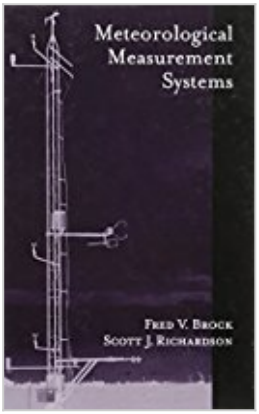

Meteorological Measurement Systems

By Fred V. Brock, Scott J. Richardson

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This book treats instrumentation used in meteorological surface systems, both on the synoptic scale and the mesoscale, and the instrumentation used in upper air soundings. The text includes material on first- and second-order differential equations as applied to instrument dynamic performance, and required solutions are developed. Sensor physics are emphasized in order to explain how sensors work and to explore the strengths and weaknesses of each design type. The book is organized according to sensor type and function (temperature, humidity, and wind sensors, for example), though several unifying themes are developed for each sensor. Functional diagrams are used to portray sensors as a set of logical functions, and static sensitivity is derived from a sensor's transfer equation, focusing attention on sensor physics and on ways in which particular designs might be improved. Sensor performance specifications are explored, helping to compare various instruments and to tell users what to expect as a reasonable level of performance. Finally, the text examines the critical area of environmental exposure of instruments. In a well-designed, properly installed, and well-maintained meteorological measurement system, exposure problems are usually the largest source of error, making this chapter one of the most useful sections of the book.

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Editorial Review

Review

"This book focuses on three main areas: physical principles of meteorological sensors, development of static and dynamic performance concepts, and analysis of the concepts of meteorological measurement systems. . .The content of this work was used in conjunction with one junior-level and one first-year graduate level college course in instrumentation."--*Bulletin of the American Meteorological Society*

About the Author
Fred V. Brock and Scott J. Richardson are both at University of Oklahoma.

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