Fiscal Year 2023 Climate Change Case Studies Selections

Columbia-Pacific Northwest Region

Geographic Climate Risk Assessment
Funding: $100,000

The Columbia-Pacific Northwest Water Management group will develop a geographic information system (GIS)-based risk assessment tool and will use the tool to conduct a climate risk assessment for the region. The tool will support semi-automated processes for measuring and mapping basin characteristics, weather projections, and climate-informed modeled hydrology. The Region-wide assessment will develop metrics to better understand changes basin-by-basin, such as the rising elevation for snow/rain transition zone, increased fire vulnerability, increased flooding events and susceptibility, and reduced local water supply. This project is expected to result in geospatial datasets and maps ranking watersheds according to different types of hydrologic risks, aiding in ongoing vulnerability assessments and planning efforts. This work is expected to be transferable to other regions.

Continued Development of Vulnerability Assessment Process
Funding: $200,000

The Columbia-Pacific Northwest Region Water Management group, in collaboration with the Yakima Field Office, Columbia Cascades Area Office, and partners from the Yakima Basin Integrated Plan, will continue development of the Vulnerability Assessment Process created as part of previous Yakima and Scoggins Climate Change Case Studies. The goal of the previous studies was to develop a process to assess vulnerabilities within current system constraints in the Yakima and Scoggins basins, supporting Reclamation's effort to operationalize climate change in decision making processes. This follow-on effort will further refine assessment assumptions through stakeholder collaboration and will test the Vulnerability Assessment Process with a proposed new storage projects and adaptation strategies. Through this project, the updated process will be applied in three basins, and will support the Yakima Basin Integrated Plan storage studies, the Big Wood River Basin Study, and the Walla Walla Basin Study, helping study proponents to better understand system vulnerabilities as a result of climate change, and find ways to increase resilience in proposed projects and adaptation strategies.

Missouri Basin/Arkansas-Rio Grande-Texas Gulf Regions

Trends and Climate Influences on Snowpack, Snowmelt, and Runoff near the Fryingpan River Basin, CO.

Funding: $183,000

The Eastern Colorado Area Office, in partnership with the U.S. Geological Survey (USGS), will perform trend analyses on snowpack accumulation and the timing of snowmelt and runoff in the Fryingpan River Basin using observations from an ensemble of gages, station instruments, and indices. Existing runoff forecasts rely on Snow Water Equivalent (SWE) data in a basin where streamflow is dominated by SWE. Inaccuracies in SWE estimates as well as changing correlations between snowpack and streamflow can substantially reduce the reliability of streamflow forecasts. The improved understanding of snowpack and streamflow trends and dynamics provided by this study will be key information needed to evaluate forecasting errors and ultimately improve runoff forecasts, and thus benefit many system users including municipalities, fisheries, recreation, irrigation, and hydropower amongst others.