

## BOOK REVIEW

Roger A. Pielke, Jr. and Roger Pielke, Sr.: 1997, *Hurricanes: Their Nature and Impacts on Society*, John Wiley and Sons, U.K.

In *Hurricanes: Their Nature and Impacts on Society*, Roger Pielke Sr. and Jr. attempt to frame the hurricane phenomenon in a wider societal context. They have compiled information on all aspects of hurricanes, and the tone and format of the book are intended to be widely accessible to a large variety of readers. This volume has some limited use as a reference on societal impacts for professional scientists; however, this is not the major target audience. The wider audience of emergency managers and interested citizens will find many aspects of the book intriguing, although some organizational difficulties and an uneven writing style lessen its potential impact. As implied by the title, historical and societal data presented are predominantly drawn from an American perspective.

In seeking to provide a context for discussion of hurricane impacts, questions of scientific understanding, societal preparedness, vulnerability, mitigation and response are addressed. The book opens with a stirring account of the physical destruction, aftermath, and immediate response to Hurricane Andrew as it made landfall in Dade County, Florida, in August 1992. One feels the force of the storm as experienced by a variety of emergency managers, media and citizens who lived through it. A review of ten other devastating storms to affect the U.S.A. expands the reader's awareness of the physical devastation that has resulted from hurricanes through recorded U.S. history. The first chapter concludes with a challenge to require better accountability for government-funded research, including more efficient transition of new scientific research into the forecast and management arenas.

The 'U.S. hurricane problem' is described in the second chapter. Vulnerability to hurricanes is assessed as a combination of *hurricane incidence* and *societal exposure*. Hurricane incidence is described in terms of storm intensity and landfall frequency, especially for intense hurricanes (the most damaging systems). Factors such as population at risk, property at risk and preparedness contribute to societal exposure; the trend toward increasing coastal populations for the U.S. Atlantic and Gulf coasts over the last few decades contributes to a society that is increasingly vulnerable to hurricanes, even for well-forecast storms. This point is returned to a number of times throughout the book. Surprisingly, Pielke and Pielke do not incorporate hurricane rainfall with wind intensity in their measure of hurricane



incidence. Rappaport (2000) has recently identified rain induced flooding *inland* as contributing to half of hurricane related deaths. In light of this new data, rain, as well as wind, might be included in a revised measure of hurricane exposure.

Chapters 3–5 directly address the physics and forecasting of hurricanes. Climatological and descriptive meteorological explanations of key aspects of hurricane genesis, intensity change and motion are presented in Chapter 3. Approaches to hurricane forecasting in the U.S. are covered in Chapter 4; this chapter is frustrating, due to the plethora of model acronyms used, since the models are only briefly (if ever) described. The first 4 subsections of Chapter 4 seem to be misplaced from Chapter 3. Physical hurricane impacts, such as storm surge, winds, waves and rainfall, are the scope of Chapter 5.

Societal responses to hurricane susceptibility are addressed in Chapter 6. The operational response to an immediate hurricane threat – real-time weather forecasting, forecast dissemination and emergency response – is reviewed. Detailed emergency planning (in advance of any immediate threat) and coordination across community, regional and state levels is advocated. Pre-planning for post-hurricane reconstruction should be designed to improve the community from its baseline (pre-hurricane) state.

The ‘societal response’ framework presented in Chapter 6 is revisited in Chapter 7, using the example of Hurricane Andrew (1992). The focus is on recording the operational forecast, community response and physical impacts (loss of life and property) due to the storm. Assessment of the success of the forecast, emergency management, and community response, and the communication between and within each of these ‘response system components’ provides insight into potential avenues for improvement of the real time response to an approaching hurricane. Response plans made in the immediate aftermath of Andrew do not generally appear to have been implemented. The authors note that the window of opportunity (of weeks to months) for a ‘recovering’ community to make what would otherwise be regarded as radical structural changes, appears to have passed for Andrew.

The last, brief chapter (Chapter 8, *Tropical Cyclone Fundamentals*) includes a list of ten important lessons from hurricanes and recommendations for improvements in the current U.S. response plan.

Some difficulties result from the breadth of material covered. The amount of information included in this text is voluminous and could have been pared down without loss. Quite a number of tables appear both in the text and in the (extensive) appendices at the end of the book. This redundancy could have been avoided by inclusion of lists of tables and figures (unfortunately missing from this volume). Appendix E (*Time Delineating Schedule*) is given little context and appears to be something of an orphan. Addition of a comprehensive glossary would benefit the diverse audience of such a text. Expansion of many figure captions, especially in the scientific background and forecasting chapters would also make these sections more accessible to the general reader.

Overall positive instructional and organizational factors in this book include: wide use of satellite imagery (a format that is increasingly familiar and widely used in the media); uncluttered line drawings; and the recommended additional reading for each chapter provided in Appendix A.

In summary, the team of Roger Pielke Sr. and Jr. have undertaken the daunting task of drawing together threads of information gleaned from the many hurricane-impacted communities. When successfully knit together, these threads may combine and lead to the development of a comprehensive statement, understanding and execution of the U.S. hurricane problem. This first effort is unevenly executed, yet the recognition of the broad scope of 'the hurricane problem' in U.S. society is valuable.

### Reference

Rappaport, E. N.: 2000, 'Loss of Life in the United States Associated with Recent Atlantic Tropical Cyclones', *Bull. Amer. Meteorol. Soc.* **81**, 2065–2074.

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