Oak Ridge Reservation/Walker Branch Watershed, ORNL (ORR): Appalachians/Cumberland Plateau Domain

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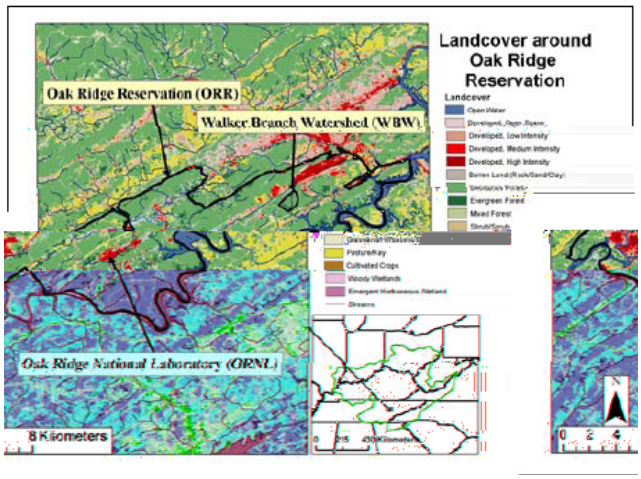
Location within Domain:



History: The Oak Ridge Reservation (ORR) was created in 1943, and the Walker Branch Watershed (WBW) was established for longterm watershed-scale ecological research within the Environmental Sciences Division of Oak Ridge National Laboratory (ORNL) in 1968. Much of the ORR was designated a DOE National Environmental Research Park (NERP) in 1989 (http://www.esd.ornl.gov/facilities/nerp/) and as one of the six units of the Southern Appalachian Biosphere Reserve. It is also a Tennessee Wildlife Management Area and part of the Southern Appalachian Man and the Biosphere (SAMAB) Cooperative.

Key Characteristics: Existing vegetation of the ORR (13,406 ha) consists of extensive areas of deciduous mixed oak forest, old fields and areas of planted pine. The ORR is in the Ridge and Valley Geophysical Province and is adjacent to a large TVA reservoir (Melton Hill lake). The climate is representative of the more southerly portion of domain 7 and the forest vegetation is typical of that throughout most of the domain. Comprehensive long-term data on climate, hydrology, biogeochemistry, and forest ecology is available for WBW (97 ha) as well as other ecological study sites and experiments on the ORR.

Existing Infrastructure: WBW, consisting of a pair of gauged watersheds, has ongoing monitoring of climate, hydrology, input-output chemical budgets, soil chemistry, and vegetation composition and biomass (http://walkerbranch.ornl.gov). WBW has been the site of many research studies (including tracer experiments) on the hydrology, biogeochemistry and ecology of forest and stream ecosystems. WBW is a site in the National Atmospheric Deposition Program NTN and AIRMoN networks (http://nadp.sws.uiuc.edu/) and the Ameriflux network for determining energy, water vapor, and CO2 exchange using eddy covariance (http://public.ornl.gov/ameriflux/). The ORR is also the site of a free-air CO2 enrichment (FACE) experiment (http://www.esd.ornl.gov/facilities/ORNL-FACE/) and old-field community climate and atmospheric CO2 manipulation experiment (http://warming.ornl.gov/OCCAM.html).

Facilities: The ORR is a restricted access, federally-owned land area with an extensive system of roads, ensuring the security of deployed instrumentation and experiments. Field research facilities for terrestrial and aquatic manipulative experiments complement long-term observational capabilities in Walker Branch Watershed and other locations on the ORR. ORNL (on the ORR and within 5 km of WBW) has modern laboratories and utilities including T1 fiber optics and wireless network distribution points. Limited housing is available at ORNL with extensive housing available within 10 km of ORR.