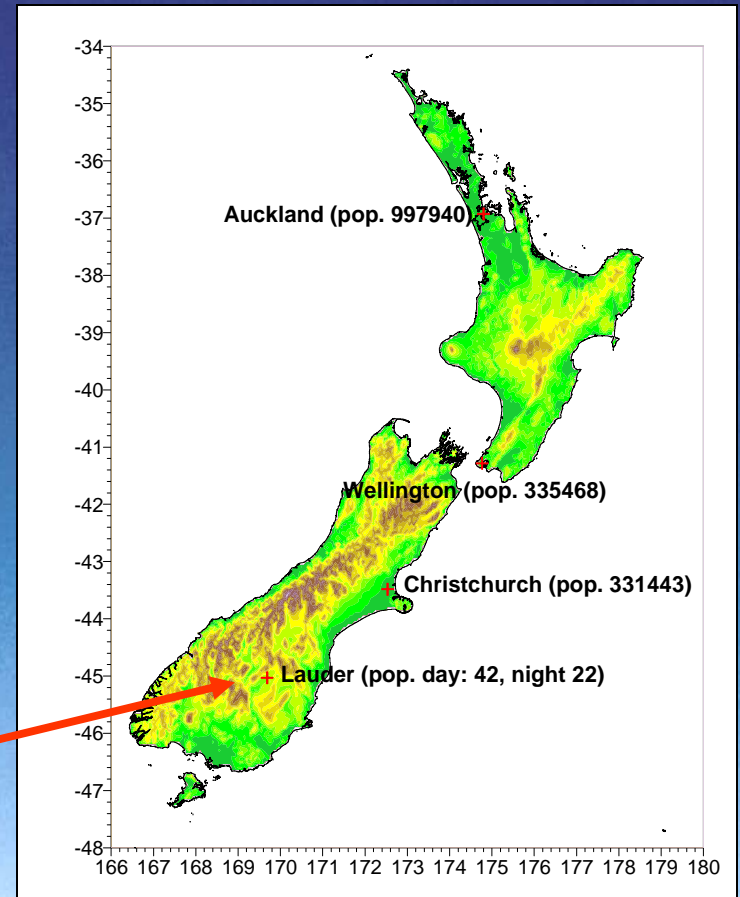


4.5 New Zealand – Lauder

1st GRUAN Implementation-Coordination Meeting
Norman , Oklahoma, USA
2-4 March 2009

NIWA's Lauder Site
45.0°S, 169.7°E
370m a.s.l.



1. Lauder Status

Initial Candidate site Lauder is not currently funded for GRUAN operations,
so, following is an outline of existing NDACC measurements relevant to GRUAN.

1.(a) Site status wrt requirements outlined in GCOS-121 & GCOS-112 (priority 1 and 2)?

GCOS-121 Radiosonde Site Requirements, Interim measure -

Tier 1: 1 x weekly production radiosonde with the best technology currently available at the site;
*Tier 2: 1 x monthly radiosonde capable of capturing moisture signal in the UT/LS and all other
priority 1 variables to the best level possible with current technology, launched together
with weekly radiosonde;*

We fly a radiosonde together with an ECC ozone sensor, surface to ~ 32 km weekly.

Two configurations used, usually on alternative weeks:

- An RS92-SGP radiosonde with an EN-SCI Z1 model ECC Ozone sensor and GPS.
- An RS80-15H radiosonde with EN-SCI Z1 model ECC Ozone sensor and GPS plus a “Micro Controlled Digital Frost Point Hygrometer” (subject to external support).

RS80-15H and RS92-SGP sondes are pressure tested at 10 hPa. to correct pressure sensor offset and slope. Marwin processing is available, but not used for ozone profiles. Our processing provides higher time resolution (1 sec RS92, 1.5 sec RS80).

*Tier 3: Regular 00 and 12 LST launches of a production radiosonde with best technology currently available. **Not supported.***

1.(b)&(c) Guidelines/manuals & Data dissemination practice? NDACC/WMO/BSRN

Ground-Based Instrumentation and Observing Practices

*Minimum set of ground-based instrumentation is to have a ground-based GPS receiver to measure total column water vapour (GPS PW) at each GRUAN site. **Not supported.***

List for additional G-B instruments (GCOS-112, priority2) encompasses six instruments-

- *surface radiation instruments: Lauder BSRN station measurements are -*
 - **Incoming Longwave Radiation- Pyrgeometer (BSRN)**
 - **Aerosol Optical Depth - 4 Wavelengths (412, 500, 610, 778 nm) (BSRN)**
 - **Incoming Shortwave Radiation- Diffuse + Direct (BSRN)**
 - **Cloud Optical Depth - Some Information - UVA Transmission using UV Spectroradiometer: **Part support (not standard GRUAN measurement).****
- *microwave radiometer: **Not owned by NIWA so GRUAN suitability not investigated so far.** (NDACC measurements - upper stratosphere H₂O and ozone).*
- *multi-channel infrared radiometer (e.g. FTIR): FTIR spectrometer measures NDACC trace species: not a calibrated radiance measurement. **Possible support.***
- *Lidar (e.g. Raman Lidar): Aerosol lidar makes regular NDACC measurements at night – up to 6 times per month. **Part support (no H₂O Raman Lidar).***
- *integrated trace gas measurements and sun photometer: Suite of NDACC column measurements plus greenhouse gases (CO₂, CO, CH₄, N₂O). **Limited profile support.***
- *cloud radar (may also be useful): **Not supported.***

Data availability: Data available through the NDACC, WOUDC and BSRN archives.

2. What do you need from the Lead Centre / working group / secretariat?

Perhaps GRUAN leadership could try and persuade the World Climate Research Program (WCRP) Working Group on Coupled Modelling (WGCM) to support the GRUAN goals with the appropriate funding agencies.

3. Are there any scientific or organizational developments we should be aware of?

Lauder Resource Status

- Invitation letter sent by WMO to the WMO Permanent Representative in NZ, and discussions started with NIWA.
- New Zealand is a country of 4.3 million people with a lower OECD GDP per capita than the OECD average.
- New Zealand already makes a significant contribution to global climate and atmospheric chemistry research, e.g., number of NZers participating in the WMO Scientific Assessment of Ozone Depletion 2006 and IPCC AR4, plus our long term NDACC measurements.
- A GRUAN station, with a Tier 3 (2 radiosonde flights a day) operation together with the other priority 1 & 2 measurements, is a large request of New Zealand.
- A year ago we hoped that a political announcement of new additional funds for Climate Change research might provide an opportunity to start a GRUAN Station, but the final RfP did not include climate measurements.
- We strongly embrace the vision and goals of GRUAN, and recognise the urgency of better balancing hemispheric coverage. Unfortunately the current funding situation makes support unlikely for now. However, we will continue to explore every opportunity.

- Maybe working with the NZ Met. Service GUAN Station in Invercargill, 187 km away, could provide an adequate Tier 3 radiosonde protocol. GUAN uses RS92 radiosondes in the south Pacific. (But is 187 km separation of radiosondes with respect to other GRUAN measurements acceptable?)
- We expect to continue our weekly radiosonde programme meeting Tier 1 protocol, and the Tier 2 protocol (subject to external support), and data from these will be available from NDACC and WOUDC archives.
- The existing level of NDACC trace species, column and insitu carbon, and radiation measurements are expected to continue and likewise will be available from the NDACC and other archives.
- If researchers from other countries wanted to use the Lauder site for their GRUAN experiments we would endeavour to host them (this may need to be cost neutral to us).

