

An Integrated Theory on the Mechanisms of Vegetation Survival and Mortality During Drought

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The goal of this project is to develop and test a new and improved theory that describes the mortality and survival of vegetation during drought. Research will focus on understanding the impacts of climate change on terrestrial ecosystems with an emphasis on regional scale vegetation mortality during droughts. In particular, the research will attempt to address three significant knowledge gaps, including: 1) improved understanding and resolution of controversy over the specific mechanisms of vegetative mortality, 2) understanding the variability in vegetation mortality that, for unknown reasons, is correlated to plant size and 3) the role of moisture versus temperature as mortality drivers during drought. Research will use manipulative experiments to generate results and datasets that will be used to develop a new and improved mortality model that will be tested against independent field data. Vegetation will span a range from Arabidopsis to pine trees. Coordination with leading scientists in the molecular, ecological, and dynamic modeling fields will ensure maximum knowledge gain.

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