

Improving Understanding of Drought Impacts in Coastal Ecosystems through Citizen Science

Carolinas Integrated Sciences & Assessments

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RISA program activities

- Understand decision contexts
- Develop actionable knowledge
- Maintain diverse, flexible networks
- Innovate services that enhance the use of science in decision making

CISA's Core Focus Areas

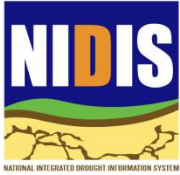
- Drought
- Climate and Watershed Modeling
- Coastal Management
- Public Health
- Adaptation

CISA Partners

- Southeast Regional Climate Center
- NC Sea Grant
- SC Sea Grant Consortium
- NC & SC State Climate Offices
- Federal, State, and Local Agencies
- Private Sector
- Non-Governmental Organizations

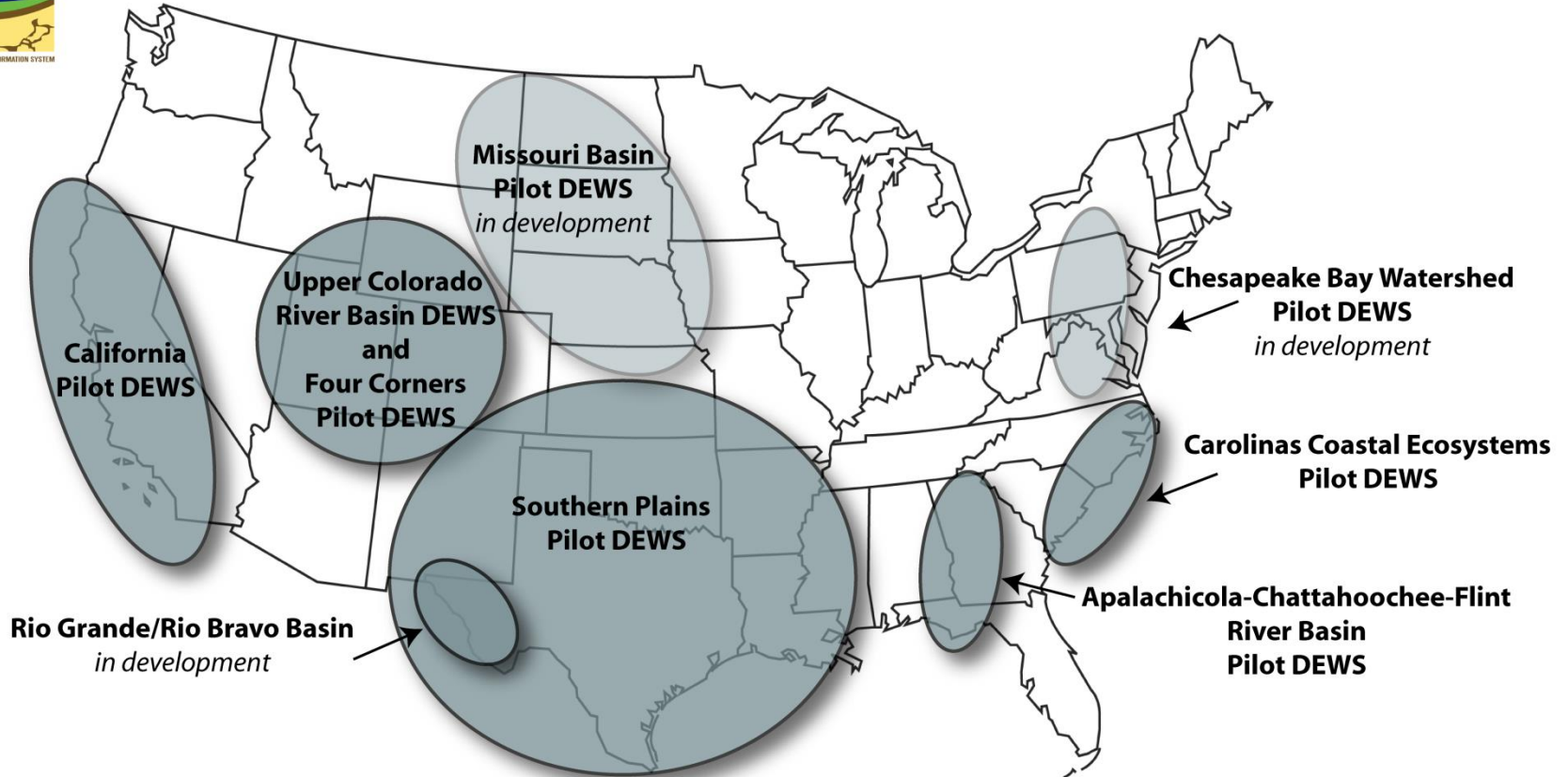
1 of 11 NOAA-funded Regional Integrated Sciences & Assessments (RISA) teams, CISA works to be a regional resource in North and South Carolina for a variety of stakeholders to incorporate climate information into water and coastal management, public health, and related decision making processes.

NIDIS Drought Early Warning Information System Programs



National Integrated Drought Information System (NIDIS)

Regions in the US where NIDIS is currently developing drought early warning information systems



Drought-Related Impacts & Concerns in Coastal Ecosystems



The Project



- * To further understanding of the usefulness of citizen science engagement as a means to increase drought impacts monitoring and reporting
- * Using existing tools developed by the Community Collaborative Rain, Hail & Snow network (CoCoRaHS)

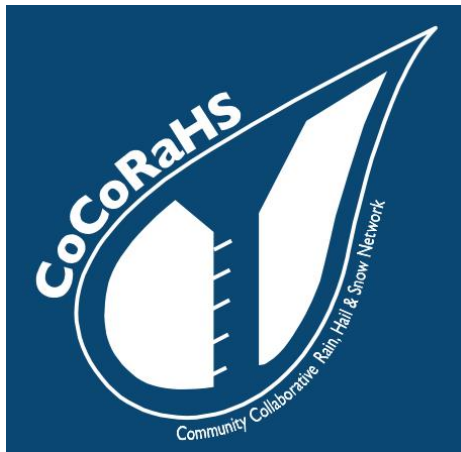
Weekly Condition Monitoring

Connecting weather and climate to the environment

- * CISA is recruiting CoCoRaHS volunteers to submit weekly condition monitoring reports in addition to their daily precipitation measurements.
- * Regular observations help to:
 - * Identify the early signs of drought
 - * Identify when conditions begin to improve
 - * Identify any lingering impacts

Participating Groups

- * Current CoCoRaHS Observers
- * Master Naturalists/Master Gardeners
- * 2014 – North Carolina Citizen Science Groups



Methods



- * In-person trainings with Master Naturalists
- * Webinars with current CoCoRaHS observers
- * Training and informational materials
- * Ongoing communications with participants
 - * Cuckoo for CoCoRaHS in the Carolinas blog
 - * <https://carolinascocorahs.blogspot.com/>
 - * Newsletter
 - * Thank You postcards
- * CISA Team CoCoRaHS Gauge

Weekly Condition Monitoring

Connecting weather and climate to the environment

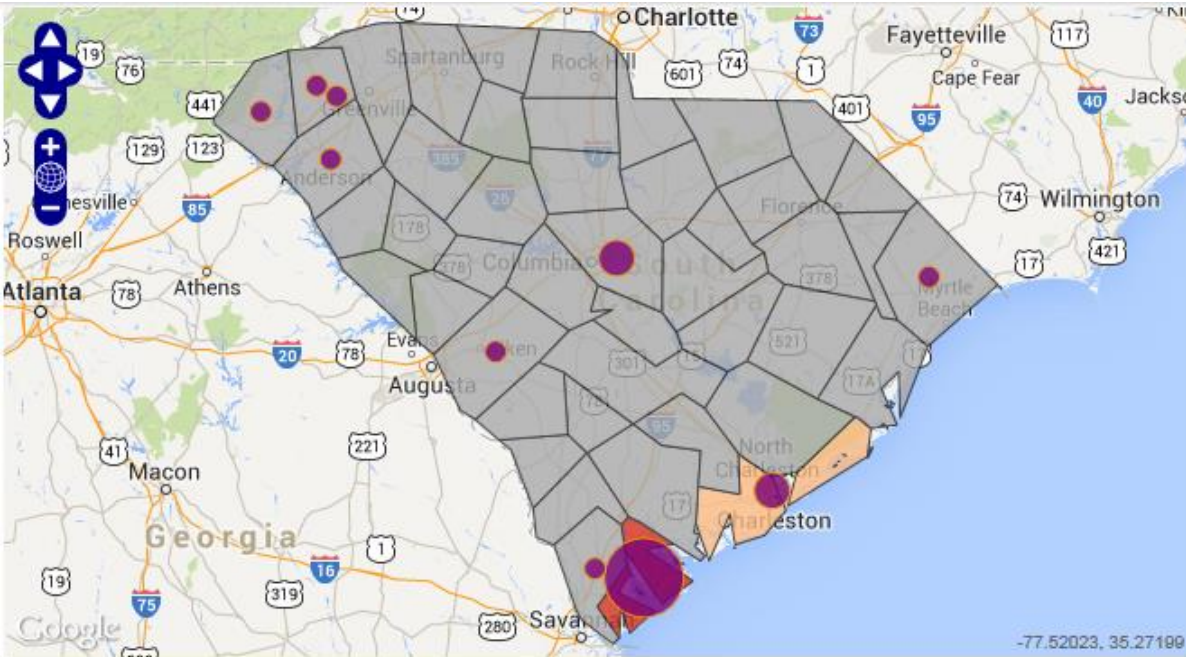
Everyone is a bit of an expert in one way or another.
We ask observers to “Tell Us What You Know”...



Sample Condition Monitoring Reports

- * November 23, 2013, Socastee County, SC
 - * Rain today, finally seeing an easing up of dry conditions. Some of the trees show stress. The leaves on the end of the branches are a different color than the leaves closer to the trunk. Crops are doing ok though.
- * December 4, 2013, Charleston County, SC
 - * Very dry, humidity is low for our area, creating sinus problems. Ground moisture is two to three inches dry. Ground water at shallow well depth seems to be plentiful. However, iron content seems to be higher. (NACl402PPM)
- * January 7, 2014, Beaufort County, SC
 - * Locally, we received 1.41" this past week. Conditions have improved significantly within the past 2-3 weeks. Lagoons are near normal levels, rain has slightly exceeded average levels for the past two months, and with the record rainfall earlier in 2013, things are looking much better. We are currently in a very cold period for a few days (coldest in 7 years), but chances for some more rain are good over the next week.

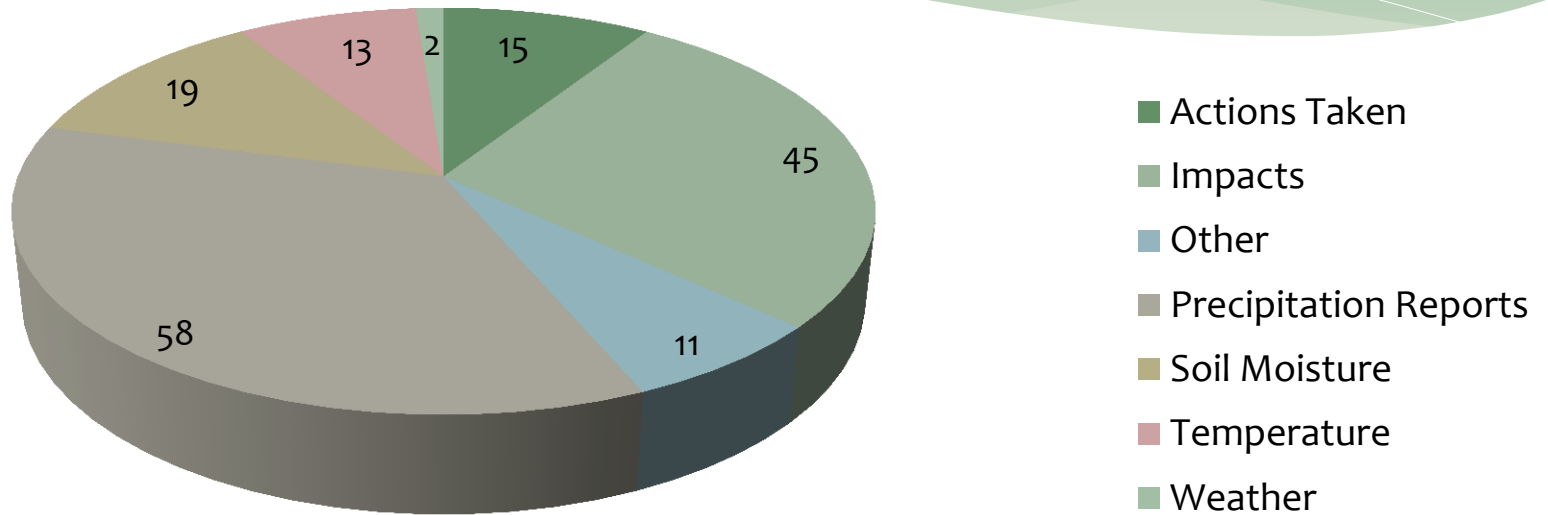
National Drought Impacts Reporter



- * SC CoCoRaHS Reports included in the National Drought Impacts Reporter for the last 6 months



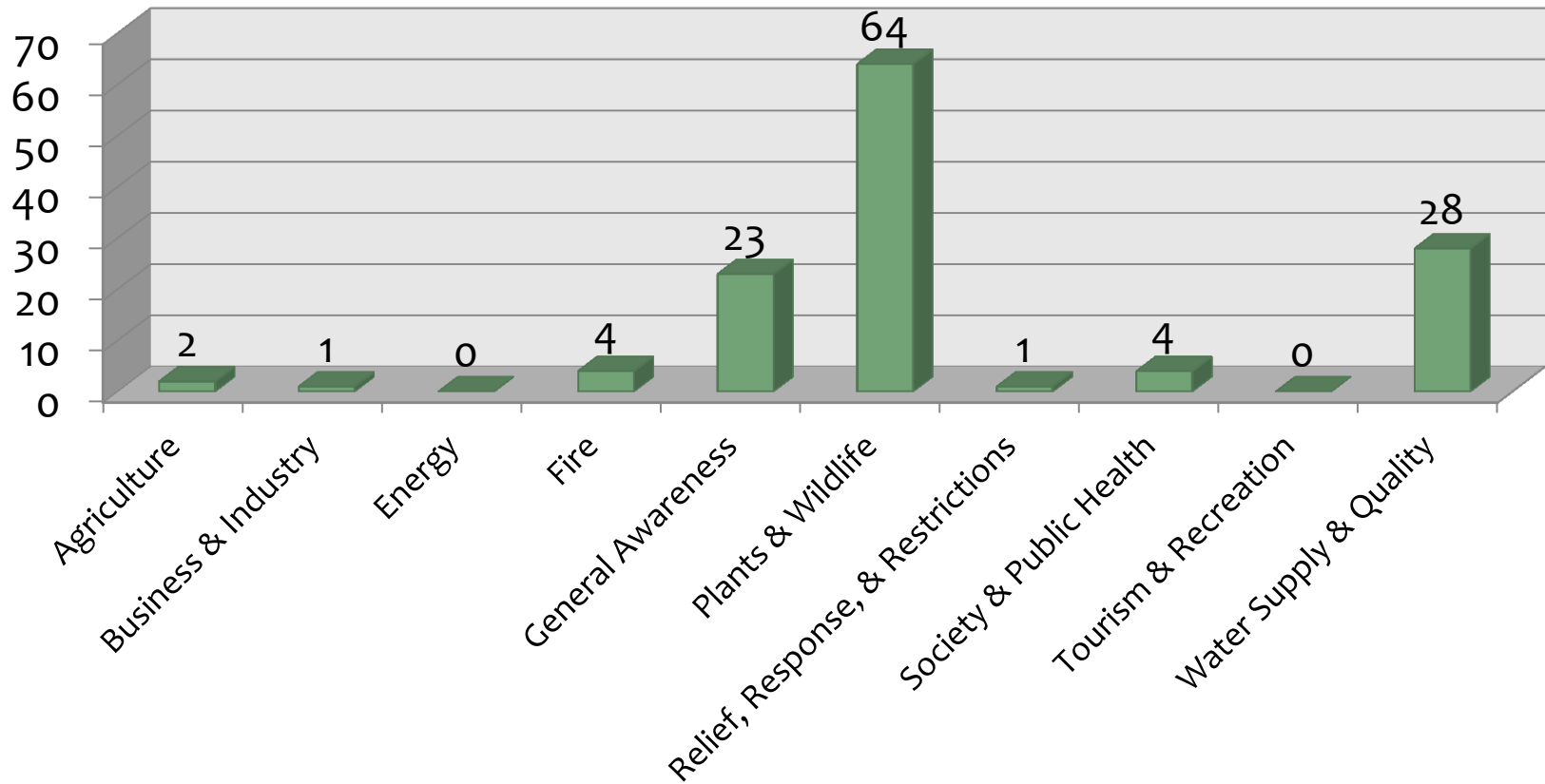
Analysis of Reports Received through January 13, 2014



“ The 2.35 inches of rain on Nov. 26 completely filled the pond behind my home. Before that rain the pond was 10" below full. The ground is now saturated. I have recorded 60 inches of rain for the year to date.”

~ Charleston County, December 4, 2013

Impact Reporting Categories



Citizen Science Evaluation Component



- * Are citizen scientists the best providers for this information?
- * Connecting the information with decision makers

Citizen Science Engagement Evaluation

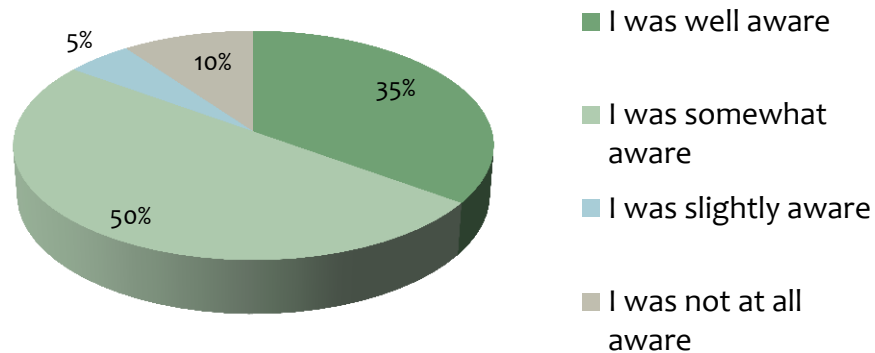
- * Why do certain groups or individuals participate in citizen science?
- * What differences, if any, are there in interpretation and documentation of environmental phenomenon?
- * What motivates participation among various groups, including those that have been historically underrepresented in citizen science efforts?

First Online Survey

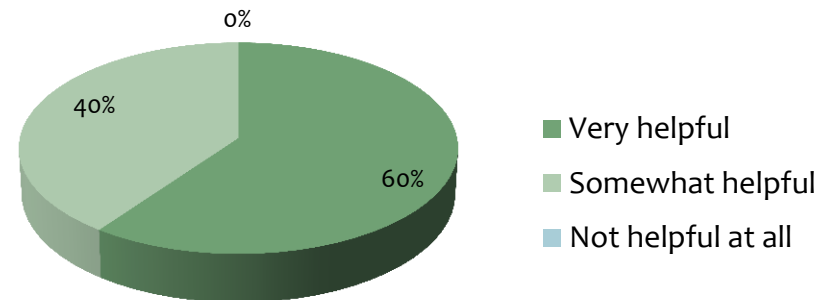
- * Survey Monkey online questionnaire
 - * January 17, 2014
 - * Sent to 44 participants
 - * 22 responses (50%)
- * Questions focused on how useful the information we are providing through trainings, the blog and newsletter has been in supporting their role as a CoCoRaHS observer.

Initial Survey Responses

Before attending CISA's in-person training or webinar to introduce the project, how aware would you say you were about the diversity and extent of the impacts precipitation has on the local environment and economy?

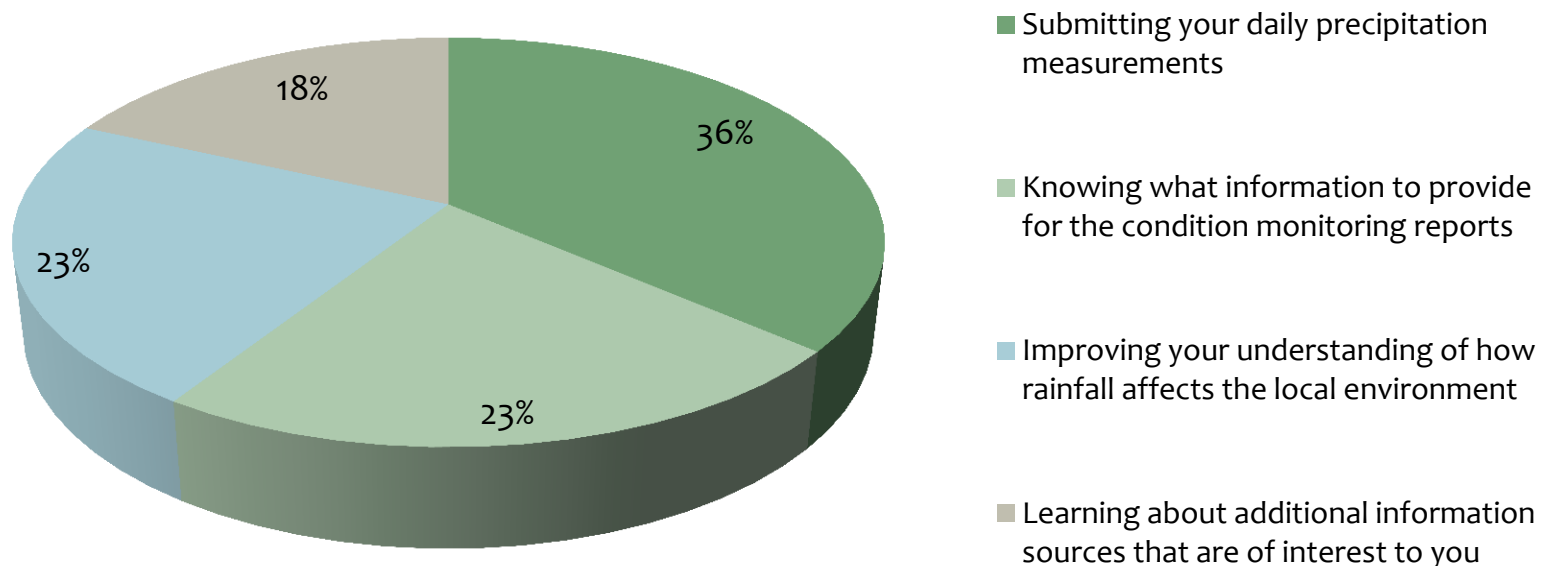


How helpful were the training and information materials you received in improving your understanding of the impacts of too little or too much rainfall?



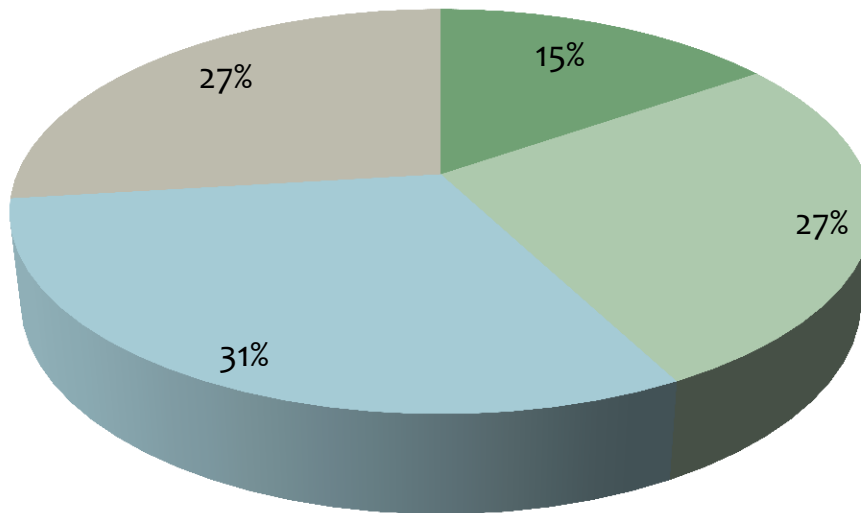
Initial Survey Responses

Is the information provided in the blog helpful for the following?



Initial Survey Results

Is the information provided in the newsletter helpful for the following?



■ Submitting your daily precipitation measurements

■ Knowing what information to provide for the condition monitoring reports

■ Improving your understanding of how rainfall affects the local environment

■ Learning about additional information sources that are of interest to you

Next Steps: Using citizen science to collect drought impacts information

- * How effective is CoCoRaHS-citizen science as a tool to expand and inform drought impact reporting and monitoring efforts?
- * How effective is CoCoRaHS-citizen science as a tool to improve understanding of drought impacts?
- * Is information collected by CoCoRaHS observers considered credible, legitimate information by decision makers and resource managers?

Thank You!

Questions or Comments?



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