

# Developing a Scientific- and Community-based Understanding of Water Resources from the Ground up in Northern Chile

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## Abstract

Shifts in the climate phases, populations, and economies of northern central Chile (23° - 30°S) have affected the supply and demand of water resources in this arid region. These shifts vary across the region, and express themselves differently from both scientific and human perspectives. At a scientific level, interpreting these changes and their effects on water resources is constrained by a sparse monitoring network and a limited understanding of hydrological processes. At a human level, the effects of changes in supply and demand are unique to each individual community. This dynamic requires research design to balance scientific objectives and community needs within the realities of limited data. We present our experiences in improving the scientific and community-based understanding of water resources in this data poor region. In the drought-plagued Elqui River watershed (30°S), we combine remote sensing data and statistical models to provide seasonal hydrological predictions using novel techniques. These results are disseminated through web-based tools and bulletins for use in water resource operations. In the San Pedro watershed (32°) we develop the first basic calculations of the water balance using station and gridded climatological data. These results are disseminated through web-based tools, maps, and community outreach.