

# **St. Joseph Sound/Clearwater Harbor Historic Tidal Circulation Changes and Recent Solutions**



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**St. Joseph Sound/Clearwater Harbor Workshop**

**March 30, 2007**

# Little Pass, Big Pass, and...

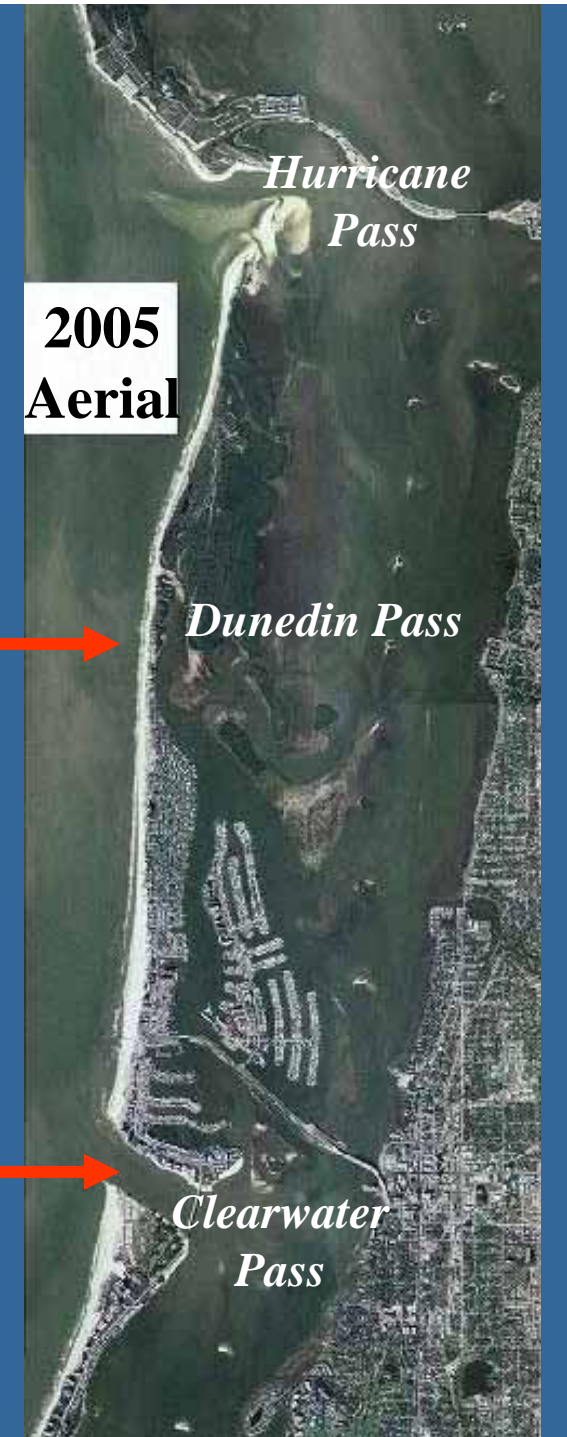
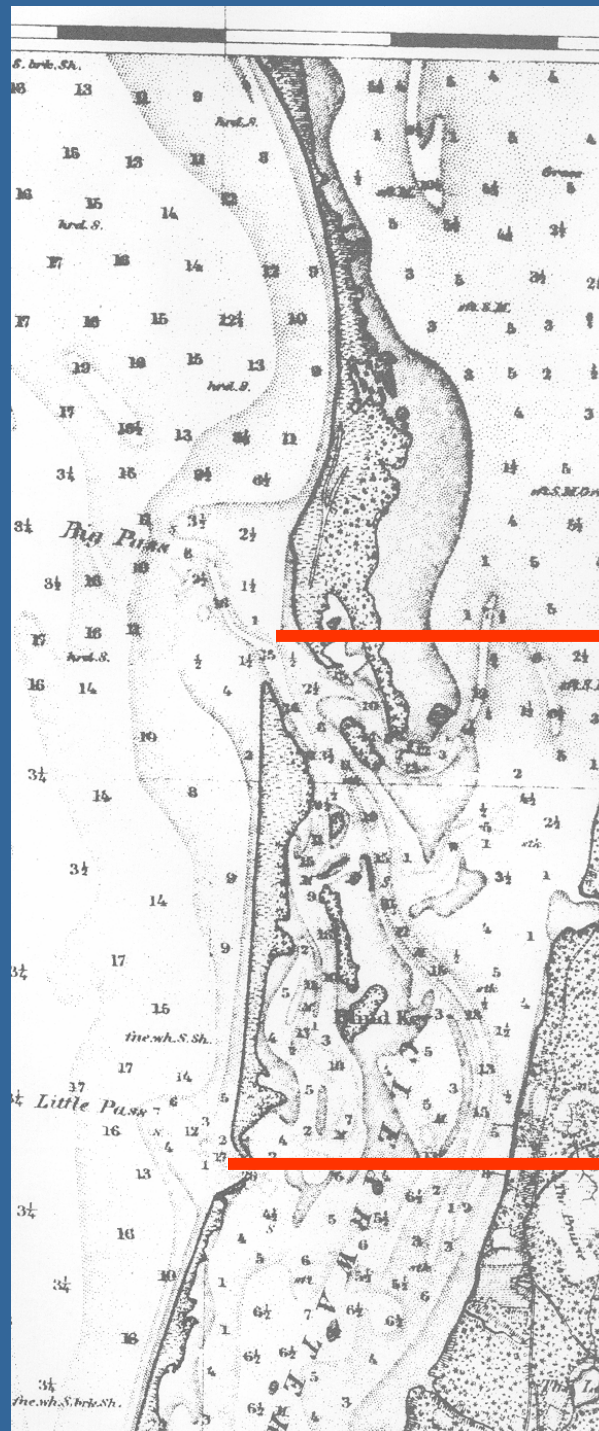
## the old switcher-oo!



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**1879  
Coast Chart  
No. 177  
U.S. Coast &  
Geodetic  
Survey**

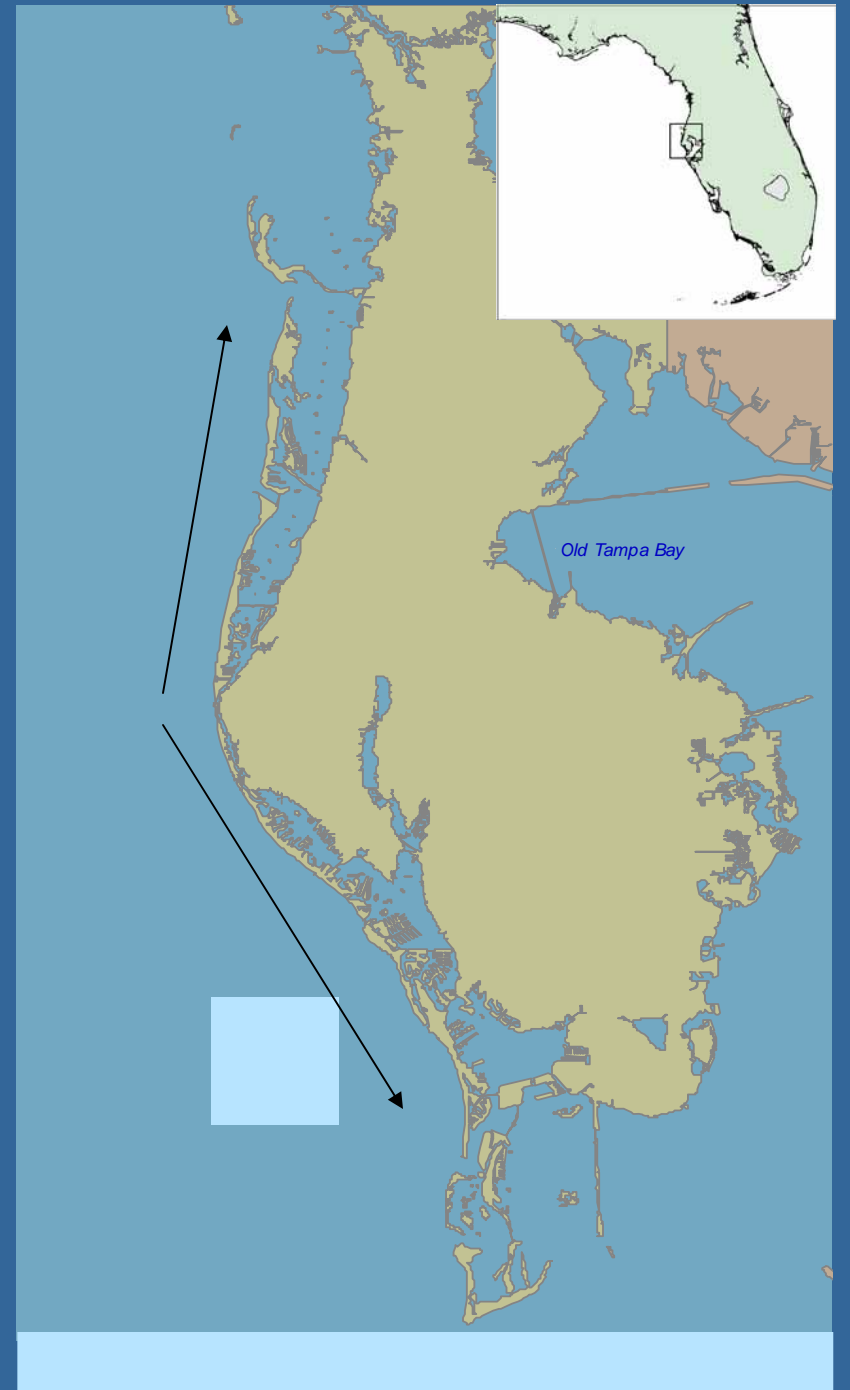


# Outline

- **Background**
- **Tidal circulation changes due to:**
  - Hurricane impacts
  - Dredging (ICW, causeways, fingers)
- **Barrier island & inlet changes**
- **Modern coastal management**
- **Summary**

# Background

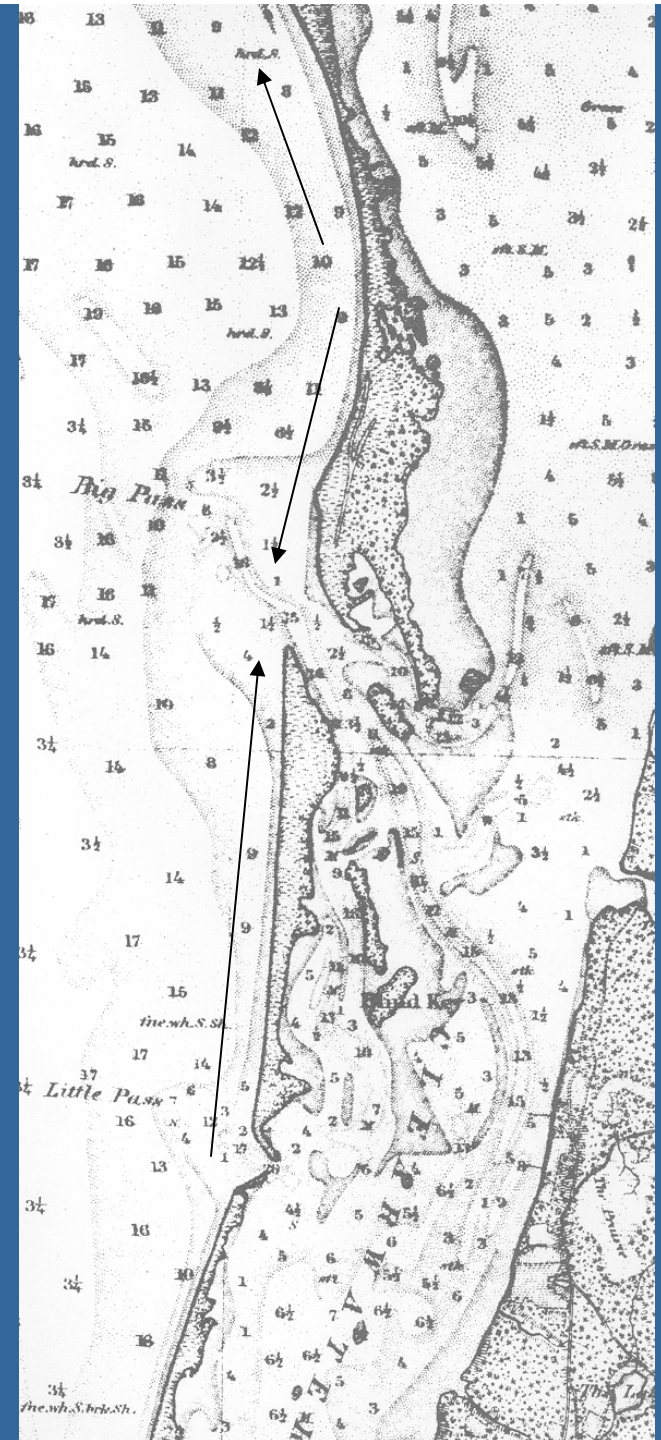
- Geologic setting
- Low energy coast
- Longshore sediment transport





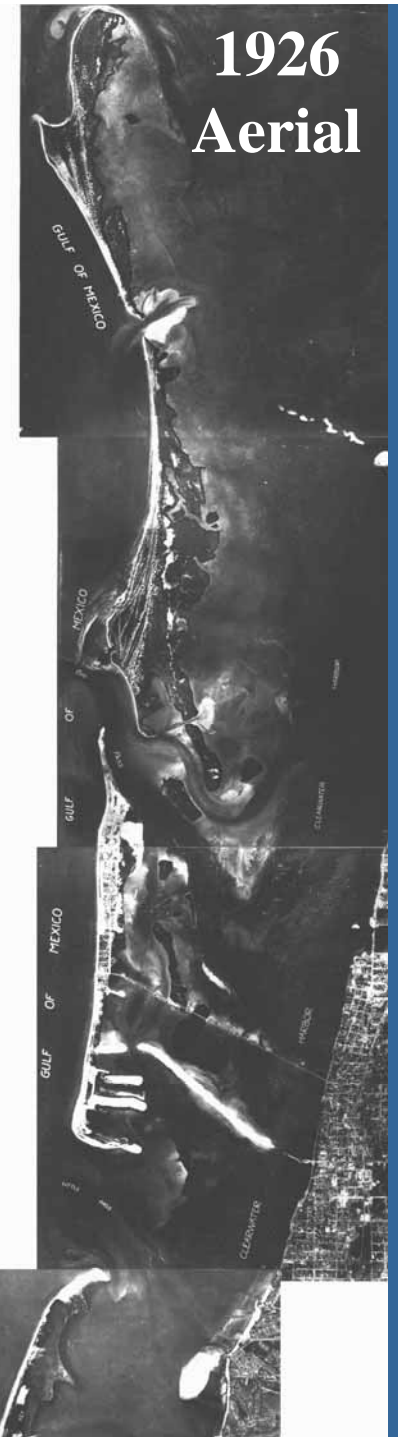
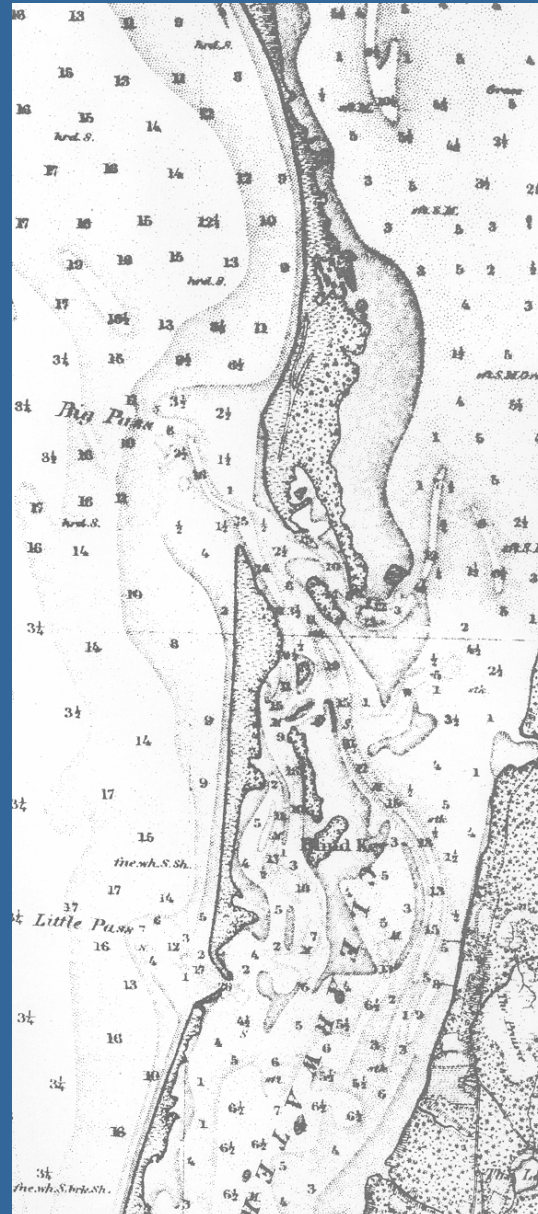
# Natural Tidal Circulation Changes

- **Longshore sediment transport**
- **Hurricanes**
  - **1848: Little Pass**
  - **1921: Hurricane Pass**
- **Multiple inlet system**



# Circulation Changes 1926

- 1921 Hurricane
- Multiple inlets
- Dredging
  - Causeway Construction
  - Finger canals



# Circulation Changes 1965





# Tidal Circulation Changes

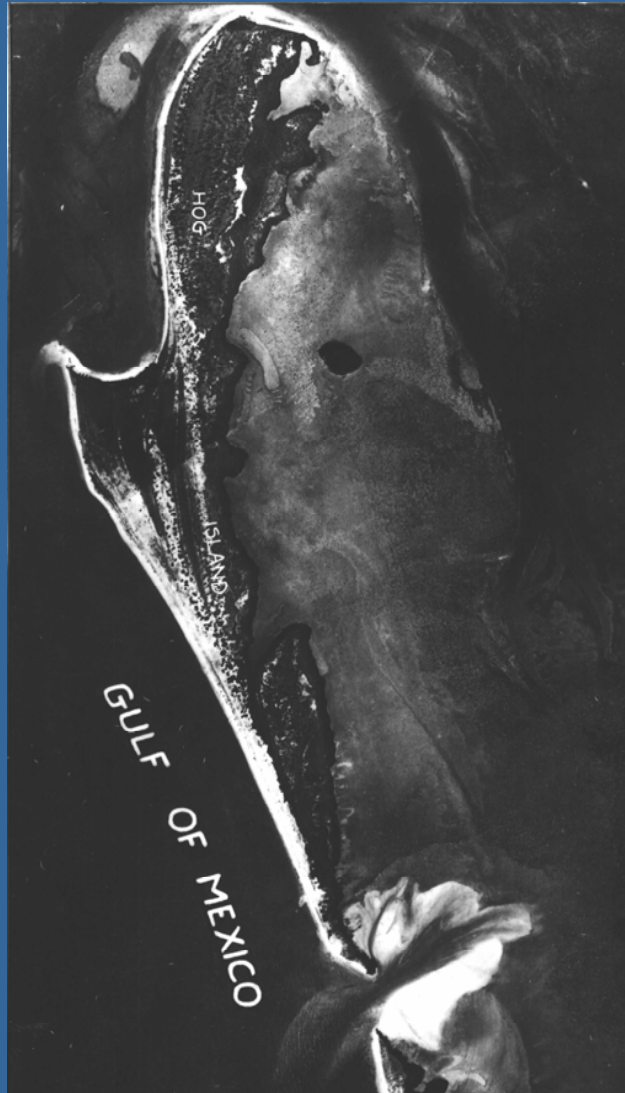


# **Barrier Island/Inlet Changes Natural and Human**

- **Honeymoon Island**
- **Caladesi Island & Dunedin Pass**
- **Clearwater Pass**

# Honeymoon Island Modifications

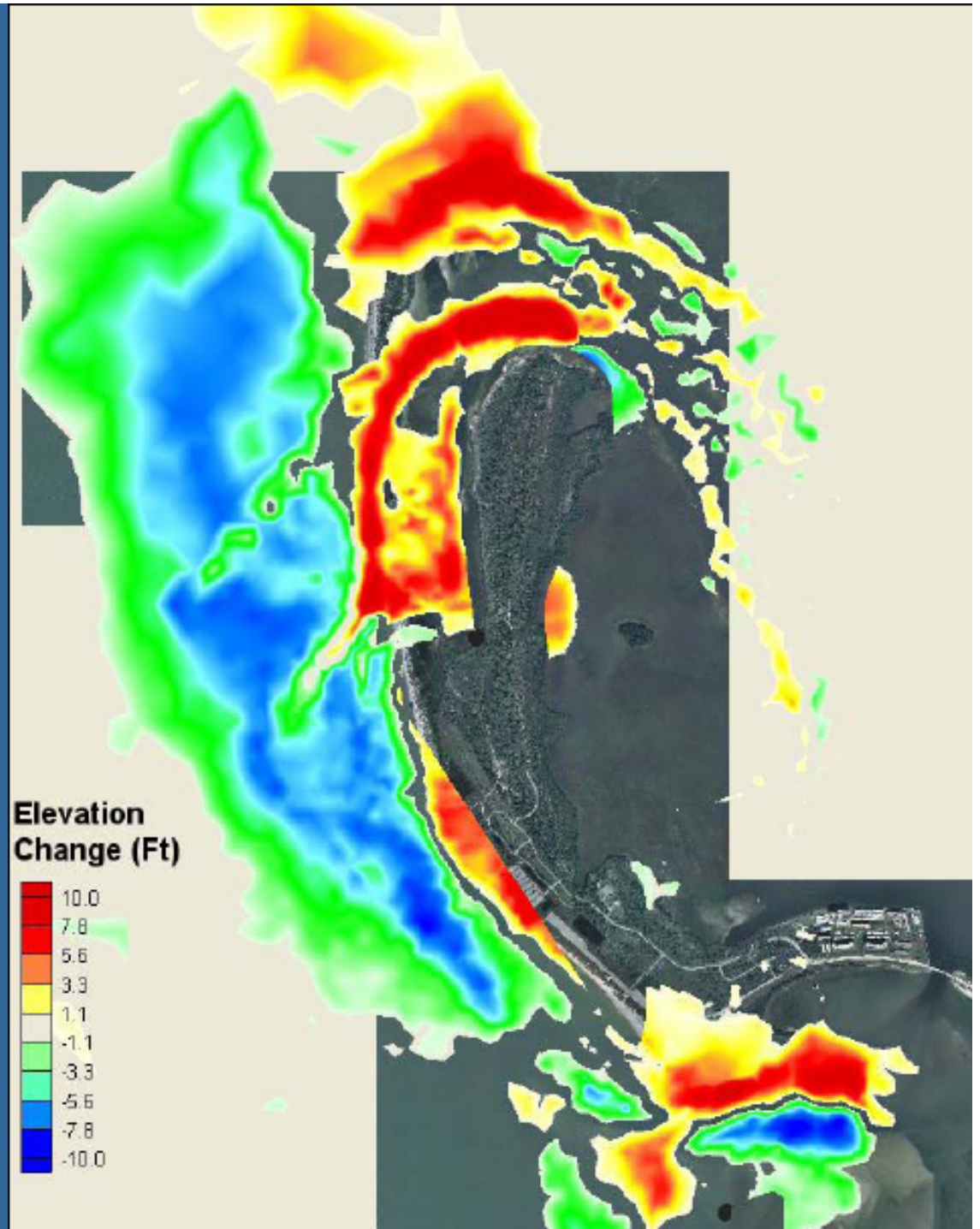
1926



1973



# Honeymoon Island Elevation Changes: 1970 - 2001





# Caladesi Island 1976



# Dunedin Pass 1984



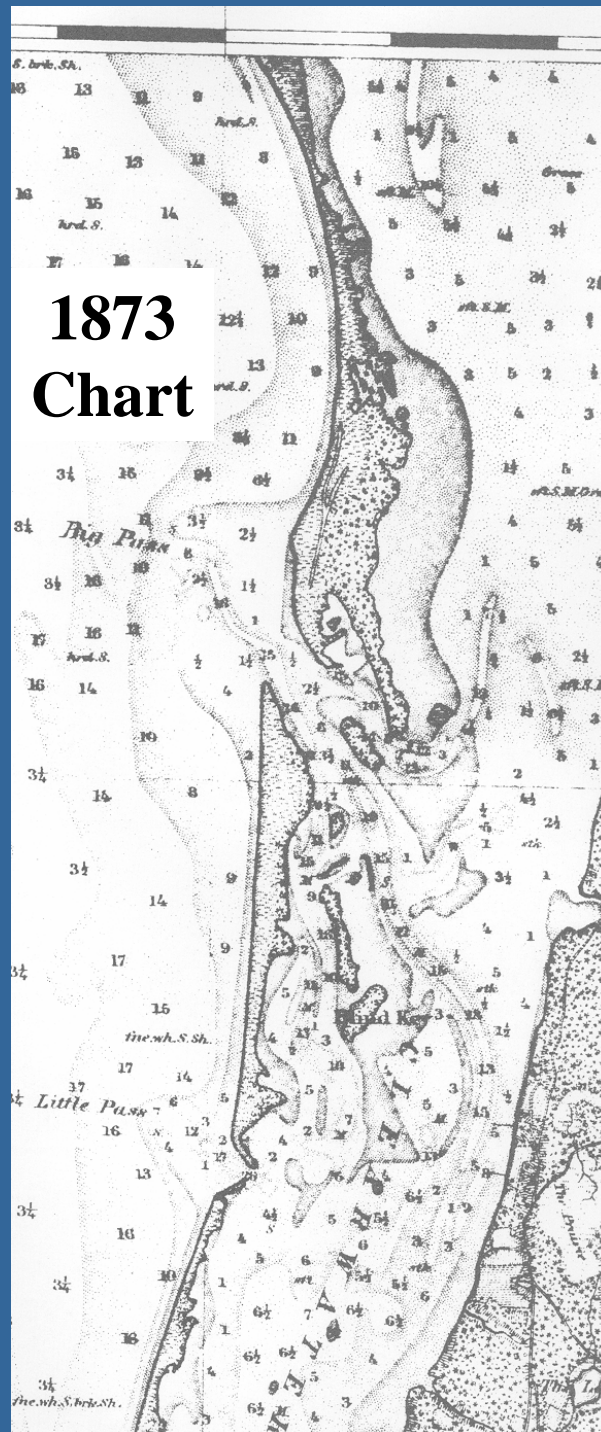
# Clearwater Pass 1970's



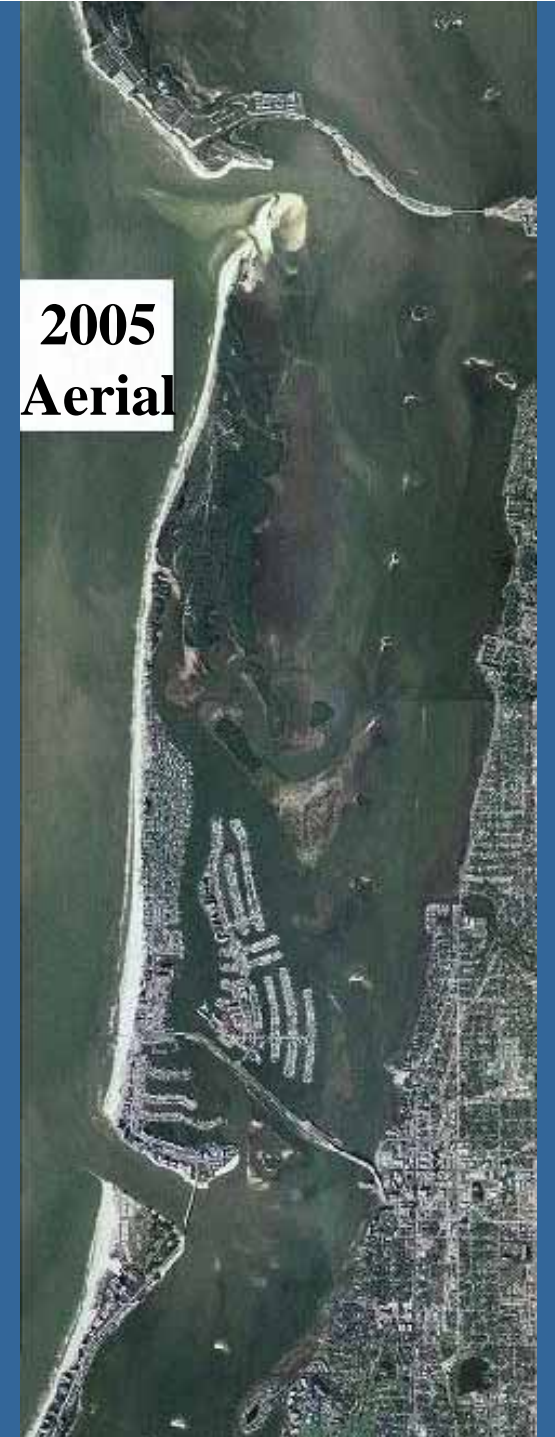


# Overview of Natural and Human Changes

1873  
Chart



2005  
Aerial

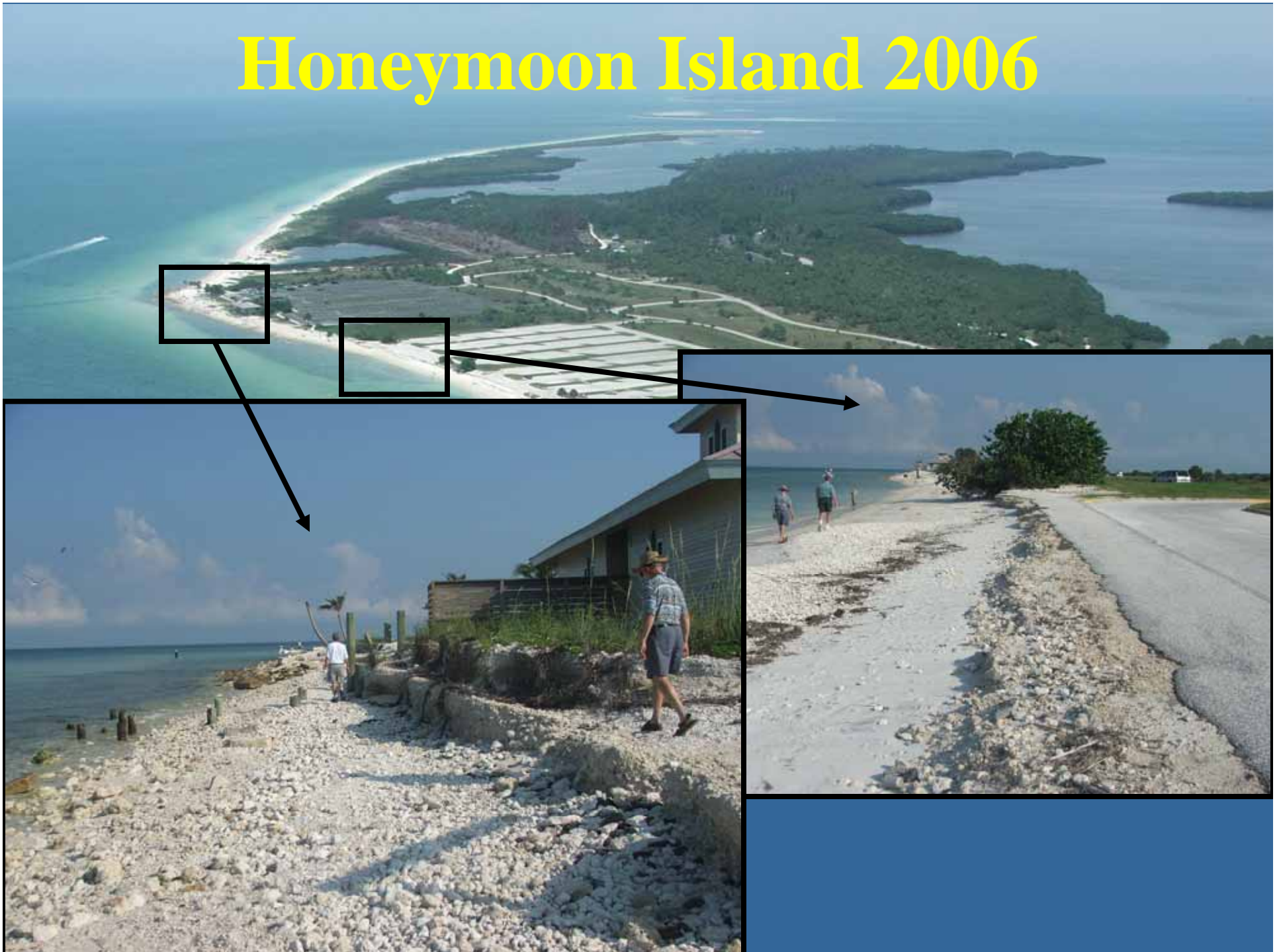




# Modern Coastal Management

- Honeymoon Island Beach Restoration Project
- Hurricane Pass
- Clearwater Pass
- Dunedin Pass

# Honeymoon Island 2006





# 2007 Honeymoon Island Beach Restoration Project



# Dunedin Pass 2006





# Clearwater Pass 2006



# Summary

- Two inlets breached by hurricanes of 1848 and 1921
- Dredging in St. Joseph Sound & Clearwater Harbor contributed to inlet instability
  - ICW, causeways, finger canals.
- Closure of Dunedin Pass
- Stabilization of Clearwater Pass

**Thank You!**

