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Summary:

Usually, climatology is studied by physical geographers who are concerned with the dynamics of atmospheric phenomena. Ecologists look at the way in which the local weather system and climate affects the responses and distributions of plant and animal species. Given the increase in interest in multi-disciplinary topics such as global warming it makes sense to look at the way these topics interact: hence, ecological climatology. Although the subject matter is not new its arrangement in this way is and it leads to a very interesting range of ideas. To fully understand the way in which topics interact it is necessary to understand the basics of each discipline in turn. This is crucial in terms of ecological education. Current UK (and overseas) arguments surrounding the 'dilution' of key subjects like biology and geography are pertinent here. Sadly, the full rigours of ecological and environmental analysis are seldom appreciated and all too often fall into the media idea of 'greenwashing'. Until a fuller appreciation of the complexities of these topics are better understood we are left with few texts carrying out good integrative work.

In this text Bonan seeks to address these problems. As such we find a book divided, roughly, into three parts. The first is a good overview of the essential points of climatology (rather than meteorology which is mentioned only in passing). The opening chapter sets the scene by describing the range of interests in ecological climatology and its applications in ecology at a range of scales. Chapter two looks at global climate, energy budgets, seasonality and climate zones (an obvious link with ecology). Chapter three deals with variability in all its forms: floods and droughts are described alongside extreme climates and temporal variability. It's this change of scale/time etc. which makes this book appealing. Rather than ignore the trickier aspects it meets them head on and shows how we can understand the subject at whatever scale we like. We move on then to climate change - not just the human side (that gets a few pages at the end) but the natural changes from plate tectonics and orbital changes to freshwater incursions. The final four chapters in this 'part' examine applied aspects of climatology through studies of the water cycle, soils, surface energy and surface climates. The first two may well be familiar to many and deal with the basic concepts. The latter two are less obvious dealing with temperature changes and local variations due to geography, respectively. The next three chapters make up the biological side of the equation. Chapter nine takes a detailed biological view of leaves and plants examining the mechanisms by which gas etc. is moved from the

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plant to the atmosphere and vice versa. Chapter ten examines the impact of climate at the broader scales of community and ecosystem. Here we see how climate affects not just productivity but the carbon cycle and ecosystem modelling. So far we have looked at a range of spatial scales: chapter 11 looks at temporal variations with a series of examples of succession. This leaves part three which is the section where the two topics meet. Chapter 12 is a study of dynamics in terms of biogeophysics (the mechanics of leaves etc.), the carbon cycle (an increasingly important and complex topic) and the impact of climate on a range of models. The final two chapters show how climate and ecology are linked in agricultural systems and urban areas.

There is much to like in this text. It presents a complex area without overmuch recourse to technicalities (although it is aimed at the graduate market and this is not a beginner's book). The idea of carefully integrating the two areas to see how each can add to the understanding of the other is a good one and although there needs to be some simplifications this does nothing to detract from the advantages of dealing with the multi-disciplinary area. The text does lean towards North America for its examples but there is enough data elsewhere to get local versions (and as much of the text is exploratory the actual examples are less important than the concepts they illustrate). Overall, anyone interested in seeing how these topics interact should read this book.