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NASA Water Resources Program

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With increasing population pressure and water usage coupled with climate variability and change, water issues are being reported by numerous groups as the most critical environmental problems facing us in the 21st century. Competitive uses and the prevalence of river basins and aquifers that extend across boundaries engender political tensions between communities, stakeholders and countries. In addition to the numerous water availability issues, water quality related problems are seriously affecting human health and our environment. The potential crises and conflicts especially arise when water is competed among multiple uses. For example, urban areas, environmental and recreational uses, agriculture, and energy production compete for scarce resources, not only in the Western U.S. but throughout much of the U.S. and also in numerous parts of the world. Mitigating these conflicts and meeting water demands and needs requires using existing water resources more efficiently. The NASA Water Resources Program Element works to use NASA products and technology to address these critical water issues. The primary goal of the Water Resources is to facilitate application of NASA Earth science products as a routine use in integrated water resources management for the sustainable use of water. This also includes the extreme events of drought and floods and the adaptation to the impacts from climate change.

NASA satellite and Earth system observations of water and related data provide a huge volume of valuable data in both near-real-time and extended back nearly 50 years about the Earth's land surface conditions such as precipitation, snow, soil moisture, water levels, land cover type, vegetation type, and health. NASA Water Resources Program works closely to use NASA and Earth science data with other U.S. government agencies, universities, and non-profit and private sector organizations both domestically and internationally. The NASA Water Resources Program organizes its projects under five functional themes.

- 1) Streamflow and Flood Forecasting
- 2) Water Supply and Irrigation (Includes evapotranspiration)
- 3) Drought
- 4) Water Quality
- 5) Climate and Water Resources

To maximize this activity NASA Water Resources Program works closely with other government agencies (e.g., the National Oceanic and Atmospheric Administration (NOAA); the U.S. Department of Agriculture (USDA); the U.S. Geological Survey (USGS); the Environmental Protection Agency (EPA), USAID, the Air Force Weather Agency (AFWA)), universities, non-profit national and international organizations, and the private sector. The NASA Water Resources program currently is funding 21 active projects under the functional themes (<http://wmp.gsfc.nasa.gov> & <http://science.nasa.gov/earth-science/applied-sciences/>).