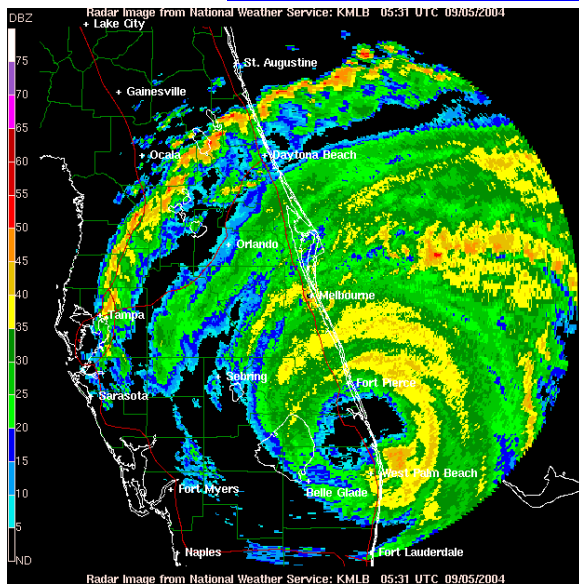


Hurricane Frances

September 4-5, 2004

[National Hurricane Center Summary of Hurricane Frances \(pdf\)](#)

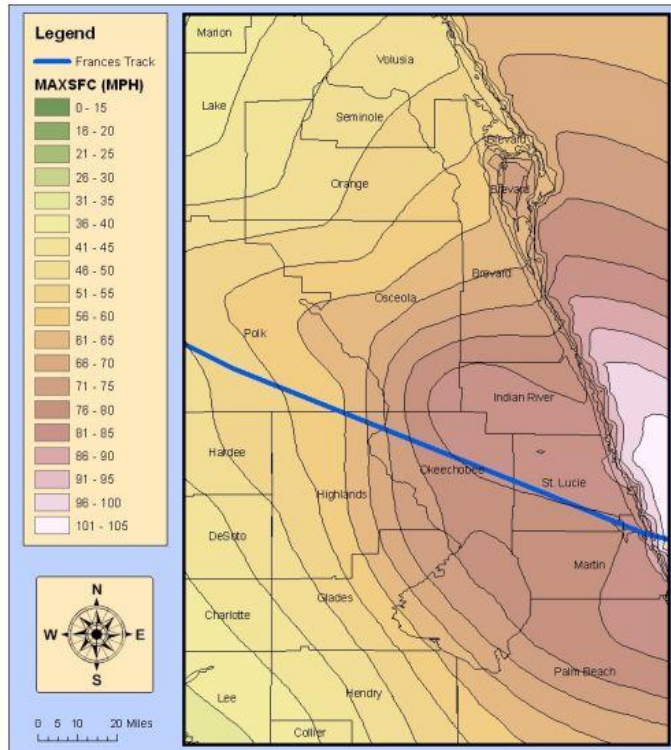


Radar Image Near Time of Landfall



Paths of Frances and Charley

Frances Winds from HRD MAXSFC (MPH)



Maximum Winds From Hurricane Frances (from Hurricane Research Division)

Damage Photos

St Lucie County

Martin County



Damage Photos

Indian River

Brevard

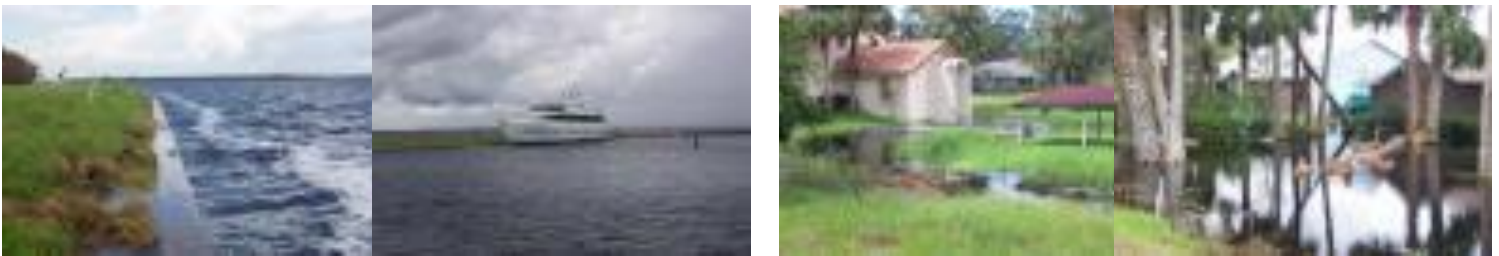
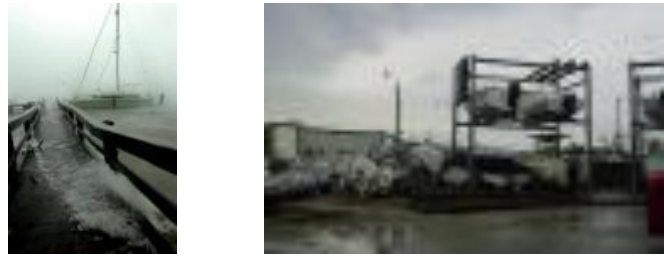


Damage Photos

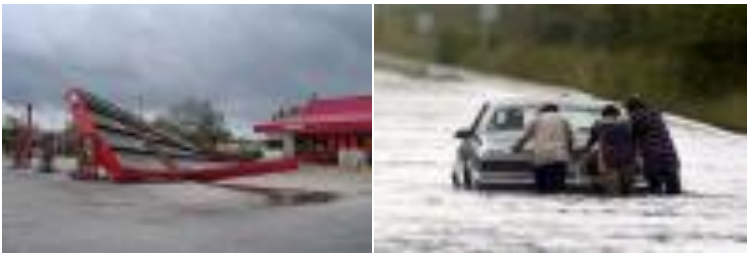
Seminole



Volusia



Osceola



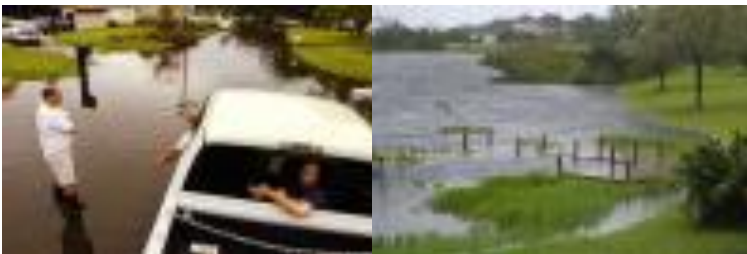
Lake



Orange



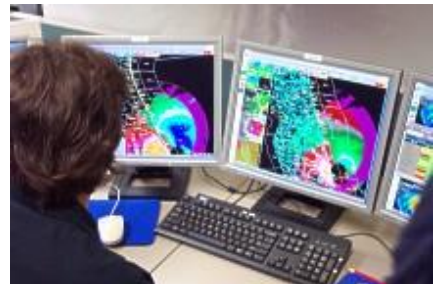
Okeechobee





Operations Floor Photographs

September 2-6, 2004



POST TROPICAL CYCLONE REPORT...HURRICANE FRANCES...AMENDED
NATIONAL WEATHER SERVICE MELBOURNE FL
1015 AM EDT FRI SEP 17 2004

ADDED DATA PRECEDED BY *

COUNTIES INCLUDED...VOLUSIA...LAKE...ORANGE...SEMINOLE...OSCEOLA...
BREVARD...INDIAN RIVER...OKEECHOBEE...ST. LUCIE...MARTIN.

A. WIND DATA

ASOS/AWOS...HIGHEST SUSTAINED WIND (2-MINUTE AVERAGE)

COUNTY.....CITY (SID).....DIR/SPD (KT)...DATE/TIME (UTC)
ORANGE.....ORLANDO (MCO).....050/47.....09/05/04..0848Z
SEMINOLE.....SANFORD (SFB).....060/44.....09/04/04..2313Z
LAKE.....LEESBURG (LEE).....070/27.....09/04/04..1740Z
VOLUSIA.....DAYTONA BEACH (DAB)..060/49.....09/05/04..1000Z
BREVARD.....CAPE CANAVERAL (CCA).070/31.....09/05/04..1119Z

ASOS/AWOS...HIGHEST GUST

COUNTY.....CITY (SID).....DIR/SPD (KT)...DATE/TIME (UTC)
ORANGE.....ORLANDO (MCO).....050/60.....09/05/04..0847Z
SEMINOLE.....SANFORD (SFB).....060/61.....09/04/04..2312Z
LAKE.....LEESBURG (LEE).....120/52.....09/05/04..1949Z
BREVARD.....MELBOURNE (MLB).....040/63.....09/04/04..2358Z
VOLUSIA.....DAYTONA BEACH (DAB)..060/65.....09/05/04..1134Z
BREVARD.....CAPE CANAVERAL (CCA).080/48.....09/05/04..1118Z

NOTE: ASOS/AWOS SITES CCA, MCO, ORL, SFB, LEE, MLB, VRB, FPR, SUA,
ISM, OMN FAILED DURING OR PRIOR TO THE HEIGHT OF THE STORM. DATA MAY
BE INCOMPLETE.

NASA WIND TOWER (ELEVATED) WINDS

CAPE CANAVERAL (BREVARD COUNTY) AIR FORCE STATION MESONET TOWERS

TOWER 110 (28.56N 80.58W AT 54 FEET AGL)

HIGHEST SUSTAINED (DIR/SPD) 075/49 (KT) AT 09/05/04...1210Z

HIGHEST GUST (DIR/SPD) 074/78 (KT) AT 09/05/04...1210Z

TOWER 19 (28.74N 80.70W AT 54 FEET AGL)

HIGHEST SUSTAINED (DIR/SPD) 066/59 (KT) AT 09/05/04...1040Z

HIGHEST GUST (DIR/SPD) 066/82 (KT) AT 09/05/04...1040Z

TOWER 22 (28.80N 80.74W AT 54 FEET AGL)

HIGHEST SUSTAINED (DIR/SPD) 083/55 (KT) AT 09/05/04...1150Z

HIGHEST GUST (DIR/SPD) 075/72 (KT) AT 09/05/04...1015Z

NOTE: WIND TOWER DATA NOT AVAILABLE AFTER 09/05 1220Z

MARINE BUOY 42009 (20 NM E PORT CANAVERAL) WINDS

HIGHEST SUSTAINED (DIR/SPD)...110/52 AT 09/05/04...1450Z (8-MIN AVG)
HIGHEST GUST (DIR/SPD).....110/66 AT 09/05/04...1320Z

NOTE: BUOY 42009 WENT ADRIFT DURING HURRICANE FRANCES. NO DATA
AVAILABLE AFTER 09/05 1450Z

MERRITT ISLAND AIRPORT (BREVARD COUNTY); DAVIS II AT ~10 METERS
HIGHEST SUSTAINED WIND...64 KT AT 05/0935Z
HIGHEST GUST.....78 KT AT 05/0935Z

FLORIDA COASTAL MONITORING SYSTEM RESEARCH TOWERS (AT 10 METERS)

HIGHEST SUSTAINED WIND (1-MINUTE AVERAGE)

COUNTY.....	CITY.....	DIR/SPD (KT)...	DATE/TIME (UTC)
BREVARD.....	INDIAN HARBOR BCH...	121/46.....	09/05/04..1455Z
INDIAN RVR..	VERO BEACH.....	042/49.....	09/05/04..0435Z
ST. LUCIE...FT. PIERCE.....		017/70.....	09/05/04..0402Z
MARTIN.....	PORT SALERNO.....	360/49.....	09/05/04..0240Z

HIGHEST GUST

COUNTY.....	CITY.....	DIR/SPD (KT)...	DATE/TIME (UTC)
BREVARD.....	INDIAN HARBOR BCH...	126/68.....	09/05/04..1453Z
INDIAN RVR..	VERO BEACH.....	044/71.....	09/05/04..0435Z
ST. LUCIE...FT. PIERCE.....		016/94.....	09/05/04..0401Z
MARTIN.....	PORT SALERNO.....	005/71.....	09/05/04..0240Z

ADDITIONAL WIND OBSERVATIONS (UNOFFICIAL)

SOUTH FLORIDA WATER MANAGEMENT DISTRICT - (OVER LAKE/RIVER
SITES-ANEMOMETER HEIGHT 33FT, EXCEPT 28FT FOR L001)

HIGHEST SUSTAINED WIND

LOCATION.....	DIR/SPD (KT)...	DATE/TIME (UTC)
S61W (28.14N 81.35W).....	107/48.....	09/05/04...1345Z
S65CW (27.40N 81.11W).....	301/35.....	09/05/04...1315Z
S65DWX (27.31N 81.02W).....	319/35.....	09/05/04...1115Z
L001 (27.14N 80.79W).....	331/62.....	09/05/04...0715Z

HIGHEST GUST

LOCATION.....	DIR/SPD (KT)...	DATE/TIME (UTC)
S61W (28.14N 81.35W).....	119/74.....	09/05/04...1500Z
S65CW (27.40N 81.11W).....	103/58.....	09/05/04...0545Z
S65DWX (27.31N 81.02W).....	324/65.....	09/05/04...1000Z
L001 (27.14N 80.79W).....	338/83.....	09/05/04...0530Z

ARMY CORP OF ENGINEERS - HIGHEST SUSTAINED WIND (1 MINUTE AVERAGE)

COUNTY.....LOCATION.....DIR/SPD (KT)....DATE/TIME (UTC)

ST. LUCIE.....ST. LUCIE LOCK.....004/37.....09/05/04...0330Z
MARTIN.....PORT MAYACA LOCK...MSG/74.....09/05/04...0500Z

SEMINOLE COUNTY MESONET STATIONS - HIGHEST GUST

LOCATION.....DIR/SPD (KT).....DATE/TIME (UTC)
STN 22 (28.655N 82.347W)...NORTHEAST/51.....09/05/04...1451Z
STN 35 (28.742N 82.300W)...NORTHEAST/50.....09/05/04...1257Z

FLORIDA AUTOMATED WEATHER NETWORK (FAWN) HIGHEST SUSTAINED WIND
ANEMOMETER HEIGHT 30 FEET; AVERAGING PERIOD UNKNOWN

COUNTY.....CITY.....DIR/SPD (KT)...DATE/TIME (UTC)
ORANGE.....AVALON.....127/30.....09/05/04...1145Z
OSCEOLA.....KENANSVILLE...259/25.....09/05/04...1100Z
LAKE.....OKAHUMPKA.....115/30.....09/05/04...1200Z
ST LUCIE.....FT PIERCE.....011/44.....09/04/04...1330Z
LAKE.....UMATILLA.....049/32.....09/04/04...1515Z

AUTOMATIC POSITION REPORTING SYSTEM (APRS)...HIGHEST GUST

COUNTY.....ID.....CITY.....DIR/SPD(KT)..DATE/TIME (UTC)
OSCEOLA.....N4ZIQ...ST CLOUD.....018/43.....09/05/04...0611Z
ORANGE.....KB2RC...ORLANDO.....071/48.....09/05/04...1334Z
ORANGE.....KD4MRL...ORLANDO.....027/56.....09/05/04...1043Z
ORANGE.....CW0572...AZALEA PARK...043/46.....09/05/04...1334Z
LAKE.....CW1921...CLERMONT.....060/56.....09/05/04...1600Z
ST. LUCIE...CW0262...PT. ST. LUCIE..008/52.....09/04/04...1525Z

USGS STATIONS - MAXIMUM SUSTAINED WIND

COUNTY....LOCATION.....DIR/SPD(KT)..DATE/TIME (UTC)
SEMINOLE..7E OF ALTAMONTE SPRINGS...099/30.....09/05/04...1203Z

USGS STATIONS - MAXIMUM GUST

COUNTY....LOCATION.....DIR/SPD(KT)..DATE/TIME (UTC)
SEMINOLE..7E ALTAMONTE SPRINGS.....007/50.....09/05/04...1334Z

SJWMD STATIONS - MAXIMUM GUST

COUNTY....LOCATION.....DIR/SPD(KT)..DATE/TIME (UTC)
BREVARD...LAKE WINDER.....52.....09/05/04...1245Z
VOLUSIA...PONCE INLET.....36.....09/05/04...2215Z
ORANGE...LAKE APOPKA.....43.....09/05/04...1330Z

ORMOND BEACH POLICE DEPT. (ON TOP OF BLDG)

COUNTY....LOCATION.....SPD(KT).....DATE/TIME (UTC)
VOLUSIA...ORMOND BEACH.....50.....09/05/04..1620Z

PUBLIC REPORT (ANEMOMETER AT APPROXIMATELY 28 FEET)

*COUNTY...LOCATION.....SPD(KT).....DATE/TIME (UTC)

*MARTIN....27 07.2N 80 15.6W....92.....09/05/04..1145Z

B. PRESSURE DATA

ASOS/AWOS...LOWEST MEAN SEA LEVEL PRESSURE

COUNTY.....CITY.....PRES/MB....DATE/TIME (UTC)

VOLUSIA.....DAYTONA BEACH (DAB)...994.9.....09/05/04...2000Z

ORANGE.....ORLANDO (MCO).....989.4.....09/05/04...1052Z

SEMINOLE.....SANFORD (SFB).....989.8.....09/05/04...1457Z

LAKE.....LEESBURG (LEE).....988.5.....09/05/04...1859Z

BREVARD.....MELBOURNE (MLB).....995.9.....09/05/04...1858Z

MARINE BUOYS LOWEST PRESSURE (MB)

42009.....20 E PORT CANAVERAL.....991.1.....09/05/04...1300Z

NOTE: BUOY 42009 WENT ADRIFT DURING HURRICANE FRANCES. NO DATA AVAILABLE AFTER 09/05 1450Z.

MERRITT ISLAND AIRPORT

MINIMUM SEA LEVEL PRESSURE...984 MB.

ADDITIONAL PRESSURE DATA (UNOFFICIAL)

ARMY CORP OF ENGINEERS

COUNTY.....LOCATION.....PRESS (MB)...DATE/TIME (UTC)

ST. LUCIE.....ST. LUCIE LOCK.....962.1.....09/05/04...0600Z

MARTIN.....PORT MAYACA LOCK...964.7.....09/05/04...0645Z

SEMINOLE COUNTY MESONET STATIONS

LOCATION.....PRESS (MB)....DATE/TIME..(UTC)

STN 22 (28.655N 82.347W).....988.8.....09/05/04...1214Z

STN 35 (28.742N 82.300W).....989.5.....09/05/04...1514Z

SOUTH FLORIDA WATER MANAGEMENT DISTRICT -

LOCATION.....PRESS (MB)....DATE/TIME (UTC)

S61W (28.14N 81.35W).....975.96.....09/05/04...1545Z

S65CW(27.40N 81.11W).....972.08.....09/05/04...1315Z

S65DWX(27.31N 81.02W).....972.41.....09/05/04...1230Z

L001 (27.14N 80.79W).....969.49.....09/05/04...1000Z

C. STORM TOTAL RAINFALL

*RADAR RAINFALL ESTIMATES OF 5 TO 8 INCHES OCCURRED ACROSS MOST OF EAST CENTRAL FLORIDA. THE HIGHEST VALUES WERE ACROSS VOLUSIA COUNTY WERE 10 TO 14 INCHES WERE ESTIMATED. 3 TO 4 INCHES WERE ESTIMATED FROM INTERIOR MARTIN COUNTY...OKEECHOBEE COUNTY...EASTERN OSCEOLA

AND WEST CENTRAL BREVARD COUNTIES.

ASOS/COOP RAINFALL 09/03/2004 - 09/06/2004

COUNTY.....	LOCATION.....	TOTAL RAINFALL (IN)
OSCEOLA.....	KISSIMMEE.....	5.65
ORANGE.....	ORLANDO INTL.....	6.50
ORANGE.....	ORLANDO EAST COOP...7.91	
ORANGE.....	PLYMOUTH COOP.....	7.95
SEMINOLE.....	SANFORD ARPT.....	4.40
SEMINOLE.....	SANFORD COOP.....	7.54
LAKE.....	LEESBURG ARPT.....	6.46
LAKE.....	LISBON.....	8.03
BREVARD.....	MELBOURNE ARPT.....	7.95
BREVARD.....	MELBOURNE NWS.....	8.11
BREVARD.....	PALM BAY COOP.....	7.27
BREVARD.....	TITUSVILLE COOP....	7.00
VOLUSIA.....	DELAND COOP.....	11.26
VOLUSIA.....	DAYTONA BEACH ARPT..	9.96
MARTIN.....	PORT SALERNO.....	8.68

ADDITIONAL RAINFALL OBSERVATIONS (UNOFFICIAL)

SEMINOLE COUNTY MESONET STATIONS (09/03/2004 - 09/06/2004)

LOCATION.....	RAINFALL (IN)
STN 22 (28.655N 82.347W)....	5.98
STN 35 (28.742N 82.300W)....	5.77

FLORIDA AUTOMATED WEATHER NETWORK (FAWN)
(09/03/2004 - 09/06/2004)

COUNTY.....	CITY.....	RAINFALL (IN)
ORANGE.....	AVALON.....	5.98
OSCEOLA.....	KENANSVILLE...6.44	
LAKE.....	OKAHUMPKA.....	7.37
VOLUSIA.....	PIERSON.....	9.05
ST LUCIE.....	FT PIERCE.....	3.44
LAKE.....	UMATILLA.....	8.86
LAKE.....	TAVARES.....	7.37

PUBLIC REPORTS (STORM TOTAL)

COUNTY.....	CITY.....	RAINFALL (IN)
SEMINOLE.....	OVIEDO.....	9.00
BREVARD.....	MELBOURNE.....	7.04
VOLUSIA.....	PORT ORANGE...15.08	

D. STORM TIDES AND HEIGHTS

THE CORP OF ENGINEERS REPORTED A STORM SURGE VALUE AT THE ST. LUCIE LOCK OF 5.89 MSL (NO TIME GIVEN). INITIAL SURVEY FROM COCOA BEACH TO

VERO BEACH INCLUDE THE FOLLOWING ESTIMATES (SUBJECT TO REVISION) AND DO NOT INCLUDE WAVE ACTION: ESTIMATE FROM 6 FEET AROUND COCOA BEACH TO 8 FEET AROUND VERO BEACH. NO SURVEY HAS BEEN CONDUCTED YET NORTH OF COCOA BEACH OR SOUTH OF VERO BEACH. STORM SURGE ON THE WEST BANK OF THE INDIAN RIVER IS ESTIMATED TO RANGE FROM 2 TO 3 FEET IN THE COCOA/ROCKLEDGE AREA TO 3 TO 4 FEET WITHIN SOUTHERN BREVARD AND INDIAN RIVER COUNTIES.

E. BEACH EROSION

BEACH EROSION WAS MODERATE TO SEVERE FROM COCOA BEACH TO VERO BEACH. A LARGE SECTION OF ROAD WAS UNDERMINED IN VERO BEACH DUE TO EROSION/UNDERMINING AND DUNE RECESSION AVERAGED FROM 5 TO 6 FEET IN CENTRAL BREVARD TO 8 TO 12 FEET IN PORTIONS OF INDIAN RIVER COUNTY. SOME STRUCTURES UNDERMINED OR IN DANGER OF UNDERMINING. SIGNIFICANT DAMAGE TO BOARDWALKS AND DUNE CROSS-OVER/BEACH ACCESS STRUCTURES. CONSIDERABLE EROSION OF WESTERN BANK OF INDIAN RIVER IN SOME AREAS...ESPECIALLY WITHIN SOUTHERN BREVARD AND INDIAN RIVER COUNTIES. PORTIONS OF THE RIGHT SIDE NORTHBOUND LANE OF U.S. 1 NORTH OF SEBASTIAN RIVER WAS CLOSED DUE TO RISK OF UNDERMINING.

F. FLOODING

MAJOR STREET IN KISSIMMEE AND ST CLOUD. RAINFALL COMBINED FROM HURRICANE CHARLEY AND FRANCES HAS FLOODED 100 HOMES IN DELAND, DELTONA AND OAK HILL IN VOLUSIA COUNTY.

G. TORNADOES

1504Z SEP 4...AN F0 TORNADO FROM AN OUTER RAINBAND TOUCHED DOWN ON HIGHWAY 192 JUST EAST OF ST. CLOUD FORCING A SHERIFF'S PATROL CAR INTO A DITCH.

1608Z SEP 6...EAST ST. CLOUD...PUBLIC SIGHTING OF TORNADO TOUCHING DOWN THREE TIMES NEAR ALLIGATOR RD. AND HICKORY TREE RD. MOVING NORTH TOWARDS NARCOOSSEE RD. AND HIGHWAY 192.

H. STORM EFFECTS...DAMAGE AND IMPACTS BY COUNTY

VOLUSIA COUNTY...478 COMMERCIAL PROPERTIES DAMAGE...19958 SINGLE FAMILY PROPERTIES DAMAGED...4800 MOBILE HOMES DAMAGED...1141 AGRICULTURAL PROPERTIES DAMAGED. COUNTY PROPERTY DAMAGE 85.5 MILLION. TOTAL DAMAGE ESTIMATE AT THIS TIME IS 238.5 MILLION.

BREVARD...DETAILED DAMAGE ASSESSMENT IS UNAVAILABLE AT THIS TIME. COUNTY EMERGENCY MANAGEMENT REPORTS THAT DAMAGE WILL BE CLOSE TO 90 MILLION DOLLARS IN INCORPORATED AREAS AND 21 MILLION DOLLARS IN MUNICIPALITIES.

INDIAN RIVER COUNTY...DETAILED DAMAGE ASSESSMENT IS UNAVAILABLE AT THIS TIME. COUNTY EMERGENCY MANAGEMENT REPORTS THAT DAMAGE WILL BE CLOSE TO ONE BILLION DOLLARS.

ST. LUCIE COUNTY...ST. LUCIE COUNTY WAS ONE OF THE HARDEST HIT COUNTIES. INITIAL REPORTS INDICATE 2.5 BILLION DOLLARS IN PUBLIC AND PRIVATE DAMAGE. THE FT. PIERCE MUNICIPAL MARINA WAS DESTROYED AS WERE MOST OF THE HANGERS AT FT. PIERCE AIRPORT. NO NUMBERS WERE AVAILABLE ON HOMES AND BUSINESSES DAMAGED AND DESTROYED, BUT THERE ARE 16 MOBILE HOME COMMUNITIES CLOSED FOR EVALUATION. A ONE MILE SECTION OF INDIAN RIVER DRIVE ALONG THE INTRACOASTAL WATERWAY WAS WASHED OUT. A BRIDGE ALONG HIGHWAY A1A SOUTH OF THE ST. LUCIE NUCLEAR POWER PLANT ON HUTCHINSON ISLAND WAS WASHED OUT.

MARTIN COUNTY...DETAILED DAMAGE ASSESSMENT IS UNAVAILABLE AT THIS TIME.

LAKE COUNTY...417 RESIDENCES DAMAGED, 69 DESTROYED (MOST MOBILE HOMES), 77 BUSINESSES DAMAGED AND 2 DESTROYED. DAMAGE ESTIMATE NEAR 6 MILLION DOLLARS.

ORANGE COUNTY...DETAILED DAMAGE ASSESSMENT IS UNAVAILABLE AT THIS TIME.

SEMINOLE COUNTY...DETAILED DAMAGE ASSESSMENT IS UNAVAILABLE AT THIS TIME.

OSCEOLA COUNTY...DETAILED DAMAGE ASSESSMENT IS UNAVAILABLE AT THIS TIME. COUNTY EMERGENCY MANAGEMENT REPORTS THAT DAMAGE WILL BE CLOSE TO 3.5 MILLION DOLLARS.

OKEECHOBEE COUNTY...24 RESIDENCES DESTROYED (MOST MOBILE HOMES). HUNDREDS OF MOBILE HOMES WITH MAJOR DAMAGE. WIDESPREAD TREES DOWN AND POWER OUTAGES.

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HAGEMEYER/DECKER/JACOBS/CANNON/DIETZMANN/SPRATT