

By Kyle Skoda<sup>1</sup>, Theresa Crimmins<sup>1,3</sup>, Martha Whitaker<sup>2</sup>

## INTRODUCTION

- Managing deep rooted vegetation in the semi-arid southwest for ecosystem services like leaf-out, flowering, and fruiting can be informed by the depth to groundwater measured at nearby wells
- Citizen Science data collected from the USA National Phenology Network (USA-NPN) Nature's Notebook used to construct high resolution calendar of life stage events. 2014 - 2024

## METHODS

• A simple linear regression analysis was used to identify a relationship between groundwater levels measure by USGS San Jose No. 9 well and phenophase timing of phreatophyte vegetation taken from multiple sites in urban Albuquerque, New Mexico



Daily mean depth to water level

Ground Measurements



Mean Annual GW levels above datum

Vegetation Response

• Rate of dry season drawdown and wet season recharge ranked and used to determine early-late leaf out trends

## between years

<sup>1</sup> School of Natural Resources and the Environment <sup>2</sup> Department of Hydrology & Atmospheric Sciences <sup>3</sup> USA National Phenology Network, School of Natural Resources and the Environment

## How does the leaf out of deep rooting phreatophyte, Populus deltoides, respond to variations in groundwater levels?









# Leaf-out timing of eastern cottonwood is inversely related to groundwater levels