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Opinion

The World's Forests in 3D

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OPINION

The scientists investigated at the structure of ancient forests on multiple continents and in various climate zones. To do so, they spent two years traveling to isolated primeval forest locations around the world, using 3D laser scanners to document the structure of the forests. A laser scanner uses a laser beam to collect the environment and create a 3D representation of the forest. This makes it possible to calculate crucial metrics to describe the structure. They discovered that the amount of precipitation and hence the availability of water in different ecosystems might explain a major part of the global variability of forest patterns.

They were able to build maps of the world's woods based on these discoveries and using climatic data to highlight the global fluctuation in structural complexity. The global maps depict the architecture that woods can form when they are not influenced by humans. Only 30% of the world's forests are still in their primeval state. “The long-term goal of our research is to learn more about how human influence and climate change affect the forest, its structure, and the processes that affect it," says the researcher. The structure of ancient woods serves as a useful reference point in this regard , according to the first author, The subject of how variations in precipitation patterns due to climate change affect forest structure is a special focus here.

Various interacting factors can explain the relevance of water in the formation of complex forest structures. The diversity of tree species is influenced by the availability of water. The coexistence of varied crown shapes and sizes of trees becomes more obvious the more tree species a forest contains. This means that in species-rich forests, the space available for tree crowns can frequently be used more efficiently, resulting in a more complex forest structure. Tropical rainforests have a more complicated system than temperate deciduous and coniferous forests, that are in turn more complex than boreal coniferous forests like those found in Scandinavia or subtropical forest savannahs in Africa.

Forests with great structural complexity can, nevertheless, be found in temperate zones, such as locations with considerable rainfall, such as the Pacific Northwest of the United States or Chile's coastal forests. This study's findings serve as a solid platform for future research. It will be feasible to accurately document the true complexity of forests in the future using satellite-based recordings of 3-D forest structure. This will help researchers better understand how forest management and climate change affect the world's forests.

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