Alaska Climate Research Center

Geophysical Institute of the University of Alaska Fairbanks

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Southeast Alaska Drought Workshop

Juneau, 7 May 2019

Photo by Buri P.

Outline

- The ACRC
  - Introduction
  - Tasks and goals
  - Partnerships
- Co-Co-RaHS
  - Introduction
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Alaska Climate Research Center - ACRC

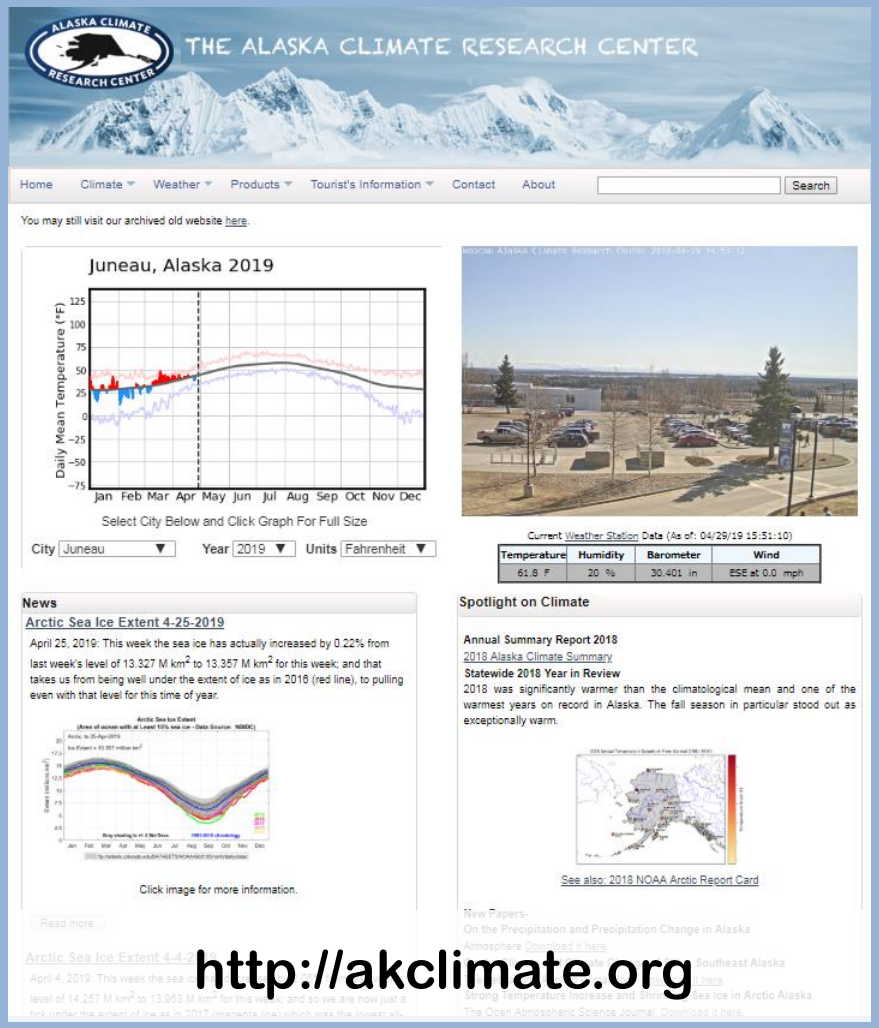
- recognized State Climate Office - American Association of State Climatologists
- merged with Alaska State Climate Center (ASCC) in 2018
- established and funded by the State of Alaska by Title 14, Chapter 40, Section 085, early 1980's
- part of the Geophysical Institute at the University of Alaska Fairbanks

uaf-climate@alaska.edu

ACRC Mission

Respond to inquiries concerning the meteorology and climatology of Alaska from public, private, and government agencies, and from researchers around the world.

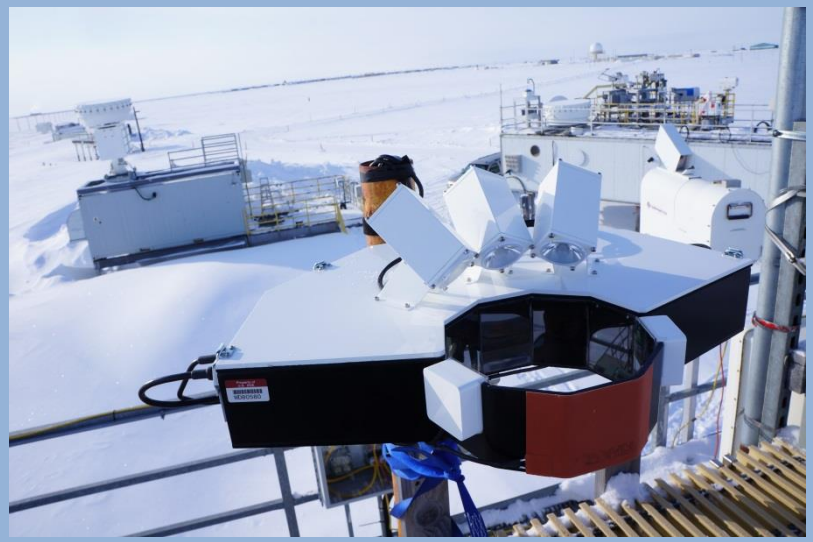
Tasks and goals



http://akclimate.org

- provide climate services
- archive digital climate records
- develop climate statistics and write weather summaries
- engage stakeholders and provide outreach
- conduct applied research related to weather and climate
- support high quality research projects
- improve the coordination of climate-related activities

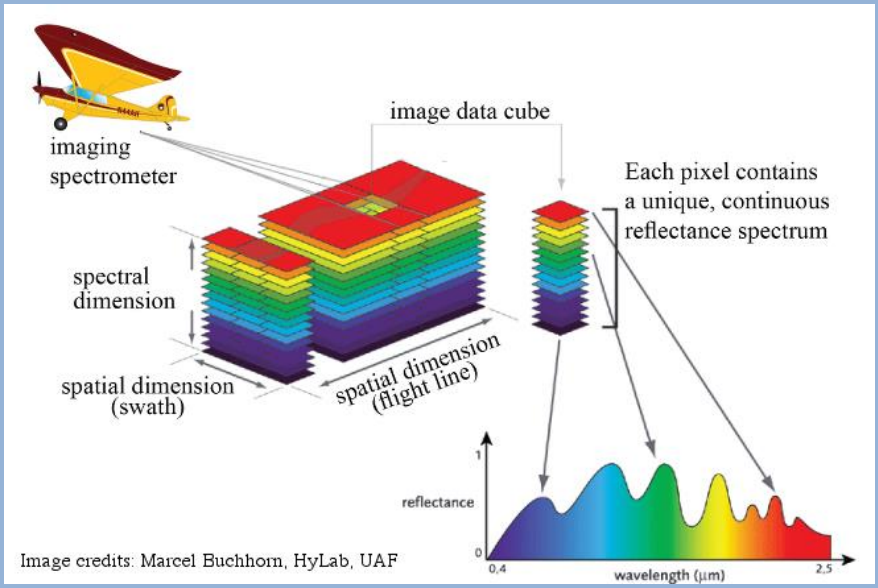
Partnerships

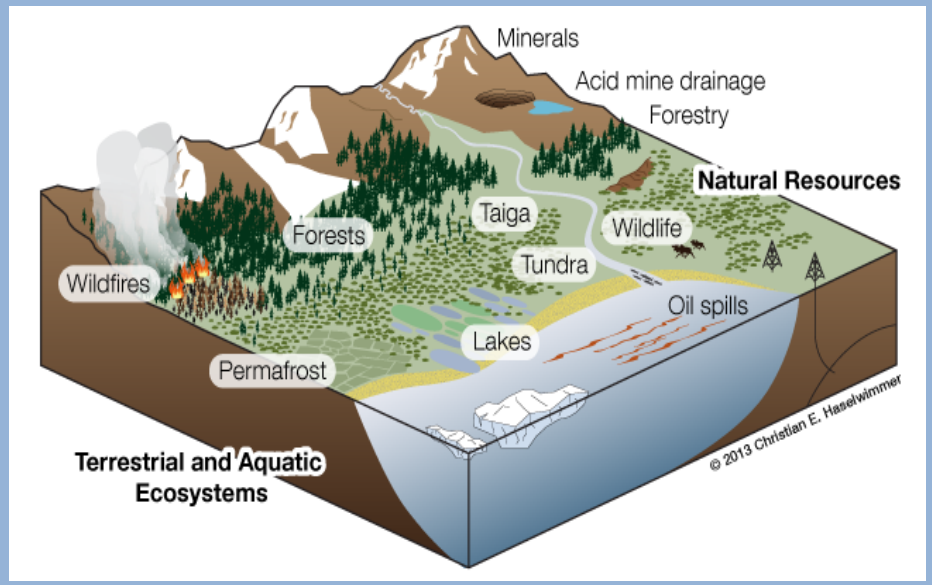


- collaborations with various units on campus, across the State, with National Laboratories and federal agencies
- UAF HyLab: airborne hyperspectral image acquisition and processing (Alaska EPSCoR)
- Geographic Information Network of Alaska (GINA)
- DOE Atmospheric Radiation Measurement (ARM) program

UAF-HyLab

airborne hyperspectral image acquisition and processing





- provides unique information concerning terrestrial and aquatic biogeochemical parameters
- contributes to a range of important research activities concerning Alaska's changing sub-Arctic and Arctic ecosystems

- our collaboration focuses especially on EPSCoR Ice and Fire Project: Boreal Fires and Coastal Margins

ATMOSPHERIC RADIATION MEASUREMENT (ARM)

ARM
CLIMATE RESEARCH FACILITY

ARM operates weather and climate observational sites in Utqiagvik and Oliktok (North Slope of Alaska Atmospheric Observatory)

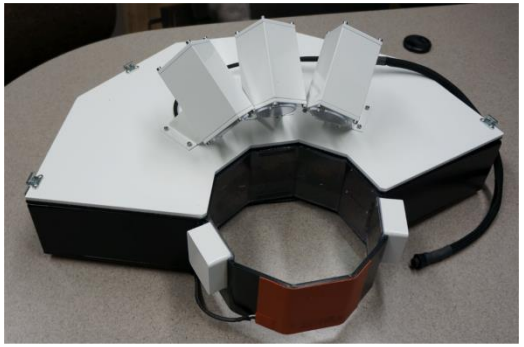
The motivation is to provide data about cloud and radiative processes in a high-latitude and cold climate

ATMOSPHERIC RADIATION MEASUREMENT (ARM)

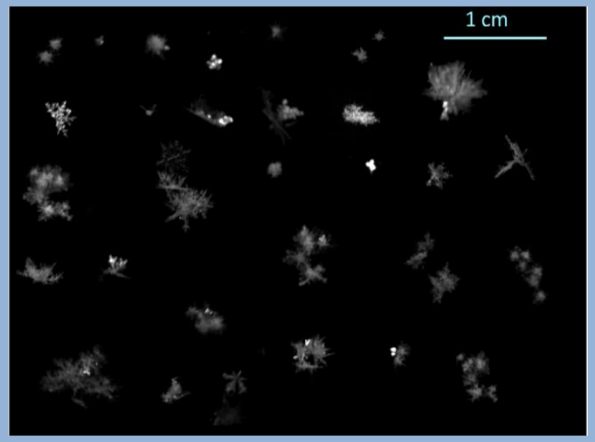
ARM
CLIMATE RESEARCH FACILITY

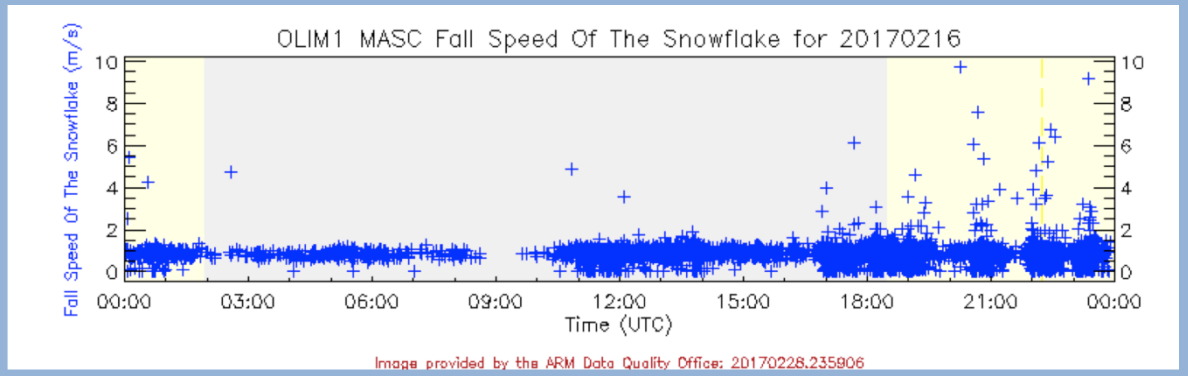
Baseline Measurement:

- aerosols
- atmospheric profiling
- atmospheric gases
- cloud properties
- surface meteorology



Multi-Angle Snowflake Camera (MASC)





CoCoRaHS

Community Collaborative Rain, Hail and Snow Network

"Because every drop counts"

www.cocorahs.org

What is CoCoRaHS?

Community Collaborative Rain, Hail and Snow Network

CoCoRaHS is a grassroots volunteer network of backyard weather observers of all ages and backgrounds working together to measure and map precipitation (rain, hail and snow) in their local communities

- **by using low-cost measurement tools and an interactive web-site, stressing training and education**

- **the main aim is to provide high quality and high density precipitation data for education and research purposes**

How and where did it start? A brief history of CoCoRaHS

The network originated in 1998 with the Colorado Climate Center at Colorado State University to better map the variability of storm events

https://coloradoencyclopedia.org

- **partially thanks to a devastating flash flood that hit Fort Collins in July 1997**
- **a very localized storm dumped over 30 cm of rain in several hours while other portions of the city had only modest rainfall**
- **the flood caused $ 200 million in damages and five deaths**

How does CoCoRaHS work?

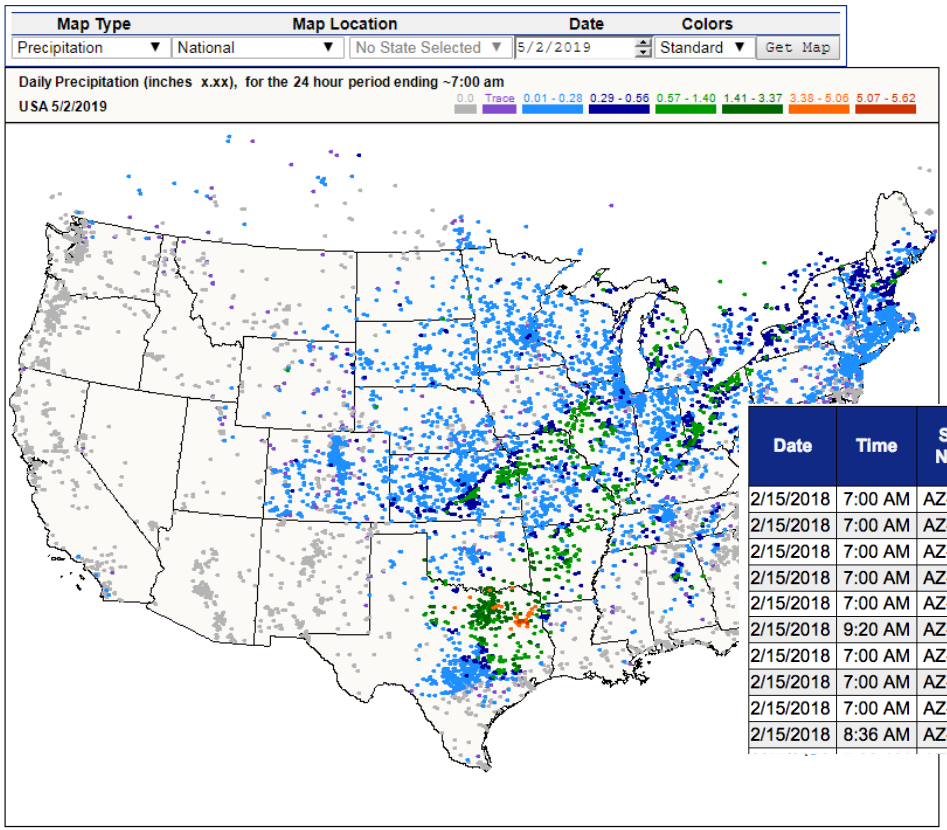
- each volunteer is provided with TRAINING and a low cost RAIN GAUGE (CoCoRaHS 4" diameter gauge, approx. 30.00 $)

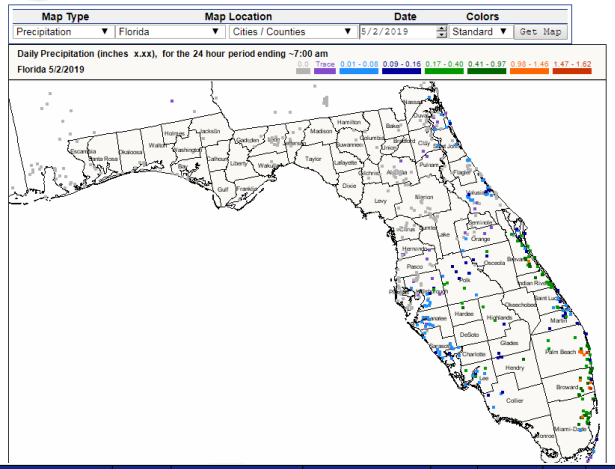
- aluminum foil-wrapped Styrofoam hail pads (state dependent)

- each time it rains, hails or snows, volunteers take measurements of precipitation and report observations on CoCoRaHS interactive web site (www.cocorahs.org) or using the CoCoRaHS mobile App

How does CoCoRaHS work?

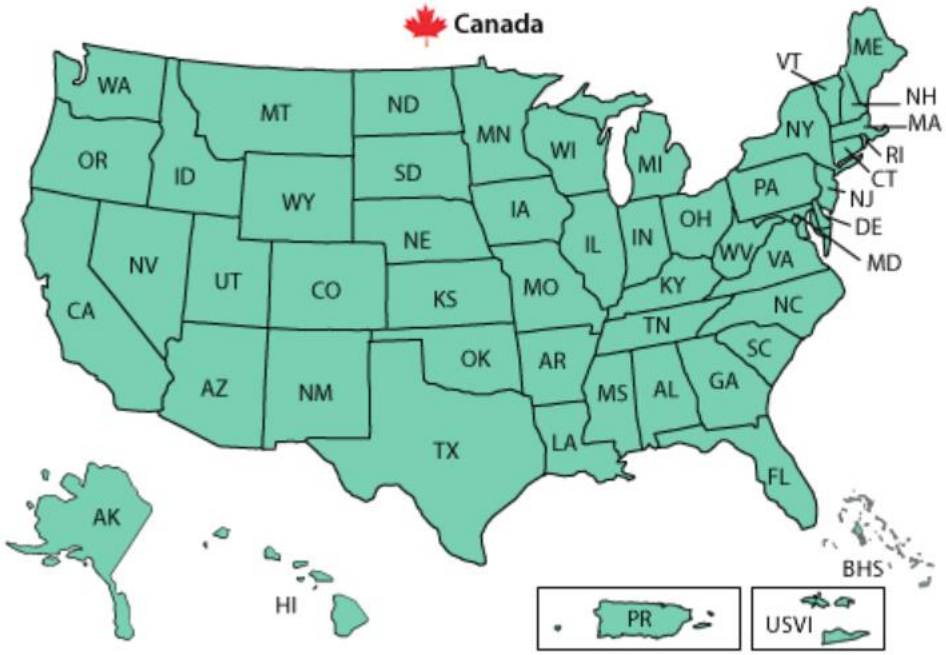
- **observations are immediately available to the public (maps, data analysis tools, Web API)**





Date	Time	Station Number	Station Name	Total Precip in. ▲	New Snow in. ❄ | 💧		Total Snow in. ❄ | 💧		State	County	View	Maps
2/15/2018	7:00 AM	AZ-PM-109	Sahuarita 2.6 WNW	1.79	NA	NA	NA	NA	AZ	Pima		Classic | New
2/15/2018	7:00 AM	AZ-PM-14	Tucson 1.5 NNE	1.60	NA	NA	NA	NA	AZ	Pima		Classic | New
2/15/2018	7:00 AM	AZ-PM-313	Sahuarita 3.0 WSW	1.60	NA	NA	NA	NA	AZ	Pima		Classic | New
2/15/2018	7:00 AM	AZ-PM-311	Green Valley 1.1 NW	1.43	NA	NA	NA	NA	AZ	Pima		Classic | New
2/15/2018	7:00 AM	AZ-PM-172	Green Valley 3.9 NE	1.41	NA	NA	NA	NA	AZ	Pima		Classic | New
2/15/2018	9:20 AM	AZ-PM-152	Tucson 9.7 ESE	1.40	NA	NA	NA	NA	AZ	Pima		Classic | New
2/15/2018	7:00 AM	AZ-PM-10	Tucson 8.4 ESE	1.39	NA	NA	NA	NA	AZ	Pima		Classic | New
2/15/2018	7:00 AM	AZ-PM-272	Green Valley 2.7 NNE	1.39	NA	NA	NA	NA	AZ	Pima		Classic | New
2/15/2018	7:00 AM	AZ-PM-269	Green Valley 1.2 W	1.38	NA	NA	NA	NA	AZ	Pima		Classic | New
2/15/2018	8:36 AM	AZ-PM-204	Vail 8.6 SSE	1.36	NA	NA	NA	NA	AZ	Pima		Classic | New

How big has it become today?



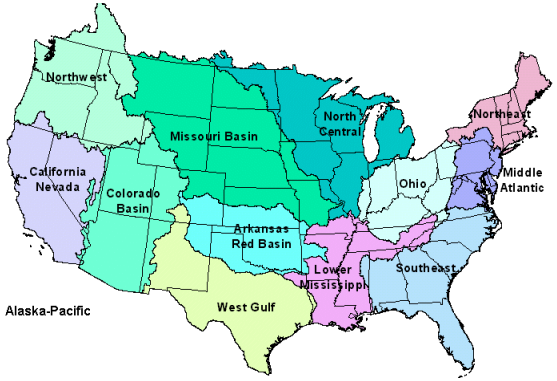
- 1998: foundation in Colorado
- 2010: nation wide network
- today: international network with over 20.000 active observers in the United States, Canada, Puerto Rico, the U.S. Virgin Islands and the Bahamas
- sponsored by several organizations. NOAA and NSF are the main sponsors

Who uses the data?

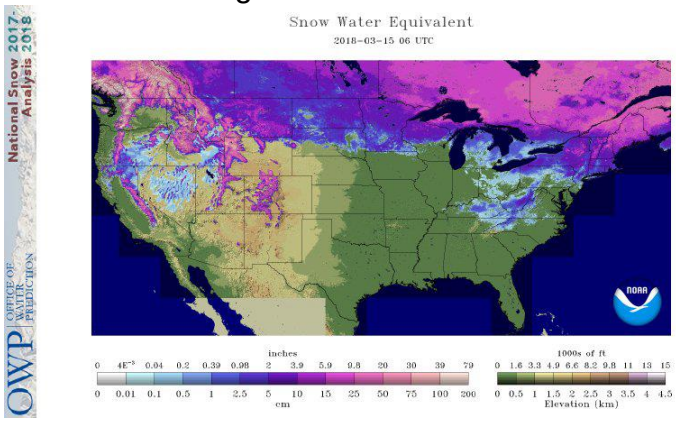
CoCoRaHS is used by a <u>wide variety</u> of organizations and individuals:

- **NWS, USDA**
- **scientists**
- **resource managers**
- **decision makers**
- **teachers/students**
- **community**

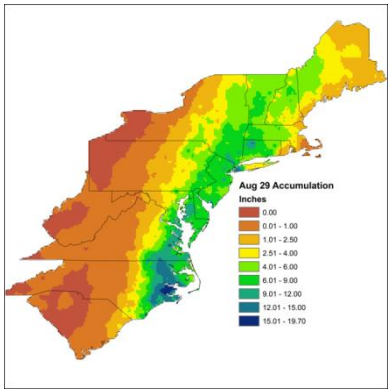
NOAA's River Forecast Center



NOHRSC – National Operational Hydrologic Remote Sensing Center



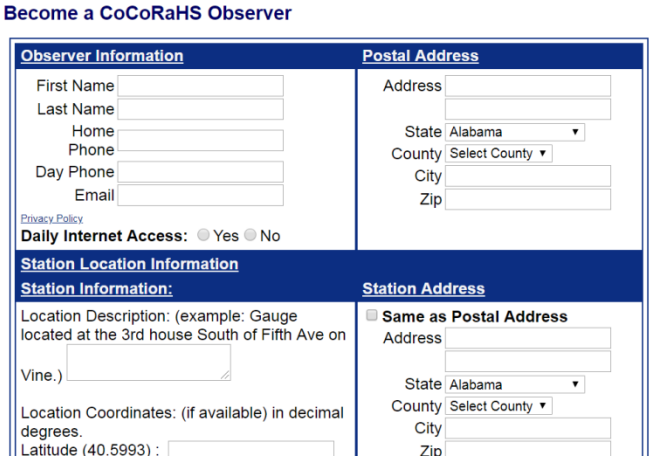
NOAA's National Hurricane Center



How to join CoCoRaHS?

Go to "Join CoCoRaHS" on the www.cocorahs.org web page and sign up!

*Only requirements are an **enthusiasm for watching and reporting weather** conditions and a **desire to learn** more about how weather can affect and impact our lives.*


Become a CoCoRaHS Observer

Observer Information

First Name
Last Name
Home Phone
Day Phone
Email
Privacy Policy
Daily Internet Access: Yes No

Postal Address

Address
State Alabama
County Select County
City
Zip

Station Location Information

Station Information:

Location Description: (example: Gauge located at the 3rd house South of Fifth Ave on Vine.)

Location Coordinates: (if available) in decimal degrees.
Latitude (40.5993) :

Station Address

Same as Postal Address
Address
State Alabama
County Select County
City
Zip

make sure to have a rain gauge, follow the training and … start measuring!!!


Thank you!
http://akclimate.org
uaf-climate@alaska.edu
acosta2@alaska.edu