LOCAL AREA
FORECASTER'S HANDBOOK

PREPARED BY:

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NAVAL AIR STATION CECIL FIELD, FL

PREPARED FOR:

COMMANDER,
NAVAL METEOROLOGY AND OCEANOGRAPHY COMMAND
STENNIS SPACE CENTER, MS

LOCAL AREA FORECASTER'S HANDBOOK

FOR

NAS CECIL FIELD, FLORIDA

APRIL 1999

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NAVLANTMETOC DET CECIL FIELD INSTRUCTION 3140.2A

Subj: LOCAL AREA FORECASTER'S HANDBOOK

Ref: (a) NAVMETOCCOMINST 3140.2 (series)

Encl: (1) Local Area Forecaster's Handbook for NAS Cecil Field

1. Purpose. In accordance with reference (a), enclosure (1) is promulgated to assist forecasters assigned to NAVLANTMETOC DET Cecil Field.

2. Cancellation. NAVLANTMETOCDETINST 3140.2

3. Discussion. This instruction provides newly-assigned forecasters with a description of the station, the local area terrain, weather phenomena unique to the local area, and guidance to assist them in fulfilling NAVLANTMETOC DET Cecil Field's support mission.

4. Action. All personnel performing forecasting duties at this detachment will become thoroughly familiar with this handbook and should be constantly vigilant for additional or improved forecasting techniques applicable to the Cecil Field area. All such concepts should be submitted to the chain of command for evaluation and incorporation into enclosure (1) as appropriate.

G. A. MACKE

TABLE OF CONTENTS

SECTION I - BASIC DESCRIPTION

SSEC.		PAGE
101.0	LOCATION	6
102.0	TOPOGRAPHY	6
103.0	INSTRUMENTATION	6
103.1	OFFICE INSTRUMENTATION	6
103.2	FIELD INSTRUMENTATION	6
104.0	METEOROLOGICAL/OCEANOGRAPHIC EQUIPMENT	7
105.0	ACTIVITIES SUPPORTED	7
106.0	PRODUCTS/SERVICES PROVIDED	8

TABLE		PAGE
1-1	WRR-88D PUP SETTINGS AND PARAMETERS	9

FIG.		PAGE
(1-1)	STATION LOCATION	11
(1-2)	NAS CECIL FIELD OVERVIEW	12
(1-3)	FIELD INSTRUMENTATION	13
(1-4)	LOCAL FLYING AREA	14

SECTION II - CLIMATOLOGY

SSEC.		PAGE
201.0	CLIMATE	15
202.0	SPECIAL FEATURES	16
202.1	TEMPERATURE	16
202.2	SURFACE WINDS	16
202.3	PRECIPITATION	16
202.4	THUNDERSTORMS	16
202.5	FOG/STRATUS	16
202.6	OCEAN CURRENT EFFECTS	16
202.7	FRONTAL SYSTEMS	17
202.8	HURRICANES, TROPICAL STORMS, AND EASTERLY WAVES	17
202.9	FLYING WEATHER	17

FIG.		PAGE
(2-1)	STATION CLIMATIC SUMMARY	19
(2-2)	TYPICAL FRONT, PRESSURE CENTER, AND AIR MASS LOCATIONS	20
(2-3)	TROPICAL CYCLONE MOVEMENT	21
(2-4)	PERCENT HOURS BELOW VFR	26

SECTION III - FORECASTING

SSEC.		PAGE
301.0	TEMPERATURE	27
301.1	MAXIMUM TEMPERATURE	27
301.2	MINIMUM TEMPERATURE	27
302.0	WIND	27
302.1	THUNDERSTORM INDUCED WINDS	28
303.0	WEATHER AND OBSTRUCTIONS TO VISION	28
303.1	PRECIPITATION	28

303.2	FOG	28
303.3	HAZE/SMOKE	29
304.0	VISIBILITY	29
305.0	SKY COVER/FLYING WEATHER	29
306.0	THUNDERSTORMS	29
306.1	AIR MASS THUNDERSTORMS	30
306.2	FRONTAL THUNDERSTORMS	31
307.0	WEATHER ASSOCIATED WITH HURRICANES, TROPICAL STORMS, AND EASTERLY WAVES	31
308.0	WEATHER ASSOCIATED WITH FRONTAL SYSTEMS	31
309.0	NORTHEAST STRATUS (“NOR’EASTER”)	32
310.0	ICING	32
311.0	TURBULENCE	32
312.0	ALTERNATE WEATHER	33
313.0	REFERENCES	33

FIG.		PAGE
(3-1)	PERCENT FREQUENCY OF WIND DIRECTION VERSUS WEATHER CONDITIONS	34
(3-2)	NORTH-SOUTH ORIENTED COLD FRONT	35
(3-3)	EAST-WEST ORIENTED COLD FRONT	35
(3-4)	REGIONAL CYCLOGENESIS	36
(3-5)	GULF WAVE FORMATION	36

SECTION IV - SPECIALIZED FORECASTS AND SERVICES

SSEC.		PAGE
401.0	PINECASTLE ELECTRONIC WARFARE RANGE (PEWR)	37
402.0	OPTIMUM PATH AIRCRAFT ROUTING SYSTEM (OPARS)	37
403.0	AIRCRAFT EVACUATION	37
404.0	STAFF AND MISSION BRIEFINGS	37
405.0	CLIMATOLOGY	38
406.0	REFERENCES	38

SECTION V - ENVIRONMENTAL EFFECTS

SSEC.		PAGE
501.0	MINIMUM METEOROLOGICAL CONDITIONS FOR AIRFIELD OPERATIONS	39
502.0	THUNDERSTORM CONDITIONS/LIGHTING ALERTS	39
503.0	WIND WARNINGS	40
504.0	FREEZE WARNINGS	40
505.0	HEAT STRESS ADVISORIES	40
506.0	REFERENCES	41

SECTION I - BASIC DESCRIPTION

101.0 LOCATION. Naval Air Station, Cecil Field is located in northeast Florida at 30 degrees, 13 minutes north latitude and 081 degrees, 53 minutes west longitude (Figure 1-1). The Naval Air Station is 18 miles south-southwest of the Jacksonville International Airport and 11 miles west of Naval Air Station, Jacksonville.

102.0 TOPOGRAPHY. The local terrain is generally flat, heavily wooded in southern pine, with a considerable number of shallow lakes and swampy areas (Figure 1-2). The elevation in northern Florida and southern Georgia averages 24 feet above mean sea level. In comparison to the surrounding area, Naval Air Station, Cecil Field, sits on a hill with a maximum field elevation of 81 feet above sea level. Other features in the vicinity include the Okefenokee Swamp, 25 miles to the northwest, the Atlantic Ocean, 27 miles due east and the Gulf of Mexico, 80 miles southwest of the station. Additionally, the St. Johns River, oriented north-south, is located midway between Cecil Field and the Atlantic Ocean.

103.0 INSTRUMENTATION.

103.1 OFFICE INSTRUMENTATION. Meteorological instrumentation utilized in the NAVLANTMETOC DET Cecil Field spaces, located on the first deck of the Operations Building, Bldg. 82 (Figure 1-3), includes the following:

a. Wind Measuring Set Indicator (ID-586/UMQ-5) - additional indicators located at RATCF and Tower.

b. Automated Surface Observing System (ASOS).

c. Aneroid Barometer (ML-448/UM).

d. Digital Altimeter Setting Indicator (ML-661/F).

e. METOC Integrated Data Display System (MIDDS).

103.2 FIELD INSTRUMENTATION. (Figure 1-3)

a. Automated Surface Observing System (ASOS) Sensor Group located 1000 feet south of the centerline of runway 27L and 1000 feet east of the centerline of runway 36R.

b. 4-inch Rain Gauge (ML-217) - backup for the ASOS rainfall sensor, located approximately 75 feet west of the southwest entrance to Bldg. 82.

c. Handheld Electric Psychrometer (ML-450A/UM) - operated manually at the observation site when required as a backup for the ASOS temperature sensor.

d. Wind Measuring Set (AN/PMQ-3) - operated manually at the observation site when required as a secondary backup for the ASOS wind sensor.

NOTE: The ML-450A/UM, and AN/PMQ-3 observation site is located just outside the south entrance to Bldg. 82 as depicted in Figure 1-3.

e. Wind Measuring Set Transmitter (ML-400/UMQ-5) - located adjacent to Ceiling Light Projector.

104.0 METEOROLOGICAL/OCEANOGRAPHIC EQUIPMENT.

a. Meteorological and Oceanographic (METOC) Integrated Data Display System (MIDDS) receives satellite, facsimile, alphanumeric, radar and lightning data via 56K NIPERNET line as well as single purpose dedicated circuits. The information is stored on the server (forecaster's terminal) and is displayed on a series of four monitors in the briefing area. The data is also available via the observers terminal (watchstation 1).

b. Lightning Positioning and Tracking System (LPATS) provides a graphical depiction of cloud to ground lightning strikes for the state of Florida and the surrounding waters. The individual strikes are color-coded to indicate time of occurrence. Care must be taken when utilizing LPATS to issue lightning alerts as the system often becomes unreliable when Cecil Field suffers a close strike.

c. Sharp Plain Paper Laser Facsimile and Rapidcom 120 Facsimile machines are used to provide DD 175-1's to customers. The Sharp facsimile group facsimile capability is also used to disseminate the 36 hour local forecast.

d. Pilot to Meteorological Service (PMSV), UHF 317.0 MHz, provides direct voice communications between aircraft and the forecaster.

e. Weathervision (AN/GMQ-27) provides an audio and video link between the forecaster and squadron ready rooms.

f. CONTEL Meteorologist Workstation (CMW) forecaster and observer terminals transmit and receive COMEDS data.

g. Airport Weather Information System (AWIS) provides a direct link with local aviation activities ensuring station observation information is available to all activities on the net as soon as possible.

h. GateGuard DTC message system provides a direct link for transmitting and receiving naval message traffic via the AUTODIN system.

i. Next Generation Radar (NEXRAD) PUP (Principal User Processor) provides state-of-the-art doppler radar information from the primary radar site at Jacksonville International Airport. Access to other radar sites are available through dial-up procedures.

105.0 ACTIVITIES SUPPORTED. As the "Master Jet Base of the South", NAS Cecil Field handles approximately 185,000 takeoffs and landings annually. In addition, White House handles approximately 32,650 takeoffs and landings annually. Dual sets of runways oriented north-south and east-west with a width of 200 feet and a minimum length of 8,000 feet are available for operations and training. Additionally, runway 36R/18L is 12,500 feet long (Figure 1-3). Routine meteorological and oceanographic (METOC) support is provided to NAS Cecil Field, NAS Cecil Field tenant activities, squadrons, transient aircraft and Pinecastle Electronic Weapons Range. Squadrons and aircraft homeported at NAS Cecil Field include:

10 F/A 18 Squadrons
4 STRKFIGHTWEAPSCHOL T-34 Aircraft

The local flying area for NAS Cecil Field squadrons and aircraft is depicted in Figure 1-4.

106.0 PRODUCTS/SERVICES PROVIDED. NAVLANTMETOC DET Cecil Field is a sub-regional forecasting (SRF) detachment providing METOC forecaster support from 0530 to 1730 and observer support during normal field hours of operation. DD 175-1 briefings, Terminal Aerodrome Forecasts, Optimum Path Aircraft Routing System computations, Horizontal Weather Depictions, IREPS products, EOTDA products, daily plain language 36 hour forecasts, surface aviation observations, special mission briefings, monthly climatological/astronomical data, and destructive weather warnings are routinely provided. Tropical cyclone warning information is also disseminated when available. Warning support from 1730 to 0530 is provided by the Sub-Regional Forecaster at NAVLANTMETOCFAC Jacksonville.

TABLE 1-1: WSR-88D PUP SETTINGS AND PARAMETERS

ROUTINE PRODUCT SET (RPS) LISTS

GENERAL SELECTIONS
LIST A - DEFAULT PRECIPITATION MODE
LIST B - DEFAULT CLEAR AIR MODE
LIST C - NOT DEFINED..... TEMPORARY SAVE FILE FOR ALL USERS
LIST D - LONG RANGE (125-250nm) PRECIPITATION PRODUCTS
VCP 11 SELECTIONS
LIST E - 0-30nm SHORT RANGE (PLUS 30-250nm PRODUCTS)
LIST F - 30-70nm MEDIUM RANGE (PLUS 70-250nm PRODUCTS)
LIST G - 70-125nm LONG RANGE (PLUS 125-250nm PRODUCTS)
VCP 21 SELECTIONS
LIST H - 0-30nm SHORT RANGE (PLUS 30-250nm PRODUCTS)
LIST I - 30-70nm MEDIUM RANGE (PLUS 70-250nm PRODUCTS)
LIST J - 70-125nm LONG RANGE (PLUS 125-250nm PRODUCTS)

(See detachment WSR-88D standard operating procedure 05W for a detailed description of a particular RPS list.)

ALERT THRESHOLD VALUES

CAT	NAME	UNITS	T-1	T-2	T-3	T-4	T-5	T-6
GRID GROUP								
1	VELOCITY	KTS	15	25	35	45	50	60
2	COMPOSITE REFL	DBZ	20	30	40	50	60	70
3	ECHO TOPS	KFT	30	40	50	60		
4	SEVR WTHR	PROB %	30	40	50	60	70	
6	VERT INTEG LIQ	KG/M3	35	40	45	50	55	65
VOLUME GROUP								
7	VEL AZ DISPL	KT	15	20	25	30	35	40
8	HAIL		PROB POS					
9	MESOCYCLONE		UNCOR	3DCOR	MESO			
10	TORN VRTX SIGN		DET					
11	MAX STORM REFL	DBZ	35	40	45	50	55	60
12	MAX STORM VEL	KT	15	25	35	40	50	60
13	STORM VOLUME	100KG	10	100	500	900		
14	STORM TOP	KFT	20	30	40	50	60	70
15	MAX 1HR PRECIP	.1 IN	10	20	30	40		
FORECAST GROUP								
25	HAIL		PROB POS					
26	MESOCYCLONE		3DCOR	MESO	UNCOR			
27	TORN VRTX SIGN		DET					
28	MAX STORM REFL	DBZ	35	40	45	50	55	60
29	MAX STORM VEL	KT	15	25	35	40	50	60
30	STORM VOLUME	100KG	10	100	500	900		
31	STORM TOP	KFT	20	30	40	50	60	70

TIME LAPSE

TL#	PROD NAME	LEVELS	RES	SLICE	RPG	MAX FRAMES	UPDATE
1	REFLECT	16	54	0.5	KJAX	25	YES
2	REFLECT	16	1.1	0.5	KJAX	25	YES

3	STRM TRAC	KJAX 25	YES

FREQUENTLY USED DIAL-UP STATIONS

1. COLUMBIA, SC. (KCAE)
2. MOREHEAD CITY, NC. (KMHX)
3. JACKSON, MS. (KJAN)
4. MEMPHIS, TN. (KNQA)
5. MOBILE, AL. (KMOB)
6. NEW ORLEANS, LA. (KLIX)
7. TAMPA BAY, FL. (KTBW)
8. TALLAHASSEE, FL. (KTLH)

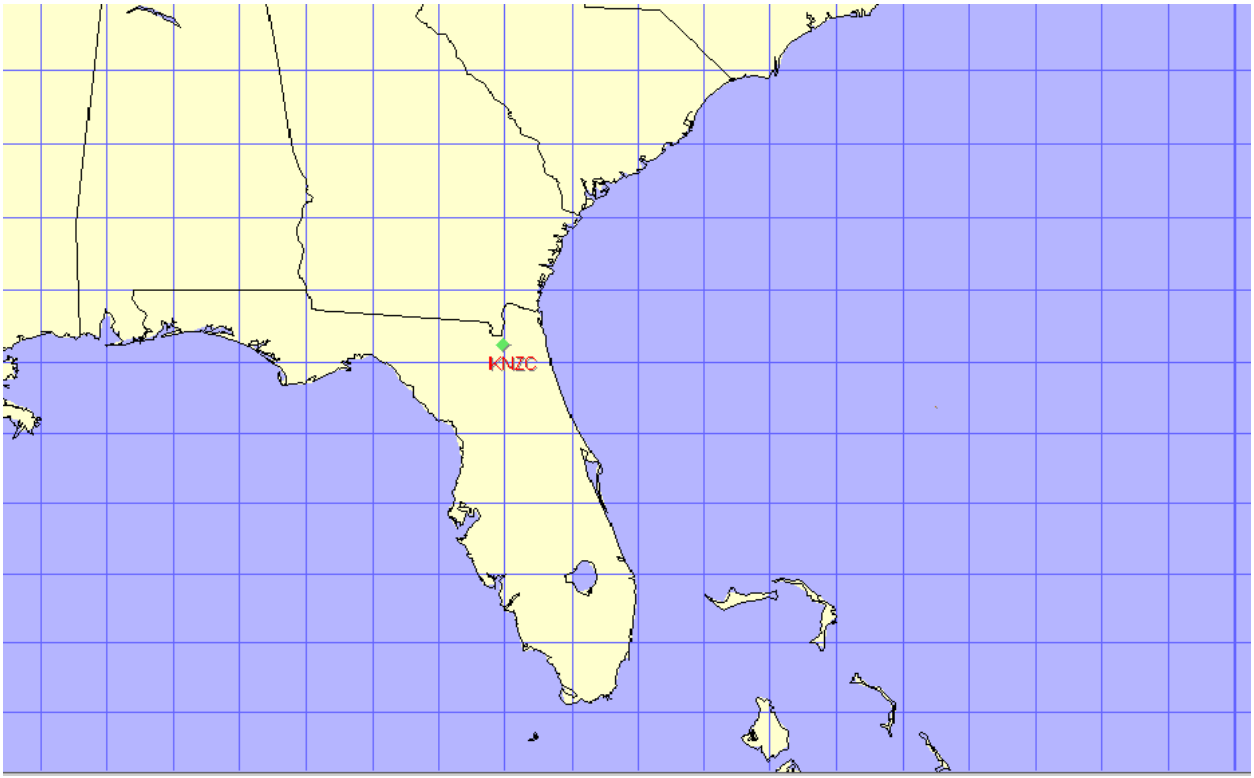


FIG (1-1) Station Location

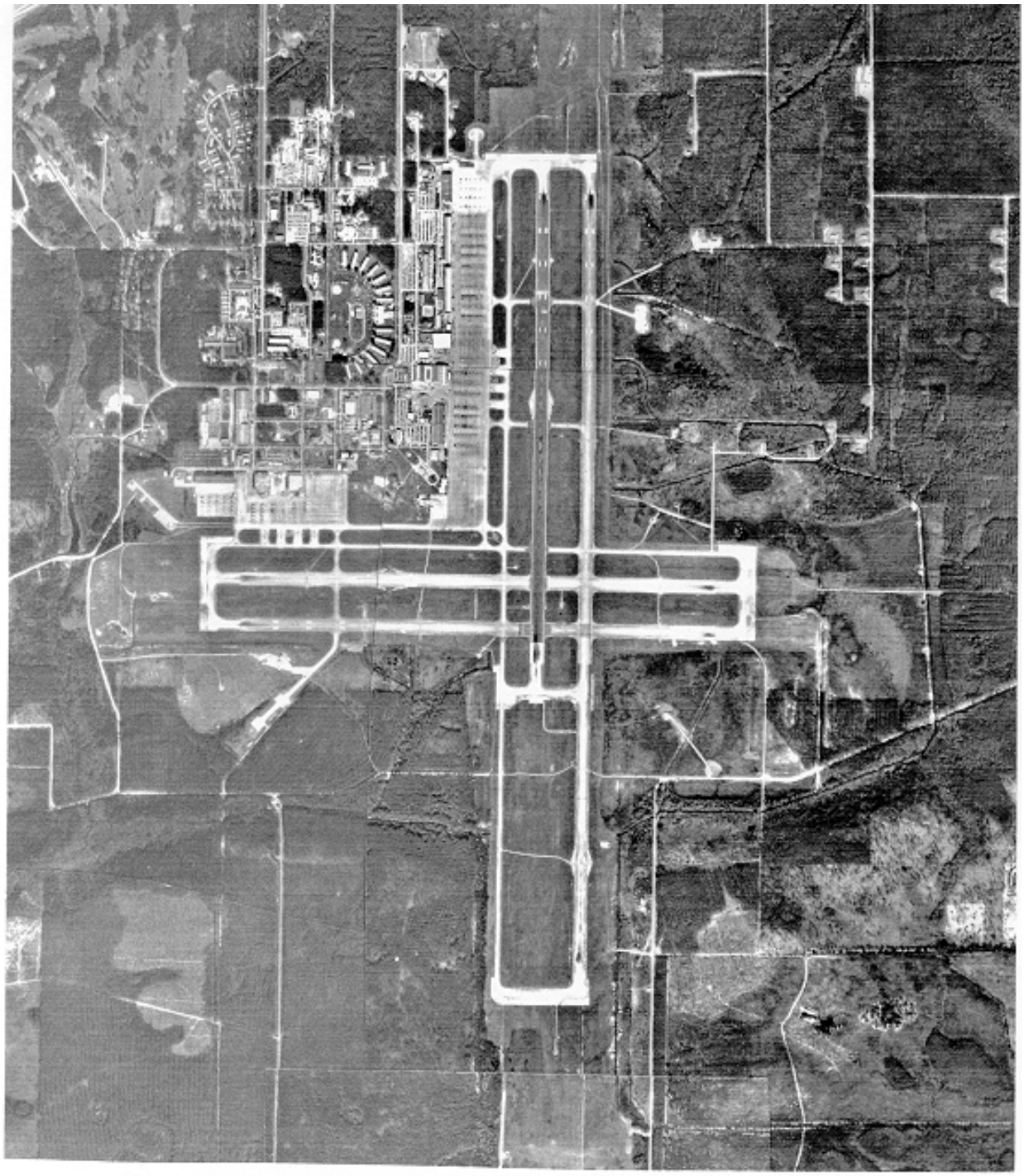


FIG (1-2) NAS Cecil Field Overview

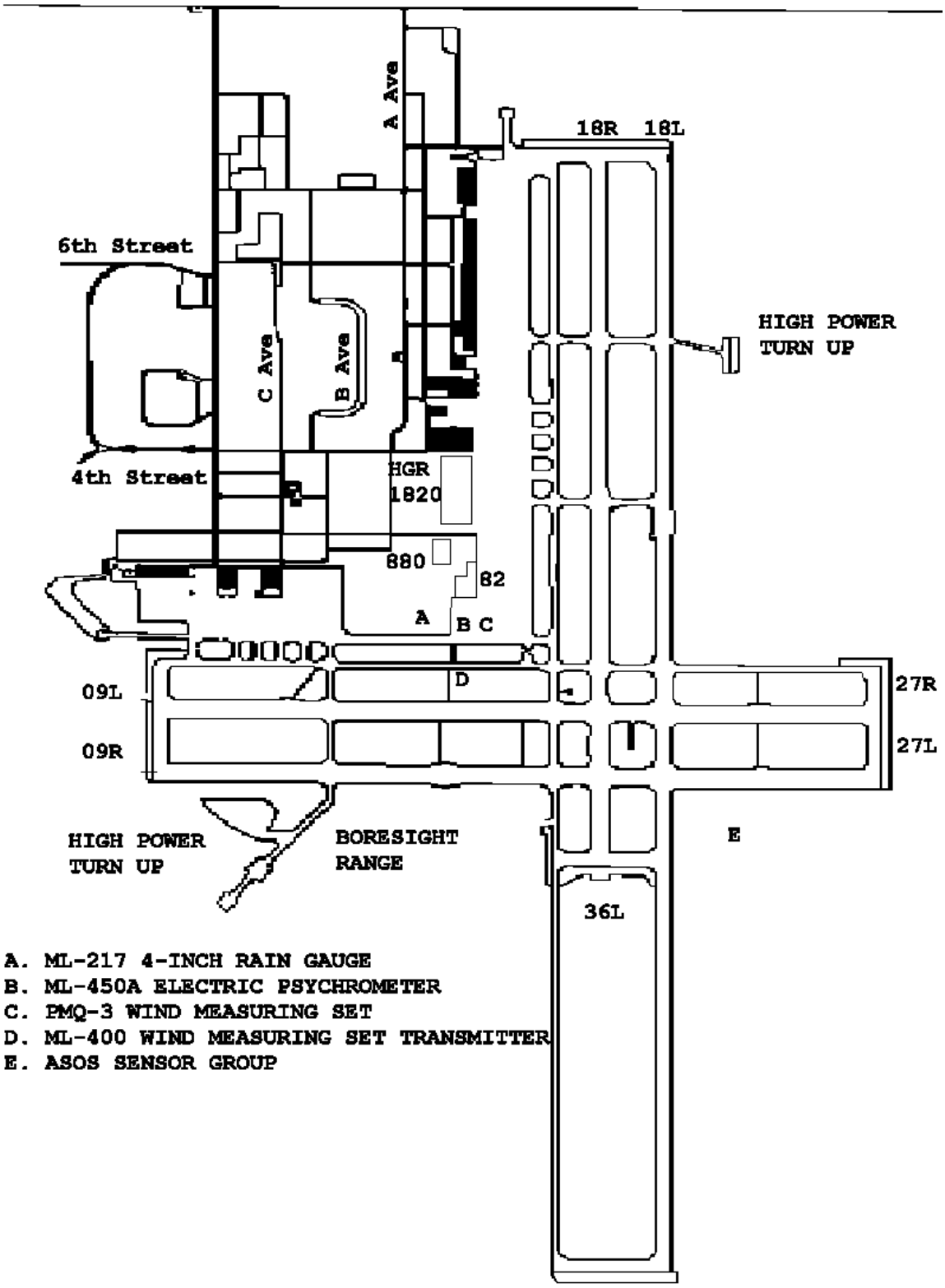


FIG (1-3) Field Instrumentation

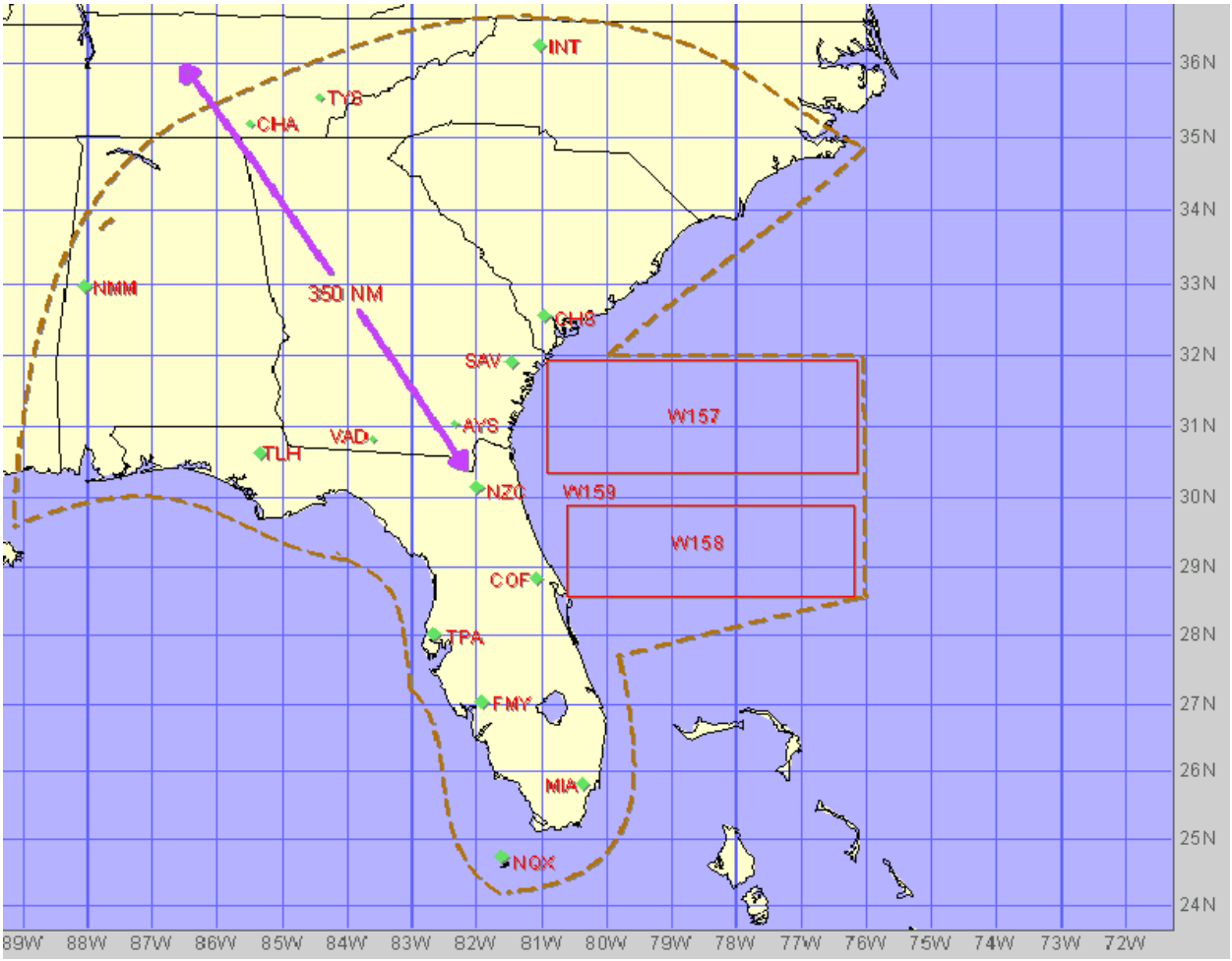


FIG (1-4) Local Flying Area

SECTION II - CLIMATOLOGY

201.0 CLIMATE. Cecil Field experiences tropical summers and middle latitude winters. Located at 30 degrees 13 minutes north latitude, Cecil Field is on the boundary between the two climatic zones. Although the Atlantic Ocean is only 27 miles to the east, sea breezes are only encountered during the summer, strong surface heating being the controlling factor.

a. JANUARY: Cecil Field is primarily dominated by modified Continental Polar air during the winter months. Outbreaks of cold arctic and polar air, which are most numerous in January, periodically affect the north Florida area. The main cyclogenesis regions are in the northern Gulf of Mexico and off the east coast of the United States. Frontal passage occurs frequently bringing periods of light rain/drizzle and fog. Occasionally a trace of snow is experienced and surface winds are predominately northerly.

b. FEBRUARY: The mean position of the polar front lies to the north of the region during February. However, due to the greater contrast between land and sea temperatures, cyclogenesis occurs more often in February, and outbreaks of cold air influence the region a bit more frequently. Rain continues to be the dominant form of precipitation with an occasional trace of snow reported. Fog occurs less, visibility improves slightly, ceilings rise and surface winds are predominately northerly.

c. MARCH: During March, the polar front continues its northward progression and overall sky cover increases with relatively fewer frontal passages and cold outbreaks. Average temperatures begin to rise, and winds remain west-southwesterly with a slight increase in speed.

d. APRIL: The mean position of the polar front shifts to a location just south of the Great Lakes during April. Many fronts stall to the north of Cecil Field, become stationary and dissipate without passing through the area. Sunny and temperate days dominate as the transition from winter to summer commences. Surface winds are predominately southwesterly.

e. MAY: May continues the transition season, and by the latter half of the month, afternoon showers and thunderstorms become the principal source of precipitation. Winds become easterly and overall cloud cover and rainfall amounts increase. Average temperatures rise sharply, and fronts continue to stall north of the area for the most part.

f. JUNE: June marks the official start of the North Atlantic tropical storm season. As the polar front is well to the north by now, the westward extension of the Bermuda High is the dominant synoptic feature, bringing in warm, moist Maritime Tropical air. Afternoon cloudiness and precipitation increase sharply during June, with the average wind direction from the southeast with the sea breeze.

g. JULY: During July, the predominant air mass is Maritime Tropical, as provided by the ridge from the Bermuda High. Due to weak pressure gradients and more significant daytime heating, July has the warmest temperatures of the year. Frontal passage is rare, but when it does occur, it occasionally provides enough lift to produce severe weather. Prevailing winds are southwesterly.

h. AUGUST: During August, the dominant Bermuda High shifts slightly to the north. Prevailing winds shift to easterly with the afternoon sea breeze. Relative humidity and precipitation amounts are at a peak during August.

i. SEPTEMBER: The Bermuda High reaches its northernmost limits during September. Insolation decreases; thus decreasing thunderstorm activity significantly. Average winds shift to north-northeasterly.

j. OCTOBER: October begins the transition season from summer to winter with an influx of modified Continental Polar air. Overall sky conditions become scattered as winds shift to northerly. Frontal passages and an occasional wave cyclone begin to affect the area. Surface winds are predominately from the north.

k. NOVEMBER: The transition season continues, bringing increasing cold frontal passages and wave cyclones that affect the area. With scattered skies and northerly winds, overnight low temperatures begin to fall into the low 50's with daytime highs also decreasing significantly from the previous month. An occasional drop to the freezing mark begins to occur.

l. DECEMBER: During December, Continental Polar air is more established in the southern states. Cold fronts pass through the area more regularly, bringing freezing temperatures an average of 5 times during the month. Cyclogenesis occurs frequently in the

northern Gulf of Mexico and off Florida's east coast. Poor visibility due to rain, drizzle and fog are the norm with an occasional chance of snow. Prevailing winds are from the north.

202.0 SPECIAL FEATURES.

202.1 TEMPERATURE. Temperatures exceeding 100 degrees Fahrenheit have been reported in each of the summer months, May through August. The daily summer maximum temperature is usually higher at Cecil Field than the other stations in the Jacksonville area due to the greater distance from the effects of the sea breezes. Below freezing temperatures occur, on the average, about five days during each of the winter months December through February. Freezing temperature normally occur in the early morning and usually do not persist longer than four to six hours on any given day.

202.2 SURFACE WINDS. The prevailing wind direction May through February is predominantly a northerly through easterly component, with the exception for the month of July. During the period February through April surface winds are predominantly a westerly though southwesterly component. It is important to remember that during the summer months high surface temperatures coupled with a weak pressure gradient create the sea breeze which usually arrive at the field around 2000Z and persist from one to three hours as a steady east to southeast wind of five to twelve knots.

202.3 PRECIPITATION. Precipitation, generally in the form of showers and thunderstorms, is almost a daily afternoon occurrence in the months of July and August. Shower activity typically commences about 1900Z and ceases about 0200Z. Although shower activity is experienced with some cold frontal passages, light to moderate rain is more typical of a frontal situation especially when a wave develops along the front as it becomes stationary over northern Florida. Other forms of precipitation, such as freezing rain and snow are very rare, but do occasionally occur. Hail is not a common occurrence, but there is an increased possibility in the vicinity of thunderstorms during the spring/summer months.

202.4 THUNDERSTORMS. Thunderstorm activity at Cecil Field reaches a peak in July and August and is at a minimum November through January. Air mass type thunderstorms are far more prevalent than those associated with frontal passage. During the spring and summer, cold fronts moving southward from the northern states lose much of their inherent character before arriving in northern Florida and do not present a serious thunderstorm threat. Frontal thunderstorms are at their strongest in winter. During the summer months, the Bermuda subtropical high pressure system dominates the region and weak pressure gradients prevail. This sets up conditions ideal for the formation of a south-easterly sea breeze at Cecil Field. Another phenomenon is the "Florida Convergence Zone". Moisture laden, opposing sea breezes from the east and west coasts of Florida converge over the heated land areas and when lifted, form a line of thunderstorms running north-south over the central portion of the state. In the early evening hours as radiational cooling sets in, thunderstorm activity is “triggered” by the relative heat of the St. John's River and St. Mary's River, and persists until about 2200L. Offshore thunderstorms can persist throughout the night. In addition, nighttime thunderstorms often persist near Cedar Key and will move northeast along the Suwanee River. Although the associated lightning can be seen from Cecil Field, this activity generally does not necessitate the issuance of a Thunderstorm Condition, and dissipates around 0600L.

202.5 FOG/STRATUS. The occurrence of fog at Cecil Field is a possibility at any time of the year. Typically light winds in conjunction with the extensive swamps, lakes and rivers surrounding the station readily provide the conditions conducive to the formation of radiation fog in the early morning hours. Regardless of the season, fog will occur during the early morning hours greater than 50% of the time. During the summer months, ground fog predominates, forming just before sunrise and persisting until one to two hours after sunrise. At other times of the year the fog is considerably more dense, beginning on some occasions late in the evening increasing in intensity throughout the night, and not lifting until late morning. This is especially true with light winds from the south or southeast during the spring, fall, and winter. Also common during these seasons is the occurrence of the "Nor'easter" after frontal passage. This phenomenon is discussed in greater detail in Section III.

202.6 OCEAN CURRENT EFFECTS. The ocean current directly affecting meteorological conditions at Cecil Field is the Gulf Stream system. The part of this system adjacent to northeast Florida is known as the Florida Current. The Florida Current is the segment of the Gulf Stream that moves northward from the Florida Straits to the vicinity of Cape Hatteras. It is fed by the westward flowing Antilles Current, and the eastward flowing Loop Current of the Gulf of Mexico. The climatological patterns are simple. When the Bermuda High is most intense in summer, the Florida Current flows more rapidly and closer to the shoreline. When radiational cooling begins after sunset, air mass thunderstorm activity moves offshore into the JAX OPAREA (over the Florida Current) and persists through the late evening into the early morning hours. In winter, the current shifts slightly southeastward with the Bermuda High and remains much warmer than both the surrounding land mass and the outbreaks of continental air from the north.

This aids in the reintensification of frontal systems as they move offshore and enhances the "Nor'easter" condition, causing extended periods of low stratus and poor visibility.

202.7 FRONTAL SYSTEMS. In the summer, Cecil Field is part of the tropics and is predominately influenced by a maritime tropical air mass (Figure 2-2). The only frontal activity generally experienced during the summer is a weak stationary front, as the polar front typically lies to the north of the Great Lakes in southern Canada. During the fall season, beginning in November, as continental polar air begins its migration southward and mixes with the dominant maritime tropical air, Cecil Field experiences some type of frontal passage every five to seven days. Winter brings frontal passages more frequently, about every four days, with the intrusion of an arctic air mass occurring at least once during the season. As continental polar air retreats northward during spring, beginning in March, frontal passage frequency returns to the rates seen during the fall.

202.8 HURRICANES, TROPICAL STORMS, AND EASTERLY WAVES. June 1st through November 30th is designated as the hurricane season for the North Atlantic. Climotological storm tracks are depicted in Figure 2-3. Storms tracking through the Caribbean and the North Atlantic basin average four tropical storms and five hurricanes annually, with peak activity occurring in September. In the past, storms have crossed the state of Florida from east to west, west to east, and have traversed the entire state from Miami to Jacksonville. Fortunately, due to the inland location of Cecil Field, strong winds of hurricane intensity are rarely a problem. However, flooding in connection with these storms is possible.
Easterly waves generally remain well to the south of Cecil Field. However, there have been well defined waves that extend into the Cecil Field area on an average of one per summer.

202.9 FLYING WEATHER. NAS Cecil Field enjoys VFR conditions (ceilings greater than or equal to 3000 feet and visibility of at least 3 nm) about 77% of the year (Figure 2-4). Single pilot minimums (ceilings less than or equal to 200' and/or visibility of 1/2 nm) occur less than 2% of the time. Restrictions to flight operations due to weather conditions rarely exceed four hours.

STATION 72206 | KNZC | CECIL FIELD NAS ,FL,US
LATITUDE 30 13N LONGUTUDE 081 53W ELEVATION 79(ft) 24(m)
YEARS COVERED: 1947-1995

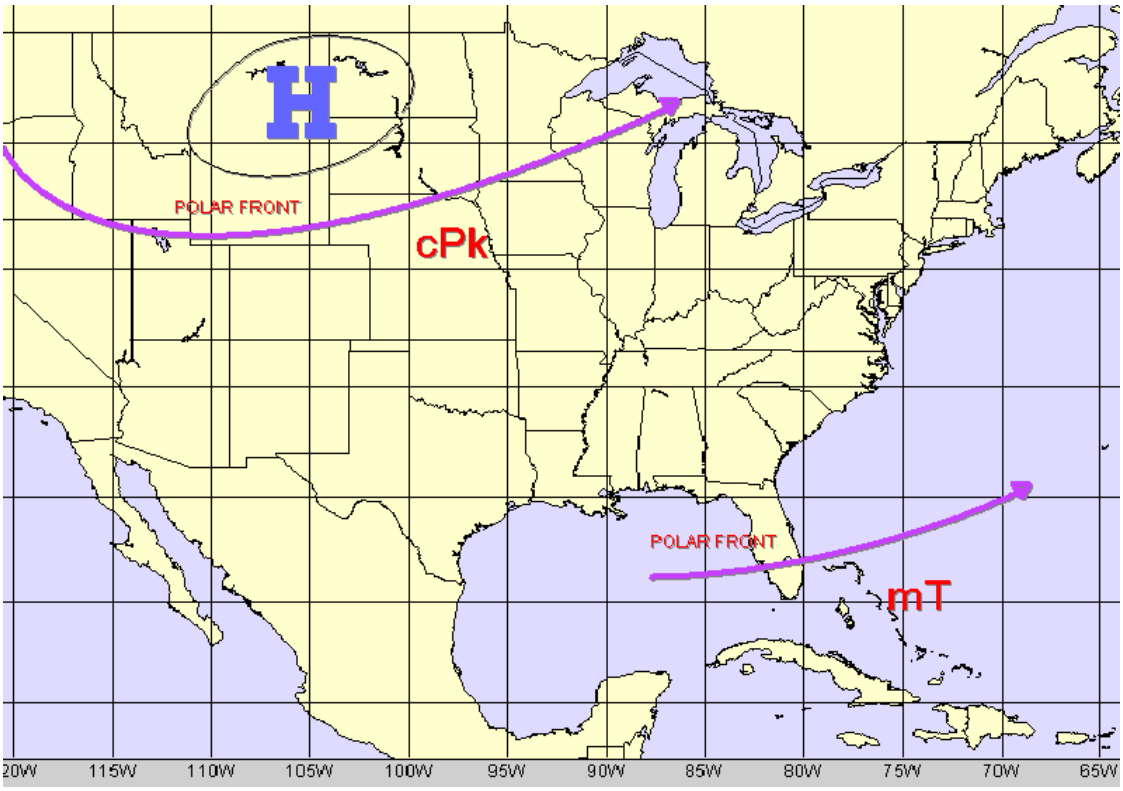
	TEMPERATURE (DEG F) MEANS			EXTREME		PRECIPITATION (INCHES) (^) PRECIP.				SNOWFALL (@)			REL HUM PERCENT (LST)		VAP PR IN. HG.	DEW PT. (F)
	MAX	MIN	AVG	MAX	MIN	MEAN	MAX	MIN	24H MAX	MEAN	MAX	24H MAX	AM 07	PM 16		
JAN	65	43	54	87	8	3.2	7.6	.3	2.7	T	T	T	85	54	.29	44
FEB	68	45	57	89	22	3.6	7.8	.9	4.6	T	T	T	85	51	.30	45
MAR	74	51	63	93	24	4.1	10.3	.7	4.8	T	T	T	85	47	.36	50
APR	81	57	69	96	34	2.6	6.2	.4	2.9	0	0	0	86	46	.44	55
MAY	87	64	76	101	46	3.7	11.3	.3	5.9	0	0	0	86	50	.57	62
JUN	90	70	80	104	51	6.6	13.3	1.6	7.8	0	0	0	89	58	.72	69
JUL	92	72	83	103	61	7.0	13.3	2.2	4.3	0	0	0	90	62	.78	72
AUG	91	72	82	102	64	7.1	17.0	2.3	5.0	0	0	0	92	63	.78	72
SEP	88	70	79	100	49	6.3	14.4	1.2	5.9	0	0	0	91	62	.72	69
OCT	81	61	71	100	35	3.4	11.7	T	6.3	0	0	0	88	58	.54	61
NOV	74	52	63	92	23	2.0	7.0	.1	3.3	0	0	0	87	56	.40	52
DEC	67	45	56	88	12	2.6	7.4	.1	2.7	T	T	T	86	56	.32	46
ANN	80	59	70	104	8	52.3	79.0	26.7	7.8	T	T	T	88	55	.49	58
POR	44	44	44	44	44	44	44	44	44	43	43	43	47	47	46	46

	PR ALT FT. $	WIND (KTS) PREVAIL DIR	SPD	MAX GST	SKY CVR +	MEAN NO. OF DAYS WITH (&) PRECIP. INCHES >=.01	>=.50	SNOW-FALL(") >=.10	>=1.5	TH STM	FOG *	TEMP (DEG F) MAX >=90	MAX >=70	MIN <=32	MIN <=10
JAN	40	N	6	54	OVR	9	2	#	0	1	20	0	12	5	#
FEB	45	W	7	49	OVR	8	2	0	0	2	17	0	14	3	0
MAR	45	WSW	8	59	OVR	8	3	0	0	3	19	#	22	1	0
APR	40	WSW	7	48	SCT	7	2	0	0	4	20	3	28	0	0
MAY	35	E	7	47	SCT	8	2	0	0	7	23	10	31	0	0
JUN	30	WSW	6	64	BRK	13	4	0	0	12	22	18	30	0	0

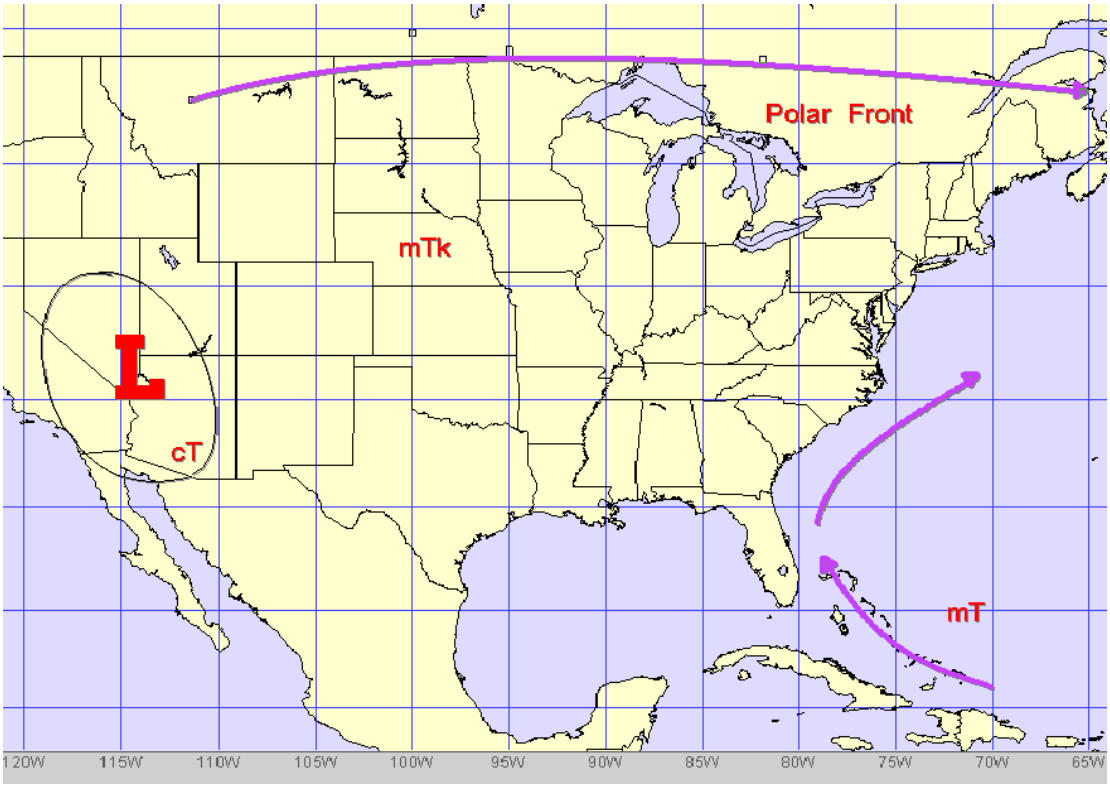
JUL	20	WSW	5	68	BRK	15	5	0	0	16	21	24	31	0	0
AUG	25	E	6	54	BRK	15	5	0	0	14	25	22	31	0	0
SEP	30	NNE	6	52	BRK	12	3	0	0	8	24	13	30	0	0
OCT	35	N	6	53	SCT	8	2	0	0	2	21	2	29	0	0
NOV	35	N	6	50	SCT	7	1	0	0	1	21	#	21	1	0
DEC	35	N	6	41	OVR	8	2	0	0	1	20	0	14	4	0
ANN	40	NNE	6	68	BRK	118	33	#	0	71	253	93	293	14	#
POR	44	46	46	41	44	44	44	43	43	36	36	44	44	44	44

T = TRACE AMOUNTS (< .05 < .5 INCHES
# = MEAN NO. DAYS < .5 DAYS
$ = PRESSURE ALTITUDE IN TENS OF FEET (I.E. 50 = 500 FEET)
@ = NAVY STATIONS REPORT HAIL AS SNOWFALL; ALSO NWS FROM JULY,1948 - DEC.,1955
+ = THE PREDOMINANT SKY CONDITION
* = VISIBILITY IS NOT CONSIDERED
& = ANN TOTALS MAY NOT EQUAL SUM OF MONTHLY VALUES DUE TO ROUNDING
^ = 24 HR MAX PRECIP AND SNOWFALL ARE DAILY TOTALS (MID-NIGHT TO MID-NIGHT)
" = INCHES

(FIG 2-1) Station Climatic Summary

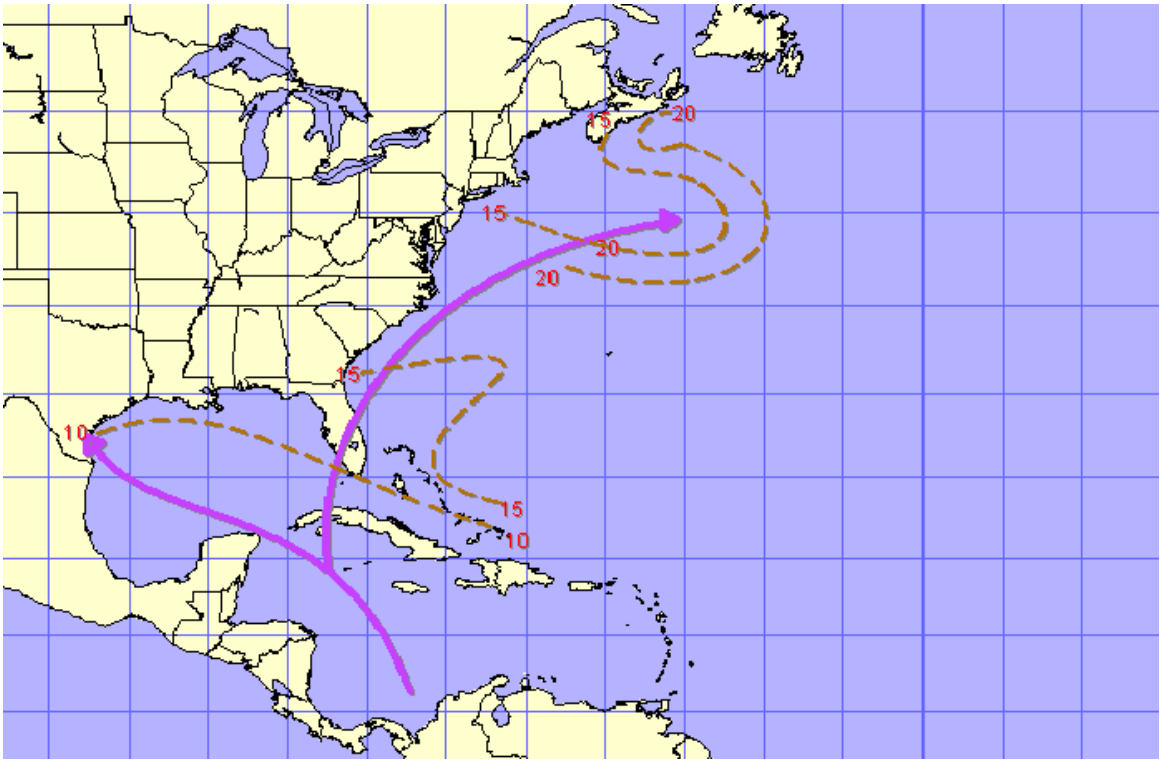


January

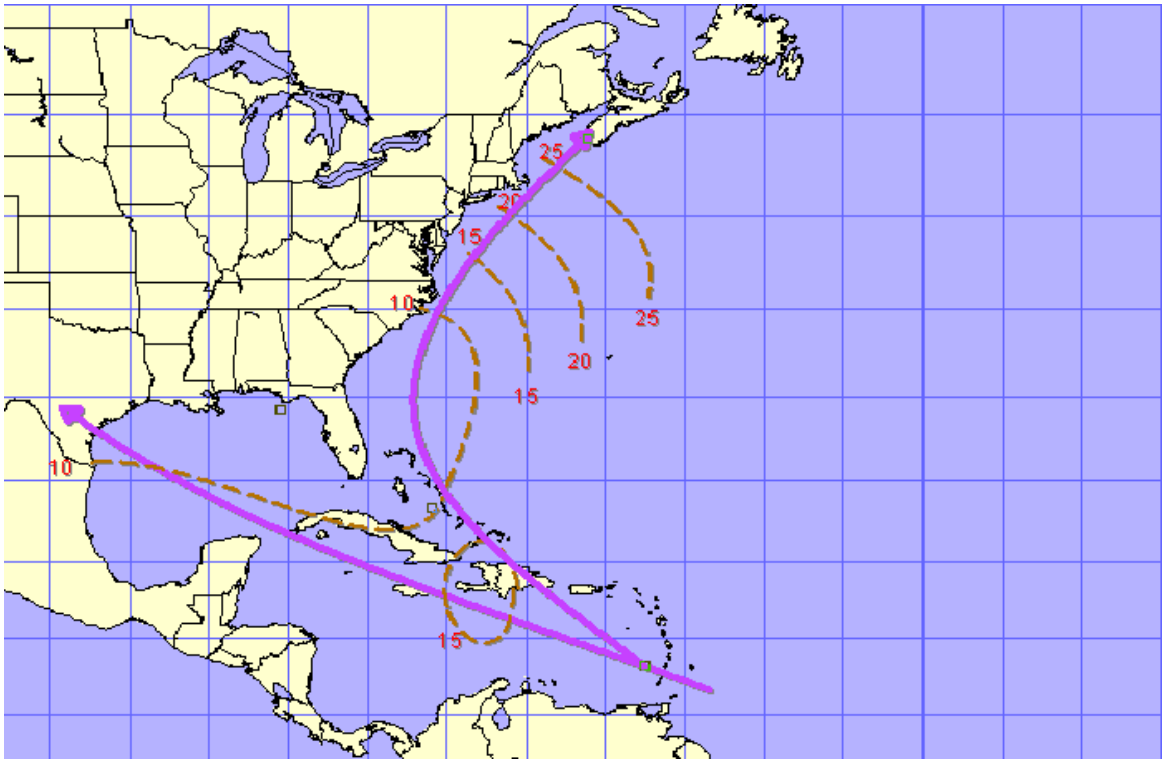


July

FIG (2-2) Typical Front, Pressure Center, and Air Mass Locations



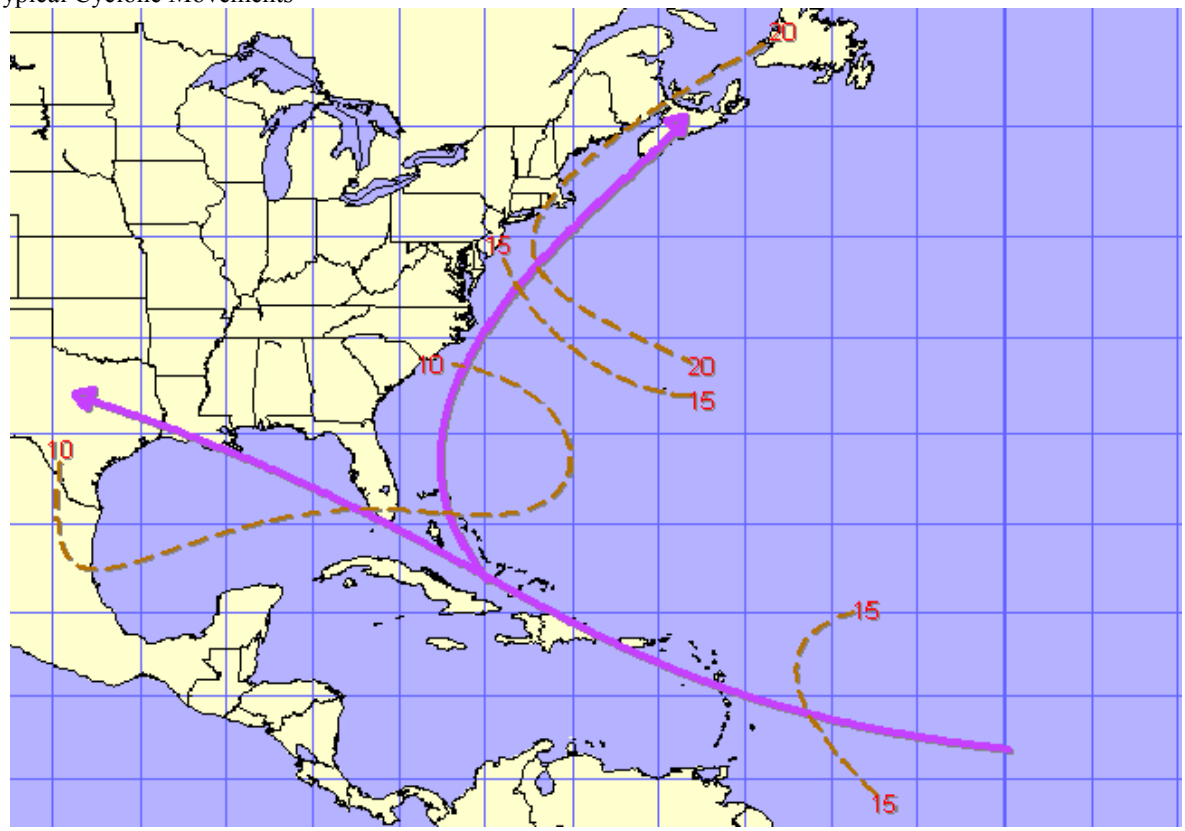
June 1-30



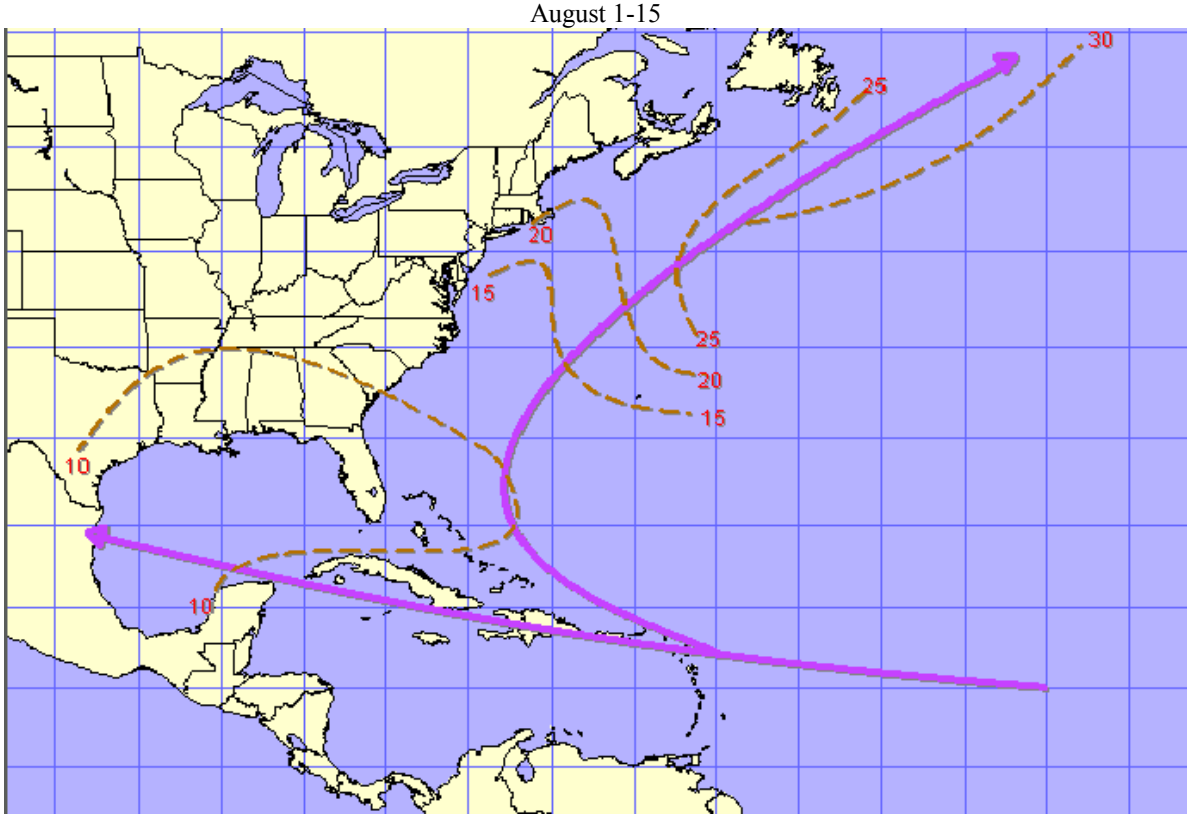
July 1-31

Storm Tracks with average Speed Of Advance in Knots.

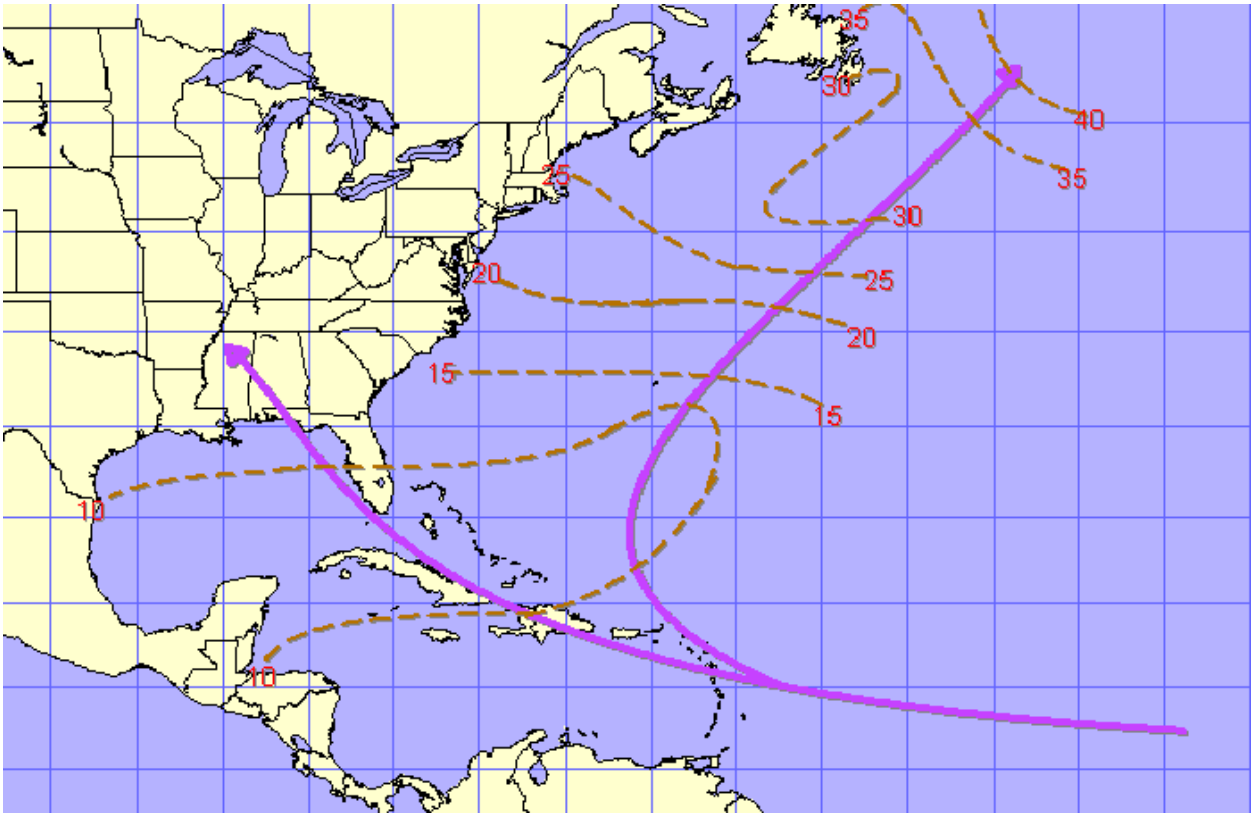
FIG (2-3) Typical Cyclone Movements



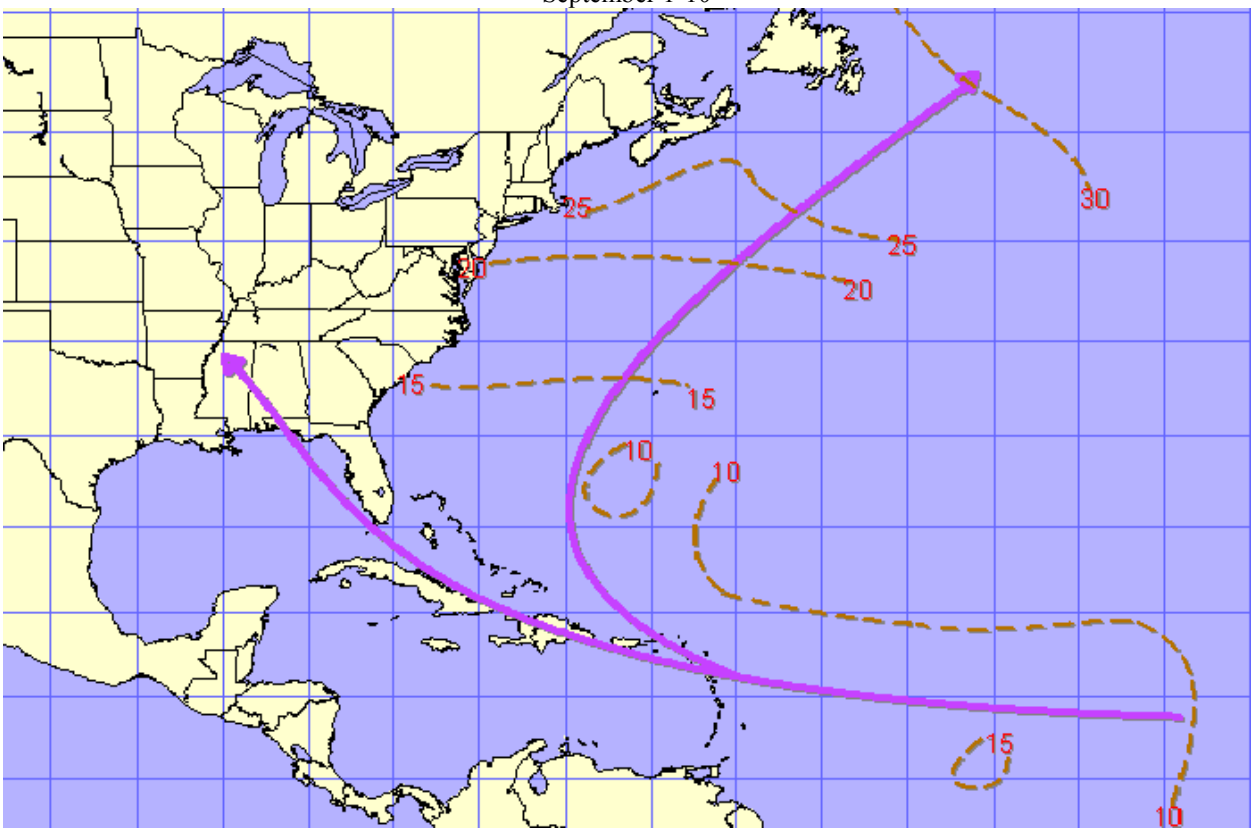
August 1-15



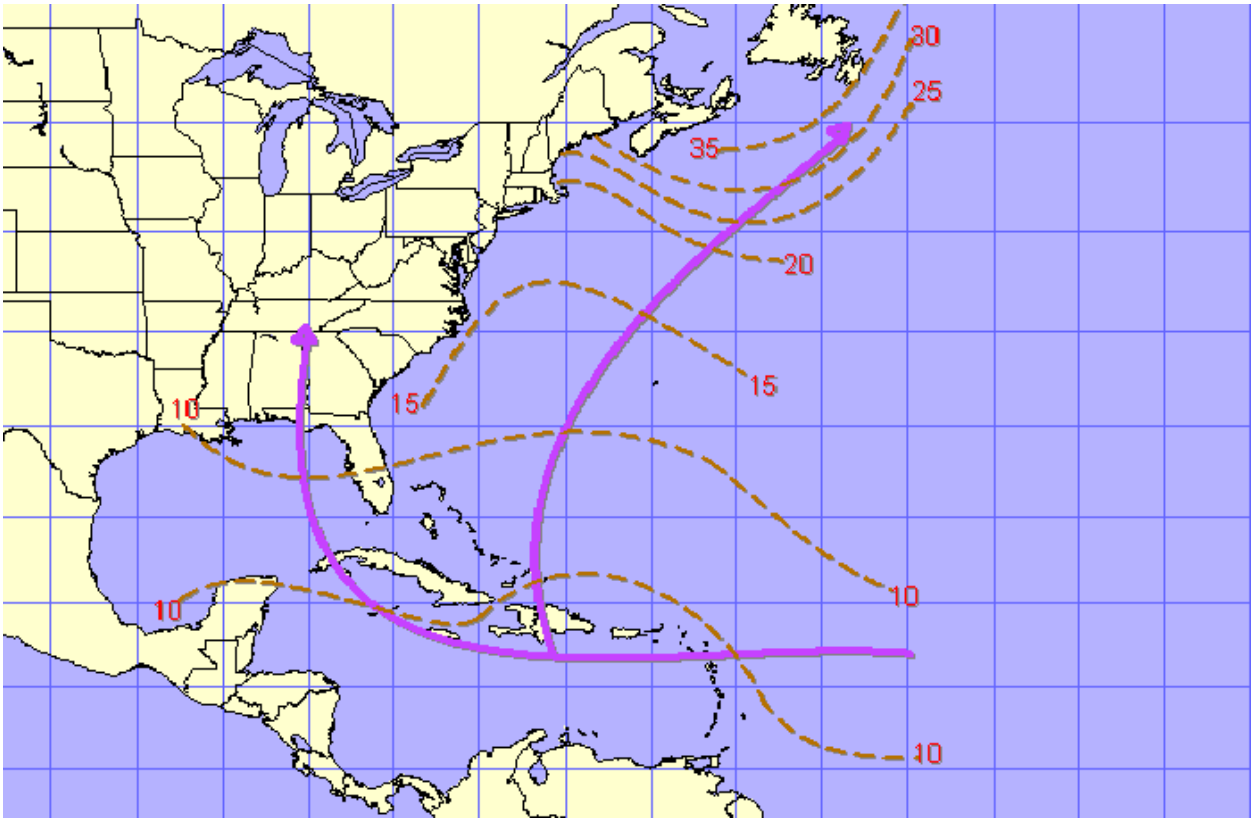
August 16-31



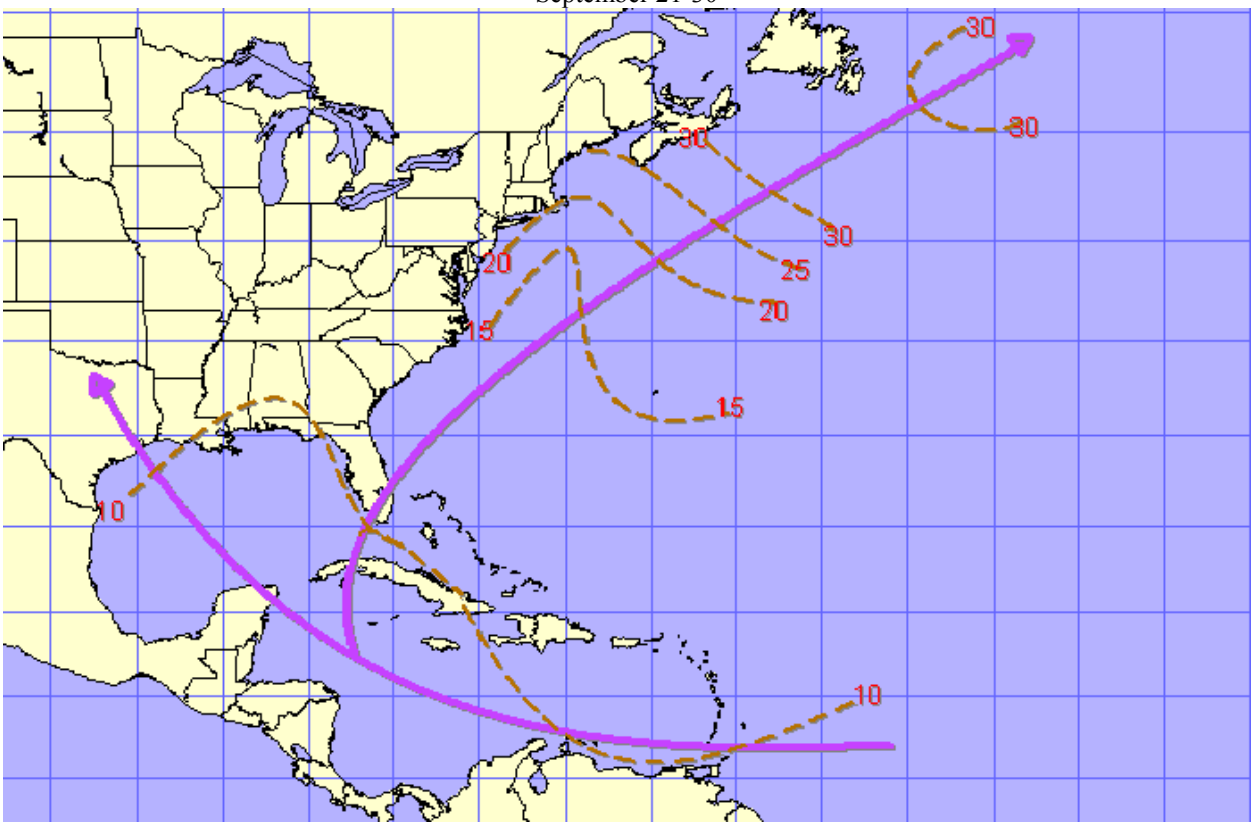
September 1-10



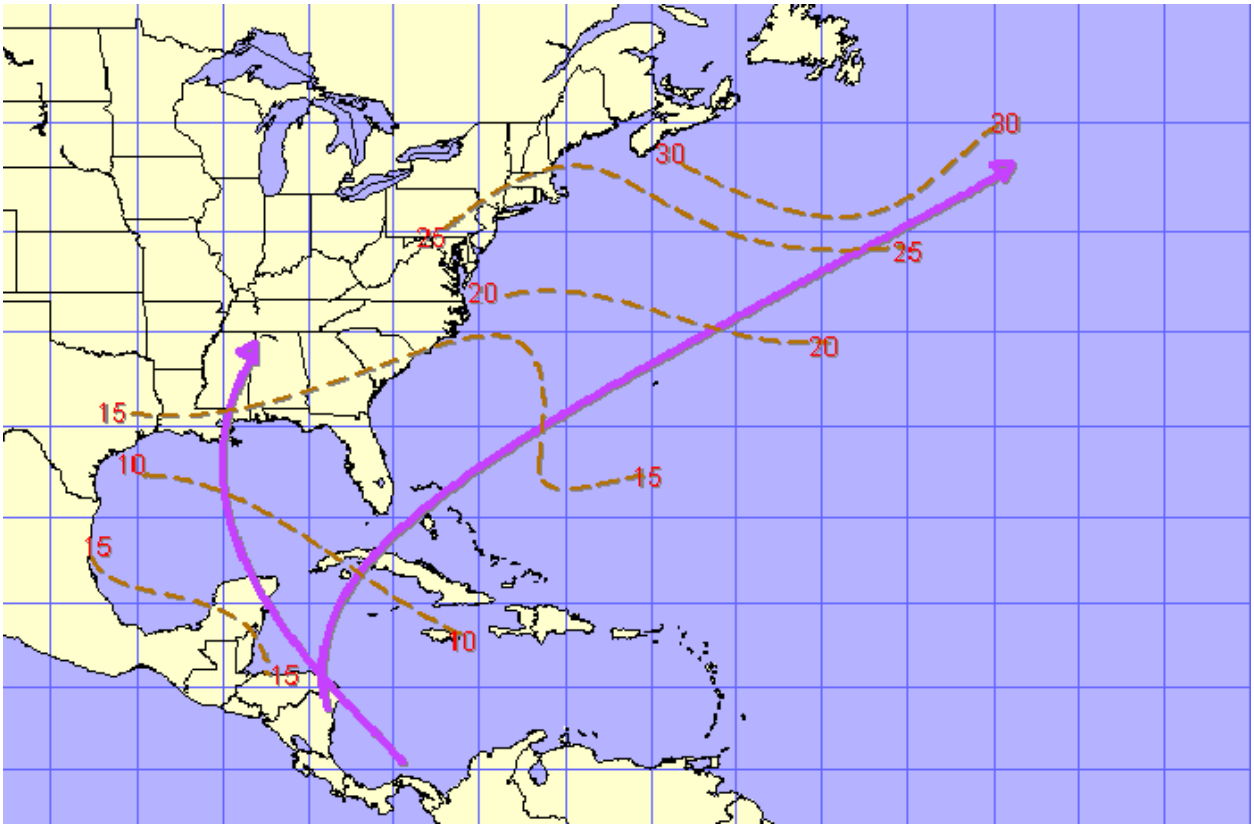
September 11-20



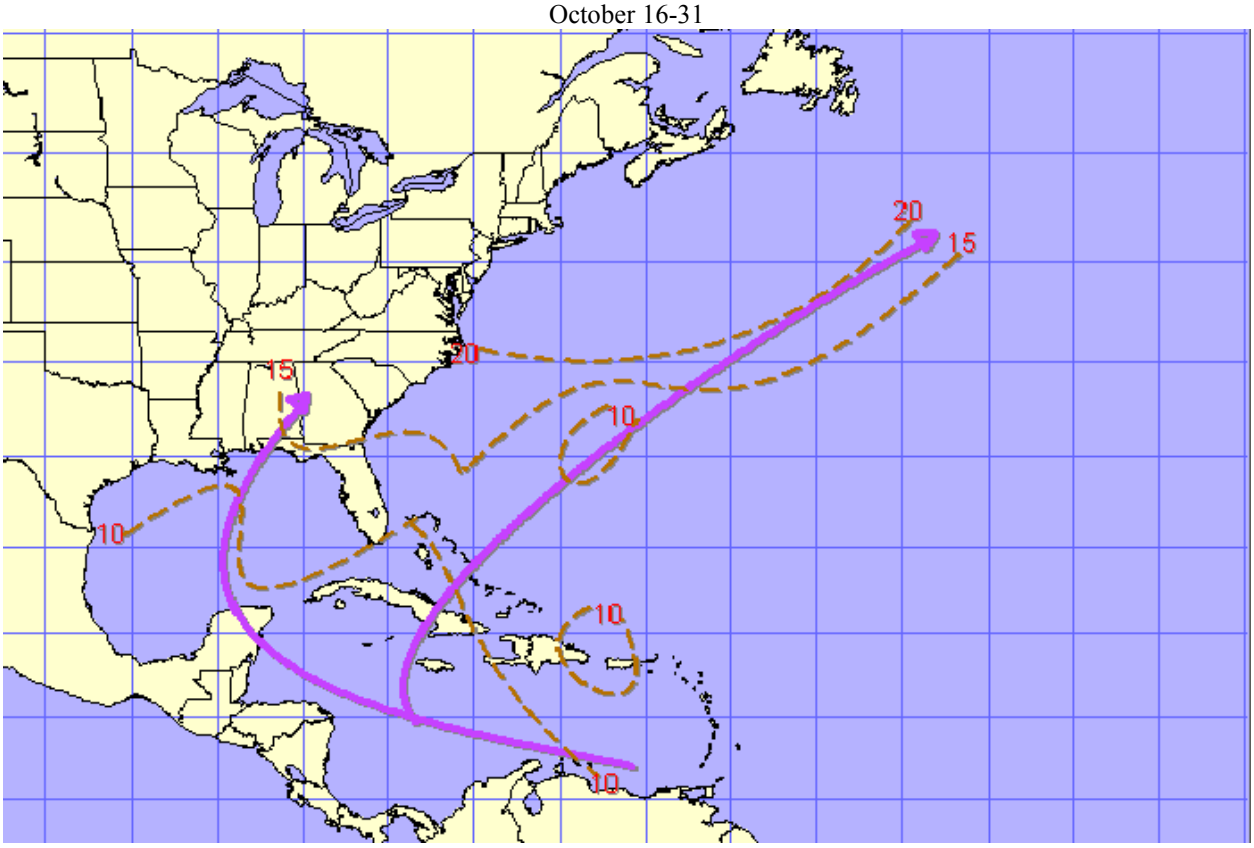
September 21-30



October 1-15



October 16-31



November 1-30

STATION 72206 | KNZC | CECIL FIELD NAS ,FL,US
LATITUDE 30 13N LONGUTUDE 081 53W ELEVATION 79(ft) 24(m)

CEILING LESS THAN 3000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

HOUR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	#YRS
01	30	25	20	13	12	9	5	9	14	21	28	30	18	49
04	36	32	29	23	22	19	12	17	24	29	35	34	26	49
07	43	42	41	33	29	25	19	29	40	41	42	41	35	49
10	32	29	26	21	23	29	25	28	35	27	22	29	27	49
13	27	26	22	17	22	28	29	30	36	29	23	25	26	49
16	22	20	16	12	14	19	20	19	22	19	15	20	18	49
19	20	19	14	9	9	14	10	14	18	18	15	20	15	49
22	22	19	15	8	7	9	5	8	13	15	19	22	13	49
ALL	29	27	23	17	17	19	16	19	26	25	25	28	23	49

FIG (2-4) Percent Hours below VFR

301.0 TEMPERATURE. During the summer months, temperature is consistent from year to year; therefore, climatology can be used with a high degree of confidence when forecasting 24 to 48 hour temperature changes. During the winter months, extrapolation, continuity and persistence are the best methods. Forecast temperatures should verify to within two to three degrees Fahrenheit of the actual temperature.

301.1 MAXIMUM TEMPERATURE. In summer, the daily maximum temperature is normally reached by 1500L. In addition to climatology, extrapolation, continuity and persistence, the following rules of thumb will aid the forecaster:

a. The temperature will decrease 7 - 10 degrees Fahrenheit with thunderstorm activity. If thunderstorms are expected before the forecast maximum and persist through the afternoon into early evening, forecast a five to seven degree decrease from the maximum.

b. If the forecast wind direction is from the southwest through north at eight knots or more, forecast a lower temperature using continuity from the previous day. The early arrival of a sea breeze may also alter the forecast maximum. As mentioned in Section II, Cecil Field usually reaches a higher temperature than Jacksonville because of the less intense late afternoon sea breeze effect.

c. National Weather Service products for Jacksonville International Airport may be used, but must be modified by adding two to four degrees to get a realistic forecast maximum temperature for Cecil Field. The FOUS 26 bulletin has also proven to be a reliable tool over a period of time.

301.2 MINIMUM TEMPERATURE. The daily minimum temperature is normally observed by sunrise (approximately 0600L during the summer and 0700L during the winter). In addition to climatology, extrapolation, continuity and persistence, the following rules of thumb will aid the forecaster:

a. If the forecast wind direction and speed is from the southwest through north at four knots or more, forecast a lower temperature starting with continuity from the previous day. Normally, winds are near calm at sunrise; however, occasionally a light breeze reaches the field from the St. Johns River.

b. National Weather Service products for Jacksonville International Airport may be used, but must be modified by subtracting two to four degrees to get a realistic forecast minimum temperature for Cecil Field. The FOUS 26 bulletin has also proven to be a reliable tool over a period of time.

c. If a freeze is expected to occur, proper warning should be given in accordance with the Standard Operating Procedures by 1200L the day of the expected freeze, or on Friday for any freeze expected over the weekend.

302.0 WIND. Wind direction is one of the most important elements to accurately forecast. If the wind forecast is accurate, the other parameters of the forecast should prove to be accurate as well. Figure 3-1 correlates percent frequency of wind direction versus weather conditions.

During the summer months, the field will generally be under a very loose pressure gradient. This loose gradient causes intense heating in the area which aids in development of the sea breeze effects. Forecast light (3 - 5 knots) southwesterly winds or light and variable until 1500-1600L. After 1600L, forecast an east-southeasterly wind of 6 - 10 knots. Winds generally become light and variable again by late evening.

In winter, the field is influenced by transiting mid- latitude systems. Prevailing winter wind direction and speed is northerly at six knots. Wind direction and speed are determined by the surface pressure gradient with applicable correction made for surface friction and the effects of inversions. High pressure following a cold front will generally result in northwesterly winds over north Florida, even when the surface isobars indicate the winds should be from the north to the northeast. The frictional effect causes the winds to cross the isobars by as much as 90 degrees. Normally, with strong high pressure behind a cold front, conditions should be watched for sustained winds 20 knots or greater. A wind warning recommendation should then be made in accordance with the Standard Operating Procedures.

302.1 THUNDERSTORM INDUCED WINDS. When air mass thunderstorms are forecast during the summer, a variable and gusty wind character should also be forecast. Once thunderstorms have begun developing around the station, the wind direction will be variable even if the sea breeze is of strong character. The Skew-T/Log-P method of forecasting maximum wind gusts associated with thunderstorms should be used.

303.0 WEATHER AND OBSTRUCTIONS TO VISION. Forecasting weather and obstructions to vision can be simplified with a good wind forecast.

303.1 PRECIPITATION. Showers are almost a daily afternoon occurrence during the summer and should be forecast along with thunderstorm activity if expected. During the winter, the following rules apply:

a. Forecast steady light rain within 48 hours when a trough or closed low appears from the 850mb to 500mb levels over Louisiana.

b. Forecast rainshowers and thunderstorms within 36 hours if the trough or low first forms in Colorado, Oklahoma, or Texas and the movement is east.

c. Forecast rain with most cold fronts instead of showers as they slow and become stationary fronts over north Florida.

d. Forecast drizzle with northeasterly surface flow and southwesterly flow aloft.

303.2 FOG. Radiation fog is predominant during the early morning hours just about any day of the year, due to the predominance of maritime tropical air. When modified continental polar air dominates during the winter months there are many mornings with frontal and/or advection fog ("Nor'easter"). Use the following rules when forecasting fog formation and dissipation:

a. Forecast formation if light winds from the northeast through the southwest are expected.

b. Forecast formation if the ground is wet or if the air has been moistened by evaporation following afternoon rainshowers creating a high relative humidity.

c. Skies do not have to be clear for fog formation at the field. Fog will also form with scattered middle and high clouds.

d. Note the dewpoint when the maximum temperature for the afternoon is reached and compare this value to the temperature at sunset. If the temperature spread is six to ten degrees, forecast one to three miles in fog for the early morning hours. This rule of thumb is for radiation fog formation with light winds.

e. When the extension of the ridge from the western Atlantic through the Florida Peninsula creates a southwesterly flow, advection fog from the Gulf of Mexico is possible. Forecast fog formation if the dewpoint-temperature spread at Gainesville and/or Orlando is 2 to 8 degrees during the early evening and surface winds are light southwesterly or calm.

f. Formation of advection fog should be forecast if light wind is expected from the northeast through southeast in late fall. This flow is typically produced by high pressure centered over the southeastern United States. The air is warmed and moistened as it advects over the Gulf Stream. Fog forms as the air continues westward across the relatively cool water between the Gulf Stream and the coast.

g. Forecast frontal fog formation during the winter months as relatively warm rain falls through the cold air below and evaporates. This is particularly true with stationary fronts with an east-west orientation across Florida. The maritime tropical air from the Gulf of Mexico overrides the continental polar air. This condition can persist for several days.

h. Forecast slow dissipation of fog (i.e. near noon) if abundant cloud cover is present above the fog which is dense enough to hide the sun or if no cloud cover is present and light surface winds of five knots are present.

i. Forecast rapid dissipation of fog (i.e. approximately two hours after sunrise) if clear or scattered skies exist above the fog.

303.3 HAZE/SMOKE. Haze and smoke are generally problems during the summer months as the Bermuda High shifts to the west of Florida, placing northern Florida in the quadrant of maximum subsidence. In this situation the surface high is centered over Alabama or Georgia, thereby causing winds to be dry and light from the northwest. A strong inversion should be observed between the 850mb and 500mb levels. Smoke from the controlled burning of scrub brush enhances the haze condition on some days and can reduce visibility all day. Normally haze should be forecast to dissipate when a sea breeze is expected.

304.0 VISIBILITY. Drizzle and fog during "Nor'easter" conditions is the greatest hindrance to visibility. Moderate to heavy precipitation from air mass thunderstorm activity is the next. As mentioned previously, knowing the wind direction and speed is a good indicator of weather and obstructions to vision possible at the field. The following ranges of visibility values should be used when forecasting the different weather phenomena at Cecil Field:

a. 3 - 5 miles during convective type afternoon showers outside of thunderstorms.

b. 1 - 3 miles during most air mass and frontal thunderstorms and 1/2 to 1 1/2 miles during the more intense air mass thunderstorms.

c. 2 - 4 miles when associated with winter frontal daytime precipitation and 2 - 3 miles at night with fog.

d. 1 - 3 miles during drizzle and fog conditions (the higher the stratus layer - the greater the visibility will be).

e. 1 - 3 miles when forecasting radiation fog during the summertime.

f. Totally obscured and 0 miles visibility when forecasting advection fog from the southwest, especially if it has rained the afternoon before (visibility will begin lowering by mid-evening).

g. 1 - 3 miles in frontal fog conditions during the winter. The time of onset of fog should be forecast as follows: November and March 2100L; December and February, 2000L; January 1900L.

h. 4 - 6 miles in haze until mid-afternoon if a sea breeze reaches the field, and 3 - 5 miles if controlled burning is taking place.

305.0 SKY COVER/FLYING WEATHER. Climatology reveals that the spring and fall months have the highest percentage of sky cover, followed by the summer months due to afternoon sky cover associated with convective activity. January has the worst flying weather and July has the best. The following rules of thumb apply:

a. The Skew-T/Log-P should be used for forecasting bases and tops (surface to 5900 feet) for cloudiness advected from the northeast.

b. Satellite photos generally give a good depiction of all cloudiness in the area except for very low level stratus.

c. Upper air moisture analysis can be used for forecasting sky condition up to 24 hours, where data is available. This analysis is especially helpful in the spring and fall months when forecasting the development of Gulf Lows.

d. If stratus or stratocumulus is present, at or below 1500 feet during the day, and moving southwest, ceilings can be expected to lower rapidly after sunset to 300' - 500' during early spring and fall.

e. Air mass convective cloudiness can normally be expected to clear a few hours after sunset.

306.0 THUNDERSTORMS. As mentioned in Section II, air mass thunderstorms are far more prevalent than frontal thunderstorms. When thunderstorms are forecast to develop, the Forecast Duty Officer shall issue recommendations to set Thunderstorm Conditions for Cecil Field in accordance with Standard Operating Procedures.

306.1 AIR MASS THUNDERSTORMS. Thunderstorms are always likely along the Florida convergence zone from mid-spring to late fall. Normally, convective cloudiness will propagate westward during the early afternoon as it builds. However, as thunderstorms mature they come under the influence of upper level winds and move in the direction of the mean wind vector in the vicinity of the cell. Hail produced by air mass thunderstorms rarely exceeds 1/2 inch in diameter.

a. Forecast development of air mass thunderstorms as follows:

1. When the maximum temperature is expected to reach at least 86 degrees and high moisture at lower levels is present, thunderstorms may develop.

2. When the maximum temperature is expected to reach at least 94 degrees and there is a subsidence inversion present between the 850mb and 500mb levels (dry intrusion), severe thunderstorms can be expected.

3. When the subsidence inversion (which sets up in the early morning as the ridge shifts back over land) is expected to dissipate, thunderstorms may develop.

4. When the upper air sounding shows a steady high moisture content with 3.5 grams per kilogram at the freezing level, thunderstorms may develop.

5. If the dewpoint at 0500L is greater than 60 degrees and a small increase is expected, thunderstorms may develop.

6. When the field is not under or within 60 miles either side of the ridge line from surface to the 700mb levels, thunderstorms may develop.

7. When the Showalter Index is expected to be less than 0, thunderstorms may develop.

8. When the K index is expected to be greater than 25, thunderstorms may develop. Expect numerous thunderstorms when the K index is expected to be greater than 35.

9. When the sea breeze becomes a "dewpoint front" as it develops in the afternoon, forecast thunderstorms to develop along the leading edge of the front.

b. The following rules should be considered when forecasting movement of air mass thunderstorms:

1. With a southwest to west wind flow aloft (700mb-500mb) during the early morning, any thunderstorms that have developed in the northeast portion of the Gulf near Cross City should be forecast to move near or south of the field by 1200L. This development can be monitored via satellite imagery and NEXRAD PUP. Activity that moves in from the west-southwest has a tendency to split off (Cecil Split) and move around the field due to the field's slightly higher elevation. Regardless of the "Cecil Split" effect, at a minimum Thunderstorm Condition II should be recommended for the field and the situation closely monitored as Thunderstorm Condition I may be warranted.

2. If thunderstorm activity is expected to develop along the "dewpoint front" associated with the sea breeze, the forecast movement should coincide with the 700mb-500mb wind flow.

3. If thunderstorm activity approaches from the south through the west, it will turn north when it reaches the St. Johns River. The activity will spread and become stationary over the river until it begins to dissipate normally near sunset as radiational cooling begins at the surface. By this time, lightning is usually observed 8-10 miles to the east of the field, outside of the 7 mile lightning alert radius.

4. Normally, a resultant vector of the 700mb and 500mb level wind flow (14000 feet) can be used to forecast thunderstorm movement, with 80% of the 500mb level wind speed used to forecast the speed of movement. With light and variable upper level winds, movement will be difficult to forecast. In this situation, development must be watched closely as thunderstorms will build quickly, initially appearing on the RADIDS as level I, then very rapidly becoming level III or greater.

306.2 <u>FRONTAL THUNDERSTORMS</u>. Frontal type thunderstorms normally occur during the spring and fall months and occasionally during the winter as frontal systems stall over northern Florida. The following rules should be considered:

a. If approaching at 25 knots or less from the west through the southwest, thunderstorms will dissipate considerably by the time they reach the field because they precipitate heavily as they move inland from the west coast of Florida. There is also a chance that the thunderstorms will split off and move to the north and south of the field ("Cecil Split").

b. Thunderstorms associated with a southeastward moving front are normally slow in movement and very weak in intensity.

c. When a cutoff low has formed over the west coast of Florida, forecast isolated weak thunderstorms as small troughs will move through the area.

d. Large hail from thunderstorms associated with a very cold trough and strong jet stream aloft is possible during the winter months.

307.0 WEATHER ASSOCIATED WITH HURRICANES, TROPICAL STORMS AND WAVES. Although hurricane force winds are rarely seen at the field, the FDO shall keep in close contact with NAVLANTMETOCFAC Jacksonville during the development of tropical systems. RECCO broadcasts, radar data, satellite imagery, ship observations and the latest bulletins from the NHC and NAVLANTMETOCCEN Norfolk can be utilized to forecast the arrival of damaging winds, heavy rain and thunderstorms. Comprehensive knowledge of the NAS Cecil Field Disaster Preparedness Plan and detachment standard operating procedures is mandatory. For operational purposes, only official information issued by NAVLANTMETOCCEN Norfolk will be utilized for operational purposes including dissemination of forecast track and intensity data to DOD activities.

308.0 WEATHER ASSOCIATED WITH FRONTAL SYSTEMS. During the winter months, when frontal systems are predominant in the north Florida area, forecasting cloudiness and precipitation at Cecil Field can be a challenge. Most frontal activity approaches the field from the northwest and from the Gulf of Mexico. Deep low pressure centers with associated cold fronts tend to slow down considerably as they reach the Appalachian Mountains. This slowing down process causes the cold fronts to become stationary in the Jacksonville area for 2-3 days at a time. Waves tend to form in the Gulf of Mexico on frontal boundaries that have moved offshore. Once these waves gain support at all levels, they become unstable and their trajectory is normally toward north Florida/south Georgia. The following rules may be applied:

a. During the winter, when polar outbreaks are strong and migrate southeast, the cold front that precedes an outbreak tends to be oriented more north-south (Figure 3-2). In this situation, forecast winds to shift rapidly to northwest after frontal passage. Often cold air stratocumulus will persist for 8-12 hours following frontal passage.

b. Cold fronts will become stationary over north Florida mainly during spring and fall months when they take on a more east-west orientation as they approach the area (Figure 3-3). When this occurs, the result is a northeasterly flow with low stratiform clouds and intermittent rain for 2-3 days. This is also a prime situation for wave formation on the frontal boundary as minor waves propagate through the upper atmosphere resulting in cyclogenesis over the region (Figure 3-4). Southwesterly flow in advance of the new cold front will create conditions favorable for thunderstorm formation. If wave/low formation does not take place, forecast the stationary front and associated weather to remain in the area until the high zonal flow aloft becomes low zonal or another wave forms in the vicinity of Cape Hatteras.

c. Occasionally a low will form in the lower levels over the northeastern Gulf of Mexico, usually on a frontal boundary (Figure 3-5). The low formation will be indicated in the gradient flow of the 850mb analysis and at times at higher levels. In addition, satellite photos will indicate increasing cloudiness. Minor troughing at 700mb will aid in the vertical development of this system to even higher levels and will cause rapid deepening of the surface low.

d. When a northward moving warm front reaches the central Alabama-Georgia area it is subject to rapid deceleration and will experience extreme difficulty in continuing a northward movement. The low pressure system will be pushed eastward bringing rain and isolated embedded thunderstorms with the cold front into north Florida. Once the system moves far enough east and overcomes the effects of the mountains, it will move up the coast at its normal speed.

309.0 NORTHEAST STRATUS ("Nor'easter"). Stratus observed in the Jacksonville area is referred to as northeast stratus since it forms almost entirely with surface winds from that direction. It forms, with few exceptions, during the months of November through March when there is a larger sea surface temperature gradient between the warm waters of the Florida Current and the cooler waters adjacent to the coast. Northeast stratus will usually occur a day or so following a cold frontal passage especially when the front stalls to the south of the Jacksonville area and becomes stationary. High pressure, usually centered north of Norfolk and east of Pittsburgh placing the Jacksonville area in the southeast quadrant, produces a north to northeast flow over up to about 2000 feet. The interaction of the wind flow over the warmer Florida Current then over the cooler coastal waters and the increased subsidence in the southeast quadrant of the high produces an extensive area of stratus. When the axis of an upper level trough lies to the west of the region, the relatively warm southwest flow aloft overruns the cooler air near the surface enhancing the "Nor'easter" conditions. Ceilings will vary from 600 to 1200 feet in mid-afternoon, but may be expected to lower to between 0 to 300 feet after midnight, depending on the wind, temperature, and dewpoint relationship. Cloud tops will range from 2000 to 3000 feet. Visibility under the stratus is usually good

during the day. Fog formation almost always occurs with 1000 foot winds of less than 15-20 knots and results in a stratus free situation. Dissipation of the localized stratus or fog may occur due to movement of the high pressure system or weakening of the pressure gradient. The northeast stratus occurs on an average of 8 times per year and usually persists for 1 to 3 days, but may last for as many as 7 days.

310.0 ICING. As NAS Cecil Field is home to F/A-18 aircraft, it is important for forecasters to be aware of the greater vulnerability of the aircraft to icing due to its lighter, thinner structure. Forecasters must pay close attention to the freezing level to determine how fast an aircraft must climb to a level where the temperature is -22 degrees Celsius or less as ice formation is rare at these temperatures. During the winter months when the freezing level is most critical, the current freezing level shall be displayed and continually updated on the Weathervision (AN/GMQ-27). Extrapolation must be used to forecast changes in the freezing level due to frontal passage as well as diurnal effects. It is extremely important to monitor pilot reports for icing conditions associated with frontal systems which pass through the north Florida area. The following rules of thumb apply:

a. Because of the numerous thunderstorms experienced at the field during the summer, the hazards of icing associated with thunderstorms are sometimes taken for granted. It should be mentioned to pilots that SEVERE icing is possible in and near thunderstorms even though it is stated so on the DD 175-1.

b. Forecast light to moderate, mixed and rime icing when a broken to overcast middle cloud layer is expected during the summer when the freezing level is normally found near 10,000 feet. Clear icing is not normally encountered with a rapid ascent through the range of 0 to -8 degrees Celsius.

c. Forecast light to moderate, mixed and rime icing when broken to overcast low and middle cloud layers are expected during the winter in precipitation clouds; and light to moderate, occasionally severe, mixed and rime icing when broken to overcast low and middle cloud layers are expected in non-precipitating clouds during the winter (non-precipitating systems generally approach north Florida from the west through northwest).

311.0 TURBULENCE. Both thermal and mechanically induced turbulence are applicable to forecasting at NAS Cecil Field throughout the year, and the following rules of thumb should be used to aid in forecasting:

a. When the convective temperature (Skew-T/Log-P) is expected to be reached, light turbulence from the surface to 5000 feet should be forecast from late spring to early fall.

b. When towering cumulus type clouds are expected to begin forming (usually around 90 degrees Fahrenheit) light to moderate turbulence from surface to 10,000 feet should be forecast.

c. It should be stressed to pilots that severe turbulence is possible in and near thunderstorms even though it is stated on the DD Form 175-1.

d. If a subsidence inversion is expected to set up, forecast light to moderate turbulence from the surface to 5,000 feet or below the inversion.

e. During the winter with cold continental polar outbreaks, surface winds can reach 15 knots or more sustained for 24-48 hours. In this situation, forecast light to moderate turbulence from the surface to 8,000 feet.

f. When the subtropical jet is expected to merge with the polar jet over the southeast United States during the winter months, forecast moderate to severe turbulence from 10,000 to 40,000 feet with clear air turbulence above 30,000 feet.

g. If frontal systems are expected to move through the area, forecast light to moderate turbulence from 10,000 to 30,000 feet.

h. If a cold front is expected to become stationary over the north Florida area, forecast light turbulence from 5,000 to 10,000 feet.

312.0 ALTERNATE WEATHER. The following air fields are used as alternates when the weather at NAS Cecil Field is expected to be below minimums:

a. Patrick Air Force Base (COF) - Located north of Melbourne, Florida in the east-central portion of the state. Generally, it has the best weather, however, the air field closes at 2300L and refueling is sometimes difficult.

b. Moody Air Force Base (VAD) - Located outside of Valdosta, Georgia. In close proximity to NAS Cecil Field, weather conditions are normally quite similar to those at Cecil Field.

313.0 REFERENCES.

a. Elliot, R.D., "Weather Types of North America", Weatherwise, Vol. 1-6, 1949

b. Watson, J.D., Unpublished Paper: Forecasting Transitional Stratus at Jacksonville, Florida

c. NAVOCEANCOMINST 3140.4 (series), Atmospheric Turbulence and Icing Criteria

d. NAVOCEANCOMINST 3142.1, Pilot Weather Reports

e. National Weather Service Forecaster's Handbook No. 1, Facsimile Products

f. CECILFLDINST 3440.2 (series), Disaster Preparedness Plan

g. NAVLANTMETOC DET Cecil Field Standard Operating Procedures

STATION 72206 | KNZC | CECIL FIELD NAS ,FL,US
LATITUDE 30 13N LONGUTUDE 081 53W ELEVATION 79(ft) 24(m)

JANUARY

WIND DIR.	RAIN	RAIN SHOWRS	DRIZZLE	FREEZE RAIN FREEZE	THUNDER TORNADO SQUALLS	FOG	ICE FOG GROUND FOG	SMOKE HAZE	BLOWING SAND DUST	NO WEATHER
N	7.6	.3	3.4	.2	.1	18.1	5.9	23.2	0	56.1
NNE	6.9	.2	4.8	.2	0	25.6	6.2	26.1	.1	46.6
NE	9.8	.1	4.2	0	.1	28.4	4.5	28.8	0	41.6
ENE	7.4	.5	5.8	0	.1	32.3	3.4	29.5	0	39.4
E	7.7	.4	3.7	0	.3	23.9	2.9	25.7	.1	50.4
ESE	10.0	.3	2.6	0	0	19.0	3.5	26.8	.5	51.3
SE	8.0	.9	1.2	0	.3	15.7	4.9	22.0	0	58.1
SSE	7.6	1.8	1.2	0	.4	15.0	4.1	21.1	.2	58.9
S	6.0	1.9	.5	0	.3	12.0	5.9	17.6	.3	64.1
SSW	6.4	2.3	1.1	0	.5	12.5	5.6	16.9	.3	63.1
SW	6.2	1.6	1.5	0	.5	9.4	4.9	15.9	.1	66.8
WSW	3.3	1.1	1.0	0	0	9.2	4.9	17.0	.3	68.1
W	2.7	1.3	.5	0	.2	7.6	5.3	16.1	0	70.4
WNW	2.5	1.3	.7	0	.1	6.8	4.5	18.0	.3	70.9
NW	4.5	1.1	.5	.1	.3	5.8	2.8	15.4	0	73.9
NNW	5.8	1.3	1.6	.7	0	10.6	3.3	18.2	.1	64.7
VAR	6.6	3.9	.8	0	1.2	22.9	1.6	23.6	0	49.6
CLM	3.4	.9	.5	0	.2	14.8	16.5	19.1	0	52.0
TOTALS	992	151	353	13	32	2680	971	3460	16	9243
%TOTAL	6.1	.9	2.2	.1	.2	16.6	6.0	21.4	.1	57.1

JULY

WIND DIR.	RAIN	RAIN SHOWRS	DRIZZLE	FREEZE RAIN FREEZE	THUNDER TORNADO SQUALLS	FOG	ICE FOG GROUND FOG	SMOKE HAZE	BLOWING SAND DUST	NO WEATHER
N	2.2	7.8	0	0	8.0	11.8	8.9	19.4	0	53.8
NNE	2.0	6.0	0	0	6.8	11.9	12.8	27.8	.2	47.7
NE	1.1	6.6	.2	0	5.4	8.2	5.3	17.1	.3	63.9
ENE	1.4	7.5	0	0	6.5	6.1	5.1	16.6	.2	66.5
E	1.3	7.5	.1	0	6.5	2.4	2.6	12.3	0	73.0
ESE	.5	6.2	0	0	5.4	2.3	1.3	11.0	0	78.1
SE	1.9	6.7	.3	0	5.7	1.9	2.3	8.1	0	78.0
SSE	1.9	5.5	0	0	5.5	1.8	1.3	9.2	0	78.5
S	1.5	5.0	0	0	5.1	2.2	2.4	7.6	0	79.6
SSW	1.0	6.0	0	0	4.9	2.0	2.4	9.2	0	78.6
SW	1.0	5.5	.1	0	5.2	1.4	1.8	6.2	.1	82.9
WSW	1.1	5.6	.1	0	5.8	1.8	2.3	11.5	0	76.8
W	1.2	6.4	.1	0	6.7	2.2	1.6	8.8	.1	78.0
WNW	1.6	7.3	0	0	6.7	7.3	1.6	15.1	0	69.7
NW	1.4	8.4	0	0	8.3	6.0	2.0	13.2	0	69.8
NNW	2.0	7.6	0	0	6.6	10.8	2.5	20.1	0	61.4
VAR	2.2	5.7	0	0	5.7	12.0	1.8	22.6	0	59.7
CLM	1.3	1.6	*	0	1.6	4.6	11.5	9.7	0	73.1
TOTALS	235	945	9	0	896	731	730	1986	6	12457
%TOTAL	1.4	5.6	.1	0	5.3	4.3	4.3	11.7	*	73.3

* = PERCENT < .05

FIG (3-1) Percent frequency of Wind Direction Versus Weather Conditions

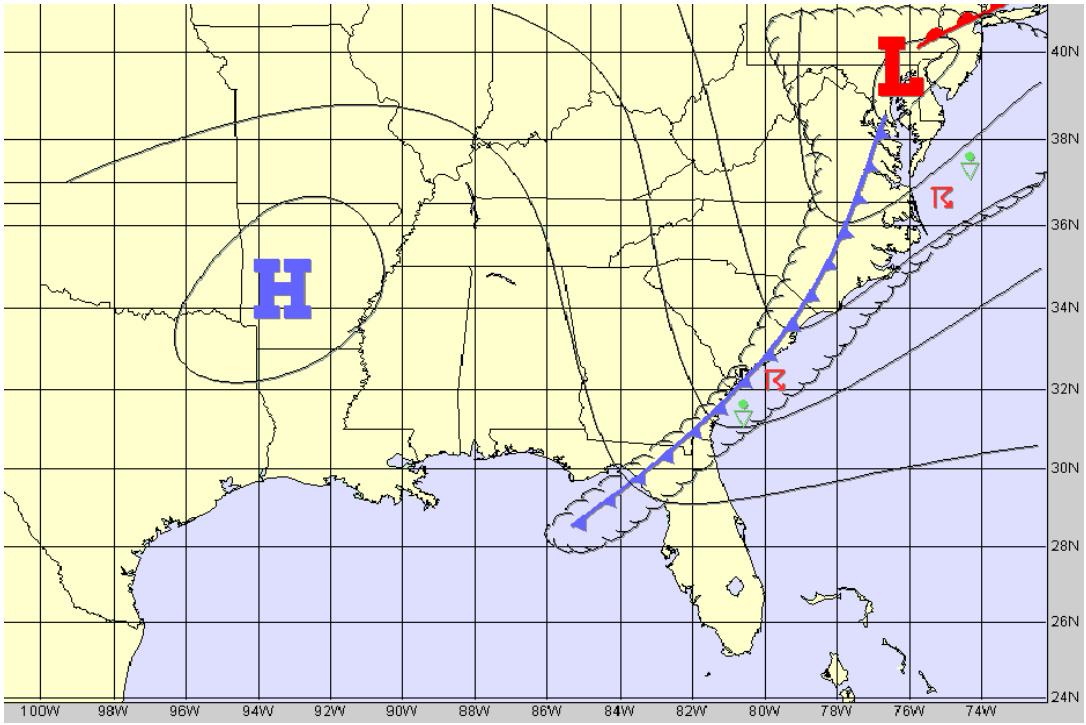


FIG (3-2) North-South Oriented Cold Front

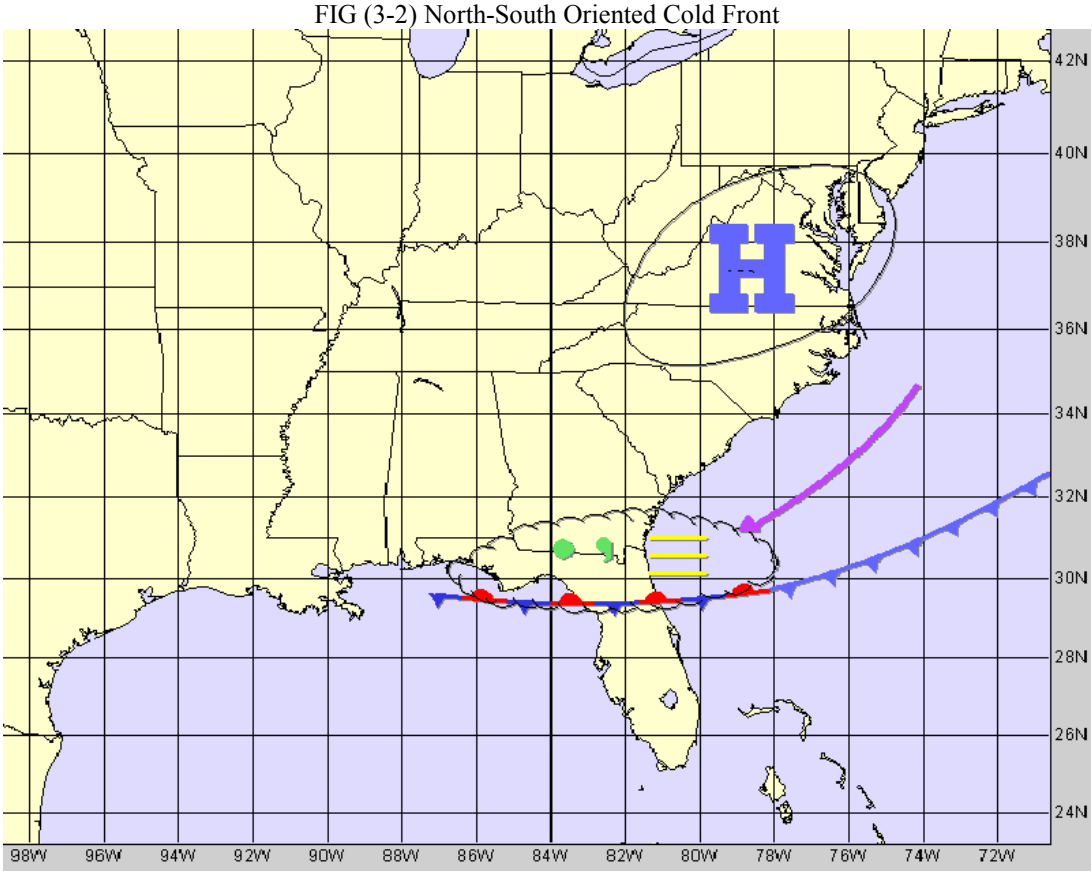


FIG (3-3) East-West Oriented Cold Front

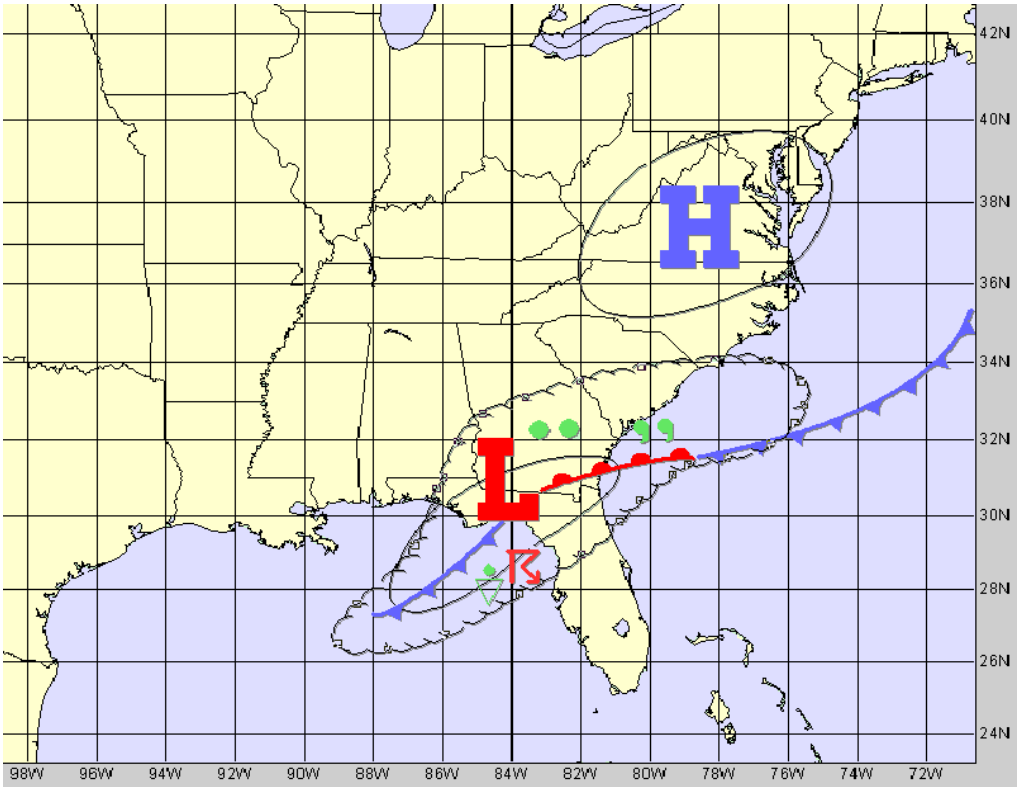


FIG (3-4) Regional Cyclogenesis

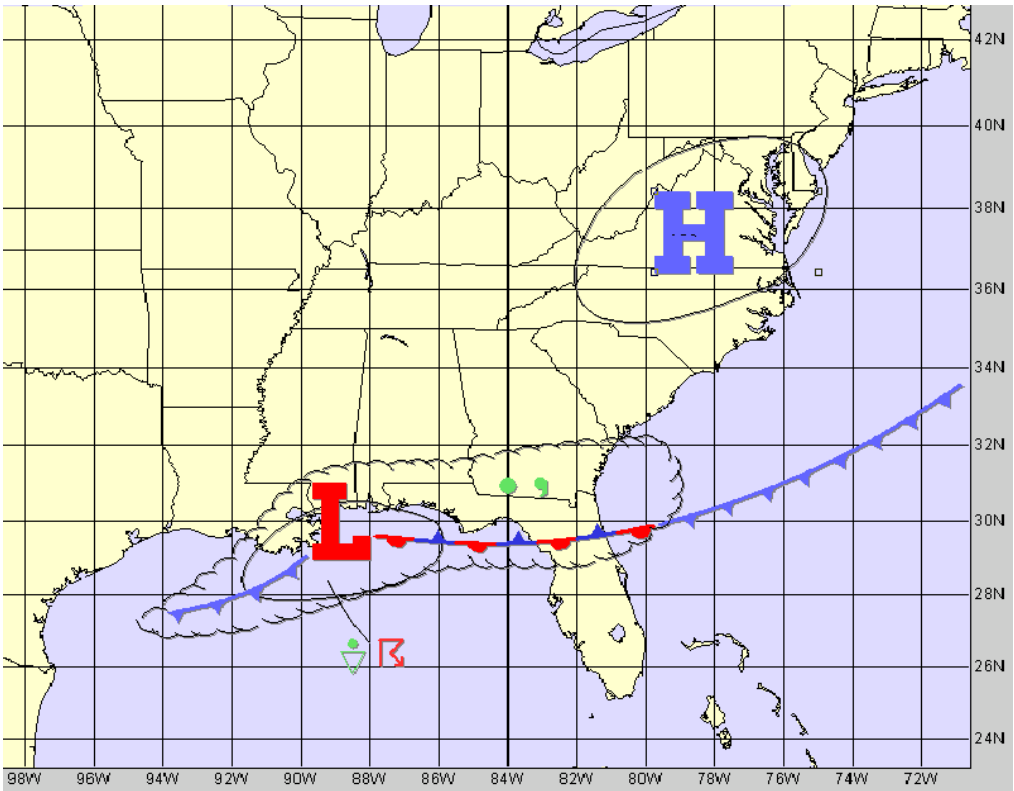


FIG (3-5) Gulf Wave Formation

SECTION IV - SPECIALIZED FORECASTS AND SERVICES

401.0 PINECASTLE ELECTRONIC WARFARE RANGE (PEWR). The Pinecastle Electronic Warfare Range is located in Astor, Florida at 29 degrees 7 minutes north latitude, 81 degrees 43 minutes west longitude. Considered a part of central Florida, the range is 18 miles south of Lake George, 35 miles west of Daytona Beach, and 38 miles north-northwest of Orlando. Topography at PEWR is generally the same as at Cecil Field except for the close proximity of the range to Lake George and the slightly higher elevation of the range at 92 feet.

The range is used extensively by tenant squadrons stationed aboard NAS Cecil Field. Therefore, it is important that the forecaster use all available information to prepare forecasts and severe weather warnings for the range. PEWR is equiped with an Automated Surface Observing System (ASOS). Automated weather observation can be obtained by using ProComm Plus to dial 1 (352) 759-2297.

Climatology is not available for the range. However, the forecasting rules for Cecil Field can be applied with the following exceptions:

a. The sea breeze effect is minimal.

b. Forecast prevailing visibilities in fog lower than those values forecast for Cecil Field. Due to the close proximity to Lake George, fog at PEWR will be more dense than at Cecil Field

c. Thunderstorm activity:

1. If the winds aloft are expected to be light; forecast thunderstorms to become stationary over Lake George, keeping the range in thunderstorm conditions for several hours.

2. When thunderstorms are expected to approach from the west, they will arrive much more quickly (approximately 2 hours) than when approaching Cecil Field from the southwest.

d. "Nor'easter" conditions which are affecting Cecil Field do not always influence PEWR as the cloud shield may not extend far enough south to encompass the range. In this situation, satellite imagery must be used to determine the southern extremity of the cloud shield.

402.0 OPTIMUM PATH AIRCRAFT ROUTING SYSTEM (OPARS). Requirements and procedures for the local preparation of OPARS are contained in the OPARS User's Manual and the detachment standard operating procedures.

403.0 AIRCRAFT EVACUATION. In the event that a tropical cyclone threatens NAS Cecil Field, aircraft may be hangared or evacuated depending on forecast conditions. If aircraft are to be evacuated, the evacuation will commence when AIRCRAFT EVACUATION CONDITION II is set for the station. At which time, the Forecast Duty Officer must be prepared to handle a large number of flight briefs and should have ready all necessary data.

404.0 STAFF AND MISSION BRIEFINGS.

a. Staff briefs will normally be conducted by the Officer in Charge and generally will contain information about Tropical Storm/Hurricane conditions. In the event the OIC is unavailable, the LCPO will be tasked to brief the staff. Staff personnel will also, at times, present themselves in the forecasting space for a general forecast.

b. If several squadrons or a large number of aircraft are involved in an exercise, a request may be received for a brief in a squadron ready room. If the FDO is able he/she will conduct the brief in person with a completed DD 175-1 and applicable briefing charts (satellite, radar summary, etc.). If the FDO is unable to leave the office, the LCPO or AFDO will provide this service subject to availability.

405.0 CLIMATOLOGY. Climatology products are available upon request.

406.0 REFERENCES.

a. NAVLANTMETOC DET Cecil Field Standard Operating Procedures

b. FLENUMOCEANCENINST 3710.1 (series), Optimum Path Aircraft Routing System (OPARS) User's Manual

c. Navy Oceanographic Data Distribution System (NODDS) User's Manual

d. FLENUMOCEANCENINST 3147.1 (series), Navy Oceanographic Data Distribution System (NODDS) Products Manual

e. FLENUMOCEANCENINST 3140.3 (series), Automated Products Request (APR) User's Manual

SECTION V - ENVIRONMENTAL EFFECTS

501.0 MINIMUM METEOROLOGICAL CONDITIONS FOR AIRFIELD OPERATIONS.

a. TAKEOFF MINIMUMS: As governed by NATOPS, conditions greater than or equal to a 200 foot ceiling and greater than or equal to 1/2 mile visibility are required.

b. APPROACH MINIMUMS: An instrument approach is required if either the ceiling is less than 2300 feet or the visibility is less than 5 miles. A local observation shall be taken when conditions improve or deteriorate such that a change in the approach method is required.

1. Precision Approach Radar (PAR)

Runway	Ceiling/Visibility
ALL	100 / 1/4

2. Airport Surveillance Radar (ASR)

Runway	Ceiling/Visibility
09L, 18R	400 / 1
36L, 09R	400 / 1 1/4 *
18L, 36R	400 / 3/4 *
27L, 27R	300 / 1

* denotes most restrictive condition listed based on aircraft category

3. Precision Approach Landing System (PALS)

Runway	Ceiling/Visibility
ALL	200 / 1/2

c. CIRCLING MINIMUMS: The least restrictive circling minimums are 500 feet and 1 mile for categories A and B aircraft. Circling minimums for category C aircraft are 500 feet and 1 1/2 miles. The most restrictive circling minimums for categories D and E aircraft are 600 feet and 2 miles.

502.0 THUNDERSTORM CONDITIONS.

a. THUNDERSTORM CONDITION II:

1. Effects on Aircraft Operations

(a) Secure aircraft on flight line - install struts/covers, close doors/hatches, and use six point tie downs.

2. Effects on Ground Operations

(a) Handling of explosive material may continue provided material can be stored or bunkered within 30 minutes.

b. THUNDERSTORM CONDITION I:

1. Effects on Aircraft Operations

(a) Hangar all aircraft when possible.

(b) Move all support equipment into hangars.

(c) Fueling operations cease.

(d) Secure all outdoor activities and maintenance.

2. Effects on Ground Operations

(a) Emergency generators are activated.

(b) Weapons handling of explosive material halts.

(c) Swimming pools are cleared when thunder or lightning is first observed until 15-20 minutes have passed with no additional claps or strokes.

(d) Personnel are not permitted to commence a new round on the golf course. Golf course use is limited to those already playing.

(e) All other outdoor MWR activities are secured.

503.0 WIND WARNINGS.

a. Wind warning recommendations shall be made by the Forecast Duty Officer as conditions warrant:

1. High Winds - 21 to 33 knots

2. Gale - 34 to 47 knots

3. Storm - 48 knots or greater

b. General safety precautions may be enacted including the following:

1. Secure aircraft on flight line.

2. Move support equipment into hangars and buildings.

3. Secure outdoor items.

504.0 FREEZE WARNINGS. Public Works personnel require sufficient advance notice to maintain proper heating capacity and to prevent water pipes from freezing. When the minimum temperature is forecast to be 29 degrees Fahrenheit or below (for any period of time) or if freezing temperatures are expected to last for four hours or more, a freeze warning shall be issued.

505.0 HEAT STRESS ADVISORIES. Heat stress advisories are issued based on apparent temperature calculations. During the summer, strenuous outdoor activities should be limited or curtailed based on the calculated heat stress level and the length of an individual's acclimatization to hot weather.

506.0 REFERENCES.

a. OPNAVINST 3710.1 (series), NATOPS

b. DOD Flight Information Publication Vol. 12

c. CECILFLDINST 3440.2 (series), Disaster Preparedness Plan

d. NAVLANTMETOC DET Cecil Field Standard Operating Procedures

e. CECILFLDINST 3710.1 (series), Air Operations Manual