

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Great Plains Research: A Journal of Natural and  
Social Sciences

Great Plains Studies, Center for

---

Spring 2004

**Review of *Changing Precipitation Regimes and Terrestrial  
Ecosystems: A North American Perspective* Edited by Jake F.  
Weltzin and Guy R. McPherson**

Luke Marzen  
*Auburn University*

Follow this and additional works at: <https://digitalcommons.unl.edu/greatplainsresearch>



Part of the [Other International and Area Studies Commons](#)

---

Marzen, Luke, "Review of *Changing Precipitation Regimes and Terrestrial Ecosystems: A North American Perspective* Edited by Jake F. Weltzin and Guy R. McPherson" (2004). *Great Plains Research: A Journal of Natural and Social Sciences*. 702.

<https://digitalcommons.unl.edu/greatplainsresearch/702>

This Article is brought to you for free and open access by the Great Plains Studies, Center for at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Great Plains Research: A Journal of Natural and Social Sciences by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

**Changing Precipitation Regimes and Terrestrial Ecosystems: A North American Perspective.** Edited by Jake F. Weltzin and Guy R. McPherson. Tucson: University of Arizona Press, 2003. xi + 237 pp. Illustrations, maps, bibliography, index. \$50.00 cloth.

This volume, the result of a 1998 symposium organized by the Ecological Society of America, brings together a number of leading experts to answer important questions about global change, precipitation regimes, and terrestrial ecosystems in several biomes of temperate North America. It is becoming increasingly apparent that anthropogenic activities combined with many other factors are substantially affecting terrestrial ecosystems and vegetation response patterns at a variety of temporal and spatial scales. Concern over global changes is leading to an increasing number of investigations into the impacts human activity may be having on climate patterns and what the potential consequences may be for terrestrial vegetation communities. A major consideration being addressed involves increasing rates of atmospheric carbon dioxide and the direct and indirect implications of CO<sub>2</sub> increases on climate and vegetation patterns. There has been extensive investigation into the effects of increasing CO<sub>2</sub> levels on temperature regimes and associated impacts in the environment. Less representative in the published literature are studies focusing on the impacts of increased atmospheric carbon dioxide levels on seasonality and precipitation and how changes in these two components of climate may affect terrestrial ecosystems.

This volume is the first to provide a review of the potential effects of seasonality and precipitation regime changes on North American terrestrial ecosystems. Although providing much insight into many of the changes that seasonality and precipitation variations may have on individual plants and vegetation communities, the book focuses on the more limited effects of seasonality and changing precipitation regimes on primary producers.

Opening with discussions explaining how interactions among precipitation, soil type, and soil moisture act to control the spatial distribution and abundance of vegetation, the book proceeds with several chapters dedicated to ongoing investigations of the impacts of changing precipitation regimes on vegetation in North America. These studies use a variety of modeling and

empirical methods from different temporal and spatial scales to examine the impacts of global changes in precipitation regimes on vegetation structure and function in several ecosystems. A majority of the field studies are conducted in marginal areas of North America (deserts, grasslands, savannas) where vegetation will be more sensitive to varying amounts, timing, frequency, and duration of precipitation events. There is also a study assessing the effects of varied precipitation patterns in the eastern deciduous forests of the United States.

Anticipated changes revolve around increasing global temperatures and associated alterations in amount, seasonality, and intensity of precipitation. Field investigations use a variety of methods to manipulate water availability in a number of different scenarios and compare the changes to surrounding control areas. In general, the preliminary findings of these ongoing investigations indicate that the interactions among precipitation, soils, and plants currently play an essential role in the distribution of vegetation and that a more complete understanding of these complex relationships will help scientists and natural resource managers plan for future global change.

*Changing Precipitation Regimes* provides a thorough background on the interactions among precipitation, soils, and plants as well as examples of research methods being used in ongoing investigations exploring dynamic precipitation regimes. The book is ideal for scientists, resource managers, and students seeking to understand the impacts of changing precipitation and seasonality on climate and vegetation response patterns in North America. **Luke J. Marzen**, *Department of Geology and Geography, Auburn University.*