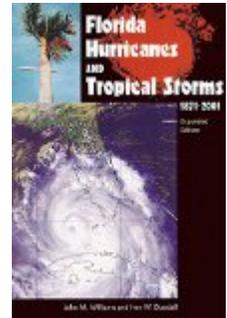


John M. Williams, Iver W. Duedall. *Florida Hurricanes and Tropical Storms, 1871-2001.* Expanded edition. Gainesville: University Press of Florida, 2002. xiii + 176 pp. \$14.95, paper, ISBN 978-0-8130-2494-3.



Reviewed by Robert H. Claxton

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An Interesting and Essential Reference Book

The two authors are associated with the Florida Institute of Technology in Melbourne. John M. Williams is a research affiliate, who previously served in the United States Army as a staff officer, specializing in satellite and tropical meteorology. He also worked at the National Hurricane Center in Coral Gables. Iver W. Duedall is professor of oceanography and environmental science, whose research interests include chemical oceanography, pollution processes, and ocean management.

The authors' purpose is to update their 1997 edition, providing a comprehensive chronological guide to hurricanes between 1871 and 2001 while standardizing 130 years of data as much as possible. Florida hurricanes are natural phenomena occurring between June and November, with the greatest number of occurrences in September. The text of the book provides the following data (if known) for each hurricane: date, name, area affected, peak sustained and gust winds, the size of the radius of the circular storm, the minimum barometric pressure in inches, the maximum surge in feet (bearing in mind that one cubic yard

of sea water weighs three quarters of a ton), and impact information (pp. 1-70). In addition to the high winds with flying debris, hurricanes spawn tornadoes and bring torrential rainfall. Table 4 succinctly summarizes these data for quick reference (pp. 88-100).

The methods of identifying and classifying hurricanes have changed over the years. Until 1950, the date and/or place was the only identification means. In the early 1950's, meteorologists began to use the World War II phonetic alphabet: "Able," "Baker," "Charlie," etc. along with the year. Starting in 1953, it was women's names in alphabetical order. In 1979, gender equality caught up with meteorologists and masculine names were alternated with the feminine. It is interesting how we personalize or humanize certain forces which we cannot control like "Mother Nature" and "Old Man Winter." We speak of a volcano's "fury," but no one has nicknamed earthquakes or droughts yet.

Similarly, the way in which we record the relative strength of a hurricane has undergone changes. At one point, a hurricane was simply

"Great" or "Severe." Later, it was "Minor," "Minimal," "Major," or "Extreme." Since 1975, public commentary has employed the Saffir/Simpson Scale, Categories One through Five, each category representing a combination of ranges of barometric pressure, wind velocity, surge height, and degree of damage. The public usually pays closest attention to wind measured in miles per hour. Category One hurricanes have winds between 74 and 95 mph; Category Two, 96-110; Three, 111-130; Four, 131-155; Five, more than 155. Fortunately for human activity, there were only six Category Five hurricanes in the Atlantic Basin in the twentieth century.

This volume draws readers' attention to record-setting Florida hurricanes. Allison had the earliest seasonal landfall (June 5, 1995). The latest was on November 30, 1925 in Tampa. Only two hurricanes hit the United States coast with Category 5 intensity: the Great Labor Day Hurricane (Florida, 1935) and Hurricane Camille (Mississippi, 1969). Andrew (1992) did the most damage of any hurricane in Florida and it was probably the most destructive natural disaster in United States history.

The frequency of hurricanes appears to run in cycles. Between 1871 and 1900, Florida experienced sixty-three hurricanes and tropical storms. During the next thirty years, 1901-1930, there were forty-two. Then, between 1931 and 1960, the total rose again, to fifty-one. The total fell dramatically to only twenty-five between 1961 and 1990. Most people were not expecting the onslaught of twenty between 1991 and 2000 alone. In fact, 1995-1999 had the most active consecutive hurricane seasons ever recorded in the Atlantic Basin. The 1991-2020 period could well resemble 1871-1900 or 1931-1960 as a time of greater frequency of hurricanes following thirty year "lulls."

Nearly half the population of Florida lives in coastal zones most likely to bear the brunt of hurricanes. The impact ranges from the inconvenient to the catastrophic. This book notes electricity out-

ages, transportation disruption, crop and farm animal losses, building damage, and ecological ruin (such as destruction of wildlife habitat or beach erosion). To that list could be added the costs of insurance claims and losses to the "hospitality industry."

This book is an excellent introduction to the topic for students in Florida schools. New arrivals from other states ought to have their own copies of this essential reference. It is a corrective to perceptions that any particular past or future hurricane is the "most destructive" or has the "greatest wind velocity." It is a model for future state or regional natural hazard handbooks.

Environmental historians examine the stage on which the actors in history play their roles and climate is certainly one of the important "props." [1] One recent writer, in fact, argues that a combination of El Nino-based climate factors and trade policies in the late nineteenth century resulted in holocausts which took at least thirty million lives and created "Third World" poverty. [2]

Natural hazards do not fit neatly into the boundaries of a selected political jurisdiction and no book has enough pages to cover "everything." Hurricane Eloise went as far north as Carrollton, Georgia, my residence, in September 1975 as did Opal in October 1995 but descriptions of those two stopped at the state line, although there are thirteen tracking charts after the text of the book. As Williams and Duedall point out, the Caribbean area in general experienced over 400 hurricanes that we know of after 1492. [3] The impact of hurricanes in Cuba is not discussed in this book but it has attracted the interest of two historians. Louis Perez found that 1840s hurricanes ruined the Cuban coffee industry which, in turn, caused greater expansion of sugar monoculture. Hurricane devastation also produced social tension. Slaves revolted more frequently, while all Cubans felt more antagonism toward the Spanish government which resisted relief through tariff reduc-

tions.[4] Sherry Johnson is studying the impact of the 1770s hurricanes on Cuba. She has found that storm damage made the Spanish government more dependent upon North American wheat and therefore more willing to support the North American struggle for independence from Britain. Environmental historians could study the long-term impact of Florida's hurricanes on that state's society and economy.

Perhaps the authors could have explored more of the emerging study of climatic teleconnections. They do mention the correlation between West African weather and Cape Verde hurricane formation (pp. 2 and 69). With plentiful rainfall in West Africa, the frequency and intensity of hurricanes increases. With drought, Saharan dust in the atmosphere cools the ocean surface which inhibits hurricane development. The authors also briefly mention El Nino on p. 60. Generally, a strong El Nino year in the Pacific corresponds to relatively few hurricanes in the Atlantic. Florida hurricanes are only a sampling of all Atlantic storms, but in eight of the decades between 1870 and 1969 (when the number of moderate or strong El Nino events was three or fewer), Florida hurricanes exceeded the decadal average of 6.9 in five decades. On the other hand, during the fifty-one years of Florida hurricanes under study, in only six cases did Florida hurricanes occur in the same year as a strong El Nino.[5]

I hope that a future edition will include a more precise history of prediction, detection, and tracking tools. I would also like to read about ways in which preparedness, such as mass media alerts, rapid evacuation, and improvements in building construction, has changed over the years.

Various eye-witness accounts of some of the hurricanes within the text transform the statistics into human terms. Black and white photographs also enhance the 1926-1998 impact record. All past damage estimates were "translated" into 1990 dollar equivalents, although higher amounts

reflect a higher degree of development more than stronger wind or poorer preparedness. One appendix offers detailed practical advice for people who live in hurricane prone places, including preparation before and cautions during the emergency. Another appendix consists of a convenient glossary of weather forecasting terms.

Color plates from Doppler radar and satellite photography document the 1992-2001 period. There is a list of relevant web sites. These may be updated by consulting the Natural Hazards Research and Applications Information Center of the University of Colorado, Boulder: <<http://www.colorado.edu/hazards>>. There are two indexes, one for named Florida hurricanes and another for subjects in general. The book concludes with a bibliography.

Notes

[1]. Robert H. Claxton, "Climate and History: From Speculation to Systematic Study," *Historian* 45:2 (1983), pp. 220-236.

[2]. Mike Davis, *Late Victorian Holocausts: El Nino Famines and the Making of the Third World* (London and New York: Verso, 2000).

[3]. They cite E. B. Garriott, *West Indian Hurricanes* (Washington, D.C.: U.S. Weather Bureau, 1990); also see, Luis Salavia, *Historia de los temporales de Puerto Rico y las Antillas, 1492-1970* (San Juan: Edil, 1972).

[4]. Luis A. Perez, Jr., *Hurricanes and the Transformation of Nineteenth Century Cuba* (Chapel Hill: University of North Carolina Press, 2001).

[5]. William H. Quinn, et al., "Historical Trends and Statistics of the Southern Oscillation, El Nino, and Indonesian Droughts," *Fisheries Bulletin* 76:3 (1978), pp. 663-678.

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