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Brief Summary of Meeting Minutes

The 7th WERA-1012 Committee meeting was held in Estes Park, Colorado at the YMCA of the Rockies from 19-21 May 2014.

Day one

A variety of topics were discussed during the three-day meeting. The first day began with greetings from Dave Robinson (2014 WERA Chair, Rutgers University) and by Jeff Steiner (WERA 1012 Administrator, Colorado State University). The first session

included a CoCoRaHS status update by Nolan Doesken (Colorado State University) that touched on the history of the program back to 1997 and the expansion of the program throughout the U.S. and recently in Canada. Over a dozen other countries have expressed interest in starting a CoCoRaHS program. The WxTalk webinar series has had from 150-300 people attending the talks (available on YouTube) and animated videos on the water cycle and weather vs. climate have recently been released. CoCoRaHS received an American Meteorological Society Special Award at their 2014 annual meeting. Tony Bergantino (University of Wyoming) followed with an overview of observer statistics, looking specifically at the impact of severe winters on observer participation (it falls) and at lag times for observers to input their observations.

An update of the National Weather Service (NWS) Cooperative Observing Program (COOP) followed from Jim Zdrojewski (NWS) that included mention of a major reorganization of observation management within the NWS that is underway. Other issues of interest were the ongoing efforts to go paperless with COOP reports and efforts to improve observing instruments, including a wireless temperature sensor. Bryant Korzeniewski (National Climatic Data Center (NCDC)) reported on continuing efforts to assimilate CoCoRaHS observations into the Global Historical Climate Network (GHCN).

The first group of WERA 2012 committee reports followed. This report highlights action items that emerged from these reports (numbered throughout this report).

Precipitation Measurements

1. Find past publications and develop and submit new publications on precipitation measurements. Display them on the website. Among reports being sought are those on gauge under-catch and wind and effects on gauge catch. In particular, seek reports that have been produced by Canadian investigators.

2. Investigate what has been done and see if there is any additional research or reevaluation that can be done by CoCoRaHS regarding precipitation measurements writ large.

3. Encourage that the NWS recommend snow core observations at COOP sites using the CoCoRaHS 4" gauge instead of the standard 8" NWS gauge. This will make it easier to accomplish these measurements, thus will likely lead to greater observer participation.

4. Design a fact sheet of 'tested techniques' for making quality SWE measurements. Include instructions on how to make observations in windy locations. Include approaches that include weighing the snow on inexpensive gauges, etc.

5. Design a fact sheet of 'tested techniques' of taking measurements during heavy rain events.

Quality assurance/control

1. Develop an animation concerning QA/QC with assistance from the Outreach/Training Committee.

2. Develop and organize tools to make QC easier for the coordinators.

3. Compile statistics of errors, frequency, type of errors, etc. and have them available for the 2015 meeting.

4. Combine significant weather reports into one report form to make for easier entry for the observers.

Sustainability/Funding

1. Secure more funding. Check with the Colorado State University Foundation to see if potential benefactors can be identified.
2. Annual fundraiser preparation.

The first day concluded with three reports related to extreme precipitation events. Focus was on the exceptional rains and subsequent devastating flooding along the Front Range in September 2013. Approximately half of the 2600 rainfall reports received were from CoCoRaHS observers. Another report discussed flooding in July and August 2013 in the Waldo Canyon Burn Scar region near Colorado Springs. To summarize the observing of such notable events, Nolan stated that COOP observations provide the historic basis and CoCoRaHS observations add the detail. Certainly radar can add value, but the value added by CoCoRaHS cannot be duplicated.

Day two

The theme of the second morning was interfacing and collaborating with other environmental citizen science networks. This included informative presentations by Theresa Crimmins of the National Phenology Network (NPN) and Sarah Newman of the National Environmental Observing Network Project Budburst program. Observation practices, observer training, observer retention and observation quality were among the topics covered, all having connections with CoCoRaHS operations.

The CoCoRaHS *Outreach/Training* committee report followed next, and resulted in one action item.

1. Create a glossary of terminology of common terms that are used by CoCoRaHS, NWS, and Environment Canada on websites, forms, etc.

The next session focused on reaching under-represented audiences. It included discussions of efforts by the NPN and CoCoRaHS state coordinators to engage tribal and Spanish speaking (also other languages) participants in their programs. The keys to successful engagement are deemed to be relationship building, benefits to the community, and translated materials. There will hopefully be a Spanish version of CoCoRaHS materials in the not-too-distant future.

The discussion next shifted to rain gauge user communities. This included reports provided in person, via video and via written communication from individuals who spoke of the value of CoCoRaHS observations in helping their agencies/organizations meet appointed responsibilities. This included the Denver Water's Management of Raw Water Supply, NWS River Forecast Centers, and the Warren County, NJ Mosquito Control Commission.

The final session of day two included a series of presentations by the ever-expanding Canadian CoCoRaHS Network. The program now covers Manitoba, Saskatchewan,

Ontario and the four Maritime provinces. Almost 500 participants have signed on and observations have already been deemed useful in, for instance, monitoring snow water equivalent. Recruitment efforts were a major theme of these presentations.

Day three

Additional committee reports began the final day of the meeting.

CoCoRaHS/COOP Collaboration

Action items include:

1. Send Jim Zdrojewski (Acting National Cooperative Program Manager) a list of the 50 state coordinators for distribution to the WFOs, so that if COOP stations are closing they can contact CoCoRaHS to see if there is an available replacement.
2. Determine which CoCoRaHS state coordinators are state climatologists or representatives from the SCOs.
3. Get feedback from the NWS Offices on how the CoCoRaHS coordinators can be helpful. For instance, Maryland Climate Division 5 - Kent and Queen Anne counties has no active COOP observer. Can the CoCoRaHS program help in finding such individuals?

March Madness

This past March, North Carolina won the traditional (total number) and Wyoming the per capita cups for signing up the most new CoCoRaHS observers. There is one action item:

1. Provide Jim Zdrojewski with information to pass along to NWS local offices for CoCoRaHS recruiting as part of Spotter training.

COOP program 125th anniversary

It appears as if the NWS will not allow for self-promotion and funds cannot be used to commemorate this anniversary. Therefore it may be left to others to organize such a program. Action items for this include:

1. Find out if there is a way to secure Heritage Funds from NOAA to cover the celebration. It was soon determined during the following weeks that they were not available at this time.
2. Explore a CoCoRaHS/American Association of State Climatologist (AASC) partnership. Send a letter to the NWS director explaining the partnership's interest in generating an anniversary event, making sure that it has a citizen science focus. This might secure some sort of NWS approval (or lack of disapproval) for this partnership to proceed with a program. Perhaps one activity at the AASC annual meeting that will be held in Cape May, NJ in June 2015 and another somewhere in the West.

The final session of the meeting was led by Julian Turner (CoCoRaHS program). He discussed updates on continued improvements to the infrastructure of the CoCoRaHS network. This included the upcoming new mapping system and new data entry interface. The significant weather report entry will be transitioned to a storm report, similar to that of the NWS. Discussion ensued regarding these changes, whether observers should be able to change their observation units, how to enable additional data being appended to observations, and how to improve multi-day observations.

Accomplishments

Recently established programs and activities continued to mature and grow during the past year. These include:

1. Evapotranspiration (ET) Gauges: In its second year, more observers have invested in atmometers and have begun contributing ET reports. Currently ET measurements are being reported from 138 observers in 38 different states.

2. PRISM Portal: The CoCoRaHS Climate Portal is in its second year of availability. This interactive tool allows users to examine the normal 30-year rainfall statistics for their station, along with time series analysis. Collaboration on this effort continues with the PRISM group at Oregon State University.

3. Alternative Training Methods: Animated short presentations continue to be developed. They are used as CoCoRaHS observer training tools, as well as for general education purposes. There are a total of 10 training animations (not including 2 additional educational animations and 3 additional promotional animations). Of the training animations, 8 are focused on snow and freezing rain, and 2 are for rain and other events. None of them are new within the last year, although 'Freezing Rain' was completed in December 2013.

4. WxTalk Webinars: Begun in December 2011, these webinars have become a frequent educational tool for the CoCoRaHS program. As of May 2014, 30 have been completed, including 13 in the past year. Examples of topics covered this year include rainwater harvesting, meteorological instruments, weather modification and air quality. On average, between 100 and 200 individuals sign up to take part in each webinar, which features a 45-minute talk by a guest presenter, and allows for the audience to ask questions and interact with the guest.

5. Global Historical Climate Network: CoCoRaHS observations continue to be transferred to the NCDC GHCN. This is a tremendous acknowledgement of the importance and utility of said observations. This began on July 12, 2010. At the time, CoCoRaHS contributed 14,304 GHCN-Daily stations, including 134 for which it was not the only source. Now CoCoRaHS contributes 25,335 GHCN-Daily stations, including 214 for which it is not the only source.

6. Recruitment: CoCoRaHS recruitment continues to evolve, with 5,180 new volunteers recruited between May 2013 and May 2014. CoCoRaHS's annual recruiting contest, "CoCoRaHS March Madness", generated 1,098 new volunteers nationwide with 155 in North Carolina alone.

Impact Statements

1. Successful collaboration between the NWS COOP program and CoCoRaHS continues to help maintain the basic long-term climate monitoring of the COOP program, complemented by the high density but less long-term and continuous CoCoRaHS data.

2. WERA 1012 interactions were instrumental in facilitating the incorporation of CoCoRaHS observations into the NCDC GHCN. This is a winning situation for both networks, and for improved spatial resolution of precipitation data for meteorological, agricultural and hydrological applications.

3. WERA efforts are leading to improved data quality from citizen science participants in the CoCoRaHS program and even within the NWS COOP program. Such data are therefore deemed reliable for the development of precipitation products for the U.S. Department of Agriculture Risk Management Agency to help with crop insurance claims and fraud reduction.

4. Greater confidence in local precipitation patterns on a daily and weekly basis is assisting those involved with the US Drought Monitor program in improving local drought depictions.

5. CoCoRaHS data, educational animations and webinars are contributing to better-informed students, citizens and user communities.