

PIMA COUNTY LOCAL DROUGHT IMPACT GROUP
(LDIG)
Wednesday, May 8, 2019
Pima County Public Works Building
RECAP

Attendance: Kathy Chavez (OSC), Erin Boyle (NWS), Mitch Basefsky (CAP), Marie Light (DEQ), Jeanette Montano (RWRD), Zack Richards (ADWR), Jeff Gickhorn (OSC), Ian Murray (OSC, Wally Wilson (Metro Water), Michael Crimmins (UA), Trevor McKellar (UA), Chris Magirl (USGS), Asia Philbin (Marana Water), Kris LaFleur (Tucson Water).

1. Welcome & Introductions
2. Review March 13 LDIG meeting (Kathy Chavez, OSC)
3. ADWR Updates (Zack Richards, ADWR)
 - a. Short-Term and Long Term Drought Status
 - i. No drought in much of the state but northeast corner of the state did not receive rain, stays in D0/D1 for the short term. Wildfire danger is increasing.
 - ii. For the long term, conditions have improved, but northeast and western Arizona remain in D3/D4. Drought recovery will need several years of good precipitation.
 - b. April 29 MTC Meeting
 - i. No indication of either way of a wet or dry monsoon.
 - ii. Navajo Nation reports wetter than average rainfall with flooding in Chinle.
 - iii. 1 MAF inflow into the Salt/Verde system.
 - iv. Record snowfall has increased state park visits.
 - c. May 9 ICG Meeting will cover drought status, weather outlook, Colorado River water supply update, drought contingency plan update, Salt and Verde watershed water supply, forest health and wildfire update, wildlife drought impact and Navajo Nation drought impacts
4. Soil Moisture Modeling and Drought Index Evaluation and Development (Mike Crimmins and Trevor McKellar, UA Dept. of Soil, Water and Environmental Science)
 - a. Arizona grazing lands are vulnerable to precipitation variability and the region has a seasonal-transitional climate in which timing, frequency and magnitude is significant.
 - b. Soil moisture is the ideal indicator of drought stress on vegetation and ecosystem health but it can't be measured reliably.
 - c. Drought indices are statistical representations of indicators of drought severity. Statistical indices transform data to standard normal distribution. SPI and SPEI are standardized precipitation indices and rank a standard deviation of 1, 2 or 3 ranks above or below the mean, called a z-score.
 - d. Index time windows aggregate data over multiple months to compare same occurrence on record.
 - e. Can compare 1-, 6- and 12-month but may signal different drought conditions, question of which one is correct. Alternately, can evaluate indices by modeling soil moisture and use it as an objective measure.
 - f. Study area of Las Cienegas has known soil types, model used to calculate soil moisture time series and Modeled Soil Moisture Index which can be compared to indices like SPI and SPEI.
 - g. The model is correlated with different time windows and depths. SPI correlates best at the 2-, 5- and 7-month index scale at 10cm, 30cm and 50cm respectively.
 - h. Precipitation takes time to travel to different depths, or soil memory. Standard indices also have memory. As example, a January precipitation event can be measured the next month at 10cm but the same event can be measured 5 or 7 months later at different depths. The index time scale represents different portions of the soil column profile.
 - i. Development of a webapp to distribute model and improve drought index use

- j. Discussion of soils, sandy soils more difficult to monitor, clay and loam more accurate. Soil data only goes back to 2010.
 - k. Outreach; mainly to Las Cienegas range managers. Not working with farms because the land is laser leveled and water application is dialed in. Can explore application to LID/GI and urban infrastructure.
5. Updates
- a. RWRD community outreach at Sahuarita school career fair, at the Continental school and at Raytheon environmental fair. RWRD initiating pilot program, Citizens Water Academy.
 - b. Metro Water reports double digit reductions in water demand from month to month and in comparison to last fiscal year. The drop is due to lower temperatures and reduced outdoor use.
 - c. USGS field office in central and northeast Arizona were busy with flooding and measuring sediment loads in the Grand Canyon area. USGS sampled 10 floods. Climate response network is operational nationwide and the long term drought monitoring includes 6 wells in Arizona.
 - d. NWS reports precipitation for the Water Year is +3" surplus and +1" surplus for the calendar year despite spring being below normal. A weak El Niño is expected to last into the summer and fall. Colorado River Basin Forecasting Center is projecting an inflow of 128% of average, the 3rd highest inflow in 23 years. For the next month, CRBFC will be giving weekly Tuesday updates.
 - e. CAP shared the Bureau of Reclamation 24-Month Study, there will be no shortage in 2020 and less than a 20% chance in 2021. Handout of CAP agricultural delivery.
 - f. OSC will address its precipitation monitoring element in its conservation lands monitoring this year, monitoring on different scales from plant level to watershed scale. Reports spring maximal wet/dry mapping on County conservation lands showed large volumes of water, considerable more flow in Cienega Creek since early 2000's. No flow in Davidson Canyon.
6. Adjournment and next meeting is July 10