REYNOLDS CREEK LONG-TERM AGRICULTURAL RESEARCH

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The Reynolds Creek Experimental Watershed (RCEW) was established by the Agricultural Research Service (ARS) in 1960 to investigate rangeland hydrology issues in the northwestern USA. The site, which is administered by the Northwest Watershed Research Center (NWRC) in Boise, Idaho, is representative of much of the region, with a 1000 m elevation range and associated climate and vegetation range. Precipitation is mostly rain at low elevations and averages about 250 mm per y and is mostly snow at higher elevations averaging about 900 mm per y. Hydrometeorological and stream flow data collection started shortly after 1960 and the network has been expanded to include 8 weirs and 30 meteorological sites. In addition, detailed snow and soil water and temperature data are part of the network. Data have been available over the internet via ftp since 2000.These data have been used to document climate trends over the past 50 years and its impacts on stream flow and soil water dynamics with estimated effects on vegetation production. In addition, these data have been part of a major model development and testing program, and NWRC snow and soil models are in widespread use. The watershed has also been the site of a number of experimental studies investigating management effects, especially due to prescribed fire, on overland flow and erosion. Current emphasis is on linking hydrological expertise from the ARS with biogeochemical and ecological research based at Idaho State University and Boise State University. The RCEW has been designated a Critical Zone Observatory (National Science Foundation) and is related, along with ARS unit in Burns, Oregon (Range and Meadow Forage Management Research Unit), as part of a new Long Term Agricultural Research (LTAR) site. These are separate projects with overlapping objectives. The primary objectives of the CZO are to: (i) measure carbon and water fluxes in a variety of vegetation and climatic conditions, (this includes net flux using eddy covariance as well as individual components of the carbon balance such as forage production), (ii) quantify the spatial distribution of soil and vegetative carbon across the entire landscape using a combination of soil mapping and verified remote sensing, and (iii) simulate water and carbon fluxes and plant production across the landscape using models verified models. For the LTAR, data collection is similar with the emphasis on the long-term effects of vegetation change. Work will extend beyond the RCEW to relatively degraded, slightly drier location north of the RCEW.

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