Study to examine carbon balance in Western U.S.

by David Stauth & Beverly Law

CORVALLIS, Ore. â€“ Researchers at Oregon State University have received a three-year, $1.5 million grant from the North American Carbon Program to determine how climate and human activities affect the terrestrial â€œcarbon balanceâ€• in Oregon, Washington and California.

The research will examine areas covered by forests, crops, shrubs, woods and grass, and things that affect carbon sequestration or release, such as wildfire, logging and urbanization.

The work will also consider the effects of climate variation, the interaction between climate and disturbance across very different environments, and the terrestrial carbon uptake relative to human-caused carbon emissions from fossil fuel burning in each state.

â€œIn the Pacific Northwest, we expect that the summers will become dryer and the winters will have more rain,â€• said Beverly Law, a professor of forest science at OSU and principal investigator on this research. â€œIn this new study, we will examine different responses to climate, in areas that range from coastal forests to arid shrublands and woodlands in the Great Basin. We hope to learn how climate anomalies will affect net carbon uptake and water vapor exchange in the different regions.â€•

Law also directs three AmeriFlux network sites that use micrometeorological methods to measure the â€œbreathing of the biosphere,â€• where researchers measure net carbon dioxide, water vapor and energy exchange with the atmosphere. The new study, along with AmeriFlux data from the West Coast, will span ecosystem processes operating over hours to years, and mapping of terrestrial carbon sources and sinks for every kilometer in the region annually over the past three decades.

Scientists expect to find large contrasts in the three-state region, significant differences in the ability of forests to offset fossil emissions, and changes caused by specific events. Carbon sequestration by western Oregon forests, for instance, offsets about 50 percent of the stateâ€™s fossil fuel emissions in an average year, but this amount decreased to 30 percent in the year of the historic Biscuit Fire, when wildfire emissions of carbon were significantly higher.