Air Apparent. How meteorologists learned to map, predict and dramatize weather.

By Mark Monmonier
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A nation with an entire cable television channel devoted to the weather must be considered obsessed. This concise little volume speaks to our national weather addiction and illustrates the development of the cartographic images we seek out daily in newspapers, television, and on the Internet.

In *Air Apparent*, Monmonier continues in the style of his earlier books *How to Lie with Maps* and *Maps in the News*. *Air Apparent* is an amply detailed yet readable account of weather, climate and meteorological cartography. Arranged nearly chronologically, each chapter explores a topic or aspect in the development of weather maps, as we know them today.

Though weather observations had long been made and recorded the idea for locating the observations on a map was slow in developing. Although we take for granted the rendering of meteorological symbols on a map, the first genuine weather map was probably not created until 1816. Through the first several chapters Monmonier traces the history of the science of meteorology and the conceptual combination of maps and weather observations. The associated development of weather symbols and cartographic conventions, such as isobars and wind direction arrows progressed over decades and centuries, finally merging in the 1800s. In addition to these cartographic innovations, the author includes discussions of some of meteorology's important controversies such as the discoveries surrounding the understanding of storm systems and the reluctant, at least in the US, adoption of the concept of warm fronts and cold fronts. Continuing from observations to rudimentary forecasting, the author emphasizes the importance of the telegraph for the timely transmission of weather observations required for predictions and the progression of weather forecasting from a primarily military, defense science to an agrarian, domestic science.

The early 20th century saw the first regularly published current weather charts of the Northern Hemisphere and the more regular inclusion of weather maps in newspapers. Thus, weather information began to reach a broader audience; first through print publications, then television, and now the Internet. As Monmonier notes, printed maps tend to be simple and clear while television and Internet maps have the added advantage of animated symbols. The author brings the book up to date with chapters on recent technological developments. High performance computing and mathematical refinements enable more sophisticated forecasting, with satellite meteorology and weather radar adding new dimensions to the suite of meteorological tools. Through these chapters, Monmonier manages to explain highly technical concepts and systems, such as Doppler radar and NEXRAD, in comprehensible terms that even the technologically challenged will understand. Another chapter addresses climate, including fundamentals such as precipitation, temperature extremes and climate classification as well as the modern concerns of global warming and ozone depletion.

The final chapter focuses on cartography. As Monmonier observes, meteorology is inherently cartographic, yet little attention is paid to the theory and practice of map-making. Likewise, historians of cartography have given meteorological maps little study. With this chapter the author, at least, begins to correct those oversights.

Air Apparent ends on a positive note. Weather forecasting is more accurate and prescient than ever, and advances in theory and technology should carry our understanding even further. Concerning the display and dissemination of these data, Monmonier envisions a future with interactive and animated charts and maps responding to short-term and long-term conditions and expectations.

Since the weather is a topic of common interest, *Air Apparent* is sure to appeal to a general audience while providing a manageable overview of the subject in only 309 pages. Additionally, Monmonier has an unusual talent for writing books that both casual readers and experts will appreciate. His thorough research is evident in the annotated endnotes. The index is well constructed and complete and an appendix includes a series of URLs. His choice of illustrations complements the text and the black and white maps, in particular, nicely highlight many salient points. A chapter on air-quality, dispersion and hazards is rather oddly placed but the information is pertinent to the overall topic and the author has clearly given it much thought, having already published a book on the subject of disasters.

In all, *Air Apparent* is just what we have come to expect

from Mark Monmonier, a well-researched and readable account of an area of cartography that has not previously been well examined. This book will be an excellent addition to most libraries and the collections of both cartographers and meteorologists.

Barrington Atlas of the Greek and Roman World.

Richard J.A. Talbert, ed. Princeton, NJ: Princeton University Press, 2000. xxviii pages, 102 plates, [ ] pages. ISBN 0-691-03169-X; $325.00. Two-volume *Map-by-Map Directory* (ISBN 0-691-04962-9) $150.00

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The publication of the *Barrington Atlas of the Greek and Roman World* is an event that has been awaited by classical scholars for over one hundred years. Only one other publication has attempted to comprehensively display the physical landscape of the Greek and Roman world, *Atlas of Ancient Geography Biblical and Classical* by William Smith published between 1872 and 1874.[1] In 1980, members of the American Philological Association (APA) realized that projects then underway were not going to successfully meet the need for basic reference maps supporting classical studies and that older materials were becoming increasingly less accessible. In 1988, after little further forward movement by the APA, Richard Talbert was asked to take on the task of providing the focus and driving force to successfully compile and complete the publication of a reference atlas. Talbert set five goals for the project: to involve the cartography firm and publisher early in development process; to develop plans that could be completed in the foreseeable future at a reasonable cost; to create a single, bound atlas ample in size but not unwieldy; to comprehensively cover depictions of ancient landscape configurations; and to create maps that could be used by readers not necessarily well versed in map interpretation. Donnelly Cartographic Services (later Geosystems and MapQuest.com, Inc.) and the Princeton University Press were involved early to establish the format and style of the atlas. In 1990 a specimen map prepared by Donnelly Cartographic Services, which became the "Byzantium" map in the atlas, received the "American Congress on Surveying and Mapping Certificate of Merit, 1990 Map Design Competition, Best of Category: Series Maps and Charts." Setting a goal of foreseeable completion in combination the goals for comprehensiveness and a single-volume accessible atlas drove design and coverage. Maps were prepared that follow a common format with a unifying symbol style, method of elevation depiction, and a minimum of different scales.

More than 200 individuals were involved in the preparation of the atlas, preparing base maps, compiling data, reviewing maps and directory entries, and editing. Base maps were developed from standard United States Defense Mapping Agency/National Imagery and Mapping Agency products, Joint Operations Graphics, Tactical Pilotage Charts, Operational Navigation Charts and Global Navigation Charts. Compilers were specialists already well acquainted with the regions that they were asked to cover; compilers were to use existing sources, not to become involved in new, extensive research efforts. Each of the plates includes attribution to its compilers, as none of the work in the atlas is anonymous or done by the collective, and the date that it was submitted to the project by the compiler. The maps were anonymously reviewed by classical scholars who were not otherwise connected with the project. Funding for the project, more than $4.5 million, came from a number of different sources including the Barrington Foundation, the American Philological Association, the National Endowment for the Humanities, and the University of North Carolina, Chapel Hill.

"The purpose of each map is to offer an up-to-date presentation of the significant physical and cultural features of the area covered, within the relevant time frame, exploiting all available historical, epigraphic, and archaeological data." The *Barrington* could well be the *Times World Atlas* for the Greek and Roman world. The volume includes 99 topographic maps on 175 pages plus three additional overview "sketches." There is an extensive amount of introductory material that places the atlas into an intellectual context, describes how the atlas was prepared, and assists the user in making the best use of the maps. A 44-page gazetteer section containing 24,249 feature names found on the maps, including multiple names for some features, concludes the volume.

The maps are at four different scales, 1:5,000,000, 1:1,000,000, 1:500,000 and 1:150,000. Most of the maps are double-page plates. Relief is shown by gradient tints and, depending on scale, shading or contours. The smallest scale is used for the seven regional "overview maps" that open the map portion of the atlas. The areas covered by the overview maps are large regions, some of which had contact with the Greeks and Romans but were not strictly part of the Greek or Roman worlds: Mare Internum, Fortunatae Insulae, Hibernia-Scandinavia, Asia Occidentalis, Arabia-Azania, India with Sri Lanka, Asia Orientalis. Six geographical sections follow: Europa Septentrionalis, Hispania-