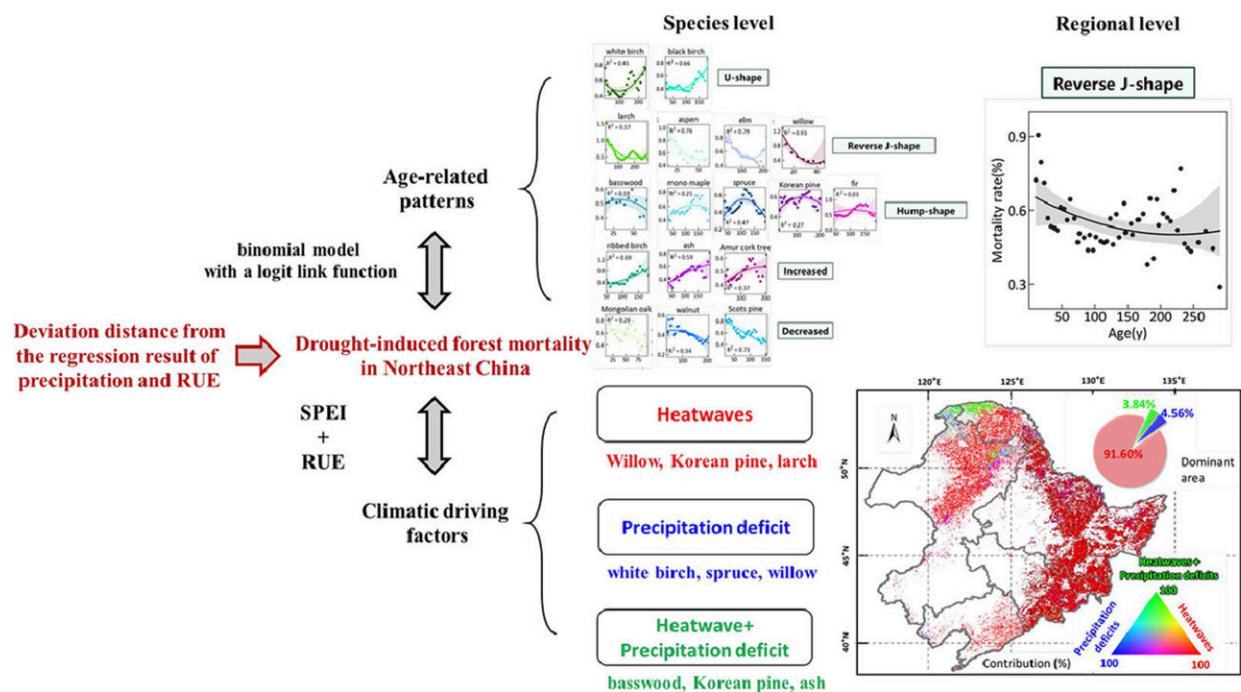


Climate extremes and forest age mediate drought-induced forest mortality in northeast China

April 6 2023, by Zhang Nannan



Graphical abstract. Credit: *Agricultural and Forest Meteorology* (2023). DOI: 10.1016/j.agrformet.2023.109360

Drought-induced forest mortality is associated with climatic factors (e.g., high-temperature, precipitation deficit) and forest age, but may vary due to differences among tree species. However, a large-scale survey of forest mortality cannot usually specify the causes of death of

different tree species.

Forests in Northeast China are of great importance to China's ecologically [sustainable development](#). It is necessary to quantify the effects of forest age and [climate change](#) on drought-induced forest mortality in Northeast China.

Ma Tianxiao, a researcher from the Institute of Applied Ecology of the Chinese Academy of Sciences, has recently completed a study to quantify drought-induced forest mortality in Northeast China at [tree species](#) and regional scales by statistically adjusting the relationship between Rainfall Use Efficiency (RUE) and precipitation, the relationship between drought-induced forest mortality and forest age, and the relationship between RUE and the drought index (more specifically, the Standardized Precipitation Evapotranspiration Index) in Northeast China.

Dr. Ma and his colleagues used data from 2000 to 2020 and found that the annual drought-induced forest mortality rate in Northeast China was 0.49% over the 20 years, with relatively high mortality rates occurring in young and [old-growth forests](#), and the mortality rate was relatively high in areas dominated by shade-tolerant tree species.

The researchers also found that abnormally high temperatures were the primary driver of tree mortality caused by climate extremes.

This study clarifies the effects of high-temperature and precipitation deficits on forest mortality, which is important for [quantitative analysis](#) and prediction of tree mortality dynamics under climate change scenarios.

This study was published in *Agricultural and Forest Meteorology*.

More information: Tianxiao Ma et al, Age-related patterns and climatic driving factors of drought-induced forest mortality in Northeast China, *Agricultural and Forest Meteorology* (2023). [DOI: 10.1016/j.agrformet.2023.109360](https://doi.org/10.1016/j.agrformet.2023.109360)

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