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Science, Colegio de
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Online seminar

June 16th, 3pm CET (Paris Time)

LIA FORESTIA 2023

How vulnerable are the high mountain forests of Mexico to climate change ?

The rapid change in the chemical composition of the atmosphere in the last century, especially in the CO₂ concentration, has had important consequences on the energy balance of the planet, with direct impacts on the processes of the biosphere, lithosphere, and hydrosphere. Collectively, the imbalances in energy fluxes are the driving agent for what we know as climate change. Scientific literature show that the global climate is being increasingly more erratic, modifying the functionality of many ecosystems. Forests around the world are experiencing changes in their productivity, structure, composition, resistance, and resilience. Some high and middle elevation forests in Mexico growing between 3200 and 4000 m and represented by Pine (*Pinus hartwegii* Lindl.) and fir (*Abies religiosa* Kunth Schltdl. et Cham.) are also showing some impacts related to climate change. One important question to address is How vulnerable are these forests to climate change? The answer is not easy, however, combining results from some independent past studies we have made with students and colleagues, we can provide some insights about the vulnerability of these forests, considering the following axes: (1) Vulnerability related to soil depth and water and nutrients supply; available soil P reserves will become critical in these volcanic soils; (2) Vulnerability related to nutrient circulation; nutrient circulation and exports due to tree removal are important, (3) Vulnerability due to variations in water use efficiency; although plants could benefit from the CO₂ increases, saving water not necessarily results in higher tree growth; and (4) Vulnerability due to other external disturbances such as pests and forest fires; the time for tree growth recovery is getting longer as climate change progress. Discussing the vulnerability of the forests according to these four axes can give us some insights about the forest functioning and the effects of climate change. In the last part of this talk I will comment on the urgency of taking actions to protect forests from the threats of climate change, involving the communities who live in the forest and who are the owners of these lands.

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Dr. Armando Gómez Guerrero

ACTUAL POSITION:

Research Professor
Institution: Graduate program in Forest Science, at the Colegio de Postgraduados in Mexico.

EDUCATION

Bachelor's degree studies: Agronomist Engineer with a specialty in forestry. University of Michoacan, Mexico.

Master of Science Studies: Edaphology Center, at the Colegio de Postgraduados in Mexico.

Ph. D. Studies: Soil Science, at the department of Land, Air and Water Resources. University of California, Campus Davis.

PROFESSOR OF THE FOLLOWING GRADUATE COURSES

FOREST SOILS
BIOGEOCHEMISTRY OF FOREST ECOSYSTEMS

RESEARCH INTEREST:

Forest Soils, Forest biogeochemistry, Stable isotopes, Climate Change, Carbon Cycle and Dendrochronology.

Member of Editorial Boards:

Soil Science Society of America Journal
Journal of Soils and Sediments

PUBLICATIONS

He has published more than 70 scientific papers in different national and international journals.



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