CoCoRaHS Condition Monitoring

Supporting a National Network of Citizen Scientists, Drought Monitoring, & Decision Making

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A NOAA RISA Program

CISA
A NOAA RISA TEAM

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

RISA
Regional Integrated Sciences and Assessments

NIDIS
NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM

CoCoRaHS

Creating the CoCoRaHS Condition Monitoring Program

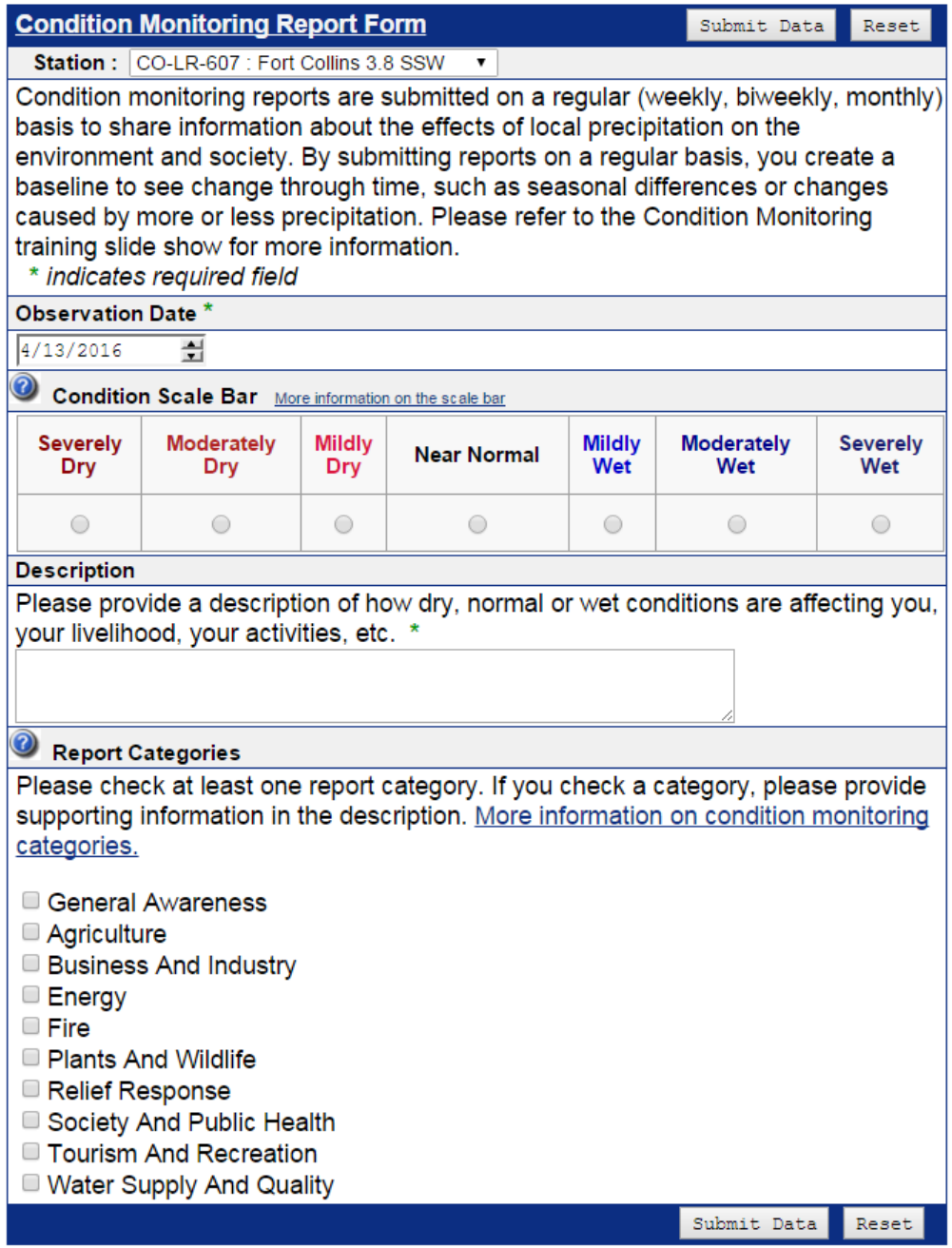
- Launched as a pilot project to
  - test a new way of collecting drought impacts information from citizen science volunteers
  - advance understanding of the linkages between drought and on-the-ground impacts

- The Community Collaborative Rain, Hail & Snow Network (CoCoRaHS)
  - Tapping into an existing network of volunteers and resources

Condition Monitoring vs. Drought Impacts Reporting

Photos courtesy of CoCoRaHS observer Christopher Lumpp

- Weekly observations help to:
  - Identify early signs of drought
  - Monitor deteriorating conditions
  - Determine when conditions begin to improve
  - Identify any lingering impacts



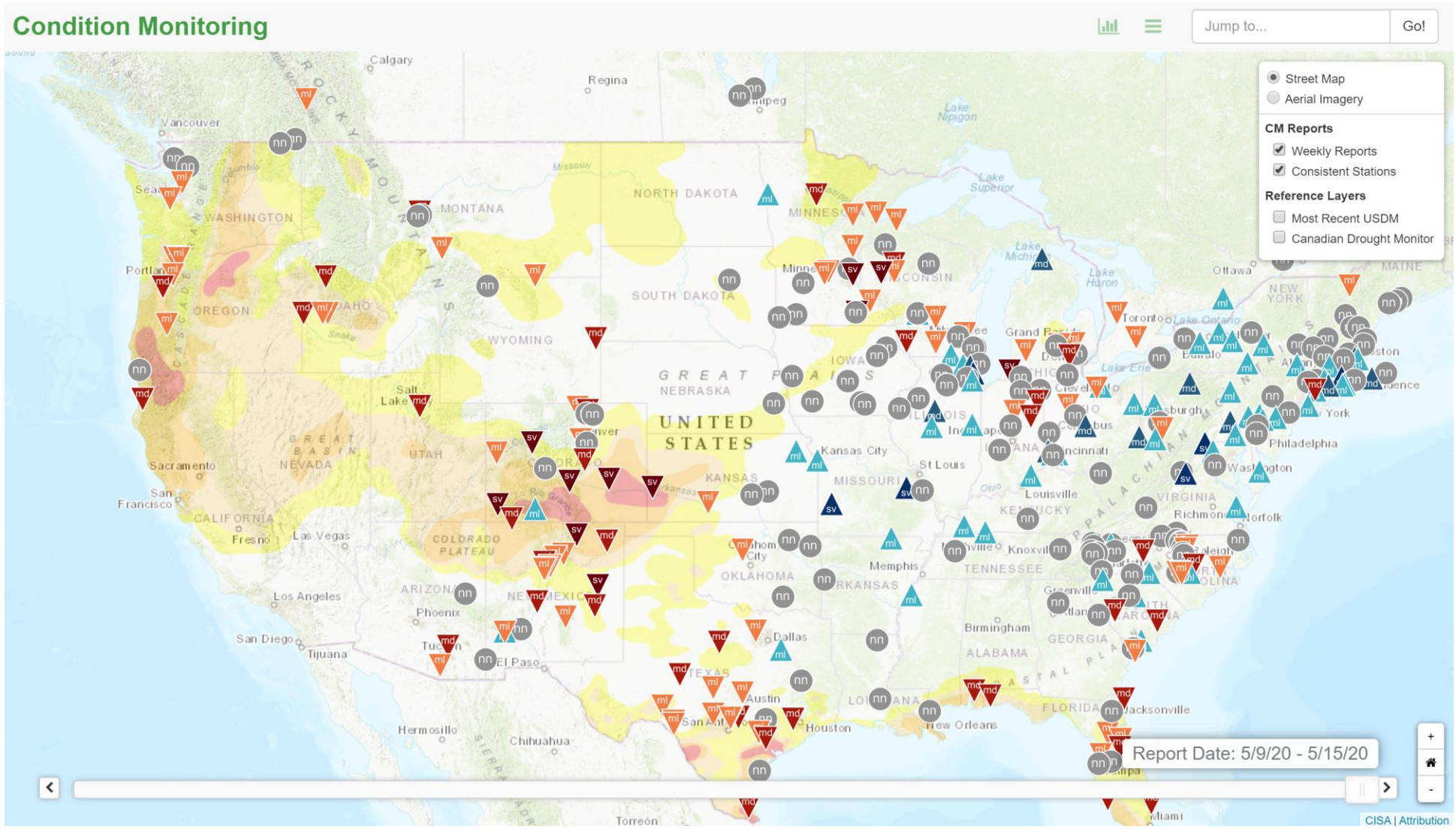
Condition Monitoring Report Form

How wet or dry is it, compared to a "normal" year?

Tell us a little more about what you're seeing in your local environment and around the community.

Use these categories to give a snapshot of the type of information you've included in your report.

Report Submissions – October 10, 2016 –May 15, 2020

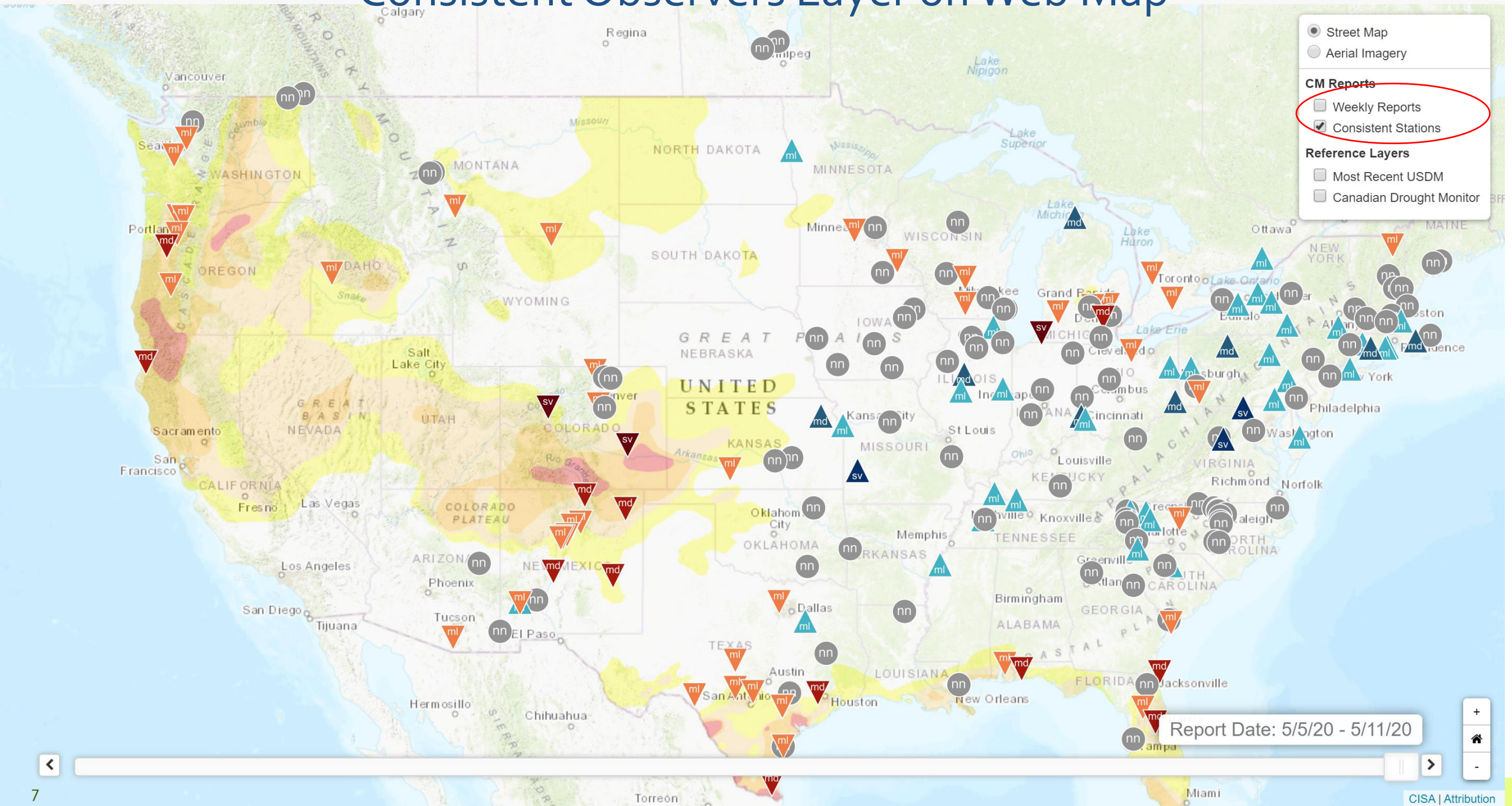


- 56,154 reports
- 4,781 observers
- All 50 states as well as
  - Bahamas
  - Canada
  - Puerto Rico
  - US Virgin Islands

Project Updates

- Web map improvements
- Outreach and communications
- Recognizing consistent observers
- Regionally-specific guidance
- Assessing new ways to use reports

Consistent Observers Layer on Web Map



Monthly Carolinas Newsletter & Consistent Observer Recognition

CISA
A NOAA RISA TEAM

February, 2020

CISA & CoCoRaHS Condition Monitoring Newsletter

This month's newsletter articles:

- CISA Condition Monitoring Research Updates
- SC Citizen Weather Observer Week
- Valentine's Day Climatology
- Southeast Region Monthly Climate Report: January
- Consistent Observer Spotlight: Aaron Martin
- January Consistent Observers

As always, please do not hesitate to reach out to us at cisa@sc.edu if you have any questions or comments.

Condition Monitoring Research Updates

Some of you may have already seen the new Regional Guidance documents for the **Southeast** and other areas in the contiguous United States. To provide guidance for all US CoCoRaHS observers, the CISA team is also developing Regional Guidance documents for Hawaii, Alaska, and Puerto Rico. These documents will help every observer who writes regular **Condition Monitoring reports** by providing guidance specific to each observer's geography and climate.

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Condition Monitoring Reporting Guide: Mountain West

Regional Background

Dry conditions are the norm in the Mountain West. Across the Great Plains, summers are intensely hot during the day, but cool at night due to the lack of humidity. In these same areas, winters can be expected to be quite cold. High elevations in the Rocky Mountains will be relatively cool year-round. Because of this cooler air, communities at higher altitudes will receive more precipitation on average than surrounding areas.

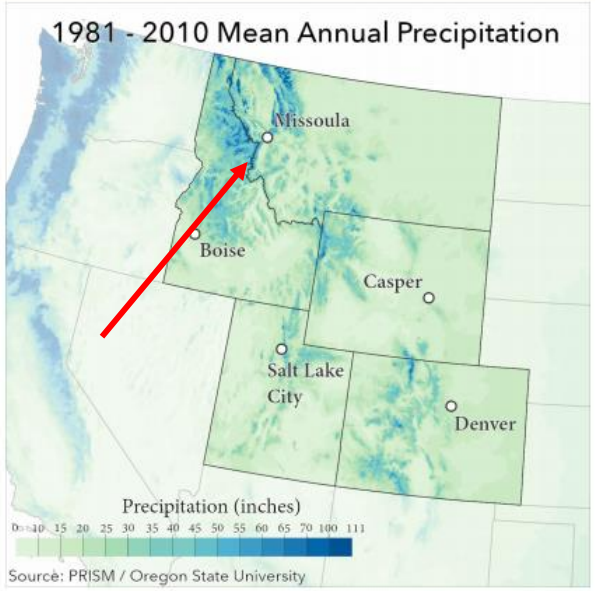
Reporting Reminders

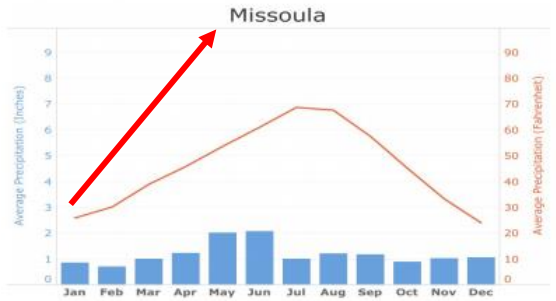
- Use "Severe" categories sparingly: overuse of these labels can make it hard for researchers to identify the hardest hit areas.
- Sometimes, minor events may still have major human impacts, or vice versa. Don't worry if your precipitation measurements seem to conflict with the severity reflected in your reports: differentiating between magnitude and human impact is valuable to researchers and decision makers!
- While heat and drought often go together, be careful to note that impacts of heat (e.g., wilting plants) are not necessarily indicative of drought conditions.
- Droughts don't end instantly. Rain after long droughts may mean *less dry* conditions, but not necessarily a reset to "Near Normal" conditions. Think *long term*.
- In addition to rain measurements, notes on a storm's duration, power outages, road closures, and other such impacts are helpful to include.

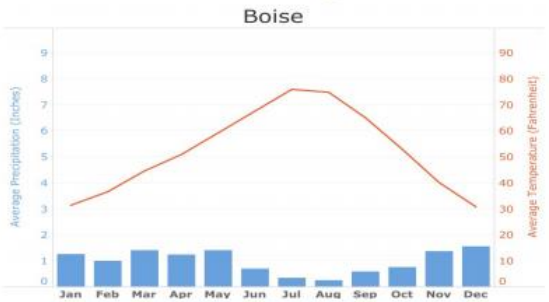
Average Monthly Climate Data

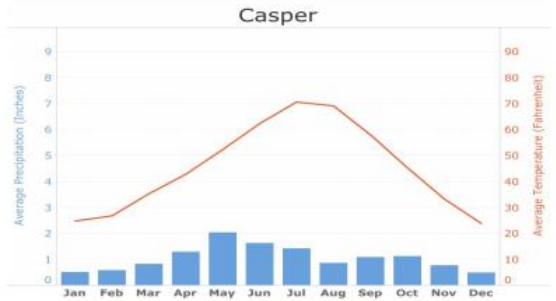
These sample climate charts represent normal monthly precipitation and temperature in your region. Pick a city near you and use the data below as a baseline for your "near normal" conditions. Explore these resources for climate data in other locations:

- National Drought Mitigation Center
- NOAA National Centers for Environmental Information
- NOAA Regional Climate Centers
- American Association of State Climatologists









Regional Guidance

What to Look For

The following tables provide examples of the types of conditions you might observe during different wet or dry periods. **These lists are designed as an aid.** The first table shows the condition monitoring scale bar categories and the types of conditions that correspond to those categories. The second table organizes different types of conditions and impacts by sectors and areas of interest. Be sure to note any other observations that you think may relate to dry or wet conditions.

SEVERELY WET	MODERATELY WET	MILDLY WET	NEAR NORMAL	MILDLY DRY	MODERATELY DRY	SEVERELY DRY
• **Use this category sparingly** • Wet conditions have persisted for several weeks • Major flooding	• Wet conditions have persisted for a few weeks, or there has been a major rainfall event • Standing water and minor flooding	• Frequent precipitation for several days • Standing water is common	• Observed conditions normal for this time of year • **This should be your default entry**	• Dry conditions have persisted for a few weeks	• Dry conditions have persisted for several weeks • Lakes and rivers are low • Water use restrictions start	• **Use this category sparingly** • Dy conditions have persisted for months • Water is scarce • State of Emergency

	WET	DRY
Agriculture	Mud or pooling water in fields ma… …ay planting or harvesting. Very wet or muddy conditions can re… …ls for potatoes and other root vegetables. Wet seasons ma… …e rangelands that have been overgra… …anchers.	Without enough water, crops may de… …op late, show stunted growth, or yield smaller harvests. Livestock may be … …or require supplemental water and feed, especially where the grow… …eland is stunted. In severe cases, farmers may pursue reserve land fo… …ency haying and grazing. Ranchers may redu… …herd sizes.
Business	Rainy and muddy conditions m… …y construction and infrastructure projects. Because many mount… …munities may depend on tourism revenue, years with high snowfa… …ly experience economic benefits from in… …tourism.	Communities that are dependent o… …lture or mountain tourism may suffer significant economic impacts. Land… …g and similar businesses are likely to lose revenue as urban areas are pr… …to reduce their water consumption.
Energy	Hydropower output may benef… …creased snowmelt. Solar energy facilities at lower elevations ma… …decreased production due to an increase… …cast days.	Utility bills are likely to increase, espe… …areas reliant on hydroelectric, coal, or nuclear plants. Dying tree li… …l heat are threats to electrical infrastructure and may increase th… …od of power outages. Increases in solar energy p… …n are possible.
Fire	U.S. Forest Service fire danger ra… …or near minimum. Fire crews may wait until conditions are wet t… …rescribed burns to have easier contro… …nditions.	Wildfires will be larger and more … …n, as reflected in increases in Fire Danger ratings from the US Forest Se… …efighting groups may release public statements or increase crew sizes. f… …on may begin earlier or last longer.
Plant & Wildlife	Heavier-than-usual snowfal… …elevations may push animal populations farther down the m… …to forage, potentially resulting in increased encounters with huma… …umn colors will likely occur later in the seaso… …wet years.	Scarcity of water and food may pu… …als to scavenge in residential areas. Deer and elk may be visibly les… …y. Changes in water level and temperature may result in fish kills. M… …ees will likely show signs of browning and drying if conditions are severe… …ge to native tree populations may also increase the risk fo… …eaks of spruce beetles.
Relief & Response	Officials may close roads in a… …on of flash floods, landslides, or volatile weather, especially at hi… …evations. Restrictions on water use and outdoor burning are likely to be lifted or relaxed as weather shifts from dry to wet. Emergency declarations or school closures for heavy snowfall are an indicator of wet conditions.	In the West, state and municipal re… …s on water use and burn bans are common, even when drought cond… …e not severe. Water use restrictions, particularly in the Colorado River Basin, will range from voluntary to mandatory as conditions worsen. Rangelands under the Conservation Reserve Program may be opened for emergency grazing.
Safety & Health	At high elevations, severe weather conditions can develop very quickly, making roads dangerous. Trails and high elevation roads may be closed if there is risk of heavy rain or snow.	Dry topsoil can be picked up by the wind, creating the potential for dust storms and low visibility. A sharp decline in air quality around urban areas is also likely. Where heat is also present, working conditions may become dangerous for outdoor workers. Drought can also harm community morale and mental health, especially in agricultural communities.

Beyond Drought: Assessing New Ways to Use Reports

LOCAL CONTEXT

EARLY WARNING

GROUND TRUTHING

LINGERING EFFECTS

- NCEI Storm Database
  - Event-specific reports
- Southeast Regional Climate Center
  - Quarterly reports
- NC and SC State Climate Offices
  - Weekly, monthly, seasonal, and annual reports

Thank You.

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