



Florida Department of Environmental Protection

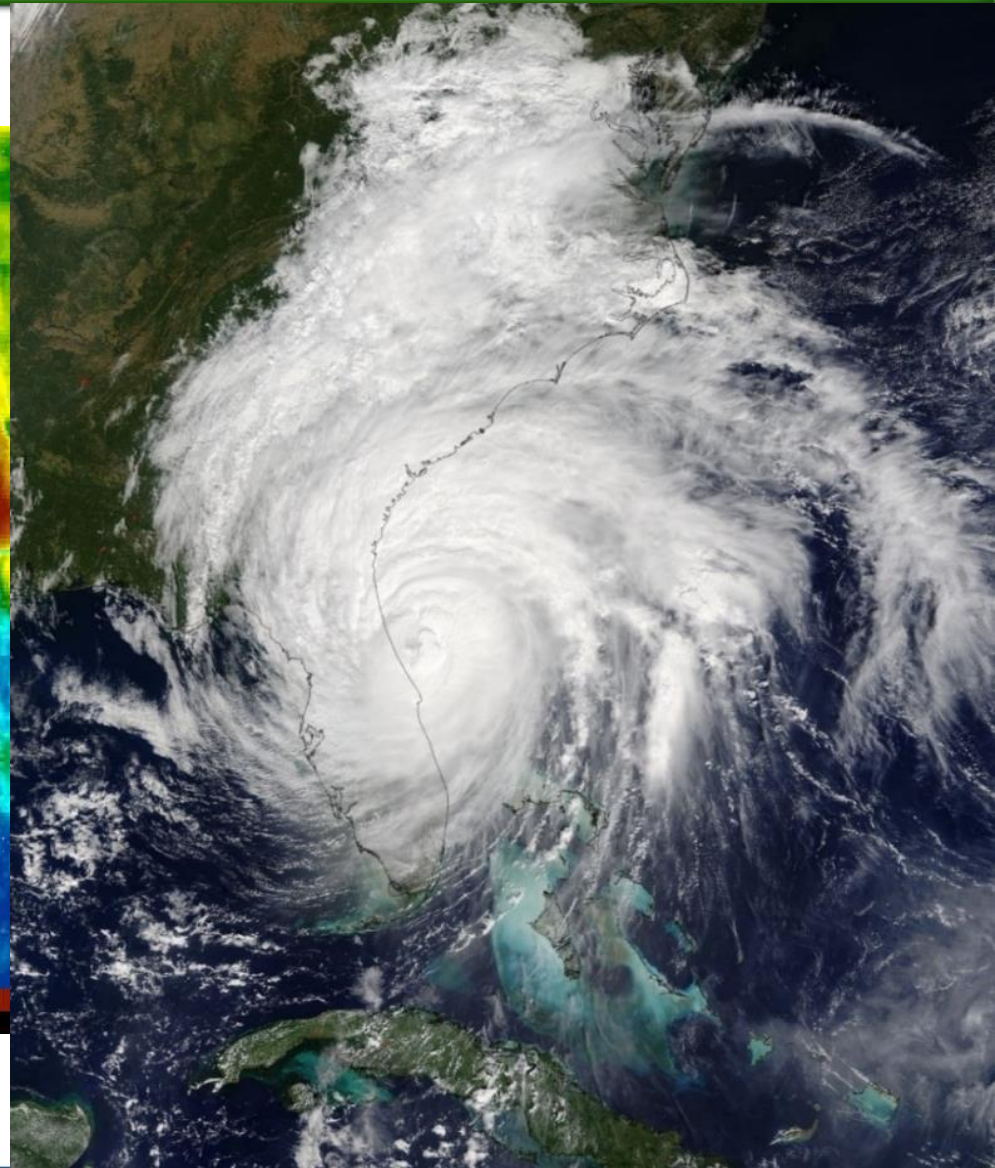
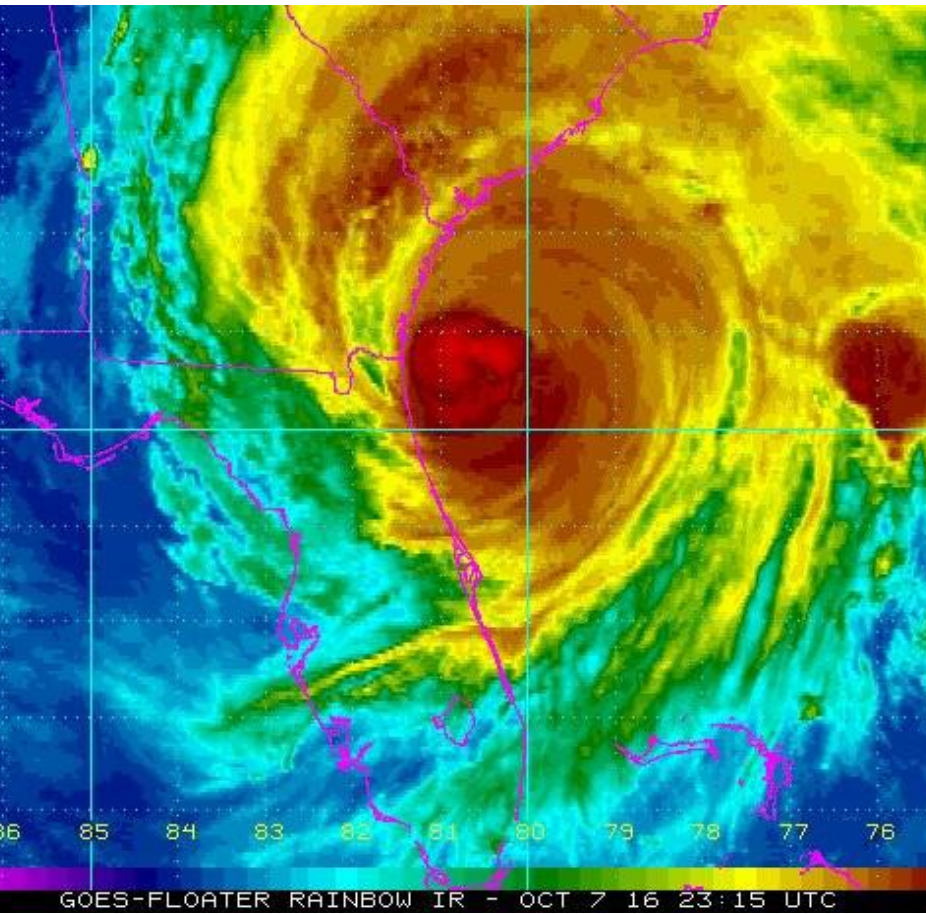
Impact of Hurricane Matthew on the Atlantic Coast of Florida

Ralph Clark
February 8, 2017



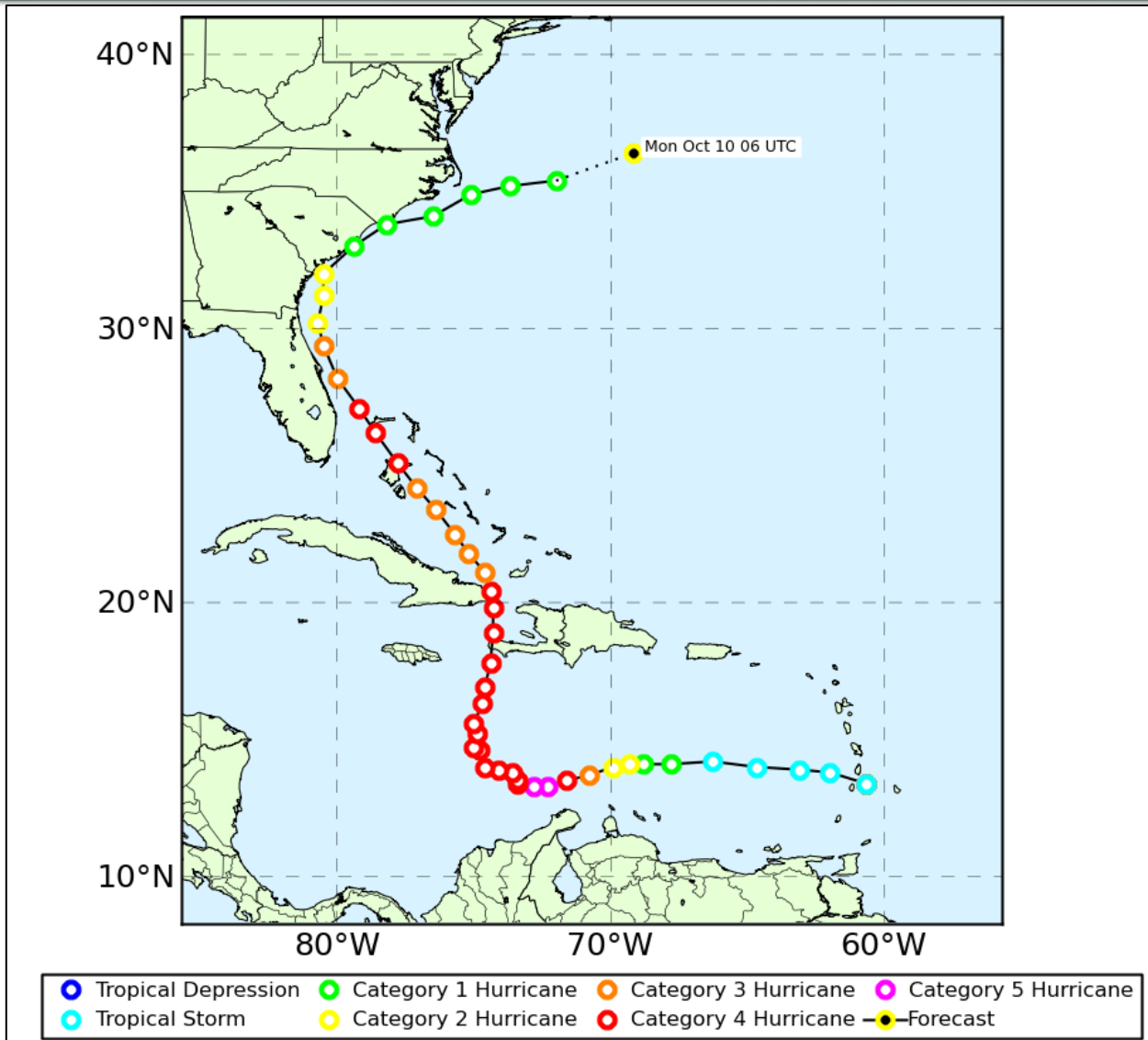


Hurricane Matthew, Oct. 6-7, 2016



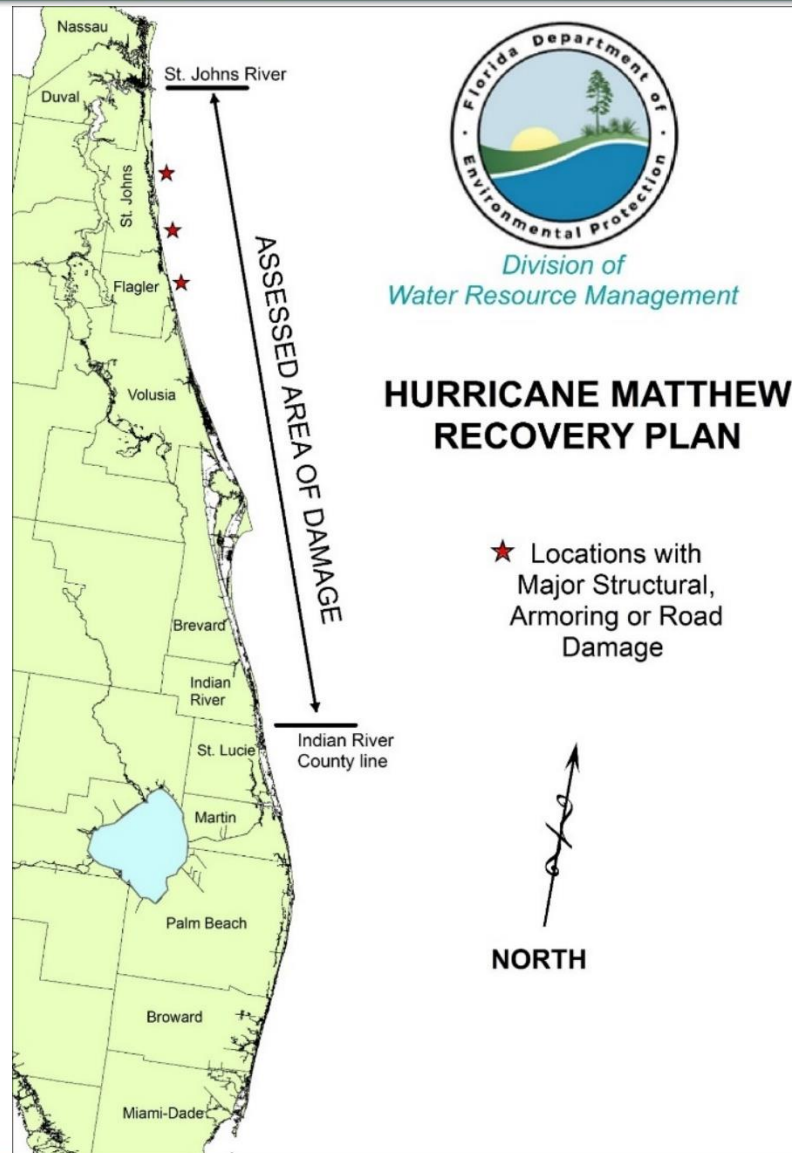


Track of Hurricane Matthew from the National Hurricane Center





Assessed Area of Damage





Winds, Waves, & Tides

Winds

- 85 mph – Kennedy Space Center
- 91 mph – Daytona Beach Airport

Waves (NOAA data buoys)

- 23.6 ft – offshore of Ft. Pierce
- 19.7 ft – offshore of Fernandina Beach

Storm Tide

- +7 ft (NAVD) at Flagler Beach Pier, Flagler County
- +8.4 ft (NAVD) at Mickler Landing, St. Johns County
- Equivalent to a 30-Year return interval



Impacts to Beaches and Dunes - Overview

- **Major beach and dune erosion** sustained for 212 miles of coast along six counties between St. Johns River and Vero Beach.
- **All 363 miles** of Florida east coast beaches sustained erosion of varying degree.
- **Upland development and property landward of restored beaches fared much better** than where beaches were narrow or eroded.



Barrier Inlet Opening to Matanzas River Lagoon, Summerhaven, FL

September 6, 2014



October 13, 2016





Dune Breach at Washington Oaks SP

October 10, 2016



January 11, 2017





Jacksonville Beach Pier Damage





Jacksonville Beach Deflation and Dune Erosion





Single-family Dwellings Damaged South Ponte Vedra, St. Johns County





South Ponte Vedra Threatened Structures





South Ponte Vedra Threatened Structures



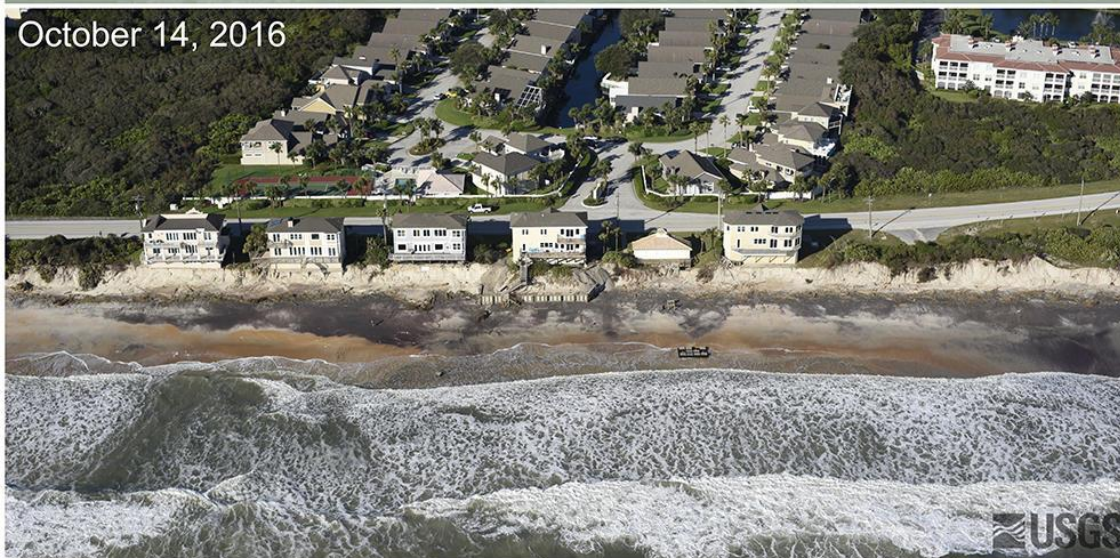


Dwellings Threatened by Dune Erosion Vilano Beach, St. Johns County

September 6, 2014



October 14, 2016





Summerhaven, St. Johns County

**North Summerhaven
Old A1A and Revetment**



**South Summerhaven
Old A1A**





Flagler Beach A1A and Revetment





Flagler Beach Before and After Matthew





Volusia County Storm Damage

**Ormond Beach
State Road A1A Damage**



**Wilbur-by-the-Sea
Wall Damage**





South Brevard County Dune Erosion

Swimming Pool Undermined



Dwellings Threatened





South Brevard County Beach and Dune Erosion





Conn Park, Vero Beach Indian River County





Summary of Major Structural Damages

County	# Single-Family Dwellings Damaged	# Multifamily Dwellings Damaged	# Other Major Structures Damaged	Total # Damaged
Duval	0	0	1	1
St. Johns	85	1	0	86
Flagler	11	6	4	21
Volusia	30	35	10	75
Brevard	0	1	2	3
Indian River	0	0	1	1
TOTAL	126	43	18	187



Armoring and Road Damage

County	Armoring Damage in Feet	Road Damage in Feet
Duval	0	0
St. Johns	7,690	5,170
Flagler	7,860	3,350
Volusia	3,820	195
Brevard	0	0
Indian River	0	550
TOTAL	19,370	9,265



Beach Restoration Projects Sustained Minimal Damage

Beach Restoration Projects	Project Length (Feet)	# of Major Structures with Damage	Armoring Damage (Feet)	Road Damage (Feet)
Duval County Shore Protection Project	53,328	1	0	0
St. Johns County Shore Protection Project	20,064	0	290	0
Brevard County Shore Protection Project – North Reach	49,632	0	0	0
Patrick Air Force Base Beach Project	21,120	0	0	0
Brevard County Shore Protection Project – South Reach	20,064	0	0	0
Indian River County – Ambersand Nourishment	14,256	0	0	0
Indian River County – Wabasso Beach Nourishment	34,848	0	0	0
Indian River County Sector 7 Beach Nourishment	10,735	0	0	0
TOTAL	224,047	1	290	0



Thank You!

For additional information contact:

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