



## PROGRAM ON THE ENVIRONMENT

UNIVERSITY *of* WASHINGTON

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### O, SOIL! WHAT O HORIZON THICKNESS CAN TELL US ABOUT SUMMER SOIL MOISTURE IN PACIFIC NORTHWEST FORESTS AMIDST GLOBAL WARMING

Session B, Breakout Room #: 7

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Rising global temperatures are rapidly impacting forests worldwide, and these

changes are outpacing the adaptability of these ecosystems. Forests play a critical role in providing essential ecological services such as carbon sequestration, watershed protection, wildlife habitats, and natural resource production. However, these vital services are at risk due to the profound impacts of climate change. This research project is dedicated to enhancing forest resilience in the Pacific Northwest by investigating methods to optimize soil moisture levels over the summer. The primary focus is to understand the interactions between soil moisture in volumetric water content percentage (VWC%) and soil O horizon thickness in cm in relation to stand density and altitude. During my internship with the Northwest Natural Resource Group (NNRG) working on their climate resiliency project, I collected soil moisture and O horizon thickness data at the Nisqually Community Forest (NCF) and Taylor Mountain. I ran linear regression models to analyze the interactions between soil moisture content and O horizon thickness, looking at patterns across different stand densities at the NCF and trees per acre (TPA) at Taylor Mountain. The analysis unveiled minimal correlation between soil moisture and O horizon thickness at both sites. However, the data suggest that stand density may influence soil moisture retention during the summer. While this study does not establish causation, it offers valuable insights into potential management strategies and warrants further experimental investigation to fully elucidate the causal systems within these forest dynamics amidst climate change.