

U.S. DEPARTMENT OF COMMERCE/ National Oceanic and Atmospheric Administration

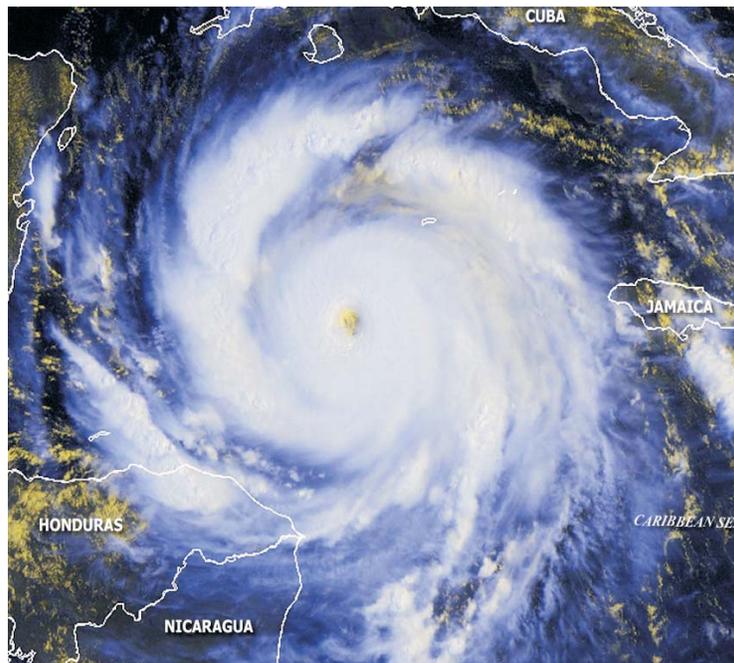
OFCM



OFFICE OF THE FEDERAL COORDINATOR FOR
METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH

National Hurricane Operations Plan

FCM-P12-2008



Hurricane Dean - 20 August 2007 - NOAA's GOES 12

Washington, DC
May 2008

THE FEDERAL COMMITTEE FOR
METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH (FCMSSR)

VADM CONRAD C. LAUTENBACHER, JR., USN (RET.) Chairman, Department of Commerce	MR. RANDOLPH LYON Office of Management and Budget
DR. SHARON L. HAYS Office of Science and Technology Policy	MS. VICTORIA COX Department of Transportation
DR. RAYMOND MOTHAS Department of Agriculture	MR. DAVID MAURSTAD Federal Emergency Management Agency Department of Homeland Security
DR. JOHN (JACK) L. HAYES Department of Commerce	DR. EDWARD WEILER National Aeronautics and Space Administration
MR. ALAN SHAFFER Department of Defense	DR. JARVIS MOYERS (Acting) National Science Foundation
DR. JERRY ELWOOD Department of Energy	MR. PAUL MISENCIK National Transportation Safety Board
MR. KEVIN (SPANKY) KIRSCH Science and Technology Directorate Department of Homeland Security	MR. MICHAEL JOHNSON U.S. Nuclear Regulatory Commission
DR. HERBERT FROST (Acting) Department of the Interior	DR. LAWRENCE REITER Environmental Protection Agency
MR. KENNETH HODGKINS Department of State	MR. SAMUEL P. WILLIAMSON Federal Coordinator

MR. MICHAEL BABCOCK, Secretariat
Office of the Federal Coordinator for
Meteorological Services and Supporting Research

THE INTERDEPARTMENTAL COMMITTEE FOR
METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH (ICMSSR)

MR. SAMUEL P. WILLIAMSON, Chairman Federal Coordinator	MR. KENNETH M. LEONARD Federal Aviation Administration Department of Transportation
MR. THOMAS PUTERBAUGH Department of Agriculture	DR. JONATHAN M. BERKSON United States Coast Guard Department of Homeland Security
MS. VICKIE NADOLSKI Department of Commerce	MR. JEFFREY MACLURE Department of State
RADM DAVID A. GOVE, USN United States Navy Department of Defense	DR. S. T. RAO Environmental Protection Agency
DR. FRED P. LEWIS United States Air Force Department of Defense	MR. DANIEL CATLETT Federal Emergency Management Agency Department of Homeland Security
MR. RICKEY PETTY Department of Energy	DR. RAMESH KAKAR National Aeronautics and Space Administration
MR. KEVIN (SPANKY) KIRSCH Science and Technology Directorate Department of Homeland Security	DR. JARVIS MOYERS National Science Foundation
MR. JOHN VIMONT Department of the Interior	MR. DONALD E. EICK National Transportation Safety Board
MR. ROBERT ARNOLD Federal Highway Administration Department of Transportation	MS. LETA A. BROWN U.S. Nuclear Regulatory Commission
	DR. STUART LEVENBACH Office of Management and Budget

MR. MICHAEL BABCOCK, Secretariat
Office of the Federal Coordinator for
Meteorological Services and Supporting Research

FEDERAL COORDINATOR
FOR
METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH

8455 Colesville Road, Suite 1500
Silver Spring, Maryland 20910
301-427-2002
www.ofcm.gov

NATIONAL HURRICANE OPERATIONS PLAN

FCM-P12-2008

Washington, D.C.
May 2008

CHANGE AND REVIEW LOG

Use this page to record changes and notices of reviews.

Change Number	Page Numbers	Date Posted	Initial
1			
2			
3			
4			
5			

Changes are indicated by a vertical line in the margin next to the change or by shading and strikeouts.

Review Date	Comments	Initial

FOREWORD

The Interdepartmental Hurricane Conference (IHC) is sponsored annually by the Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM) to provide a forum for the responsible Federal agencies, together with representatives from the user communities like emergency management, to review the Nation's hurricane forecast and warning program and to make recommendations on how to improve the program in the future. The major objective is to plan and prepare for the upcoming hurricane season. The 62nd IHC was held in Charleston, South Carolina, March 3-7, 2008, and the new procedures, procedural changes, and agreements reached at the conference were incorporated into this publication—the 46th edition of the *National Hurricane Operations Plan* (NHOP).

At the 62nd IHC, there were 18 actions items stemming from the meeting of the Working Group for Hurricane and Winter Storms Operations and Research. Of those, seven will be closed through incorporation into the 2008 NHOP as approved recommendations and/or changes. Four items were informational in nature and six (plus three open actions from the 61st IHC) will be worked through follow-on actions by the group. Detailed descriptions of the action items are available on the OFCM's web site at http://www.ofcm.gov/homepage/text/spc_proj/ihc.html.

This edition includes a number of minor revisions and changes. In Chapter 3 (*General Operations and Procedures of the National Weather Service Hurricane Centers*), changes included updating information regarding the Tropical Weather Outlook (TWO) product for both the Atlantic and Eastern Pacific basins. In Chapter 5 (*Aircraft Reconnaissance*), information in Table 5-2 (item Foxtrot) clarified that all winds reported in the Vortex message should be 10-s averages. Also in Chapter 5, the minimum operational configuration of the WP-3D was updated to include the Doppler radar and information was updated regarding the availability of WP-3D aircraft (see paragraph 5.5.2.5.). Additionally, Chapter 6 (*Satellite Reconnaissance*), Appendix A (*Local National Weather Service (NWS) Office Products*), and Appendix B (*Defining Points for Tropical Cyclone Watches/Warnings*) contain some important updates. Finally, Appendix G (*RECCO, HDOB, and Temp Drop Codes, Tables, and Regulations*) was updated to add two new codes to the "Nationally Developed Codes: 62626." The identifier, REL, was added (release location of the dropwindsonde and the release time) and the identifier, SPG, was also added (impact location of the dropwindsonde based on its last GPS position and the splash time).

For the 2007 Atlantic hurricane season, there were 15 named storms. Six of these storms became hurricanes, including two major hurricanes. This was similar to the long-term averages of 11, 6 and 2. Both major hurricanes reached category 5 status. For the Eastern North Pacific, there were 11 named storms. Four of these storms became hurricanes, including one major hurricane. Of note, this was the lowest number of hurricanes since 1977. The other tropical cyclone basins supported by the Central Pacific Hurricane Center and Joint Typhoon Warning Center had the following tropical cyclone activity in 2007 (25-year averages are noted in parenthesis): Central Pacific – 2 (5); Northwest Pacific – 27 (31); South Pacific – 8 (6); Arabian Sea and Bay of Bengal – 6 (5); South Indian Ocean and Australian Region – 16 (23).

The multiagency efforts—from both civilian and military organizations—that are part of the tropical cyclone forecast and warning system provided superb support to their customers, helping to prevent loss of life and injuries and to reduce vulnerability to these potentially devastating storms.

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

NATIONAL HURRICANE OPERATIONS PLAN

TABLE OF CONTENTS

	Page
CHANGE AND REVIEW LOG	ii
FOREWORD	iii
TABLE OF CONTENTS	v
CHAPTER 1 INTRODUCTION	1-1
1.1. General.....	1-1
1.2. Scope	1-1
CHAPTER 2 RESPONSIBILITIES OF COOPERATING FEDERAL AGENCIES	2-1
2.1. General	2-1
2.2. DOC Responsibilities	2-1
2.3. DOD Responsibilities.....	2-3
2.4. DOT/DHS Responsibilities	2-4
2.5. Annual Liaison with Other Nations	2-5
2.6. Air Traffic Control/Flight Operations Coordination.....	2-5
CHAPTER 3 GENERAL OPERATIONS AND PROCEDURES OF THE NATIONAL WEATHER SERVICE HURRICANE CENTERS	3-1
3.1. General	3-1
3.2. Products.....	3-1
3.3. Designation of Tropical and Subtropical Cyclones.....	3-5
3.4. Transfer of Warning Responsibility	3-7
3.5. Alternate Warning Responsibilities	3-8
3.6. Abbreviated Communications Headings.....	3-12
3.7. Hurricane Liaison Team (HLT)	3-14
CHAPTER 4 NATIONAL WEATHER SERVICE PRODUCTS FOR THE DEPARTMENT OF DEFENSE	4-1
4.1. General	4-1
4.2. Observations.....	4-1
4.3. Tropical Cyclone Forecast/Advisories	4-1
CHAPTER 5 AIRCRAFT RECONNAISSANCE	5-1
5.1. General	5-1
5.2. Responsibilities	5-1
5.3. Control of Aircraft.....	5-3
5.4. Reconnaissance Requirements	5-3
5.5. Reconnaissance Planning and Flight Notification	5-6
5.6. Reconnaissance Effectiveness Criteria.....	5-22

5.7.	Aerial Reconnaissance Weather Encoding, Reporting, and Coordination	5-24
5.8.	Operational Flight Patterns.....	5-27
5.9.	Aircraft Reconnaissance Communications	5-29
CHAPTER 6	SATELLITE SURVEILLANCE OF TROPICAL AND SUBTROPICAL CYCLONES	6-1
6.1.	Satellites	6-1
6.2.	National Weather Service (NWS) Support	6-5
6.3.	NESDIS Satellite Analysis Branch (SAB).....	6-5
6.4.	Air Force Support and the Defense Meteorological Satellite Program (DMSP)	6-7
6.5.	Satellites and Satellite Data Availability for the Current Hurricane Season	6-7
6.6.	Current Intensity and Tropical Classification Number	6-12
CHAPTER 7	SURFACE RADAR REPORTING.....	7-1
7.1.	General	7-1
7.2.	The WSR-88D.....	7-1
7.3.	Procedures	7-1
CHAPTER 8	NATIONAL DATA BUOY CAPABILITIES AND REQUIREMENTS.....	8-1
8.1.	General	8-1
8.2.	Requests for Drifting Buoy Deployment	8-2
8.3.	Communications.....	8-2
CHAPTER 9	MARINE WEATHER BROADCASTS	9-1
9.1.	General	9-1
9.2.	Global Maritime Distress and Safety System (GMDSS)	9-1
9.3.	Coastal Maritime Safety Broadcasts	9-1
9.4.	High Seas Broadcasts	9-2
9.5.	Additional Information.....	9-3
CHAPTER 10	PUBLICITY	10-1
10.1.	News Media Releases.....	10-1
10.2.	Distribution.....	10-1

APPENDIX A	LOCAL NATIONAL WEATHER SERVICE (NWS) OFFICE PRODUCTS	A-1
APPENDIX B	DEFINING POINTS FOR TROPICAL CYCLONE WATCHES/ WARNINGS	B-1
APPENDIX C	JOINT TYPHOON WARNING CENTER (JTWC) BULLETINS	C-1
APPENDIX D	FORMAT FOR NHOP/NWSOP FLIGHT INFORMATION FOR INTERNATIONAL AND DOMESTIC NOTAM ISSUANCE	D-1
APPENDIX E	SAFFIR-SIMPSON HURRICANE SCALE	E-1
APPENDIX F	OFFICIAL INTERAGENCY AGREEMENTS	F-1
APPENDIX G	RECCO, HDOB, AND TEMP DROP CODES, TABLES, AND REGULATIONS	G-1
APPENDIX H	WSR-88D OPERATIONS PLAN FOR TROPICAL CYCLONE EVENTS	H-1
APPENDIX I	TELEPHONE LISTING	I-1
APPENDIX J	PHONETIC PRONUNCIATION LISTING	J-1
APPENDIX K	ACRONYMS/ABBREVIATIONS	K-1
APPENDIX L	GLOSSARY	L-1
APPENDIX M	DISTRIBUTION	M-1

LIST OF FIGURES

Figure	Page
1-1.	Tropical Cyclone Forecast Centers' Areas of Responsibility 1-2
2-1.	Typhoon Dorian, November 29, 2006 2-1
3-1.	HPC Public Advisory Product Format..... 3-4
3-2.	Aviation Tropical Cyclone Advisory Format 3-5
4-1.	Tropical Cyclone Forecast/Advisory Format..... 4-4
4-2.	Tropical Cyclone Public Advisory Format 4-5
5-1.	WC-130J Weather Reconnaissance Aircraft 5-2
5-2.	G-IV Weather Surveillance Aircraft 5-2
5-3.	NOAA P-3 Weather Surveillance Aircraft 5-2
5-4.	Vortex Data Message Worksheet..... 5-8
5-5.	Example Vortex Data Message (VDM) for the WC-130J..... 5-11
5-6.	NHOP Coordinated Request for Aircraft Reconnaissance 5-12
5-7.	Tropical Cyclone Plan of the Day Format 5-13
5-8.	Mission Evaluation Form..... 5-25
5-9.	Flight Pattern ALPHA 5-27
5-10.	Suggested Patterns for Investigative Missions 5-28
5-11.	Schematic of Aircraft-to-Satellite Data Link for NOAA P-3 Aircraft 5-32
5-12.	Schematic of Aircraft-to-Satellite Data Link for AFRC WC-130 Aircraft 5-33
6-1.	The GOES Satellite System 6-3
8-1.	Example Buoy and Float Deployment Pattern..... 8-3
A-1.	Hurricane Local Statement Format A-8
A-2.	Extreme Wind Warning A-10
A-3.	Post-Tropical Cyclone Report Format A-13
G-1.	Reconnaissance Code Recording Form G-2
G-2.	HDOB Description and Sample Message..... G-6
G-3.	Example TEMP DROP Message for Tropical Cyclones G-15

LIST OF TABLES

Table	Page	
3-1.	Atlantic Tropical Cyclone Names.....	3-9
3-2.	Eastern Pacific Tropical Cyclone Names	3-10
3-3.	Central Pacific Tropical Cyclone Names.....	3-11
3-4.	International Tropical Cyclone Names for the Western Pacific and South China Sea.....	3-12
5-1.	Requirements for Aircraft Reconnaissance Data.....	5-6
5-2.	Vortex Data Message Entry Explanation.....	5-9
6-1.	Communications Headings for Satellite Tropical Weather Discussion Summaries	6-6
6-2.	Communications Headings for SAB Dvorak Analysis Products.....	6-6
6-3.	Satellite and Satellite Data Availability for the Current Hurricane Season.....	6-8
6-4.	The Empirical Relationship between the C.I. Number and the Maximum Wind Speed and the Relationship between the T-Number and the Minimum Sea-Level Pressure	6-12
7-1.	Participating Radar Stations.....	7-2
A-1.	HLS Product Table	A-3
A-2.	Product Actions when Tropical Cyclone Advisories are Subsequently Issued	A-4
G-1.	Reconnaissance Code Tables.....	G-3
G-2.	Reconnaissance Code Regulations	G-5
G-3.	Communications Headers for HDOB Messages.....	G-7
G-4.	Mission/Ob Identifier Line Format for HDOB Messages	G-7
G-5.	HD/HA Data Line Format for HDOB Messages.....	G-8
G-6.	TEMP DROP Code.....	G-10

