NOAA Technical Memorandum NWS WR-200

ANNUAL DATA AND VERIFICATION TABULATION EASTERN NORTH PACIFIC TROPICAL STORMS AND HURRICANES 1986

Roger L. Cross

Kenneth B. Mielke

Salt Lake City, Utah
September 1987

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

NOAA TECHNICAL MEMORANDA
National Weather Service, Western Region Subseries

The National Weather Service (NWS) Western Region (WR) Subseries provides an informal medium for the documentation and quick dissemination of results not appropriate, or not yet ready, for formal publication. The series is used to report on work in progress, to describe technical procedures and practices, or to relate progress to a limited audience. These Technical Memoranda will report on investigations devoted primarily to regional and local problems of interest mainly to personnel, and hence will not be widely distributed.

Papers 1 to 25 are in the former series, ESSA Technical Memoranda, Western Region Technical Memoranda (WRTM); papers 24 to 59 are in the former series, ESSA Technical Memoranda, Weather Bureau Technical Memoranda (WBTM). Beginning with 60, the papers are part of the series, NOAA Technical Memoranda NWS. Out-of-print memoranda are not listed.

Papers 2 to 22, except for 5 (revised edition), are available from the National Weather Service Western Region, Scientific Services Division, P.O. Box 11188, Federal Building, 125 South State Street, Salt Lake City, Utah 84147. Paper 5 (revised edition), and all others beginning with 25 are available from the National Technical Information Service, U.S. Department of Commerce, Sills Building, 5285 Port Royal Road, Springfield, Virginia 22161. Prices vary for all paper copies; $3.50 microfiche. Order by accession number shown in parentheses at end of each entry.

ESSA Technical Memoranda (WRTM)

2 Climatological Precipitation Probabilities. Compiled by Lucianne Miller, December 1965.
3 Western Region Pre- and Post-FP-3 Program, December 1, 1965, to February 20, 1966. Edward D. Diemer, March 1966.
5 Station Descriptions of Local Effects on Synoptic Weather Patterns. Philip Williams, Jr., April 1966 (revised November 1967, October 1969). (PB-17800)
8 Interpreting the RAREP. Herbert P. Benner, May 1966 (revised January 1967).
11 Some Electrical Processes in the Atmosphere. J. Latham, June 1966.
17 A Digitalized Summary of Radar Echoes within 100 Miles of Sacramento, California. J. A. Youngberg and L. B. Overaas, December 1966.
21 An Objective Aid for Forecasting the End of East Winds in the Columbia Gorge, July through October. D. John Coparanis, April 1967.
22 Derivation of Radar Horizons in Mountainous Terrain. Roger G. Pappas, April 1967.

ESSA Technical Memoranda, Weather Bureau Technical Memoranda (WBTM)

25 Verification of Operation Probability of Precipitation Forecasts, April 1966-March 1967. W. W. Dickey, October 1967. (PB-176240)
26 A Study of Winds in the Lake Mead Recreation Area. R. P. Augulis, January 1968. (PB-177830)
28 Weather Extremes. R. J. Schmidli, April 1968 (revised March 1986). (PB86 177672/AS)
29 Small-Scale Analysis and Prediction. Philip Williams, Jr., May 1968. (PB178425)
30 Numerical Weather Prediction and Synoptic Meteorology. CPT Thomas D. Murphy, USAF, May 1968. (AD 673365)
31 Precipitation Detection Probabilities by Salt Lake ARTC Radars. Robert K. Belesky, July 1968. (PB 179084)
32 Probability Forecasting--A Problem Analysis with Reference to the Portland Fire Weather District. Harold S. Ayer, July 1968. (PB 179289)
36 Temperature Trends in Sacramento--Another Heat Island. Anthony D. Lentini, February 1969. (PB 183055)
37 Disposal of Logging Residues Without Damage to Air Quality. Owen P. Cramer, March 1969. (PB 183057)
39 Upper-Air Lows Over Northwestern United States. A.L. Jacobson, April 1969. PB 184296)
40 The Man-Machine Mix in Applied Weather Forecasting in the 1970s. L.W. Snellman, August 1969. (PB 185068)
43 Forecasting Maximum Temperatures at Helena, Montana. David E. Olsen, October 1969. (PB 185762)
44 Estimated Return Periods for Short-Duration Precipitation in Arizona. Paul C. Kangieser, October 1969. (PB 187763)
46 Applications of the Net Radiometer to Short-Range Fog and Stratus Forecasting at Eugene, Oregon. L. Yee and E. Bates, December 1969. (PB 190476)
47 Statistical Analysis as a Flood Routing Tool. Robert J.C. Burnash, December 1969. (PB 188744)
48 Tsunami. Richard P. Augulis, February 1970. (PB 190157)
49 Predicting Precipitation Type. Robert J.C. Burnash and Floyd E. Hug, March 1970. (PB 190962)
50 Statistical Report on Aeroallergens (Pollens and Molds) Fort Huachuca, Arizona, 1969. Wayne S. Johnson, April 1970. (PB 191743)
51 Western Region Sea State and Surf forecaster's Manual. Gordon C. Shields and Gerald B. Burdwell, July 1970. (PB 193102)
52 Sacramento Weather Radar Climatology. R.G. Pappas and C. M. Veliquette, July 1970. (PB 193347)
54 A Refinement of the Vorticity Field to Delineate Areas of Significant Precipitation. Barry B. Aronovitch, August 1970.
55 Application of the SSARR Model to a Basin without Discharge Record. Vail Schermerhorn and Donal W. Kuehl, August 1970. (PB 194394)
56 Areal Coverage of Precipitation in Northwestern Utah. Philip Williams, Jr., and Werner J. Heck, September 1970. (PB 194389)
57 Preliminary Report on Agricultural Field Burning vs. Atmospheric Visibility in the Willamette Valley of Oregon. Earl M. Bates and David O. Chilcote, September 1970. (PB 194710)
58 Air Pollution by Jet Aircraft at Seattle-Tacoma Airport. Wallace R. Donaldson, October 1970. (COM 71 00017)
59 Application of PE Model Forecast Parameters to Local-Area Forecasting. Leonard W. Snellman, October 1970. (COM 71 00016)

NOAA Technical Memoranda (NWS WR)

60 An Aid for Forecasting the Minimum Temperature at Medford, Oregon, Arthur W. Fritz, October 1970. (COM 71 00120)
63 700-mb Warm Air Advection as a Forecasting Tool for Montana and Northern Idaho. Norris E. Woerner, February 1971. (COM 71 00349)
64 Wind and Weather Regimes at Great Falls, Montana. Warren B. Price, March 1971.
66 A Preliminary Report on Correlation of ARTCC Radar Echoes and Precipitation. Wilbur K. Hall, June 1971. (COM 71 00829)
69 National Weather Service Support to Soaring Activities. Ellis Burton, August 1971. (COM 71 00956)
71 Western Region Synoptic Analysis-Problems and Methods. Philip Williams, Jr., February 1972. (COM 72 10433)
74 Thunderstorms and Hail Days Probabilities in Nevada. Clarence M. Sakamoto, April 1972. (COM 72 10554)
75 A Study of the Low Level Jet Stream of the San Joaquin Valley. Ronald A. Willis and Philip Williams, Jr., May 1972. (COM 72 10707)
76 Monthly Climatological charts of the Behavior of Fog and Low Stratus at Los Angeles International Airport. Donald M. Gales, July 1972. (COM 72 11140)
77 A Study of Radar Echo Distribution in Arizona During July and August. John E. Hales, Jr., July 1972. (COM 72 11136)
78 Forecasting Precipitation at Bakersfield, California, Using Pressure Gradient Vectors. Earl T. Riddiough, July 1972. (COM 72 11146)
79 Climate of Stockton, California. Robert C. Nelson, July 1972. (COM 72 10920)
80 Estimation of Number of Days Above or Below Selected Temperatures. Clarence M. Sakamoto, October 1972. (COM 72 10021)
81 An Aid for Forecasting Summer Maximum Temperatures at Seattle, Washington. Edgar G. Johnson, November 1972. (COM 73 10150)
82 Flash Flood Forecasting and Warning Program in the Western Region. Philip Williams, Jr., Chester L. Glenn, and Roland L. Raetz, December 1972, (revised March 1978). (COM 73 10251)
83 A comparison of Manual and Semiautomatic Methods of Digitizing Analog Wind Records. Glenn E. Rasch, March 1973. (COM 73 10669)
86 Conditional Probabilities for Sequences of Wet Days at Phoenix, Arizona. Paul C. Kangieser, June 1973. (COM 73 11264)
87 A Refinement of the Use of K-Values in Forecasting Thunderstorms in Washington and Oregon. Robert Y.G. Lee, June 1973. (COM 73 11276)
89 Objective Forecast Precipitation Over the Western Region of the United States. Julia N. Paegle and Larry P. Kierulff, September 1973. (COM 73 11946/3AS)
91 Arizona "Eddy" Tornadoes. Robert S. Ingram, October 1973. (COM 73 10465)
92 Smoke Management in the Willamette Valley. EArl M. Bates, May 1974. (COM 74 11277/AS)
93 An Operational Evaluation of 500-mb Type Regression Equations. Alexander E. MacDonald, June 1974. (COM 74 11407/AS)
94 Conditional Probability of Visibility Less than One-Half Mile in Radiation Fog at Fresno, California. John D. Thomas, August 1974. (COM 74 11555/AS)
95 Climate of Flagstaff, Arizona. Paul W. Sorenson, and updated by Reginald W. Preston, January 1987. (PB87 143160/AS)
96 Map type Precipitation Probabilities for the Western Region. Glenn E. Rasch and Alexander E. MacDonald, February 1975. (COM 75 10428/AS)
97 Eastern Pacific Cut-Off Low of April 21-28, 1974. William J. Alder and George R. Miller, January 1976. (PB 250 711/AS)
98 Study on a Significant Precipitation Episode in Western United States. Ira S. Brenner, April 1976. (COM 75 10719/AS)
99 A Study of Flash Flood Susceptibility-A Basin in Southern Arizona. Gerald Williams, August 1975. (COM 75 11360/AS)
102 A Set of Rules for Forecasting Temperatures in Napa and Sonoma Counties. Wesley L. Tuft, October 1975. (PB 246 902/AS)
103 Application of the National Weather Service Flash-Flood Program in the Western Region. Gerald Williams, January 1976. (PB 253 053/AS)
104 Objective Aids for Forecasting Minimum Temperatures at Reno, Nevada, During the Summer Months. Christopher D. Hill, January 1976. (PB 252 866/AS)
105 Forecasting the Mono Wind. Charles P. Ruscha, Jr., February 1976. (PB 254 650)
106 Use of MOS Forecast Parameters in Temperature Forecasting. John C. Plankinton, Jr., March 1976. (PB 254 649)
107 Map Types as Aids in Using MOS PoPs in Western United States. Ira S. Brenner, August 1976. (PB 259 594)
108 Other Kinds of Wind Shear. Christopher D. Hill, August 1976. (PB 260 437/AS)
109 Forecasting North Winds in the Upper Sacramento Valley and Adjoining Forests. Christopher E. Fontana, September 1976. (PB 273 677/AS)
110 Cool Inflow as a Weakening Influence on Eastern Pacific Tropical Cyclones. William J. Denney, November 1976. (PB 264 655/AS)
112 The MAN/MOS Program. Alexander E. MacDonald, February 1977. (PB 265 941/AS)
113 Winter Season Minimum Temperature Formula for Bakersfield, California, Using Multiple Regression. Michael J. Oard, February 1977. (PB 273 694/AS)
114 Tropical Cyclone Kathleen. James R. Fors, February 1977. (PB 273 676/AS)
116 A Study of Wind Gusts on Lake Mead. Bradley Colman, April 1977. (PB 268 847)
117 The Relative Frequency of Cumulonimbus Clouds at the Nevada Test Site as a Function of K-Value. R.F. Quiring, April 1977. (PB 272 831)
118 Moisture Distribution Modification by Upward Vertical Motion. Ira S. Brenner, April 1977. (PB 268 740)
119 Relative Frequency of Occurrence of Warm Season Echo Activity as a Function of Stability Indices Computed from the Yucca Flat, Nevada, Rawinsonde. Darryl Randerson, June 1977. (PB 271 290/AS)
121 Climatological Prediction of Cumulonimbus Clouds in the Vicinity of the Yucca Flat Weather Station. R.F. Quiring, June 1977. (PB 271 704/AS)
122 A Method for Transforming Temperature Distribution to Normality. Morris S. Webb, Jr., June 1977. (PB 271 742/AS)
124 Statistical Guidance for Prediction of Eastern North Pacific Tropical Cyclone Motion - Part I. Charles J. Neumann and Preston W. Leftwich, August 1977. (PB 272 661)
125 Statistical Guidance on the Prediction of Eastern North Pacific Tropical Cyclone Motion - Part II. Preston W. Leftwich and Charles J. Neumann, August 1977. (PB 273 155/AS)
127 Development of a Probability Equation for Winter-Type Precipitation Patterns in Great FAlls, Montana. Kenneth B. Mielke, February 1978. (PB 281 387/AS)
128 Hand Calculator Program to Compute Parcel Thermal Dynamics. Dan Gudgel, April 1978. (PB 283 080/AS)
129 Fire whirls. David W. Goens, May 1978. (PB 283 866/AS)
130 Flash-Flood Procedure. Ralph C. Hatch and Gerald Williams, May 1978. (PB 286 014/AS)
131 Automated Fire-Weather Forecasts. Mark A. Mollner and David E. Olsen, September 1978. (PB 289 916/AS)
132 Estimates of the Effects of Terrain Blocking on the Los Angeles WSR-74C Weather Radar. R.G. Pappas, R.Y. Lee, B.W. Finke, October 1978. (PB 289767/AS)
133 Spectral Techniques in Ocean Wave Forecasting. John A. Jannuzzi, October 1978. (PB291317/AS)
134 Solar Radiation. John A. Jannuzzi, November 1978. (PB291195/AS)
135 Application of a Spectrum Analyzer in Forecasting Ocean Swell in Southern California Coastal Waters. Lawrence P. Kierulff, January 1979. (PB292716/AS)
136 Basic Hydrologic Principles. Thomas L. Dietrich, January 1979. (PB292247/AS)
137 LFM 24-Hour Prediction of Eastern Pacific Cyclones Refined by Satellite Images. John R. Zimmerman and Charles P. Ruscha, Jr., January 1979. (PB294324/AS)
138 A Simple Analysis/Diagnosis System for Real Time Evaluation of Vertical Motion. Scott Heflick and James R. Fors, February 1979. (PB294216/AS)

NOAA Technical Memorandum NWS WR-200

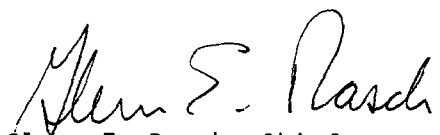
ANNUAL DATA AND VERIFICATION TABULATION EASTERN NORTH PACIFIC TROPICAL STORMS AND HURRICANES 1986

Roger L. Cross
Eastern Pacific Hurricane Center
San Francisco, California

Kenneth B. Mielke
Scientific Services Division
National Weather Service Western Region Headquarters
Salt Lake City, Utah
September 1987

UNITED STATES DEPARTMENT OF COMMERCE / National Oceanic and Atmospheric Administration / National Weather Service
Richard E. Hallgren, Director

This publication has been reviewed
and is approved for publication by
Scientific Services Division,
Western Region.



Glenn E. Rasch, Chief
Scientific Services Division
Western Region Headquarters
Salt Lake City, Utah

TABLE OF CONTENTS

LIST OF TABLES

ANNUAL DATA AND VERIFICATION TABULATION
EASTERN NORTH PACIFIC TROPICAL STORMS AND HURRICANES 1986

I. INTRODUCTION

This is the eighth report of an annual series covering eastern North Pacific tropical cyclone activity. Data are provided by the National Weather Service Eastern Pacific Hurricane Center and the Satellite Field Service Station in San Francisco, California, and the Chief, Aerial Reconnaissance Coordination, all Hurricanes (CARCAH), Miami, Florida.

II. OBJECTIVE FORECAST TECHNIQUES

Tropical cyclone prediction models used by the Eastern Pacific Hurricane Center (EPHC) forecasters include:

1. EPHC77 (Leftwich and Neumann, 1977). A statistical-synoptic model.

2. EPHC81 (Leftwich, 1981). A statistical-dynamic model.

3. EPCLIPER84 (Neumann, 1982). A simulated-analog model based on persistence and climatology. This model was updated in 1984-85 and was first used during the 1986 season. The model development data set was updated to include all storms from 1965 to 1985.

4. EPANALOG85 (Jarrell, Mauck, and Renard, 1975). An analog model. This model also was updated for use in the 1986 season. The data set was updated to include the years 1965 to 1985 instead of the previous set 1949 to 1976. In addition, all analogs chosen must now be within 650 km, as opposed to the previous 1-1/2 degree limit. The analog date must be within 30 days of the current date, whereas previously, analogs from the entire season were used.

5. EPSANBAR (Sanders and Burpee, 1968). A filtered barotropic model.

In addition to the above models, forecasters also make use of NMC analyses and prognoses.

III. VERIFICATION

Verification statistics for the 1986 season are shown in Table 1. The forecast displacement error is the vector difference between the forecast displacement and the actual displacement computed from operational advisory positions. Tropical depressions are not verified.

IV. DATA SUMMARIES

A summary of the 1986 Eastern North Pacific tropical cyclone statistics is given in Table 2. Best track, operational positions, and position errors are given in Tables 3 to 19.

The actual track of a tropical storm consists of two scales of motion. The small scale motion is a trochoidal oscillation about a mean track. The large scale motion is the result of environmental steering forces and is quite conservative. The "best track" positions are constructed by removing the small scale motions. The operational position is real-time storm location, determined while the storm is in progress; the "best track" is based upon past operational positions and updated every 6 hours. Forecast errors are determined from the "best track" positions. The tables on the following pages only include tropical storms and hurricanes, but the storm history for each begins when the system reaches tropical depression status ($\geq$25 KTS). Forecast errors are only computed once the tropical depression reaches storm status ($\geq$33 KTS), therefore, there may be a lot of zero entries in the tables at the beginning and ending of a storm.

NOAA reconnaissance aircraft flew into two of the Eastern North Pacific tropical cyclones during the 1986 season. On September 21, a NOAA aircraft conducted cloud microphysics experiments around Hurricane Newton. Again on September 30, the NOAA aircraft conducted hurricane-environment experiments and structure of hurricane rainband experiments on Hurricane Paine.

Even as satellite imagery continues to improve and is one of the more important tools used by tropical forecasters, aircraft reconnaissance and ship reports are invaluable in providing comparative observations.

V. REFERENCES

Hope, J. R., and B. I. Miller, 1972: A Statistical Method of Combining Synoptic and Empirical Cyclone Prediction Systems. NOAA Technical Memorandum NWS SR-63, U.S. Department of Commerce, National Weather Service Southern Region.

Jarrell, J.D., C. M. Mauck, and R. J. Renard, 1975: The Navy's Analog Scheme for Forecasting Tropical Cyclone Motion Over the Northeastern Pacific Ocean. Technical Paper No. 6-75, Environmental Prediction Research Facility, Naval Postgraduate School, Monterey, California.

Leftwich, P.W., 1981: A Statistical-Dynamical Model for Prediction of Tropical Cyclone Motion in the Eastern North Pacific Ocean. NOAA Technical Memorandum NWS WR-169, U.S. Department of Commerce, National Weather Service Western Region.

Leftwich, P.W., and C.J. Neumann, 1977: Statistical Guidance on the Prediction of Eastern North Pacific Tropical Cyclone Motion. NOAA Technical Memorandum NWS WR-125, U.S. Department of Commerce, National Weather Service Western Region.

Neumann, C.J., 1972: An Alternate to the HURRAN Tropical Cyclone Forecast System. NOAA Technical Memorandum NWS SR-63, U.S. Department of Commerce, National Weather Service Southern Region.

Sanders, F., and R. W. Burpee, 1968: Experiments in Barotropic Hurricane Track Forecasting. Journal of Applied Meteorology, **7**, 313-323.

TABLE 1
1986 FORECAST ERRORS*

	FORECAST PERIOD		
	24 HR	48 HR	72 HR
EPHC FORECASTERS	187(101)/203	414(224)/160	577(312)/114
EPANALOG85	198(107)/198	422(228)/164	592(320)/121
EPHC77	189(102)/201	394(213)/168	564(305)/125
CLIPER84	196(106)/202	409(221)/168	585(316)/125
EPHC81	196(106)/92	376(203)/76	549(297)/58

*Average error in kilometers (nautical miles)/number of cases

TABLE 2
Summary of Eastern North Pacific Tropical Cyclones of 1986**
(Includes Only Those Cyclones that Reached Hurricane (HU) or
Tropical Storm (TS) Strength)

NO.	NAME	CLASS	DATES	MAX WIND (KTS)
1.	AGATHA	HU	22-29 MAY	65
2.	BLAS	TS	17-19 JUN	35
3.	CELIA	HU	24-30 JUN	75
4.	DARBY	TS	3-7 JUL	35
5.	ESTELLE	HU	16-21 JUL	115
6.	FRANK	HU	24 JUL-2 AUG	75
7.	GEORGETTE	TS	2-4 AUG	35
8.	HOWARD	TS	16-18 AUG	35
9.	ISIS	TS	19-24 AUG	45
10.	JAVIER	HU	20-31 AUG	115
11.	KAY	TS	28 AUG-3 SEP	40
12.	LESTER	TS	13-16 SEP	45
13.	MADELINE	TS	15-22 SEP	60
14.	NEWTON	HU	18-23 SEP	75
15.	ORLENE	HU	21-22 SEP	65
16.	PAINE	HU	28 SEP-2 OCT	80
17.	ROSLYN	HU	15-22 OCT	125

**Damage and Death Summaries Are Unknown

AGATHA.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
52200	12.6	107.5	13.0	107.5	24.0	14.0	108.0	168.	14.7	108.5	331.	15.7	109.1	365.
52206	12.2	107.4	13.4	107.2	72.9	14.9	106.5	236.	0.0	0.0	0.	0.0	0.0	0.
52212	11.8	107.2	13.8	106.5	126.8	14.7	104.8	226.	0.0	0.0	0.	0.0	0.0	0.
52218	11.5	106.8	11.5	105.5	75.9	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
52300	11.3	106.4	11.5	106.7	21.2	11.3	106.3	93.	0.0	0.0	0.	0.0	0.0	0.
52306	11.0	106.1	11.0	106.0	5.8	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
52312	10.7	105.6	11.0	105.5	18.9	11.4	103.9	97.	0.0	0.0	0.	0.0	0.0	0.
52318	10.5	105.2	10.5	105.0	11.5	11.0	103.3	75.	12.8	102.7	155.	15.7	101.4	67.
52400	10.3	105.1	10.3	105.1	0.0	10.0	105.5	72.	10.2	106.0	375.	11.3	106.6	434.
52406	10.3	105.4	10.1	105.4	12.0	10.7	107.1	223.	11.7	107.6	402.	13.2	107.4	454.
52412	10.7	105.0	10.4	105.2	21.4	11.0	105.4	195.	11.7	105.8	383.	13.3	106.7	457.
52418	11.5	104.8	10.6	104.5	56.7	11.8	103.2	199.	13.7	102.7	197.	16.8	103.6	311.
52500	12.4	104.7	11.1	105.0	79.9	12.3	105.1	238.	14.0	105.8	313.	15.8	105.0	429.
52506	13.2	104.5	13.4	104.5	12.0	17.1	103.5	46.	0.0	0.0	0.	0.0	0.0	0.
52512	14.1	104.3	13.9	103.9	26.1	17.2	103.2	52.	18.0	103.3	276.	0.0	0.0	0.
52518	15.0	104.0	15.0	104.1	5.8	18.3	103.7	150.	0.0	0.0	0.	0.0	0.0	0.
52600	15.8	103.6	16.1	103.9	25.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
52606	16.5	103.0	16.6	102.9	8.3	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
52612	16.6	102.2	17.1	102.3	30.6	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
52618	16.3	101.5	16.8	101.6	30.6	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
52700	16.0	100.8	15.7	100.7	18.9	15.8	96.6	68.	0.0	0.0	0.	0.0	0.0	0.
52706	15.8	100.0	15.9	100.1	8.3	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
52712	15.5	99.2	15.6	99.2	6.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
52718	15.3	98.4	15.4	98.4	6.0	15.3	95.7	92.	15.5	94.7	95.	15.6	93.9	0.
52800	15.0	97.7	15.2	97.6	13.3	14.7	94.8	107.	14.2	93.2	0.	13.3	91.6	0.
52806	14.7	97.3	15.0	97.0	25.0	15.0	94.6	101.	0.0	0.0	0.	0.0	0.0	0.
52812	14.4	97.0	14.7	96.5	34.1	14.4	95.1	38.	14.1	95.6	0.	14.3	96.0	0.
52818	14.1	96.8	14.3	96.9	13.3	13.6	97.7	148.	14.0	98.5	0.	14.6	97.9	0.
52900	14.0	96.4	14.0	96.5	5.8	13.4	95.6	0.	13.2	94.6	0.	13.1	93.3	0.
52906	13.9	96.0	14.0	96.0	6.0	14.1	94.4	0.	0.0	0.0	0.	0.0	0.0	0.
52912	13.9	95.5	14.0	95.6	8.3	14.2	94.5	0.	15.3	94.2	0.	0.0	0.0	0.
52918	0.0	0.0	14.0	95.2	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								131.			281.			360.
NUMBER OF CASES								20			9			7

TABLE 3

BLAS.....

DATE/TIME (GMT)	BEST TRACK LAT.	LONG.	OPERATIONAL POSITION LAT.	LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	LONG.	ERROR (N.MI)	48 HOUR FORECAST LAT.	LONG.	ERROR (N.MI.)	72 HOUR FORECAST LAT.	LONG.	ERROR (N.MI.)
61700	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
61706	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
61712	8.7	112.6	8.7	112.5	5.9	8.9	116.5	111.	9.3	119.9	0.	10.0	122.9	0.
61718	8.8	113.8	8.7	113.4	24.4	9.0	117.4	176.	10.0	121.3	0.	10.7	125.0	0.
61800	9.0	115.2	8.8	114.5	43.0	9.3	118.5	93.	9.8	120.7	0.	11.2	123.6	0.
61806	9.2	116.5	9.0	116.5	12.0	9.8	121.6	93.	10.2	125.6	0.	10.9	128.9	0.
61812	9.6	117.7	10.0	118.0	29.8	11.4	122.5	0.	0.0	0.0	0.	0.0	0.0	0.
61818	10.0	118.7	11.4	119.1	87.3	17.5	124.3	0.	0.0	0.0	0.	0.0	0.0	0.
61900	10.5	119.6	10.4	119.6	6.0	13.0	124.7	0.	0.0	0.0	0.	0.0	0.0	0.
61906	0.0	0.0	10.9	120.5	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
61912	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
61918	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								118.			0.			0.
NUMBER OF CASES								4			0			0

TABLE 4

CELIA.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
62400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
62406	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
62412	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
62418	10.7	97.6	10.9	97.8	16.7	10.9	101.4	61.	11.8	105.7	160.	13.1	109.6	138.
62500	10.6	98.3	11.4	98.3	48.0	11.4	100.3	76.	11.5	102.4	106.	11.9	106.0	289.
62506	10.6	99.1	10.7	98.6	29.7	10.5	101.6	21.	10.6	105.7	145.	11.2	109.7	324.
62512	10.6	99.8	10.8	99.2	36.7	11.3	101.8	31.	12.1	105.0	126.	13.4	108.6	291.
62518	10.6	100.5	10.4	100.5	12.0	10.8	103.2	44.	11.7	105.9	206.	13.1	109.7	398.
62600	10.7	101.2	10.6	101.3	8.3	11.3	104.5	53.	12.1	107.9	230.	13.1	111.3	448.
62606	10.8	101.8	10.7	101.9	8.3	11.3	104.6	112.	12.4	107.6	280.	13.4	110.7	514.
62612	11.1	102.5	10.8	101.9	38.8	11.4	103.8	206.	12.3	105.6	440.	13.2	108.2	0.
62618	11.6	103.2	11.5	103.0	12.9	13.1	106.0	138.	14.4	109.1	336.	15.3	112.3	409.
62700	12.3	104.2	12.1	104.1	13.3	13.9	107.7	134.	15.1	111.4	329.	15.6	115.0	434.
62706	13.0	105.4	13.0	105.4	0.0	15.5	110.2	72.	16.6	114.1	303.	16.7	117.5	417.
62712	13.7	106.7	13.6	106.5	12.7	15.8	111.2	132.	16.6	115.2	0.	17.2	118.6	422.
62718	14.5	107.8	14.6	107.8	6.0	16.8	112.2	167.	18.0	116.5	270.	18.5	120.0	405.
62800	15.6	108.8	15.8	108.9	13.2	19.5	112.8	64.	21.5	116.1	131.	22.7	119.7	0.
62806	16.6	109.7	16.6	109.7	0.0	19.9	113.4	102.	21.4	116.6	143.	21.8	119.4	0.
62812	17.9	110.6	17.9	110.5	5.6	21.7	113.9	0.	22.7	115.7	55.	23.4	117.2	0.
62818	19.2	111.5	19.5	111.5	18.0	23.7	114.9	117.	25.1	117.3	105.	25.4	119.4	0.
62900	20.2	112.5	20.5	112.4	18.8	24.5	115.3	119.	26.6	117.8	0.	28.1	120.6	0.
62906	20.9	113.1	21.6	113.3	43.5	25.3	116.7	160.	28.0	117.7	0.	29.3	116.5	0.
62912	21.6	113.6	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
62918	22.2	114.0	21.9	114.1	18.8	23.0	115.8	60.	0.0	0.0	0.	0.0	0.0	0.
63000	22.7	114.4	22.8	114.2	12.7	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
63006	23.2	114.9	23.2	114.9	0.0	25.5	116.0	0.	0.0	0.0	0.	0.0	0.0	0.
63012	23.6	115.4	23.6	115.5	5.6	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
63018	24.0	115.8	24.0	115.8	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								98.			210.			374.
NUMBER OF CASES								19			16			12

TABLE 5

DARBY.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
7 300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
7 306	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
7 312	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
7 318	13.5	104.5	13.3	104.6	13.3	13.5	109.4	147.	14.5	113.3	238.	15.2	117.7	274.
7 400	14.0	105.7	13.6	105.4	29.5	14.3	109.5	128.	15.5	113.4	202.	16.7	117.4	170.
7 406	14.5	106.6	14.1	106.5	24.7	15.9	110.5	78.	17.3	114.0	106.	17.8	117.0	84.
7 412	15.1	107.5	14.7	107.7	26.6	16.4	111.7	99.	17.5	115.0	138.	18.3	118.0	55.
7 418	15.5	108.4	15.7	108.3	13.3	18.0	111.8	12.	19.9	114.8	53.	21.5	117.0	138.
7 500	16.0	109.3	16.4	109.1	26.5	18.9	112.3	12.	20.3	115.2	80.	21.4	118.4	0.
7 506	16.7	110.0	16.5	109.3	41.1	18.3	111.5	121.	19.8	113.6	196.	0.0	0.0	0.
7 512	17.4	110.8	16.7	110.0	61.5	17.6	112.1	161.	18.5	114.0	220.	19.4	116.0	0.
7 518	18.1	111.5	18.2	111.8	17.9	20.4	115.2	78.	23.1	117.8	217.	0.0	0.0	0.
7 600	18.7	112.3	18.7	112.3	0.0	22.2	114.3	204.	24.2	115.2	0.	0.0	0.0	0.
7 606	19.0	113.2	19.0	113.5	16.9	21.8	116.5	159.	23.5	118.5	0.	0.0	0.0	0.
7 612	19.1	114.2	19.6	114.0	32.0	23.0	114.5	293.	0.0	0.0	0.	0.0	0.0	0.
7 618	19.2	115.2	19.1	115.2	6.0	19.3	118.8	36.	0.0	0.0	0.	0.0	0.0	0.
7 700	19.2	116.0	19.2	116.0	0.0	19.4	119.4	0.	0.0	0.0	0.	0.0	0.0	0.
7 706	19.3	116.8	19.2	117.0	12.7	19.3	120.5	0.	0.0	0.0	0.	0.0	0.0	0.
7 712	19.4	117.6	19.2	117.8	16.4	19.4	121.3	0.	0.0	0.0	0.	0.0	0.0	0.
7 718	19.5	118.2	19.5	118.2	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								118.			161.			144.
NUMBER OF CASES								13			9			5

TABLE 6

ESTELLE.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
71600	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
71606	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
71612	10.3	115.0	10.0	115.5	34.3	11.0	119.2	43.	12.2	122.7	59.	13.3	126.2	111.
71618	10.3	116.3	9.8	116.1	32.2	11.0	119.4	71.	12.0	122.0	157.	13.1	124.6	284.
71700	10.4	117.4	10.2	117.8	26.2	11.0	122.2	46.	12.2	126.3	42.	13.6	130.2	71.
71706	10.7	118.5	10.3	119.3	52.5	10.9	124.1	107.	11.7	128.5	118.	12.5	132.5	98.
71712	11.0	119.6	10.6	119.8	26.7	11.4	124.2	56.	12.4	128.5	59.	13.6	132.7	100.
71718	11.3	120.6	11.5	120.5	13.3	14.4	123.3	132.	16.7	126.3	246.	18.3	128.7	475.
71800	11.6	121.6	11.6	121.7	5.8	12.7	125.9	6.	13.4	129.8	96.	13.5	133.8	270.
71806	11.9	122.7	11.9	122.6	5.8	13.0	126.5	24.	14.1	130.3	145.	15.1	134.0	365.
71812	12.2	123.7	12.2	123.7	0.0	13.3	128.0	6.	14.5	131.9	134.	15.6	135.6	0.
71818	12.5	124.7	12.6	124.6	8.3	14.3	128.1	79.	15.4	130.8	309.	17.1	133.6	0.
71900	12.8	125.8	12.7	125.8	6.0	13.7	130.1	76.	14.6	134.0	240.	15.0	138.0	0.
71906	13.0	126.9	12.9	126.9	6.0	13.8	131.2	95.	14.0	135.0	319.	13.9	139.0	0.
71912	13.4	128.1	13.3	128.1	6.0	14.1	132.8	83.	14.2	137.6	0.	14.2	142.0	0.
71918	13.7	129.7	13.9	129.4	21.1	15.5	134.5	102.	17.3	139.8	0.	19.4	143.0	0.
72000	13.9	131.3	13.8	131.4	8.3	14.3	137.7	59.	14.6	142.7	0.	15.1	147.6	0.
72006	14.2	132.9	14.1	132.8	8.3	14.6	139.0	89.	14.9	143.5	0.	15.0	147.2	0.
72012	14.6	134.6	14.4	134.2	26.1	15.0	140.1	0.	15.2	145.5	0.	16.0	150.8	0.
72018	15.0	136.3	14.8	136.1	16.7	16.0	142.2	0.	17.0	148.2	0.	18.9	152.1	0.
72100	15.2	138.2	15.2	138.1	5.8	15.6	144.6	0.	15.8	150.8	0.	16.0	156.2	0.
72106	15.4	140.3	15.4	140.3	0.0	15.9	148.1	0.	16.6	155.0	0.	17.5	159.5	0.
72112	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
72118	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								67.			160.			222.
NUMBER OF CASES								16			12			8

TABLE 7

FRANK.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
72400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
72406	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
72412	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
72418	11.1	94.9	10.6	94.7	32.2	10.7	99.2	137.	11.0	103.6	185.	11.5	108.1	280.
72500	11.3	96.1	11.3	96.0	5.8	12.1	100.4	46.	13.1	104.5	183.	14.2	108.7	268.
72506	11.7	97.3	12.0	97.0	24.9	14.3	101.3	115.	16.8	105.3	280.	20.4	106.7	568.
72512	11.9	98.1	12.3	98.2	24.7	13.8	102.6	64.	15.7	106.2	262.	0.0	0.0	0.
72518	12.1	100.1	12.6	100.5	37.9	14.0	105.7	63.	15.3	110.3	119.	16.0	115.0	171.
72600	12.5	101.6	12.6	101.0	35.4	12.9	105.8	113.	13.5	110.1	189.	14.1	114.5	239.
72606	12.8	103.0	12.5	102.0	60.6	13.8	106.5	146.	14.9	110.1	233.	16.6	113.9	379.
72612	13.1	104.5	12.9	103.2	76.2	14.1	107.9	145.	15.2	112.1	196.	16.3	116.3	308.
72618	13.4	106.0	13.0	106.0	24.0	13.5	112.3	45.	13.9	116.8	26.	14.0	121.4	80.
72700	13.7	107.5	13.6	107.6	8.3	14.8	113.0	51.	16.0	116.4	167.	17.3	119.8	253.
72706	13.9	109.0	13.8	109.0	6.0	14.5	114.9	60.	15.4	119.2	81.	15.8	123.9	41.
72712	13.9	110.5	14.1	110.4	13.3	14.8	115.8	64.	15.7	120.7	89.	16.6	125.8	13.
72718	14.0	112.0	14.2	112.0	12.0	14.7	117.3	36.	15.3	121.9	46.	15.9	126.6	64.
72800	14.1	113.3	14.0	113.3	6.0	14.6	118.5	25.	15.8	123.0	50.	17.2	128.6	13.
72806	14.1	114.6	14.0	114.0	35.0	14.5	118.4	94.	15.1	122.1	149.	16.3	126.5	215.
72812	14.1	115.9	13.9	115.2	41.9	14.0	119.8	83.	14.5	124.5	133.	16.0	129.0	183.
72818	14.2	117.2	14.1	117.2	6.0	14.2	122.5	36.	14.2	127.4	156.	14.2	132.3	236.
72900	14.3	118.5	14.2	118.6	8.3	14.5	124.1	51.	14.9	129.1	133.	15.3	133.5	180.
72906	14.5	119.9	14.3	120.0	13.3	14.9	125.5	71.	15.5	130.6	112.	16.0	135.2	153.
72912	14.8	121.1	14.3	121.2	30.5	14.4	126.2	123.	15.2	130.8	167.	16.2	135.2	144.
72918	15.0	122.3	14.8	122.5	16.6	15.5	127.7	83.	16.1	132.8	120.	16.7	137.7	168.
73000	15.4	123.5	15.2	123.6	13.3	15.3	128.6	109.	15.4	133.2	175.	15.5	137.5	291.
73006	15.9	124.8	15.7	124.6	16.6	17.5	129.2	53.	18.1	133.1	71.	18.4	136.6	0.
73012	16.5	126.1	16.4	125.7	23.6	17.9	130.4	63.	18.5	134.4	40.	19.0	133.6	0.
73018	17.0	127.6	16.8	127.2	25.8	18.2	132.8	6.	18.9	137.0	62.	19.2	141.1	0.
73100	17.3	129.1	17.1	128.8	20.9	17.2	134.9	104.	16.9	140.5	208.	16.0	145.7	0.
73106	17.6	130.4	17.3	130.1	24.9	17.4	135.4	87.	17.4	139.8	0.	17.0	144.1	0.
73112	17.8	131.6	17.9	131.5	8.3	18.2	136.8	100.	18.8	141.5	0.	19.4	145.8	0.
73118	18.1	132.8	18.1	132.8	0.0	18.9	139.3	87.	19.3	144.7	0.	19.4	149.7	0.
8 100	18.5	134.1	18.3	133.5	36.3	18.9	137.5	116.	20.0	139.3	0.	22.0	141.0	0.
8 106	18.9	135.3	18.4	134.3	64.5	19.0	137.7	0.	19.5	140.8	0.	20.0	144.3	0.
8 112	19.3	136.6	18.6	135.1	95.4	19.1	139.0	0.	19.5	141.8	0.	19.9	144.8	0.
8 118	19.7	137.9	19.5	137.9	12.0	20.1	143.1	0.	20.6	147.7	0.	21.1	151.9	0.
8 200	20.2	139.1	20.1	139.1	6.0	21.6	142.2	0.	23.0	145.5	0.	0.0	0.0	0.
8 206	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
8 212	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
8 218	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								79.			140.			202.
NUMBER OF CASES								30			26			21

TABLE 8

GEORGETTE.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
81300	9.0	133.3	9.0	133.2	5.9	9.1	138.0	86.	9.3	142.3	0.	10.2	146.8	0.
81306	9.0	134.7	9.0	134.5	11.9	9.0	140.0	0.	9.5	145.1	0.	9.9	150.0	0.
81312	8.9	136.5	8.6	136.2	25.3	8.6	141.7	0.	9.4	146.6	0.	9.9	151.2	0.
81318	8.9	138.1	8.2	137.3	63.4	8.0	142.8	0.	0.0	0.0	0.	0.0	0.0	0.
81400	8.7	140.0	7.8	138.6	99.1	7.4	143.2	0.	7.9	146.8	0.	8.9	149.8	0.
81406	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
81412	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
81418	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								86.			0.			0.
NUMBER OF CASES								1			0			0

TABLE 9

HOWARD.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
81600	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
81606	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
81612	17.3	104.3	16.0	104.0	79.8	17.0	108.6	166.	17.8	112.8	353.	18.3	117.6	0.
81618	17.8	105.7	17.8	105.7	0.0	19.5	110.6	72.	20.0	116.0	165.	21.0	118.5	0.
81700	18.3	107.0	18.5	107.0	12.0	21.6	112.2	13.	24.1	117.1	0.	26.3	120.5	0.
81706	18.9	108.4	18.9	108.3	5.6	18.9	108.3	383.	23.6	117.8	0.	25.0	121.7	0.
81712	19.7	109.8	19.6	109.6	12.7	22.2	114.5	75.	24.2	118.0	0.	26.6	121.2	0.
81718	20.6	111.3	20.6	111.1	11.2	24.6	117.5	124.	26.2	125.0	0.	0.0	0.0	0.
81800	21.6	112.7	21.7	112.4	17.8	26.3	116.9	0.	28.7	118.6	0.	0.0	0.0	0.
81806	22.4	114.0	22.4	114.0	0.0	25.5	120.0	0.	0.0	0.0	0.	0.0	0.0	0.
81812	23.2	115.2	23.2	115.3	5.6	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
81818	0.0	0.0	22.7	116.6	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								139.			259.			0.
NUMBER OF CASES								6			2			0

TABLE 10

ISIS.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
81900	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
81906	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
81912	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
81918	15.4	114.0	15.0	115.0	61.5	15.5	119.1	51.	16.5	123.0	143.	17.4	127.1	247.
82000	15.5	115.0	15.0	115.4	37.6	15.2	118.8	121.	15.5	122.5	254.	15.9	126.7	385.
82006	15.8	116.0	15.0	116.0	48.0	15.1	118.4	219.	15.3	120.8	393.	15.7	123.1	612.
82012	16.0	117.5	15.0	117.3	61.1	15.4	120.9	180.	15.7	124.8	308.	16.4	128.9	424.
82018	16.4	118.8	16.3	118.8	6.0	17.3	123.7	83.	18.3	127.8	183.	19.2	131.2	243.
82100	16.7	120.2	16.7	120.2	0.0	18.0	125.2	61.	19.5	129.6	119.	21.0	133.3	101.
82106	17.1	121.6	17.2	121.5	8.2	18.9	126.1	21.	20.2	129.8	150.	21.3	133.8	120.
82112	17.7	122.9	17.7	122.9	0.0	19.7	128.5	69.	21.5	132.6	66.	0.0	0.0	0.
82118	18.4	124.1	18.6	124.2	13.2	21.6	129.3	37.	23.2	133.6	106.	0.0	0.0	0.
82200	19.0	125.2	19.0	125.0	11.2	21.5	128.7	84.	23.0	133.0	167.	0.0	0.0	0.
82206	19.7	126.4	19.2	126.3	30.5	20.1	130.2	143.	20.8	134.2	96.	0.0	0.0	0.
82212	20.4	127.6	20.2	127.4	16.4	21.5	131.5	86.	22.6	134.6	0.	0.0	0.0	0.
82218	21.0	128.9	21.2	128.8	13.2	23.7	132.9	152.	26.0	136.1	0.	0.0	0.0	0.
82300	21.6	130.2	21.4	130.2	12.0	23.6	135.1	156.	0.0	0.0	0.	0.0	0.0	0.
82306	22.0	131.6	22.2	131.4	16.4	24.1	135.6	193.	24.0	138.0	0.	0.0	0.0	0.
82312	22.0	133.0	22.6	132.5	45.6	23.7	136.4	0.	0.0	0.0	0.	0.0	0.0	0.
82318	21.6	134.1	21.7	134.6	28.6	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82400	21.1	135.1	21.0	135.1	6.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82406	0.0	0.0	20.9	135.9	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82412	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82418	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								110.			180.			305.
NUMBER OF CASES								15			11			7

TABLE 11

JAVIER.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
82000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82006	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82012	10.0	97.2	9.5	97.4	32.2	10.5	102.2	73.	11.6	106.8	73.	12.5	111.3	92.
82018	10.2	98.5	10.2	98.2	17.4	11.3	102.6	99.	13.0	106.7	111.	15.0	110.8	59.
82100	10.6	99.9	10.7	99.7	13.1	12.4	104.6	63.	14.3	109.9	99.	15.0	115.2	286.
82106	11.0	101.2	11.1	101.5	18.3	12.9	107.0	48.	14.4	111.6	114.	16.8	115.0	308.
82112	11.4	102.8	11.5	102.9	8.3	13.3	108.6	91.	15.1	114.1	252.	16.8	119.0	530.
82118	11.8	104.2	11.8	104.2	0.0	14.0	110.0	130.	15.6	115.0	282.	17.4	119.4	519.
82200	12.0	105.5	12.0	105.6	5.8	13.3	111.3	126.	15.0	115.8	321.	16.0	120.5	556.
82206	12.3	106.5	12.1	107.0	31.2	12.7	112.6	156.	13.2	117.2	433.	14.4	121.2	601.
82212	12.5	107.5	11.9	108.0	46.1	12.3	112.7	168.	12.8	116.6	422.	14.0	121.2	590.
82218	12.8	108.6	12.4	108.5	24.7	13.0	112.0	114.	14.0	116.0	360.	15.0	120.1	474.
82300	13.0	109.2	12.8	109.2	12.0	13.7	112.8	153.	14.7	116.5	354.	16.0	120.4	434.
82306	13.3	109.6	13.3	110.0	22.7	15.3	112.7	157.	16.8	116.0	273.	18.0	120.0	291.
82312	13.6	110.0	13.5	110.1	8.2	15.2	111.7	106.	17.5	114.8	170.	19.0	117.7	99.
82318	14.0	110.2	14.1	110.4	12.8	15.9	112.1	107.	17.7	114.7	124.	19.2	117.7	54.
82400	14.5	110.2	14.5	110.3	5.7	16.0	111.1	67.	17.2	112.4	138.	18.5	113.6	328.
82406	15.1	110.1	15.0	110.0	8.2	17.3	109.0	132.	19.7	105.6	537.	0.0	0.0	0.
82412	15.8	110.1	15.5	109.9	21.3	17.9	108.9	172.	20.6	105.8	592.	0.0	0.0	0.
82418	16.6	110.4	16.6	110.4	0.0	19.3	111.9	66.	21.5	114.7	188.	22.5	118.2	322.
82500	17.1	110.8	17.1	110.9	5.6	18.9	112.3	76.	20.0	114.4	265.	20.4	116.2	495.
82506	17.6	111.4	17.5	111.3	8.2	19.2	113.7	80.	20.7	116.1	265.	21.9	118.8	421.
82512	18.0	112.1	18.1	111.9	12.7	20.0	114.5	101.	21.5	117.0	285.	22.8	119.0	479.
82518	18.5	112.8	18.5	112.7	5.6	20.4	115.4	131.	22.0	118.3	306.	23.1	121.0	366.
82600	19.1	113.8	19.2	113.6	12.5	21.2	117.1	127.	22.9	120.8	275.	25.5	123.0	427.
82606	19.6	115.2	19.4	115.1	13.2	20.7	120.4	29.	22.1	125.9	92.	22.4	130.0	54.
82612	19.9	116.4	20.0	116.3	8.1	21.8	120.4	115.	23.5	124.0	249.	25.0	126.0	330.
82618	20.1	117.7	20.1	117.7	0.0	20.4	122.5	56.	20.7	126.8	13.	20.8	130.8	102.
82700	20.2	119.1	20.2	119.1	0.0	20.7	123.9	63.	21.3	125.7	191.	22.3	127.2	322.
82706	20.2	120.6	20.4	120.8	16.3	21.1	126.5	34.	21.8	130.6	38.	23.0	134.8	55.
82712	20.3	122.1	20.6	122.0	18.8	21.7	126.6	72.	22.9	131.1	74.	24.3	134.6	70.
82718	20.4	123.5	20.4	123.5	0.0	20.7	128.6	90.	20.9	133.6	107.	21.0	138.1	233.
82800	20.5	124.9	20.5	125.0	5.5	20.9	130.2	63.	21.3	132.7	62.	22.2	134.8	140.
82806	20.6	126.1	20.6	126.2	5.5	21.2	131.5	86.	22.1	136.2	144.	22.7	139.7	193.
82812	20.8	127.2	20.7	127.3	8.1	21.2	131.3	41.	22.2	135.0	60.	23.0	138.0	0.
82818	20.9	128.1	20.6	127.0	63.1	21.0	129.3	167.	22.2	131.6	228.	23.9	133.4	0.
82900	21.1	129.1	21.1	129.1	0.0	22.0	132.7	25.	23.1	135.9	67.	24.2	139.2	0.
82906	21.4	130.1	21.5	130.0	9.1	22.9	133.3	28.	24.1	137.3	36.	24.7	141.3	0.
82912	21.7	131.0	21.7	130.8	11.0	22.8	134.0	60.	23.9	137.0	0.	24.5	140.3	0.
82918	22.0	132.0	22.0	132.1	5.5	23.2	135.7	47.	25.0	139.0	0.	0.0	0.0	0.
83000	22.3	133.0	22.3	133.0	0.0	23.7	136.9	53.	25.0	140.0	0.	0.0	0.0	0.
83006	22.7	133.8	23.0	133.8	18.0	25.4	137.5	66.	27.5	140.3	0.	0.0	0.0	0.
83012	23.2	134.6	23.2	135.0	22.0	25.1	139.0	0.	26.7	143.0	0.	0.0	0.0	0.
83018	23.8	135.5	23.9	135.3	12.5	26.7	137.7	0.	0.0	0.0	0.	0.0	0.0	0.
83100	24.2	136.4	24.2	136.1	16.5	25.6	138.4	0.	0.0	0.0	0.	0.0	0.0	0.
83106	24.5	137.4	24.5	136.8	33.0	25.2	138.0	0.	0.0	0.0	0.	0.0	0.0	0.
83112	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
83118	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								91.			211.			308.
NUMBER OF CASES								40			36			30

TABLE 12

KAY.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
82800	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82806	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82812	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82818	18.1	112.3	18.0	113.2	51.1	18.5	115.4	82.	19.6	118.9	172.	20.9	122.2	156.
82900	18.1	112.7	18.0	115.9	181.3	18.7	120.0	303.	19.1	122.1	292.	19.8	124.0	143.
82906	18.1	113.2	18.1	116.8	203.7	18.6	119.9	285.	19.4	122.8	300.	20.2	125.7	187.
82912	18.2	113.6	17.7	115.0	84.8	18.2	118.7	211.	19.2	122.3	220.	20.0	125.8	166.
82918	18.2	114.0	18.2	114.0	0.0	18.5	116.0	17.	19.6	118.6	103.	20.9	121.0	302.
83000	18.2	114.5	18.2	114.7	11.3	18.1	116.9	25.	18.5	119.4	132.	19.4	122.0	306.
83006	18.2	115.1	18.3	114.9	12.8	18.3	117.3	21.	18.6	120.0	159.	19.2	123.0	296.
83012	18.3	115.7	18.4	115.0	40.0	18.7	116.6	109.	19.0	118.7	276.	19.3	121.5	453.
83018	18.4	116.3	18.3	116.2	8.2	18.6	118.7	94.	19.5	121.4	262.	20.6	124.0	309.
83100	18.5	117.0	18.5	117.0	0.0	18.8	119.8	108.	19.2	122.7	266.	20.3	125.6	221.
83106	18.5	117.8	18.5	117.6	11.3	18.9	120.5	131.	19.5	123.6	261.	20.3	127.1	163.
83112	18.6	118.9	18.5	118.5	23.4	18.7	121.6	111.	19.0	124.8	269.	19.4	128.0	157.
83118	18.7	120.3	19.0	120.3	18.0	19.9	125.1	70.	21.1	129.6	109.	23.0	133.7	0.
9 100	18.8	121.7	18.8	121.7	0.0	19.5	126.4	57.	20.5	130.7	77.	21.5	134.8	0.
9 106	18.9	123.0	18.7	122.8	16.5	18.4	127.4	95.	18.4	131.7	145.	18.4	136.0	0.
9 112	19.0	124.5	18.3	123.5	70.4	17.9	127.8	145.	18.1	131.1	116.	18.4	135.0	0.
9 118	19.1	126.0	19.1	126.0	0.0	19.7	131.6	132.	20.7	136.8	0.	22.2	141.4	0.
9 200	19.3	127.3	19.4	127.4	8.2	20.3	132.3	160.	21.3	136.0	0.	0.0	0.0	0.
9 206	19.4	128.1	19.8	128.2	24.7	20.9	131.4	89.	0.0	0.0	0.	0.0	0.0	0.
9 212	19.5	128.8	19.7	129.5	41.3	20.0	134.5	214.	0.0	0.0	0.	0.0	0.0	0.
9 218	19.6	129.3	19.3	129.3	18.0	19.2	131.5	0.	0.0	0.0	0.	0.0	0.0	0.
9 300	19.7	129.8	19.9	129.5	20.8	21.0	129.4	0.	0.0	0.0	0.	0.0	0.0	0.
9 306	19.8	130.3	20.2	130.0	29.4	21.9	131.1	0.	0.0	0.0	0.	0.0	0.0	0.
9 312	20.0	130.7	20.0	130.7	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
9 318	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								123.			197.			238.
NUMBER OF CASES								20			16			12

TABLE 13

LESTER.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
91300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
91306	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
91312	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
91318	14.0	129.9	14.0	129.9	0.0	13.8	133.4	54.	13.7	136.9	192.	13.7	140.3	0.
91400	14.0	130.9	14.0	130.3	34.4	13.8	133.4	107.	13.9	136.6	190.	14.3	139.7	0.
91406	14.0	131.8	14.2	131.7	13.3	14.6	135.9	39.	14.9	139.1	186.	15.3	142.7	0.
91412	14.1	132.8	14.2	132.9	8.3	14.8	137.6	125.	15.8	141.0	168.	17.2	144.9	0.
91418	14.4	133.7	14.0	134.3	42.0	14.2	139.2	206.	14.8	143.3	0.	15.3	147.5	0.
91500	15.0	134.7	14.5	135.1	37.8	15.0	139.3	166.	15.9	143.4	0.	16.8	147.3	0.
91506	15.4	135.6	14.9	135.3	34.6	16.7	138.9	97.	18.0	141.0	0.	19.8	143.9	0.
91512	16.0	136.3	15.6	135.6	46.8	16.6	136.7	166.	17.8	138.0	0.	18.7	140.0	0.
91518	16.5	137.0	16.9	137.0	24.0	19.8	139.9	0.	21.5	143.7	0.	0.0	0.0	0.
91600	17.0	137.7	17.0	137.3	23.0	18.8	139.0	0.	20.0	141.1	0.	0.0	0.0	0.
91606	17.6	138.4	17.6	137.5	51.7	19.8	138.0	0.	21.3	137.7	0.	0.0	0.0	0.
91612	18.0	139.2	18.0	139.2	0.0	21.4	140.2	0.	23.5	140.6	0.	0.0	0.0	0.
91618	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								120.			184.			0.
NUMBER OF CASES								8			4			0

TABLE 14

MADELINE.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
91500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
91506	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
91512	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
91518	12.7	103.9	13.0	104.0	18.9	13.3	108.7	84.	13.9	112.8	139.	14.3	116.8	269.
91600	12.5	105.4	13.1	106.0	50.0	13.5	112.0	123.	14.1	118.0	119.	16.0	122.7	100.
91606	12.4	106.8	13.1	107.0	43.6	13.6	111.7	72.	14.0	116.4	93.	14.2	120.4	251.
91612	12.3	108.1	13.2	108.5	58.7	13.9	113.5	93.	15.1	117.8	123.	16.2	121.0	307.
91618	12.3	109.6	12.2	109.6	6.0	12.6	115.0	13.	13.6	119.8	95.	15.0	124.4	267.
91700	12.4	110.8	12.3	110.3	29.6	12.5	114.7	98.	13.3	119.2	242.	14.5	124.0	353.
91706	12.5	112.1	12.4	111.7	23.9	12.7	116.5	74.	13.5	121.3	209.	15.0	125.9	256.
91712	12.6	113.4	12.5	112.8	35.1	13.1	117.2	94.	14.1	121.4	276.	15.3	125.6	279.
91718	12.8	115.0	12.8	114.9	5.8	13.7	120.0	82.	14.5	124.6	258.	15.3	128.7	177.
91800	13.0	116.6	13.0	116.3	17.2	14.0	122.4	52.	15.2	128.6	83.	16.3	134.8	277.
91806	13.2	118.2	13.1	117.7	29.2	13.8	123.1	105.	14.6	128.4	134.	16.0	133.4	265.
91812	13.5	119.9	13.3	118.8	63.8	14.3	123.8	137.	15.4	128.3	141.	16.8	133.1	248.
91818	14.0	121.6	13.9	121.4	12.9	15.0	127.4	93.	15.8	133.0	183.	16.9	137.4	455.
91900	14.4	123.2	14.4	123.2	0.0	14.9	129.6	43.	14.6	132.5	255.	14.5	135.6	469.
91906	14.8	125.0	14.6	124.7	20.9	15.3	130.8	54.	15.7	134.9	341.	16.0	139.9	665.
91912	14.9	126.8	14.8	126.1	40.2	15.3	131.4	127.	16.0	136.3	425.	16.8	141.2	685.
91918	15.0	128.4	15.1	129.0	34.6	15.6	136.0	340.	16.0	141.0	669.	16.2	145.6	0.
92000	15.5	129.6	15.5	130.0	22.7	17.0	135.8	314.	18.4	140.6	639.	18.8	145.8	0.
92006	16.3	130.0	16.0	130.2	21.3	18.1	132.7	157.	19.7	134.9	328.	21.0	137.5	0.
92012	17.0	130.3	17.0	130.1	11.4	19.8	130.7	47.	21.4	131.0	86.	22.0	131.1	0.
92018	17.7	130.5	17.7	130.5	0.0	20.4	131.0	99.	23.1	131.1	0.	25.7	130.7	0.
92100	18.4	130.5	18.4	130.5	0.0	21.1	130.7	116.	23.7	130.5	0.	26.3	129.8	0.
92106	18.7	130.2	19.2	130.2	30.0	22.0	129.3	109.	23.0	130.2	0.	0.0	0.0	0.
92112	19.1	129.9	19.6	129.9	30.0	22.3	128.5	130.	24.1	128.4	0.	0.0	0.0	0.
92118	19.4	129.6	19.2	129.8	16.5	20.3	129.0	0.	21.4	128.2	0.	0.0	0.0	0.
92200	19.8	129.3	19.6	129.4	13.3	21.1	128.8	0.	23.1	128.5	0.	0.0	0.0	0.
92206	20.2	129.0	20.2	129.1	5.7	21.9	128.5	0.	0.0	0.0	0.	0.0	0.0	0.
92212	20.5	129.8	20.5	129.8	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
92218	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								111.			242.			333.
NUMBER OF CASES								24			20			16

TABLE 15

NEWTON.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
91800	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
91806	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
91812	12.4	94.5	13.0	94.0	45.9	14.7	98.2	95.	16.5	102.0	84.	18.1	106.3	48.
91818	12.7	95.8	12.3	95.9	24.7	13.1	101.0	67.	15.1	105.8	121.	17.3	109.6	253.
91900	12.9	97.0	12.8	96.8	12.8	14.3	101.2	71.	15.6	104.9	115.	16.5	109.0	300.
91906	13.3	98.2	13.0	97.6	38.4	14.4	101.1	102.	16.1	104.8	144.	17.4	108.3	277.
91912	13.6	99.6	13.2	98.7	56.2	14.3	102.5	120.	15.7	106.4	187.	17.1	110.4	347.
91918	14.1	101.0	14.2	100.8	12.7	15.8	105.2	67.	17.6	108.6	205.	18.7	113.5	363.
92000	14.8	102.0	14.8	102.3	16.6	17.5	107.3	120.	18.9	109.8	201.	21.2	110.8	207.
92006	15.3	102.9	15.3	102.6	16.6	17.1	103.9	137.	18.2	105.7	257.	19.5	107.5	367.
92012	15.9	103.8	16.1	103.4	25.0	18.6	105.4	75.	20.4	107.6	141.	21.9	109.4	253.
92018	16.7	104.6	16.5	104.3	20.4	18.6	106.9	115.	20.7	109.8	158.	22.3	112.2	0.
92100	17.5	105.2	17.5	105.2	0.0	20.4	108.6	92.	21.7	110.7	177.	23.7	111.6	0.
92106	18.5	105.9	18.2	106.0	18.8	20.2	108.3	112.	21.5	110.1	222.	22.1	112.0	0.
92112	19.4	106.4	18.8	106.7	39.6	21.7	109.4	74.	23.6	111.6	176.	24.7	113.5	0.
92118	20.3	106.8	20.5	106.7	13.2	24.0	107.1	128.	0.0	0.0	0.	0.0	0.0	0.
92200	21.2	107.3	21.2	107.2	5.5	24.5	108.8	49.	0.0	0.0	0.	0.0	0.0	0.
92206	22.0	107.7	22.0	107.8	5.5	25.3	109.9	6.	28.2	111.8	0.	0.0	0.0	0.
92212	22.8	108.4	22.6	108.5	13.2	25.2	110.8	73.	26.9	111.4	0.	0.0	0.0	0.
92218	23.6	109.1	23.3	109.3	21.1	27.4	111.2	0.	0.0	0.0	0.	0.0	0.0	0.
92300	24.5	109.7	24.5	109.7	0.0	28.2	111.7	0.	0.0	0.0	0.	0.0	0.0	0.
92306	25.2	109.9	25.2	109.9	0.0	28.3	111.6	0.	0.0	0.0	0.	0.0	0.0	0.
92312	26.1	109.9	26.1	109.9	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
92318	26.7	109.8	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								88.			168.			268.
NUMBER OF CASES								17			13			9

TABLE 16

ORLELE.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
92100	12.0	138.7	12.1	138.7	6.0	16.4	139.4	172.	18.8	140.7	0.	21.2	142.6	0.
92106	12.4	138.9	12.3	139.2	18.4	14.0	140.8	0.	16.2	141.7	0.	0.0	0.0	0.
92112	12.9	139.2	12.7	139.0	16.7	14.8	139.8	0.	16.5	140.1	0.	18.5	141.4	0.
92118	13.2	139.5	13.1	139.3	13.1	14.6	140.2	0.	16.3	141.3	0.	18.5	140.3	0.
92200	13.6	140.0	13.6	140.0	0.0	15.5	141.7	0.	17.5	143.2	0.	18.1	143.0	0.
92206	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	19.7	144.0	0.
92212	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
92218	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								172.			0.			0.
NUMBER OF CASES								1			0			0

TABLE 17

PAINE.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
92800	11.5	93.0	11.5	93.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
92806	11.5	94.6	11.5	95.2	33.4	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
92812	11.6	96.2	11.5	96.7	28.4	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
92818	11.8	97.9	11.5	98.2	24.8	12.1	104.2	56.	13.0	110.7	354.	15.0	115.0	502.
92900	12.4	99.4	12.0	101.8	137.8	13.0	107.6	94.	14.6	112.0	324.	16.3	114.0	474.
92906	13.0	100.7	12.3	103.6	168.7	13.2	110.2	165.	14.7	115.2	493.	16.5	119.1	719.
92912	13.7	102.0	12.4	105.4	206.0	13.7	110.7	126.	15.0	115.5	497.	16.5	119.4	796.
92918	14.5	103.3	12.4	105.1	161.5	13.5	111.0	336.	14.7	116.3	567.	16.0	121.2	0.
93000	15.4	104.5	13.2	106.0	156.5	14.6	112.0	324.	16.3	116.9	585.	18.4	120.7	0.
93006	16.3	105.6	14.0	107.5	174.4	16.0	112.8	341.	17.4	116.8	583.	19.0	120.1	0.
93012	17.2	106.6	14.7	108.8	194.2	16.9	113.8	347.	19.0	118.3	652.	21.8	122.3	0.
93018	18.0	107.3	18.3	108.0	43.2	22.1	111.8	153.	25.3	113.3	0.	0.0	0.0	0.
10 100	18.9	108.0	18.5	108.1	24.6	20.9	110.0	119.	23.6	110.7	0.	0.0	0.0	0.
10 106	19.7	108.7	20.3	108.9	37.7	25.6	109.8	124.	0.0	0.0	0.	0.0	0.0	0.
10 112	20.5	109.1	20.6	109.1	6.0	23.8	109.6	95.	26.6	110.2	0.	0.0	0.0	0.
10 118	21.5	109.2	21.3	109.2	12.0	24.3	109.1	0.	0.0	0.0	0.	0.0	0.0	0.
10 200	22.5	109.1	22.7	109.1	12.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
10 206	23.7	108.9	23.7	108.9	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
10 212	25.1	108.6	25.1	108.6	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
10 218	27.2	107.3	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								190.			507.			623.
NUMBER OF CASES								12			8			4

TABLE 18

ROSLYN.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
101500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
101506	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
101512	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
101518	10.2	92.7	10.3	93.0	18.6	10.3	95.0	182.	10.4	97.0	431.	10.5	99.0	594.
101600	10.3	94.1	10.2	94.0	8.4	10.4	97.5	136.	11.0	101.6	241.	11.7	105.6	236.
101606	10.5	95.3	10.4	95.2	8.3	10.8	99.9	69.	12.2	104.1	159.	15.9	106.8	243.
101612	10.7	96.8	10.4	96.1	44.4	11.6	100.2	143.	13.3	104.5	204.	15.6	107.8	203.
101618	10.8	98.0	11.0	98.0	12.0	12.0	103.0	73.	13.8	107.8	101.	16.0	112.3	112.
101700	11.0	99.6	11.1	99.7	8.3	12.0	105.5	8.	13.2	110.2	48.	15.4	114.3	151.
101706	11.3	101.0	11.2	101.0	6.0	12.3	106.7	19.	13.5	110.0	8.	14.5	112.3	96.
101712	11.5	102.6	11.2	102.6	18.0	12.1	108.3	30.	13.2	112.5	109.	15.4	116.0	240.
101718	11.7	104.1	11.7	104.2	5.8	12.5	110.1	70.	13.4	116.2	292.	14.2	122.1	641.
101800	11.9	105.3	11.9	105.6	17.2	12.9	111.5	123.	14.0	116.3	277.	15.2	120.7	616.
101806	12.1	106.5	12.0	106.8	18.1	13.2	111.5	83.	14.8	116.0	228.	16.2	120.1	654.
101812	12.3	107.7	12.2	107.8	8.3	13.1	111.9	79.	14.1	115.7	264.	15.8	119.3	664.
101818	12.7	108.8	12.5	108.9	13.3	13.6	113.6	142.	15.0	118.4	425.	18.5	120.0	646.
101900	13.0	109.4	13.0	109.4	0.0	14.3	112.2	61.	15.4	114.2	300.	16.9	116.0	548.
101906	13.4	110.1	13.4	110.1	0.0	15.3	112.7	53.	16.9	115.2	386.	17.6	117.5	661.
101912	13.8	110.7	13.7	110.7	6.0	15.2	112.8	104.	16.9	114.5	397.	18.7	116.2	0.
101918	14.4	111.3	14.4	111.3	0.0	16.8	113.2	112.	18.5	114.6	363.	19.8	118.0	0.
102000	15.2	111.7	15.2	111.7	0.0	18.4	112.9	129.	22.3	112.0	217.	24.8	108.1	0.
102006	16.1	112.1	16.1	112.3	11.3	20.5	110.9	79.	0.0	0.0	0.	0.0	0.0	0.
102012	17.1	112.0	16.8	112.1	18.9	20.7	110.0	59.	0.0	0.0	0.	0.0	0.0	0.
102018	18.1	111.6	18.0	111.7	8.2	21.6	109.0	6.	0.0	0.0	0.	0.0	0.0	0.
102100	19.1	111.1	19.2	110.8	17.9	22.9	106.8	83.	0.0	0.0	0.	0.0	0.0	0.
102106	20.2	110.5	20.4	109.5	57.6	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
102112	20.8	109.8	21.0	109.0	46.6	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
102118	21.4	109.0	21.5	109.0	6.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
102200	22.0	108.1	22.2	108.1	12.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
102206	22.7	107.1	22.7	107.1	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
102212	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
102218	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								84.			247.			420.
NUMBER OF CASES								22			18			15

TABLE 19

139 Aids for Forecasting Minimum Temperature in the Wenatchee Frost District. Robert S. Robinson, April 1979. (PB298339/AS)
140 Influence of Cloudiness on Summertime Temperatures in the Eastern Washington Fire Weather district. James Holcomb, April 1979. (PB298674/AS)
141 Comparison of LFM and MFM Precipitation Guidance for Nevada During Doreen. Christopher Hill, April 1979. (PB298613/AS)
142 The Usefulness of Data from Mountaintop Fire Lookout Stations in Determining Atmospheric Stability. Jonathan W. Corey, April 1979. (PB298899/AS)
143 The Depth of the Marine Layer at San Diego as Related to Subsequent Cool Season Precipitation Episodes in Arizona. Ira S. Brenner, May 1979. (PB298817/AS)
144 Arizona Cool Season Climatological Surface Wind and Pressure Gradient Study. Ira S. Brenner, May 1979. (PB298900/AS)
146 The BART Experiment. Morris S. Webb, October 1979. (PB80 155112)
147 Occurrence and Distribution of Flash Floods in the Western Region. Thomas L. Dietrich, December 1979. (PB80 160344)
149 Misinterpretations of Precipitation Probability Forecasts. Allan H. Murphy, Sarah Lichtenstein, Baruch Fischhoff, and Robert L. Winkler, February 1980. (PB80 174576)
150 Annual Data and Verification Tabulation - Eastern and Central North Pacific Tropical Storms and Hurricanes 1979. Emil B. Gunther and Staff, EPHC, April 1980. (PB80 220486)
151 NMC Model Performance in the Northeast Pacific. James E. Overland, PMEL-ERL, April 1980. (PB80 196033)
152 Climate of Salt Lake City, Utah. Wilbur E. Figgins, Third Revision January 1987. (PB87 157194/AS)
153 An Automatic Lightning Detection System in Northern California. James E. Rea and Chris E. Fontana, June 1980. (PB80 225592)
154 Regression Equation for the Peak Wind Gust 6 to 12 Hours in Advance at Great Falls During Strong Downslope Wind Storms. Michael J. Oard, July 1980. (PB91 108367)
155 A Raininess Index for the Arizona Monsoon. John H. Ten Harkel, July 1980. (PB81 106494)
156 The Effects of Terrain Distribution on Summer Thunderstorm Activity at Reno, Nevada. Christopher Dean Hill, July 1980. (PB81 102501)
157 An Operational Evaluation of the Scofield/Oliver Technique for Estimating Precipitation Rates from Satellite Imagery. Richard Ochoa, August 1980. (PB81 108227)
158 Hydrology Practicum. Thomas Dietrich, September 1980. (PB81 134033)
159 Tropical Cyclone Effects on California. Arnold Court, October 1980. (PB81 133779)
160 Eastern North Pacific Tropical Cyclone Occurrences During Intraseasonal Periods. Preston W. Leftwich and Gail M. Brown, February 1981. (PB81 205494)
161 Solar Radiation as a Sole Source of Energy for Photovoltaics in Las Vegas, Nevada, for July and December. Darryl Randerson, April 1981. (PB81 224503)
162 A Systems Approach to Real-Time Runoff Analysis with a Deterministic Rainfall-Runoff Model. Robert J.C. Burnash and R. Larry Ferral, April 1981. (PB81 224495)
163 A Comparison of Two Methods for Forecasting Thunderstorms at Luke Air Force Base, Arizona. LTC Keith R. Cooley, April 1981. (PB81 225393)
164 An Objective Aid for Forecasting Afternoon Relative Humidity Along the Washington Cascade East Slopes. Robert S. Robinson, April 1981. (PB81 23078)
165 Annual Data and Verification Tabulation, Eastern North Pacific Tropical Storms and Hurricanes 1980. Emil B. Gunther and Staff, May 1981. (PB82 230336)
166 Preliminary Estimates of Wind Power Potential at the nevada Test Site. Howard G. Booth, June 1981. (PB82 127036)
167 ARAP User's Guide. Mark Mathewson, July 1981, revised September 1981. (PB82 196783)
168 Forecasting the Onset of Coastal Gales Off Washington-Oregon. John R. Zimmerman and William D. Burton, August 1981. (PB82 127051)
169 A Statistical-Dynamical Model for Prediction of Tropical Cyclone Motion in the Eastern North Pacific Ocean. Preston W. Leftwich, Jr., October 1981. (PB82195298)
170 An Enhanced Plotter for Surface Airways Observations. Andrew J. Spry and Jeffrey L. Anderson, October 1981. (PB82 153883)
171 Verification of 72-Hour 500-MB Map-Type Predictions. R.F. Quiring, November 1981. (PB82 158098)
172 Forecasting Heavy Snow at Wenatchee, Washington. James W. Holcomb, December 1981. (PB82 177783)
173 Central San Joaquin Valley Type Maps. Thomas R. Crossan, December 1981. (PB82 196064)
174 ARAP Test Results. Mark A. Mathewson, December 1981. (PB82 198103)
176 Approximations to the Peak Surface Wind Gusts from Desert Thunderstorms. Darryl Randerson, June 1982. (PB82 253089)
177 Climate of Phoenix, Arizona. Robert J. Schmidli, April 1969 (revised December 1986). (PB87 142063/AS)
178 Annual Data and Verification Tabulation, Eastern North Pacific Tropical Storms and Hurricanes 1982. E.B. Gunther, June 1983. (PB85 106078)
179 Stratified Maximum Temperature Relationships Between Sixteen Zone Stations in Arizona and Respective Key Stations. Ira S. Brenner, June 1983. (PB83 249904)
180 Standard Hydrologic Exchange Format (SHEF) Version I. Phillip A. Pasteries, Vernon C. Bissel, David G. Bennett, August 1983. (PB85 106052)
181 Quantitative and Spacial Distribution of Winter Precipitation along Utah's Wasatch Front. Lawrence B. Dunn, August 1983. (PB85 106912)
182 500 Millibar Sign Frequency Teleconnection Charts - Winter. Lawrence B. Dunn, December 1983. (PB85 106276)
183 500 Millibar Sign Frequency Teleconnection Charts - Spring. Lawrence B. Dunn, January 1984. (PB85 111367)
184 Collection and Use of Lightning Strike Data in the Western U.S. During Summer 1983. Glenn Rasch and Mark Mathewson, February 1984. (PB85 110534)
185 500 Millibar Sign Frequency Teleconnection Charts - Summer. Lawrence B. Dunn, March 1984. (PB85 111359)
186 Annual Data and Verification Tabulation eastern North Pacific Tropical Storms and Hurricanes 1983. E.B. Gunther, March 1984. (PB85 109635)
187 500 Millibar Sign Frequency Teleconnection Charts - Fall. Lawrence B. Dunn, May 1984. (PB85 110930)
188 The Use and Interpretation of Isentropic Analyses. Jeffrey L. Anderson, October 1984. (PB85 132694)
189 Annual Data & Verification Tabulation Eastern North Pacific Tropical Storms and Hurricanes 1984. E.B. Gunther and R.L. Cross, April 1985. (PB85 1878887AS)
190 Great Salt Lake Effect Snowfall: Some Notes and An Example. David M. Carpenter, October 1985. (PB86 119153/AS)
191 Large Scale Patterns Associated with Major Freeze Episodes in the Agricultural Southwest. Ronald S. Hamilton and Glenn R. Lussky, December 1985. (PB86 144474AS)
192 NWR Voice Synthesis Project: Phase I. Glen W. Sampson, January 1986. (PB86 145604/AS)
193 The MCC - An Overview and Case Study on Its Impact in the Western United States. Glenn R. Lussky, March 1986. (PB86 170651/AS)
194 Annual Data and Verification Tabulation Eastern North Pacific Tropical Storms and Hurricanes 1985. E.B. Gunther and R.L. Cross, March 1986. (PB86 170941/AS)
195 Radid Interpretation Guidelines. Roger G. Pappas, March 1986. (PB86 177680/AS)
196 A Mesoscale Convective Complex Type Storm over the Desert Southwest. Darryl Randerson, April 1986. (PB86 190998/AS)
197 The Effects of Eastern North Pacific Tropical Cyclones on the Southwestern United States. Walter Smith, August 1986. (PB87 106258AS)
198 Preliminary Lightning Climatology Studies for Idaho. Christopher D. Hill, Carl J. Gorski, and Michael C. Conger, April 1987. (PB87 180196/AS)
199 Heavy Rains and Flooding in Montana: A Case for Slantwise Convection. Glenn R. Lussky, April 1987. (PB87 185229/AS)

NOAA SCIENTIFIC AND TECHNICAL PUBLICATIONS

The National Oceanic and Atmospheric Administration was established as part of the Department of Commerce on October 3, 1970. The mission responsibilities of NOAA are to assess the socioeconomic impact of natural and technological changes in the environment and to monitor and predict the state of the solid Earth, the oceans and their living resources, the atmosphere, and the space environment of the Earth.

The major components of NOAA regularly produce various types of scientific and technical information in the following kinds of publications:

PROFESSIONAL PAPERS — Important definitive research results, major techniques, and special investigations.

CONTRACT AND GRANT REPORTS — Reports prepared by contractors or grantees under NOAA sponsorship.

ATLAS — Presentation of analyzed data generally in the form of maps showing distribution of rainfall, chemical and physical conditions of oceans and atmosphere, distribution of fishes and marine mammals, ionospheric conditions, etc.

TECHNICAL SERVICE PUBLICATIONS — Reports containing data, observations, instructions, etc. A partial listing includes data serials; prediction and outlook periodicals; technical manuals, training papers, planning reports, and information serials; and miscellaneous technical publications.

TECHNICAL REPORTS — Journal quality with extensive details, mathematical developments, or data listings.

TECHNICAL MEMORANDUMS — Reports of preliminary, partial, or negative research or technology results, interim instructions, and the like.

Information on availability of NOAA publications can be obtained from:

ENVIRONMENTAL SCIENCE INFORMATION CENTER (D822)
ENVIRONMENTAL DATA AND INFORMATION SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

6009 Executive Boulevard
Rockville, MD 20852