



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2004HI57B

Title: The Dynamic Effects of Native versus Non-Native Vegetation on the Ecohydrology of a Hawaiian Stream Valley

Project Type: Research

Focus Categories: Hydrology, Ecology, Models

Keywords: Ecohydrology

Start Date: 03/01/2004

End Date: 02/28/2005

Federal Funds: \$21,670

Non-Federal Matching Funds: \$29,556

Congressional District: First

Principal Investigator:

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Abstract

The Kohala Ecohydrology Project (KEP) is focused on the dynamic interplay between climate, soil moisture, and vegetation for native and non-native plant communities in Hawaii. Besides being fundamental to plant species' health and community organization, this is the critical link between climate and actual percolation of water to replenish Hawaiian watersheds. The results of this seminal research will have important implications for ecosystem management and for preservation of biodiversity throughout the islands. This proposal is focused on the hydrological side of the larger KEP effort. We will (1) design and construct soil moisture sensors, (2) set-up climatological stations to collect rainfall and ET data, and (3) begin modeling of the root zone soil moisture profile. This will be done for plots of native as well as non-native vegetation. The results will later be incorporated with physiological models, to be done by the project botanist, in order to create the desired plot-scale ecohydrological model of plant-soil water interactions.

One could then begin to answer questions as to how changes in vegetation affect the availability and distribution of water in our watersheds. Interestingly, the same model would also answer the inverse question.