



GNOMO Time Series Data Survey Report

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Background

In September 2015, the Rocky Mountain Biological Laboratory (Gothic, CO) hosted a workshop with the goal of forming a Global Network of Mountain Observatories (GNOMO)¹. One of the initial working groups that was formed out of this meeting is a group a Time Series Data Trial project², with the goal of publishing time series data from the willing observatories using CUAHSI Water Data Center tools. The project consists of:

- **Data Inventory Survey:** Administration of a data inventory survey developed by CUAHSI and answered by observatory representatives.
- **Formatting and Publication of Data:** In coordination with the observatory representatives, CUAHSI staff will perform the necessary metadata formatting for data publication on CUAHSI servers.
- **Development of Discovery and Analysis Tutorials:** Once data publication is complete, CUAHSI staff will develop example tutorials of how to access data for the GNOMO community.

Survey Questions

The Data Inventory Survey consisted of the following questions and was administered through email and Google Forms:

Table 1. Data Inventory Survey questions

Your Name
Email Address
Name of Observatory
Do you have time series data that you are willing to share freely and openly?
What time series variables do you collect that you would be willing to publish?
What is the frequency of observations for the time series data that you wish to publish?
What is the start date of the time series data you are willing to publish?
If other than present, what is the end date of the time series data you are willing to publish?
Anything else to add?

¹ <http://gnomo.ucnrs.org/>

² <http://gnomo.ucnrs.org/index.php/data-trial/>

Survey Results

Sixteen responses were received by November 1, 2015. As seen in Figure 1, 11 out of the 16 observatory representatives are willing to move ahead with the time series publication trial given the nature of the CUAHSI Water Data Center is that published data are available openly without a specific request from the publisher. Out of these 11, the record of observations vary widely, but many have observations at least beginning in 1990 (Figure 2). The most common frequencies for observations are daily and sub-hourly (Figure 3). As might be expected, the most common parameters are meteorological, while Soil Moisture, Snow Water Equivalent, and Stream Discharge are observed at 3 or more observatories. The rest of the parameters received in the survey responses were observed at 2 or less observatories (Figure 4).

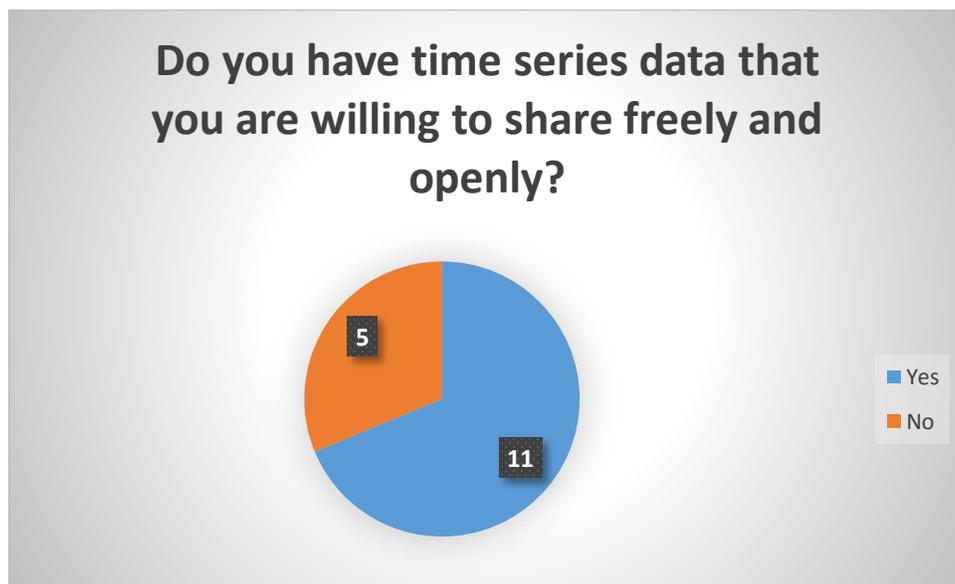


Figure 1. Eleven out of 16 observatories are willing to move ahead with the time series publication trial.

The following tables and figures are limited to those observatories that are willing to share their data.

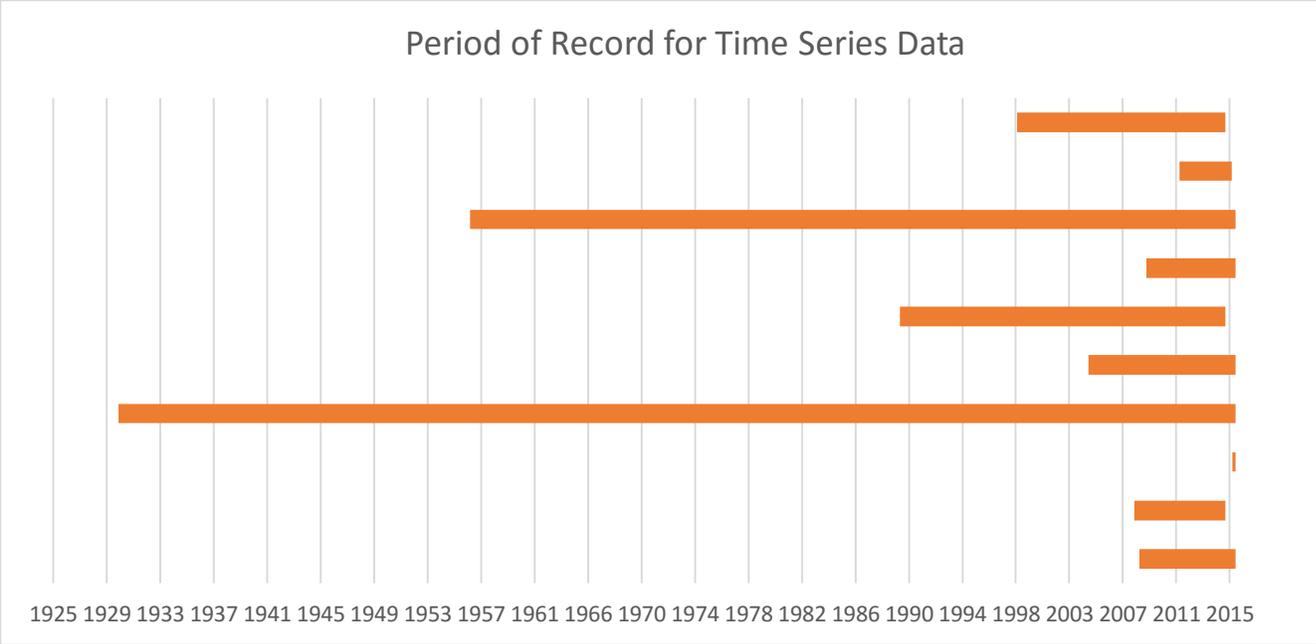


Figure 2. The period of record from observatories willing to publish their data ranges from over 70 years to less than 1 year. Note: One survey response omitted answering this question.

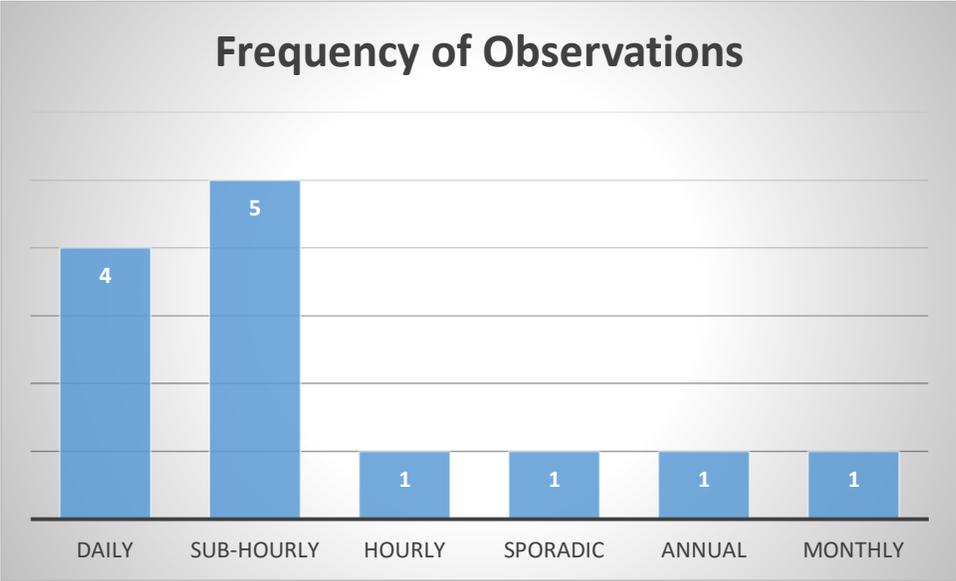


Figure 3. Most time series from the observatories that are willing to publish their data are observed at a daily or sub-hourly frequency.

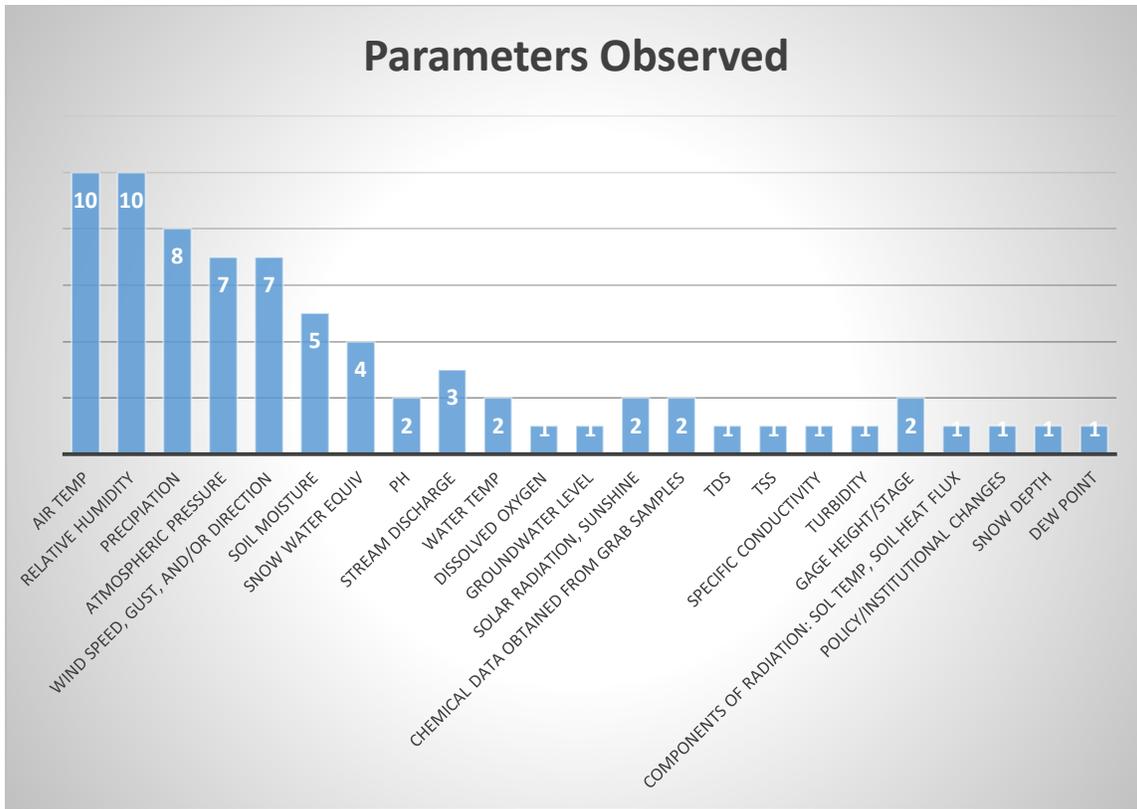


Figure 4. The most common parameters being observed are meteorological. Soil Moisture, SWE, and Stream Discharge also are observed at 3 or more observatories. The remaining parameters are observed at 2 or less observatories.

Publishing Data

In December 2015, CUAHSI Staff will begin working with the following observatory representatives in order to obtain data to publish on CUAHSI servers. CUAHSI is willing to work with the observatories to publish all point time series data that the observatories are willing to share free and openly.

Contact Name	Observatory
Ian Billick	RMBL
Yan Yang	Alpine Ecosystem Observation and Experiment Station of Mt. Gongga
Maria Shahgedanova	Tuyuksu
Derek Kauneckis	Truckee/Carson River System
Jeff Brown	Sagehen Creek Field Station
Uwe Boerst	Culture Area Karakorum
Daniel Ruiz-Carrascal	Poleka Kasue - Los Nevados
Mark Schulze	H.J. Andrews Experimental Forest
Scotty Strachan	NevCAN: Nevada Climate-ecohydrological Assessment Network
Bill Bowman	Niwot Ridge LTER
Jan Dick	ECN Cairngorms

Notes on Existing Data Publication Efforts

Several survey participants noted that they are already publicly sharing their data through their own portals or networked systems. This pilot project will enable an exploration into what is possible if these different resources are tied together. In the long-term, it is worth exploring how the existing systems that the GNOMO participants are using might be tied together across the GNOMO community. CUAHSI's system is setup to handle such integration of systems, but software development effort may be required of the data providers or CUAHSI.