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Rio Grande | Bravo

CLIMATE IMPACTS & OUTLOOK

December 2017

Note

This issue of the Rio Grande/Bravo Climate Impacts & Outlook is abbreviated due to the holidays. We will resume in January with a full issue, and we wish everyone a safe and happy holiday.

FORECASTS

Temperature & Precipitation

- U.S. (normally issued on the third Thursday of the month): <http://www.cpc.noaa.gov/>
- MX (normally issued on the first of the month):
 - Temperature (<http://smn.cna.gob.mx/es/climatologia/pronostico-climatico/temperatura-form>)
 - Precipitation (<http://smn.cna.gob.mx/es/climatologia/pronostico-climatico/precipitacion-form>)

Drought

- North American Drought Monitor (issued December 8, 2017): <https://www.ncdc.noaa.gov/temp-and-precip/drought/nadm/maps>
- U.S. Seasonal Drought Outlook (normally issued mid-month): http://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php

Fire

- North American Seasonal Fire Assessment and Outlook (issued December 11, 2017): https://www.predictiveservices.nifc.gov/outlooks/NA_Outlook.pdf

El Niño-Southern Oscillation (ENSO)

- International Research Institute for Climate and Society (IRI) ENSO Forecast (normally issued mid-month): <https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/>
- ENSO Diagnostic Discussion (normally issued mid-month): http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.pdf

RESEARCH

INCREASING TEMPERATURES DECREASE FUTURE COLORADO RIVER FLOWS

Increases in temperature in the Upper Colorado River Basin (UCRB) have resulted in a decrease in average annual streamflow of about 7% for the Basin, or about 38% of the allotment to Arizona, according to a recent study published online in [Earth Interactions](#). This study expanded on previous work, and quantified the impact of temperature water-year flow, as well as warm and cool season flow, in UCRB. The authors found that the negative impacts of temperature were most pronounced during warm season months (April – September), suggesting that evaporation and snowmelt have a larger impact on reduced streamflows than a change in precipitation from snow to rain. Increased temperatures, combined with a shift to dry conditions due to natural climatic variability, will result in droughts of unprecedented severity. The results of this study, although specific to the Colorado River Basin, can still be relevant for the Rio Grande Basin, given that the rivers share similar characteristics and the headwaters of both originate in Colorado.

ENGAGING WITH WATER RESOURCE MANAGERS TO IMPROVE EFFICIENCY IN CONDUCTING CLIMATE IMPACTS STUDIES

A recent, management-guided study published in [Climate Services](#), uses a novel strategy for assessing hydrological and climatic conditions that impact future streamflows on the Upper Colorado River Basin (UCRB). The simple testing approach could reduce the cost and improve the efficiency of conducting climate change impacts studies on streamflows. Projections for warmer and possibly drier conditions in the coming century have raised concern over future flows in the basin, and how this change would impact municipal, industrial, and economic activities in the region. Despite the large and growing suite of studies evaluating the changes in Colorado River flow, planning for the impacts of climate change on the UCRB is still a significant challenge for water resource managers. The authors of this study, informed by engagement with local water resource managers, found that the relative severity of future flow projections within a given climate scenario can be estimated with simple metrics that characterize the input climate data and basin conditions, potentially improving the efficiency of impacts studies.

GROUNDWATER RECHARGE TO DECREASE IN THE SOUTHWEST U.S.

Groundwater recharge in the Southwest U.S. will decrease by 4-10%, as early as the year 2021 in some areas, according to new research published in [Geophysical Research Letters](#). The authors used multiple global climate models to understand how future precipitation and temperature will interact with the land surface, such as vegetation and soil type, to affect groundwater recharge. Looking at two time intervals, 2021-2050 and 2071-2100, they found that recharge will decrease in the southern portion of the western U.S., such as Arizona, New Mexico, and the High Plains of Texas—areas already strapped for water—and increase in the northern portion of the West.

TOOLS

WATER-QUALITY CHANGES IN THE NATION'S STREAMS AND RIVERS

A new [interactive map](#), produced by the USGS, displays trends in water chemistry and aquatic ecology for four time periods since 1972 for rivers and streams in the United States.

AGRICULTURAL CONSERVATION PLANNING FRAMEWORK (ACPF) TOOLBOX

Utilizing GIS software, the [toolbox](#), developed by the USDA Agricultural Research Service, is intended to help local farming communities better address soil and water conservation needs.

ANNOUNCEMENTS

98TH ANNUAL MEETING OF THE AMERICAN METEOROLOGICAL SOCIETY

The next meeting of the [American Meteorological Society](#) (AMS) is scheduled for January 7–11, 2018 in Austin, Texas. The meeting is “the world’s largest yearly gathering for the weather, water, and climate community.”

ESRI WATER CONFERENCE

The Esri Water Conference is for water utilities and water resources professionals to explore the power of GIS (Geographic Information Systems). The [Conference](#) takes place January 29 - February 1, 2018 in San Diego, California.

SUSTAINABLE WATER MANAGEMENT CONFERENCE

The Sustainable Water Management Conference brings together professionals in water sector organizations to discuss best practices for managing water resources, the costs and benefits of water conservation, and alternative water sources such as stormwater and reuse. The [Conference](#) takes place March 25-28, 2018 in Seattle, Washington.

NEW TRAINING MATERIALS ANNOUNCED FOR WINTER 2017-2018

[COMET MetEd](#) has released new training materials (44 in English; 11 in Spanish) for the winter 2017-2018. Examples of courses include severe storms, basic meteorology, and “What’s Coming in Hydrologic Impacts Studies?”.

CLIMAS CLIMATE AND HEALTH PROJECT SHOWCASE

Videos of the presentations (slides + audio) for the CLIMAS Climate & Health Colloquium (from November 3) are now available on the [CLIMAS YouTube Channel](#). Of particular relevance to the Rio Grande/Bravo region, is the presentation on [Heat, Health, Science, People - NIHHS Work in the El Paso Borderlands Region](#).

NEWS

- *Ranchers, environmental groups work to improve public lands*, November 29, 2017: <http://www.sanluisobispo.com/news/business/article187036918.html>
- *12 takeaways from new Water Foundation poll of 12 Western states*: <http://waterpolls.org/water-foundation-poll-2017/>
- *A ‘grand adventure in learning’ along the Rio Grande for students*, December 11, 2017: <http://nmpoliticalreport.com/782791/student-citizen-science-along-the-rio-grande-is-a-grand-adventure-in-learning-en/>