



Update on where we are at with  
bringing new sites into GRUAN.

**Greg Bodeker**

**8<sup>th</sup> GRUAN Implementation and Coordination meeting,  
Boulder, 27 April 2016**

# Reminder

- Our approach needs to be coordinated - One GRUAN 'shepherd' per country.
- Use the wiki page to manage and update contacts to countries and developments:

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

**There has been too little activity on this page over the past year!**

# Azores

**GRUAN shepherds:** ??

**Institution contact:** Someone in Portugal?

**History:** There is an ARM mobile facility on Graciosa Island, Azores. The plan is to follow in ARM's footsteps and explore whether we can establish GRUAN sites at locations where the ARM mobile facilities have been.

**Next steps:** Doug, what can/should we do? Who might be a contact in Portugal we can follow up with?

# China

**GRUAN shepherds:** June Wang, Greg Bodeker

**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. June has subsequently been in contact with Prof. Jianping Huang. He was invited to attend this meeting.

**Next steps:** More to come in the next talk.

# 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).

**Next steps:** Things continue to limp forward. We communicate regularly with the people at the La Paz site → skype telecons every 6 months or so. Communication with SENAMHI is ongoing. My feeling is that it is unlikely that we will be successful in establishing a GRUAN site at La Paz ☹.

# Cuba

**GRUAN shepherds:** 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:** Should we just remove this from our list?

# 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. Who can and will do this?

# 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 → a very attractive site in West Africa.

**Next steps:** More to come in the next talk.

# 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). 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. 7 May 2015: It was found that Sami Kiesiläinen at FMI is working with AMO/NHMS on a weather radar related project in Vietnam. It seems their goals are better weather forecasts with cloud, lightning, and surface weather (AWS) measurements.

**Next steps:** Not clear.

# Canada

**GRUAN shepherds:** Richard Querel and Greg Bodeker

**Institution contact:** James Drummond (PI for Eureka, CANDAC). David Tarasick and Jonathan Davis (Environment Canada). Greg did invite Jim to ICM-7

**History:** From Patti Edwards (Manager, National Aviation Monitoring Section, Weather and Environmental Monitoring Directorate) to David Tarasick on 31 October 2014 "I decided that the requirements of GRUAN were too stringent for our operational network and would likely be best suited to sites with research affiliations (none within the Canadian context). I have copied Carrie Taylor as my perspective might change if such a initiative were driven by CRD and Upper Air Monitoring could be a contributing partner." Greg has subsequently talked with David Tarasick → Greg needs to approach Marjorie Shepherd the director of the Canadian Climate Research Directorate.

**Next steps:** Greg needs to talk with Ted Shepherd.

# 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 O<sub>3</sub> and NO<sub>2</sub> 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 (anyone else)

**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? Bertrand Calpini believe this is not worth pursuing.

# Antarctica - Marambio

**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)

# Antarctica - South Pole

**GRUAN shepherds:** Greg Bodeker

**Institution contact:** Peter Milne (NSF; [pmilne@nsf.gov](mailto:pmilne@nsf.gov)) and/or Bryan Johnson and Jim Butler ([Bryan.Johnson@noaa.gov](mailto:Bryan.Johnson@noaa.gov) , [James.H.Butler@noaa.gov](mailto:James.H.Butler@noaa.gov))

**History:** This site was suggested since it is already a GAW site.

**Next steps:** Greg to phone Peter, or contact Bryan and Jim

# Antarctica - Halley

**GRUAN shepherds:** Greg Bodeker

**Institution contact:** Steve Colwell (src@bas.ac.uk)

**History:** None yet.

**Next steps:** Greg to contact Steve

# Abu Dhabi

**GRUAN shepherds:** Greg Bodeker (anyone else?)

**Institution contact:** Masdar Institute

**History:** None yet.

**Next steps:** Greg to send an email to an appropriate person there.

# Antarctica - Syowa

**GRUAN shepherds:** Masatomo Fujiwara

**Institution contact:** Nobuhiko Kizu (JMA)

**History:** Syowa is a Japanese Antarctic station with a long history. Regular upper air observations (radiosonde and ozonesonde) are being made by JMA. This station is included in the GAW, GUAN, BSRN, and GSN networks. Also, the GNSS measurement is being made by the Geospatial Information Authority of Japan (GSI), and is included in the IGS. Special balloon sounding campaigns and other special scientific measurements (including a new MST radar) are made by NIPR

<http://www.nipr.ac.jp/english/antarctic/index.html> (NIPR)

<http://antarctic.gsi.go.jp/index-e.html> (GSI) one yet.

**Next steps:** After the Tateno certification is completed, Kizusan and Fujiwara-san will talk to the JMA headquarter, NIPR, and GSI.

# Minamitorishima (northwestern Pacific)

**GRUAN shepherds:** Masatomo Fujiwara

**Institution contact:** Nobuhiko Kizu (JMA)

**History:** Minamitorishima is an island in the northwestern Pacific. Regular upper air observations (radiosonde only) are being made by JMA. This station is included in the GAW, GUAN, BSRN, and GSN networks. Also, the GNSS measurements are being made by the Geospatial Information Authority of Japan (GSI).

**Next steps:** After the Tateno certification is completed, Kizusan and Fujiwara-san will talk to the JMA headquarter, NIPR, and GSI.

# Hohenpeissenberg

**GRUAN shepherds:** Greg Bodeker (anyone else?)

**Institution contact:** Christian Plass-Dülmer, (christian.plass-duelmer@dwd.de)

**History:** None yet. This site was suggested since it is already a GAW site and they are doing 3 ozonesonde flights a week.

**Next steps:** Greg to contact Christian.

# Meumayer

**GRUAN shepherds:** Greg Bodeker (anyone else?)

**Institution contact:** Gert König-Langlo (gert.koenig-langlo@awi.de)

**History:** None yet. This site was suggested since it is already a GAW site.

**Next steps:** Greg to contact Gert.

# Pyramid - Nepal

**GRUAN shepherds:** Greg Bodeker (anyone else?)

**Institution contact:** Sandro Fuzzi (S.Fuzzi@isac.cnr.it). For Italy the GAW country contact is Lt. Col. Patrizio Emiliani, Director of Air Force Mountain Centre CAMM

**History:** This site was suggested since it is already a GAW site. It would be a very good high altitude site.

**Next steps:** Greg to contact Sandro.

# Ushuaia

**GRUAN shepherds:** Greg Bodeker (anyone else?)

**Institution contact:** Ricardo Sanchez and Manuel Cupeiro (ozono@smn.gov.ar, mcupeiro@smn.gov.ar, mcupeiro@gmail.com). The GAW contact for Argentina is Monica Marino (marino@smn.gov.ar).

**History:** This site was suggested since it is already a GAW site.

**Next steps:** Greg to contact Ricardo and Manuel.

# Izaña

**GRUAN** shepherds: Greg Bodeker (anyone else?)

**Institution contact:** Emilio Cuevas (ecuevasa@aemet.es).

**History:** This site was suggested since it is already a GAW site.

**Next steps:** Greg to contact Emilio.

Who else?