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FEDERAL METEOROLOGICAL HANDBOOK NO. 11

DOPPLER RADAR METEOROLOGICAL OBSERVATIONS

PART C
WSR-88D PRODUCTS
AND ALGORITHMS

FCM-H11C-2006

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PREFACE

The Federal Coordinator for Meteorological Services and Supporting Research has the responsibility to maintain and publish Federal Meteorological Handbooks. This series of documents provides standards and procedures to facilitate the efficient collection, sharing, and use of meteorological information by agencies of the federal government and private industry.

The original Federal Meteorological Handbook, Number 11 (FMH-11), DOPPLER RADAR METEOROLOGICAL OBSERVATIONS, was prepared and published under the auspices of the Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM) at the request of the Next Generation Weather Radar (NEXRAD) Program Council and in coordination with the federal agencies that are represented on the Interdepartmental Committee for Meteorological Services and Supporting Research. The purpose of FMH-11 is to standardize, insofar as practical, the operation of the Weather Surveillance Radar-1988, Doppler (WSR-88D) systems and the procedures used by personnel of the Departments of Commerce, Defense, and Transportation. By approving publication of this handbook, those agencies have agreed to operate their WSR-88D systems accordingly. Some flexibility under certain meteorological, siting, or mission circumstances is permitted to enhance the quality and utility of some WSR-88D products.

The revision process is dependent on the evolution of WSR-88D subsystems software and products. Part A has been revised to ensure it provides users current operations guidance. Parts B, C, and D have been revised in a separate effort principally through the guidance of the Radar Operations Center (ROC). All revisions are coordinated among the NEXRAD triagencies (Department of Commerce (DoC), Department of Defense (DoD), and Department of Transportation (DoT)); thus, they possess the same authority as the initial edition of FMH-11.

The agencies shall review the documents at least annually. The goal is to review and update (as necessary) the handbooks as part of every WSR-88D software build release. Suggestions for modifications and additions shall be forwarded through the appropriate channels in each agency for consideration and issuance, if appropriate. Changes will be issued as a total update of each chapter of the handbook. The handbook updates will be issued in electronic format and made available on the OFCM home page (http://www.ofcm.gov). Readers can make copies of the handbook without a request for approval from the OFCM. A summary of changes made during updates will be annotated in the preface of each part.

Each major part of the FMH-11 is designed to stand alone, except where cross references are made to avoid voluminous redundancy. In all, FMH-11 has four parts:

Part A	-	System Concepts, Responsibilities, and Procedures (April 2006)
Part B	-	Doppler Radar Theory and Meteorology (December 2005)
Part C	-	WSR-88D Products and Algorithms (April 2006)
Part D	-	WSR-88D Systems Description and Operational Applications (February 2006)

Part C provides discussions of products, accompanied by color photographs, to include a description of each product, and its operational characteristics, potential usage, and operational considerations. It then describes how meteorological and hydrometeorological algorithms are used to process the Doppler radar signal and the resulting base data to produce the WSR-88D products. Discussions of the algorithms include their functional description, the operational default parameters, and operational considerations as well as the source of the individual meteorological algorithms. Signal processing algorithms are also briefly described. Finally, discussions of the WSR-88D operational modes and volume coverage patterns are provided.

Summary of Changes:
This version of Part C replaces the original document, published in February 1991. This version incorporates the many system changes made since February 1991, updates the document as of Radar Product Generator Build 6 (released in September 2004), and adds information based on operational experience gained during the first decade of WSR-88D operational use and case studies.

Samuel P. Williamson
Federal Coordinator for Meteorological
Services and Supporting Research

FEDERAL METEOROLOGICAL HANDBOOK NO. 11
DOPPLER RADAR METEOROLOGICAL OBSERVATIONS
PART C
WSR-88D PRODUCTS AND ALGORITHMS

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