THE HOWLAND INTEGRATED FOREST STUDY (HIFS) - ECOSYSTEM RESEARCH ON ATMOSPHERIC INFLUENCES GOVERNING FOREST FUNCTION

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The Howland Integrated Forest Study (HIFS) was developed in a low elevation, commercial spruce-fir forest in east-central Maine, USA at approximately 60 m elevation on level topography. The site was established in the 1980's to evaluate the effects of atmospherically derived N and S on this important forest type through intensive studies of biogeochemical cycling. Since 1990 the program has developed a suite of studies designed to evaluate the influence of both the chemical and physical climate on Maine forests, including an ecosystem manipulation component. The current program includes (a) long-term intensive biogeochemical cycling measurements of major ecosystem pools and fluxes of elements, (b) a landscape-scale gradient study that examines the relationship between modern gradients in climate and ecosystem function, (c) an ecosystem manipulation that experimentally warms the forest floor to determine the effects of warming on critical soil processes, and (d) a modelling component to describe atmosphere-canopy interactions. Emphasis is on soil processes controlling carbon and nutrient cycling that include decomposition, nitrification, soil respiration, and fine root biomass production.

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