

## STATISTICAL INFERENCE AND PREDICTION IN CLIMATOLOGY: A BAYESIAN APPROACH

by **Edward S. Epstein**

This monograph is intended to introduce some concepts of statistical inference and prediction that are not generally treated in the traditional college course in statistics, and have not seen their way into the technical literature generally available to the practicing climatologist. Even today, where Bayesian methods are presented the practical aspects of their application are seldom emphasized. Using examples drawn from climatology and meteorology covering probabilistic processes ranging from Bernoulli to normal to autoregression, methods for quantifying beliefs as concise probability statements are described, and the implications of new data on beliefs and of beliefs on predictions are developed.

### ABOUT THE AUTHOR

Edward S. Epstein, a fellow of both the American Meteorological Society and the American Association for the Advancement of Science, is presently principal scientist of the Climate Analysis Center in the National Weather Service's National Meteorological Center. Among the positions he has previously held at the National Oceanic and Atmospheric Administration (NOAA) are those of associate administrator for environmental monitoring and prediction (1973-78), director of the National Climate Program Office (1978-81), and chief of the National Environmental, Data and Information Service's Climate and Earth Science Laboratory (1981-83). Before joining NOAA he was professor of meteorology and chairman of the Department of Atmospheric and Oceanic Science at the University of Michigan.

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