

SC CASC SCIENCE NEEDS 2017

The South Central Climate Science Center has recently embarked on a research funding program that emphasizes work in the Rio Grande and Red River Basins in their entirety. This investment in climate science is not to the exclusion of other areas, but is a focal area for concentrated funding. In 2015 and 2016 a significant portion of our research budget went to projects in the Rio Grande Basin. In 2017, a similarly significant portion will be focused on the Red River Basin.

Within these basins priority will be given to projects in the following areas identified by our Stakeholder Advisory Committee (however; proposals on any weather- or climate-extreme-related projects focused on natural, cultural, or agricultural resources will be considered for funding):

1. Studies of the impacts of extreme weather and climate on hydrology, high priority ecosystems, and human systems.

Definitions:

- a. The identification of high priority ecosystems (including their component parts such as individual species) has been undertaken by the many natural and cultural resource management organizations who have partnered with the SC CSC (see table below) and others. Proposers are encouraged to work closely with these organizations in shaping a research project that will address their climate information needs.
- b. Human systems are defined as cultures, agriculture, economies, governance, transportation, education, planning, recreation, energy, and information systems.

2. Research to develop and/or evaluate tools and techniques to assist resource managers in decision making that incorporates consideration of weather and climate extremes.

Areas of Particular Interest:

- a. Decision support systems (usually models) that are intended to assist in decision making by providing relevant information.
- b. Demonstration and evaluation of techniques and targets for the restoration, enhanced adaptive capacity, or resilience of ecosystems or populations impacted by weather and climate extremes.
- c. Techniques for improved climate data production (including

downscaling), management, and compatibility across geographies, computing devices, models, scientific disciplines, and levels of expertise (i.e. scientist to general population).

3. **Projects to communicate or increase capacity for utilizing climate information among natural, cultural, and agricultural resource managers, Tribal nations and/or the general public.** This includes outreach, trainings, and/or education (formal and informal) regarding weather and climate extremes and their potential impacts in a manner that is easily understood by these audiences using appropriate media (including social media).
4. **Projects that collate and synthesize what is known about the impacts of drought or other extreme weather on ecosystems or other natural resources in all or a portion of the South Central U.S.** This should include research projects supported by the SC CSC.

Examples of potential projects:

These were identified through our interactions with stakeholders in the region. Other project ideas are welcome.

1. A literature review or synthesis of the state of the science in the Red River basin on the impacts of weather extremes or climate change on the ecology (or hydrology; or agriculture) of the system.
2. A synthesis of the impacts of weather extremes or climate on phenology and potential mismatches (e.g. bird migrations that miss prey insect emergences and result in increased bird mortality) and/or on potential species range shifts that result in new interspecies interactions or relationships (such as new prey species for a predator or species invasions of ecosystems).
3. A study of how drought impacts resource managers' conservation efforts in, perspectives of, or planning in the Red River basin.
4. A study of the impacts of sedimentation on ecology (or hydrology) of the Red River (and/or Lake Texoma).
5. A study of the impact of predicted warmer temperatures on the survival of a focal species (e.g. alligator gar, a focal species for the GCP LCC)