



Discussion of potential new sites
in GRUAN including brief reports
by nominated shepherds on
progress

Greg Bodeker

**7th GRUAN Implementation and Coordination meeting,
Matera, 25 February 2015**

Imperatives

Shackleton advert

Men wanted for hazardous journey, small wages, bitter cold, long months of complete darkness, constant danger, safe return doubtful, honor and recognition in case of success.

- We need to get out there and *sell* GRUAN to the observations community, but maybe using something more palatable than our version of the Shackleton advert.
- Our approach needs to be coordinated – One GRUAN 'shepherd' per country.

<http://gruan.wikidot.com/newsite>

China

GRUAN shepherds: Greg Bodeker, Holger Vömel, June Wang

Institution contact: Yang Rongkang

History: 16 July 2012 meeting with senior officials at the CMA. CMA officials agreed to host an additional 3 GRUAN stations within China at Nagqu (4500m above sea-level on the Tibetan Plateau), Kunming and Mt. Waliguan. Follow-up letter to Datong Zhao from GCOS secretariat (signed by Carolin Richter and Holger Vömel) sent on 10 October 2013. No response received.

Next steps: Follow-up letter needs to be sent. In late August 2014, June contacted Prof. Jianping Huang on potential site at SACOL. Main issue is that they don't have a sounding program and do not plan to have one in the near future. Maybe leverage with nearby radiosonde site can be done. June forwarded ICM-7 invitation to Jianping to see whether he can attend.

Bolivia - La Paz

GRUAN shepherds: Greg Bodeker and David Whiteman

Institution contact: Marcos Andrade and Ricardo Forno

History: La Paz is a high altitude site in Bolivia (3420 m). Access to measurement station at Chataaltaya (5240 m). They have experience in launching balloons. Marcos Andrade attended ICM-6. Funding is a clear hurdle but we are working to resolve that. More than US\$15,000 was collected through crowd-funding to establish a pilot RS92 radiosonde programme at La Paz. That will run through all of 2015.

Next steps: Can the flights that are being made at La Paz be processed through the GRUAN data processor (but not made available through NCDC)? Trying to organise a high level meeting including Marcos Andrade and Ricardo Forno, Greg, David Whiteman as a key collaborator, FMI (Edith Rodriguez) as a key collaborator, SENAMHI, Bolivian ministry officials, maybe also Tim?

Cuba

GRUAN shepherds: Dian Seidel and Peter Thorne

Institution contact: Juan Carlos Antuña Marrero

History: Would fill a clear gap in the network i.e. a site in the Caribbean. Juan Carlos has had discussions with Dian and Peter but there is currently no possibility for financial support for GRUAN operations in Cuba.

Next steps: ??

Australia

GRUAN shepherds: Greg Bodeker

Institution contact: Matt Tully

History: Attractive sites would be Alice Springs, Melbourne, Macquarie Island, Davis (Antarctica). Greg met with Matt Tully and Russell Stringer at BoM on 15 February 2013 to discuss GRUAN options. Matt attended ICM-6 and is now following up with BoM senior management on next steps to take. Greg had a phone call with Matt Tully on 31 October 2014 to discuss BoM participation further. Matt is drafting a letter to go to CEO of BoM. Matt is optimistic that BoM will support some candidate GRUAN sites. Howard Diamond had a telephone conversation with Peter May, Bruce Forgan and Anthony Rea around 16 January 2015 regarding BoM support for a GRUAN operation at Darwin. Likely that a GRUAN operation at Darwin will be supported by BoM.

Next steps: Waiting on Matt.

South Africa

GRUAN shepherds: Belay Demoz

Institution contact: Interest from a university (UP, Hannes Rautenbach) and a branch of the South African Weather Service (SAWS; Mark Majodina).

History: Would be the first GRUAN site on the African continent and a valuable addition as a southern hemisphere site. Anne Thompson was in South Africa in early February 2015 and spoke with SAWS and Hannes about potential support for GRUAN. Retirement of Gerrie Coetzee is a problem. Retaining capacity is a problem for SAWS.

Next steps: Need to meet with more senior managers at SAWS.

Senegal

GRUAN shepherds: Belay Demoz

Institution contact: Seydi Ababacar Ndiaye, Ph.D., Professor at Ecole Supérieure Polytechnique (Dakar) UCAD.

History: The site would be at Dakar. Belay was to forward a write-up by a scientist from the Dakar station to the Lead Centre.

Next steps: ??

Vietnam

GRUAN shepherds: Masatomo Fujiwara

Institution contact: Mr. Hoang Gia Hiep (director of the AMO), Mr. Dinh Duc Tu (vice chief of the AMO's research department)

History: At ICM-6 presentation and discussion were made for Hanoi station: The Aero-Meteorological Observatory (AMO), National Hydro-Meteorological Service (NHMS) currently has 6 upper air stations (2 will be added in 2014; 11 in total in the near future). All current stations are using Vaisala RS92, twice daily. Regular ozonesounding at Hanoi station since September 2004. On 3 April 2014, Masatomo sent an email to Mr. Hoang Gia Hiep and Mr. Dinh Duc Tu, introducing GRUAN and asking whether AMO is interested in GRUAN.

Next steps: Waiting for the response.

Russian sites

GRUAN shepherds: None yet

Institution contact: None yet

History: None yet

Next steps: Someone needs to email Alexander Kats to find out if and how to get the ball rolling. Any takers?

Canada

GRUAN shepherds: Richard Querel

Institution contact: James Drummond (PI for Eureka, CANDAC). David Tarasick and Jonathan Davis (Environment Canada).

History: While Jim Drummond has instruments at the northern sites, Environment Canada does all of the radiosonde launches. Richard explained that they could work together on this as GRUAN "sites" are made up of certified measurements, rather than certifying sites. Richard provided him with the 2-page flyer and links to further information. Peter Thorne spoke to Jim in person at the NDACC meeting (6 Nov 2014) and impressed that if Canadian candidature known before congress they would be on the map. Jim said that they were shortly to have an interagency call on Canadian contribution to GRUAN.

Next steps: Richard will contact Jim again in a little while to discuss further. (Last email 20 October 2014)

Chile

GRUAN shepherds: Richard Querel

Institution contact: Roberto Rondanelli (Geophysics U.Chile), and Raul Cordero (Dept. Physics, U. Santiago de Chile). Raul is a PI of the Chilean Antarctica Science Research at the Escudero Station (62°S).

History: Interested in working towards having a GRUAN site. Two of their UV spectrometers soon joining NDACC (one in Santiago in 2014, one at Escudero in 2015). There are several instruments in Santiago that could be put together to make a site - but no radiosonde launches. Chilean weather service (DMC) operates five sites that submit twice daily launches. No routine launches from either Santiago or Escudero themselves. Closest to Santiago is Santo Domingo (90 km west of Santiago). Roberto and Raul are going to meet to discuss options.

Next steps: Richard to stay in contact and see how things are going. (Last email 20 October 2014)

Argentina

GRUAN shepherds: Richard Querel

Institution contact: Elian Wolfram (PI of the Rio Gallegos site in Southern Argentina, 51.6°S).

History: Elian is interested, but says that they do not have routine balloon launches at their site, or even nearby (closest is above mentioned Punta Arenas in Chile, 200 km west). Their site has DIAL ozone profiles, mm-wave radiometer, SAOZ for O₃ and NO₂ columns, and a set of broadband radiometers (UVA, UVB and Vis). The other stations with aerosol lidars and radiometers are: Bariloche, Comodoro Rivadavia, Neuquen and Buenos Aires. The only stations that have regular radiosondes (one per day) are Buenos Aires (34.5°S) and Comodoro Rivadavia (45°S)

Next steps: Richard will discuss further with Elian about other sites in Argentina.

Qatar

GRUAN shepherds: Greg Bodeker

Institution contact: Mohammed Ayoub

History: From Dale: I was just chatting with Mike Newchurch (Univ. of Alabama, Huntsville) and he reminded me that one of his ex-students has established an atmospheric monitoring program in Qatar. He apparently has surface instruments and is now launching balloon-borne sondes, predominantly for air quality monitoring. As I recall, when I met him I got the feeling he has no shortage of funding from the Qatar government to purchase these instruments and perform this work. Anyway, this might be worth exploring since we are always trying to fill in the holes on the GRUAN map.

Next steps: Greg to contact Mohammed or maybe Dale (Greg doesn't like hot climates).

Nairobi

GRUAN shepherds: Anne Thompson?

Institution contact: Greg has asked Anne for details.

History: This is an email from Anne on 22 April 2014: Data collected at the SHADOZ Irene and Nairobi stations have been of consistently high quality over 15 years and I have visited both locations. The SHADOZ Nairobi station is a partnership between Meteoswiss (the Payerne group) and Kenyan Meteorological Dept. Attention to data-taking protocols and quality assurance are excellent. Several people participate in each sonde launch. The Nairobi KMD launch site hosts a regional WMO training facility for meteorological observers from dozens of sub-Saharan African countries, an activity that seems to mean quite a bit of support and infrastructure.

Next steps: Can Rolf Philipona, or others at MeteoSwiss, assist given that MeteoSwiss has a strong connection to the Nairobi site?

Singapore

GRUAN shepherds: Greg Bodeker and Stefanie Kremser

Institution contact: Audrey Eun, Lesley Choo, King Kheong Mah (Singapore MetService), John McBride (National Environment Agency).

History: Greg and Stefanie met with the Singapore MetService people 19 and 20 January 2015. They have been flying Graw radiosondes but will soon switch to RS41. We discussed the value of the Singapore upper-air data and two weeks after the visit sent them a list of 220 papers that used Singapore upper-air data for their analyses. We had some very productive discussions with them. I think that with some additional work we can get Singapore into GRUAN. Radiosonde flights are NOT made from Changi airport.

Next steps: Greg or Stefanie to do a follow-up visit next time passing through Singapore.

Antarctica

GRUAN shepherds: Richard Querel

Institution contact: Ricardo Sanchez, SMNA (Servicio Meteorológico Nacional, Buenos Aires, Argentina)

History: Emails between Richard and Ricardo Sanchez and Rigel Kivi discussing the possibility of certifying the Marambio Base site in Antarctica as a GRUAN site. Ricardo is interested in what would be required and thinks it would be good to try to get certified. Marambio Base is a well instrumented site with a long ozonesonde record (since 1989, in agreement with FMI, they have had about 65 ozonesondes per year).

Next steps: Richard will email again to discuss further. (Last email 1 October 2014)

Who else?