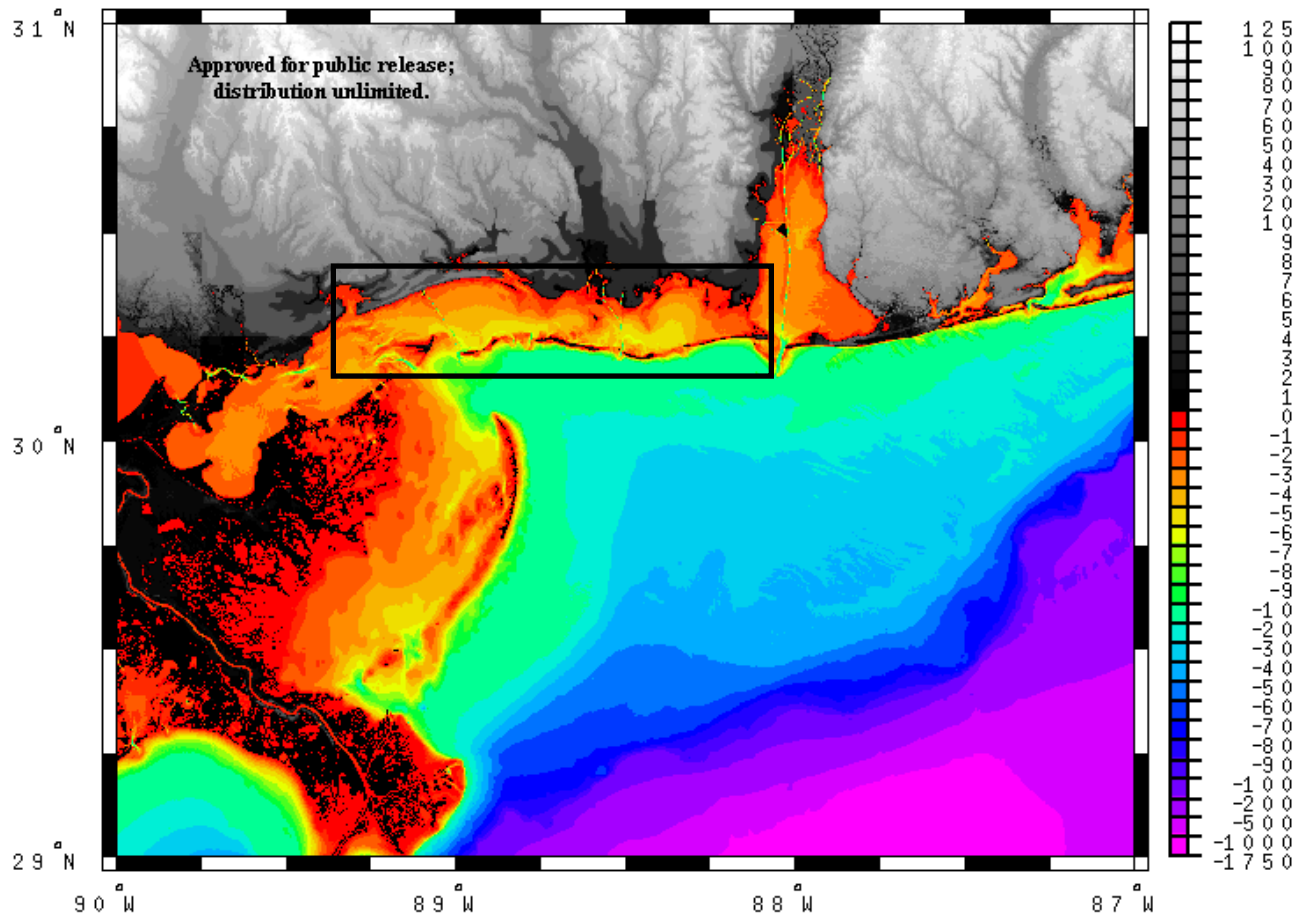


**COMPILATION AND ANALYSIS OF HISTORICAL SHORELINE AND BATHYMETRY  
SURVEYS FOR QUANTIFYING SEDIMENT TRANSPORT PATHWAYS,  
LATERAL INLET AND ISLAND MIGRATION, AND DETAILED SEDIMENT BUDGETS  
FOR MISSISSIPPI SOUND AND ENVIRONS**

**Mark R. Byrnes and Sarah F. Griffee**

Applied Coastal Research and Engineering  
766 Falmouth Road, Suite A-1  
Mashpee, MA 02649  
Tel: (508) 539-3737 Fax: (508) 539-3739  
e-mail: mbyrnes@appliedcoastal.com



Submitted to:

**Ms. Julie Dean Rosati**

US Army Engineer Research and Development Center  
Coastal and Hydraulics Laboratory (CHL)  
3909 Halls Ferry Road  
Vicksburg, MS 39180

October 30, 2006

## **INTRODUCTION**

Most barrier beaches in the northeastern Gulf of Mexico have been migrating landward and losing sand volume with time, and their capacity to protect mainland beaches and infrastructure is diminishing. Barrier islands can also migrate laterally, as through spit growth, and become elongated. If the lateral growth is near an inlet or open-bay navigation channel, the channel will experience persistent filling and may have to be relocated. As the primary channel navigation and shore protection agency in the U.S., the Army Corps of Engineers continually evaluates the potential benefits of fortifying barrier beaches nationwide. This is particularly important in areas hardest hit by coastal storms, such as the northeastern Gulf of Mexico. A critical component of the evaluation process involves analysis of historical sediment transport pathways from existing shoreline and bathymetry survey data as input to GIS-based regional sediment budgets.

Along the Mississippi Sound coast, barrier island beaches and associated backbarrier environments help protect mainland beaches from storms. A series of devastating hurricanes over the past five years has significantly reduced the width and elevation of barrier beaches, exposing mainland beaches, infrastructure, and navigation channels to increasing storm damage. The primary purpose for analyzing historical shoreline and bathymetry data sets is to document the evolution of beach, nearshore, and channel environments most directly influenced by major storms for determining net sediment transport pathways, quantifying net changes on a regional scale, and developing detailed sediment budgets (using SBAS-A). The following discussion provides a summary of data compiled and analyzed for Mississippi Sound to document historical sediment transport patterns and geomorphic change since the mid-1800s.

## **REGIONAL ANALYSIS OF SHORELINE AND NEARSHORE MORPHODYNAMICS**

To evaluate the potential impact of island movement and degradation on mainland shoreline protection, available historical shoreline and bathymetry data were compiled and analyzed to quantify net volume changes and document sediment transport pathways from seaward of the barrier islands fronting Mississippi Sound to the mainland shoreline. A portion of this analysis concerns assessment of channel infilling rate and location relative to the regional sediment budget. Figure 1 depicts recent bathymetry for the northeast Gulf of Mexico.

The exchange of sediment between the barrier island littoral drift system, navigation channels, inlet shoals between the islands, and Mississippi Sound controls the sand budget throughout the system. Geomorphic changes caused by normal and storm conditions document cause and effect relationships that are often difficult to capture with short-term, site specific process measurements. Long-term shoreline and bathymetry change analyses document net sediment transport pathways and the volume of material in transit within a barrier island system. Data sets spanning long time periods accurately describe the geomorphic evolution of coastal systems by minimizing measurement uncertainties relative to the magnitude of detected change. In other words, measured change over short time intervals is generally small relative to longer time intervals, but the uncertainty associated with survey measurements remains relatively constant. Development of GIS-based sediment budgets and transport prediction capabilities in coastal and nearshore settings will be advanced when our understanding of the direction, magnitude, and timing of sediment transport is quantified using detailed historical shoreline and bathymetry surveys, and coastal processes data.

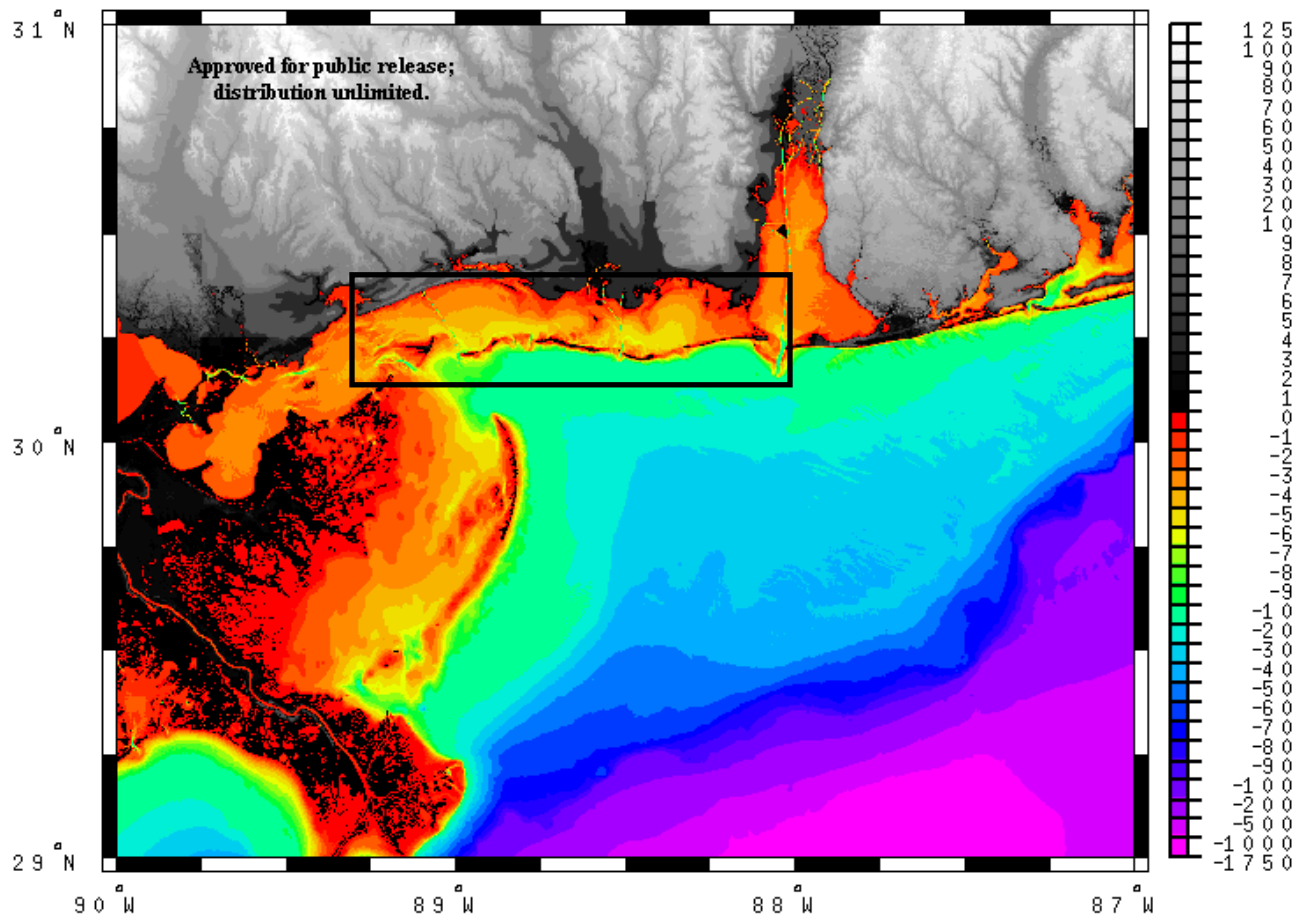


Figure 1. Bathymetry/topography for the northeast Gulf of Mexico between New Orleans, LA and Pensacola, FL.

The primary goal of this study component is to quantify net sediment volume changes associated with the historical evolution of nearshore morphology and adjacent beaches where detailed historical survey data exist. Table 1 provides a summary of shoreline data available for the Mississippi Sound area. Initial shoreline surveys of the area were completed for the period 1847/52. Appendix A illustrates the location of field surveys as depicted on maps prior to the advent of digital data collection. All data have been compiled within a GIS framework, so metadata regarding coordinate system, vertical datum, measurement units, and timing of data collection are provided in the attribute table for each data set. Tables 2 and 3 provide a summary of lateral island migration in response to dominant east to west directed longshore sediment transport throughout the study area, and changes in island area relative to historical shoreline movement.

## Historical Shoreline Change

<b>Date</b>	<b>Data Source</b>	<b>Comments and Map Numbers</b>
1847/52	USC&GS Topographic Maps 1:10,000 (T-324, T-325); 1:20,000 (all others)	First regional shoreline survey throughout study area using standard planetable surveying techniques; 1847 - Dauphin Island (T-240); 1848 – Cat Island (T-242), Bayou LaBatre (T-243), Ship Island (T-244), Petit Bois Island (T-245), and Pascagoula (T-273); 1849 – Horn Island (T-274); 1851 – Belle Fontaine (T-323), Biloxi (T-324), Pass Christian (T-325); 1852 – Long Beach (T-369), Waveland (T-370).
1916/18	USC&GS Topographic Maps 1:40,000	Second regional shoreline survey along the seaward coast of the study area using standard planetable surveying techniques (regional-scale reconnaissance survey); 1916/17 – Biloxi (T-3701); 1917 – Point aux Chenes (T-3702); Pascagoula (T-3703); Dauphin Island (T-3711); 1917/18 – Pass Christian (T-3663).
June 1950 to November 1957	USC&GS Topographic Maps 1:10,000 (T-9376 to T-9383; T-10741 to T-10773); 1:20,000 (all others)	All maps produced from interpreted aerial photography; June 1950 - Cat Island (T-9383), Ship Island (T-9384, T-9385); April 1951 – T-sheets 9788 and 9791; February 1952 – T-sheets 9376, 9377, 9378, 9379, 9380, 9381, 9382, and 9655; November 1957 – T-sheets 10741 to 10773.
1967/71	USC&GS Topographic Maps 1:10,000 (all others) 1:20,000 (TP-00036 to 00039)	All maps produced from interpreted aerial photography; 1967 – T-sheets 10748 to 10751, T-sheets 13032 to 13036; 1968 – T-11946 and T-11947; T-sheets 11804 to 11810, 11813 to 11815; 1971 – TP-sheets 00036, 00039).
1981/86	USC&GS Topographic Maps 1:20,000 USACE Aerial Photography 1:24,000	All maps produced from interpreted aerial photography; 1981 – TP-00929 and 00930; 1982 – TP-01122 and 01124; 1986 – TP-00207 and 01394; 1986 – interpreted from USACE aerial photography using Control points from UDGS topographic map.
1993	Differential GPS Survey (1:1)	MS Sound mainland and barrier shorelines surveyed by the MS Office of Geology
1994/95	Differential GPS Survey (1:1)	MS Sound mainland and barrier shorelines surveyed by the MS Office of Geology
1997	Differential GPS Survey (1:1)	MS Sound mainland and barrier shorelines surveyed by the MS Office of Geology
1998/99	Differential GPS Survey (1:1)	MS Sound mainland and barrier shorelines surveyed by the MS Office of Geology and the National Park Service
2000	Differential GPS Survey (1:1)	MS Sound mainland and barrier shorelines surveyed by the MS Office of Geology and the National Park Service
2001/02	Differential GPS Survey (1:1)	MS Sound mainland and barrier shorelines surveyed by the MS Office of Geology and the National Park Service
May 19, 2006	Digital Orthophotography	Dauphin Island; 1 foot resolution imagery



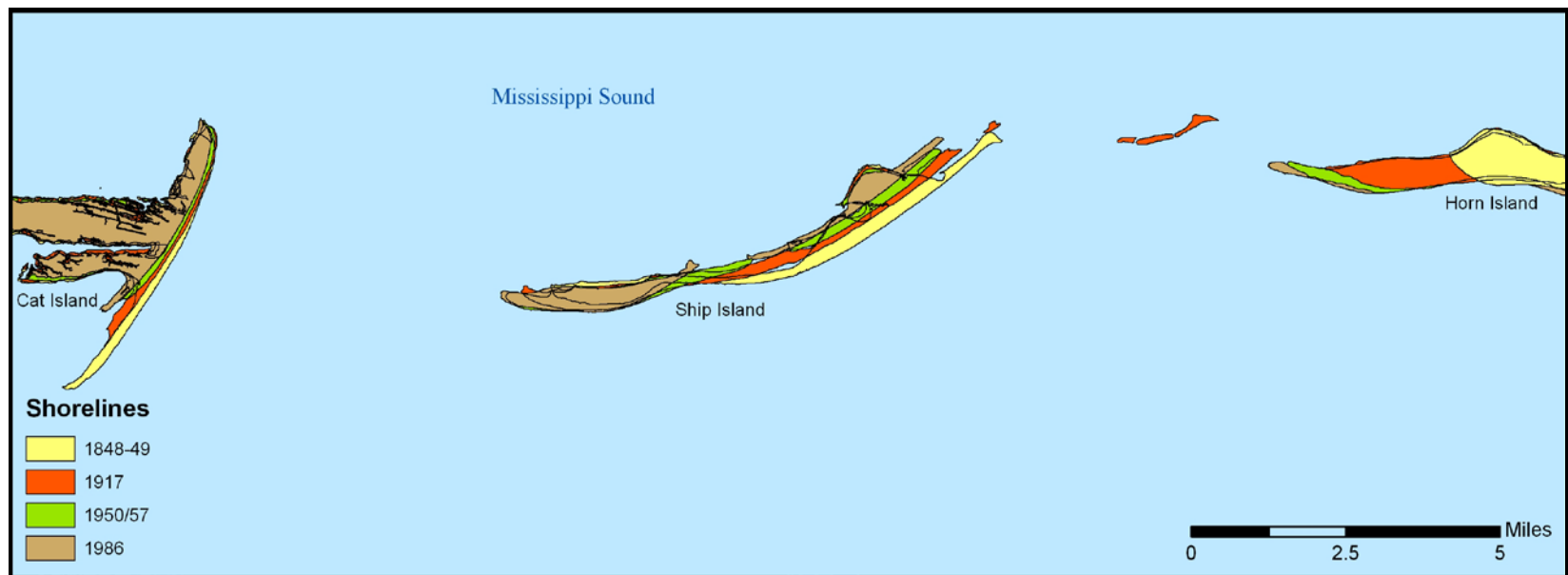
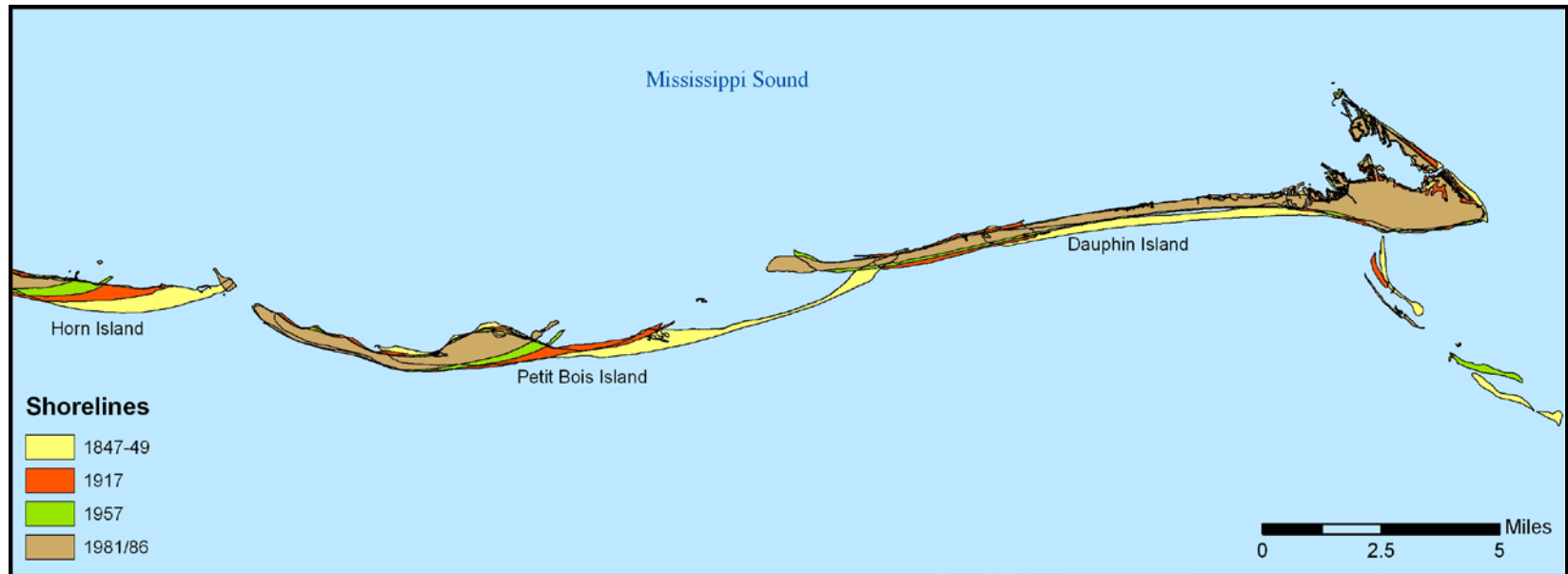


Figure X. Changes in surface area for the islands fronting Mississippi Sound, 1847 to 1986.

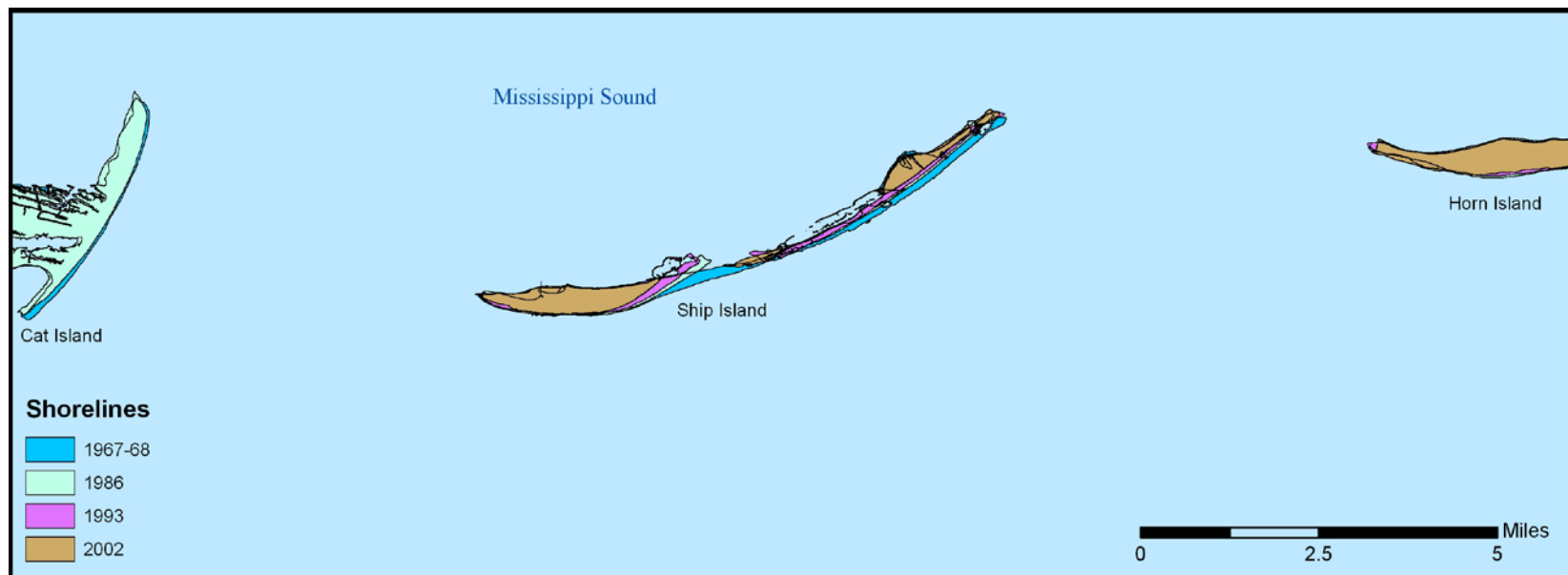
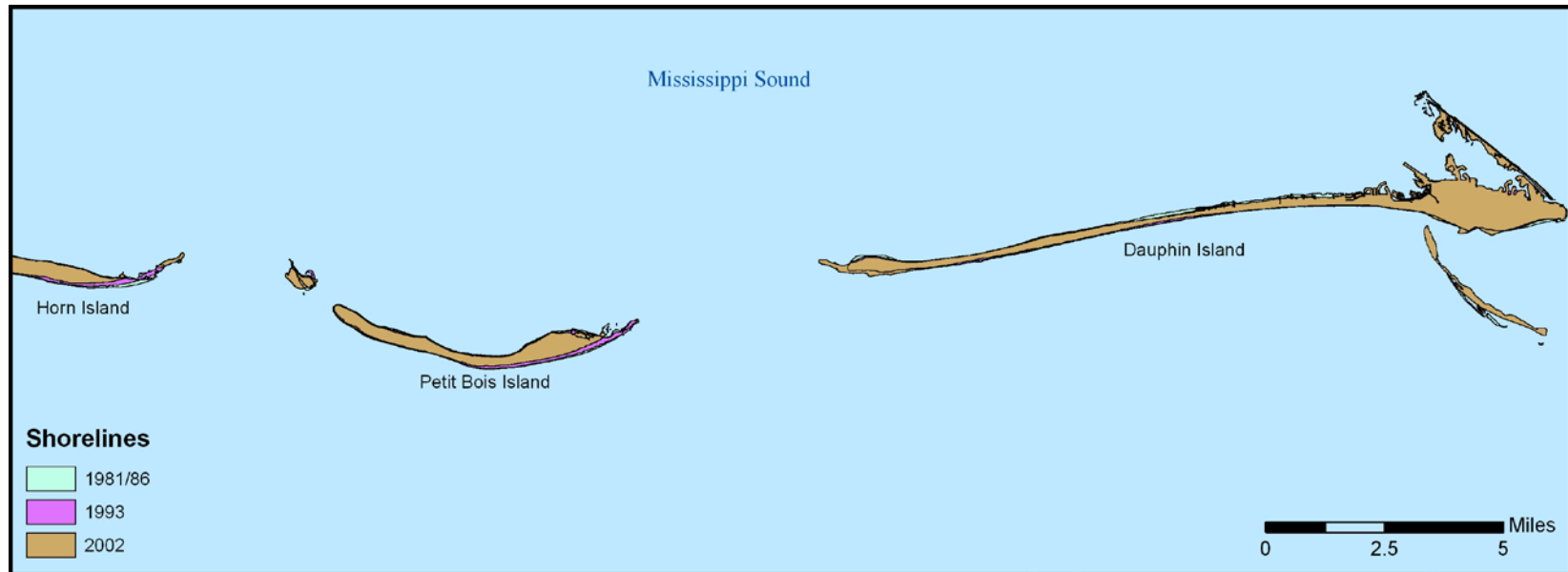


Figure X. Changes in surface area for the islands fronting Mississippi Sound, 1967 to 2002.

**Table 2. Lateral Island Migration (ft/yr) for the Islands Fronting Mississippi Sound.**

	Ship Island		Horn Island		Petit Bois Island		Dauphin Island	
	West End	East End	West End	East End	West End	East End	West End	East End
<b>1847/52 - 1916/18</b>	+37.6	+50.4	+155.8	+104.7	+165.9	+376.8	+204.3	
<b>1916/18 - 1950/57</b>	+37.8	+52.2	+81.2	+155.4	+61.5	+305.5	+165.7	
<b>1950/57 - 1967/71</b>	+42.5	-65.6						
<b>1967/71 - 1981/87</b>	-15.5	+47.5						
<b>1957 - 1986</b>			+55.4	+135.8	-4.5	+22.1	+105.2	
<b>1986 – 2002</b>							+198.9	
<b>1981/87-1993</b>	+35.2	-110.1	+16.4	-121.9	0.0	+21.1		
<b>1993-1994/95</b>	+114.8	+114.8	-82.0	-295.3	-16.4	+49.2		
<b>1994/95-1997</b>	-8.7	+98.4	+10.9	-448.4	+27.3	-175.0		
<b>1997-1998/99</b>	+574.1	+164.0	-328.1	-442.9	+16.4	+4133.9		
<b>1998/99-2000</b>	+21.3	-123.0	-213.3	-170.6	0.0	-533.1		
<b>2000-2001/02</b>	+246.1	+18.0	+237.9	+86.9	+59.1	+426.5		
<b>1847/52-2001/02</b>	+33.7	+29.8	+100.1	+92.8	+89.3	+275.7	+174.6	

+ equals westward movement; - equals eastward movement

**Table 3. Barrier Island Area Change (acres) for the Islands Fronting Mississippi Sound.**

	Cat Island	Ship Island	Horn Island	Petit Bois Island	Dauphin Island
<b>Initial Island Area</b>	2973.9	1490.0	3697.7	2056.4	3745.7
<b>1847/52-1916/18</b>	-249.7	-63.1	-126.8	-286.3	-645.54
<b>1916/18-1950/57</b>	-334.6	-276.7	-219.4	-274.8	710.48
<b>1950/57-1967/71</b>	-168.8	-126.0			
<b>1967/71-1981/87</b>	-130.8	-90.9			
<b>1957 to 1986</b>			-242.1	-148.8	-199.5
<b>1986 – 2000/2002</b>	96.1				-99.6
<b>1981/87-1993</b>		-81.9	-65.4	-93.6	
<b>1993-1994/95</b>		-19.7	12.1	-9.6	
<b>1994/95-1997</b>		-6.6	-9.0	-24.0	
<b>1997-1998/99</b>		-168.4	-107.9	-173.6	
<b>1998/99-2000</b>		153.6	135.9	143.5	
<b>2000-2001/02</b>		-140.8	-182.7	-99.2	
<b>2002 to 2006</b>					-324.9
<b>1847/52-2001-02</b>	-787.8	-820.5	-805.2	-966.4	-559.1
<b>Percent Change</b>	26.5	55.1	21.8	47.0	14.9

# Cat Island

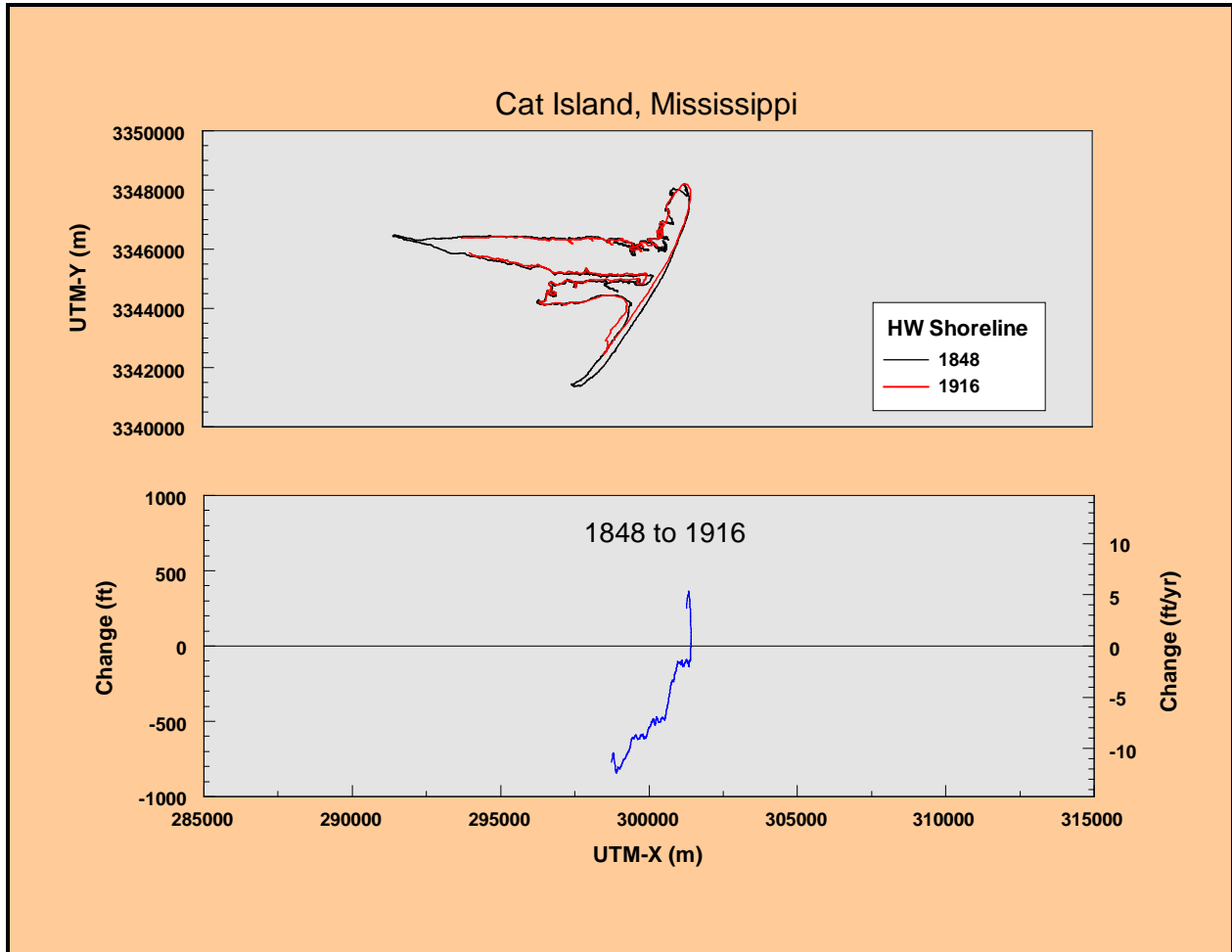


Figure x. Change in historical shoreline position for Cat Island, 1848 to 1916.

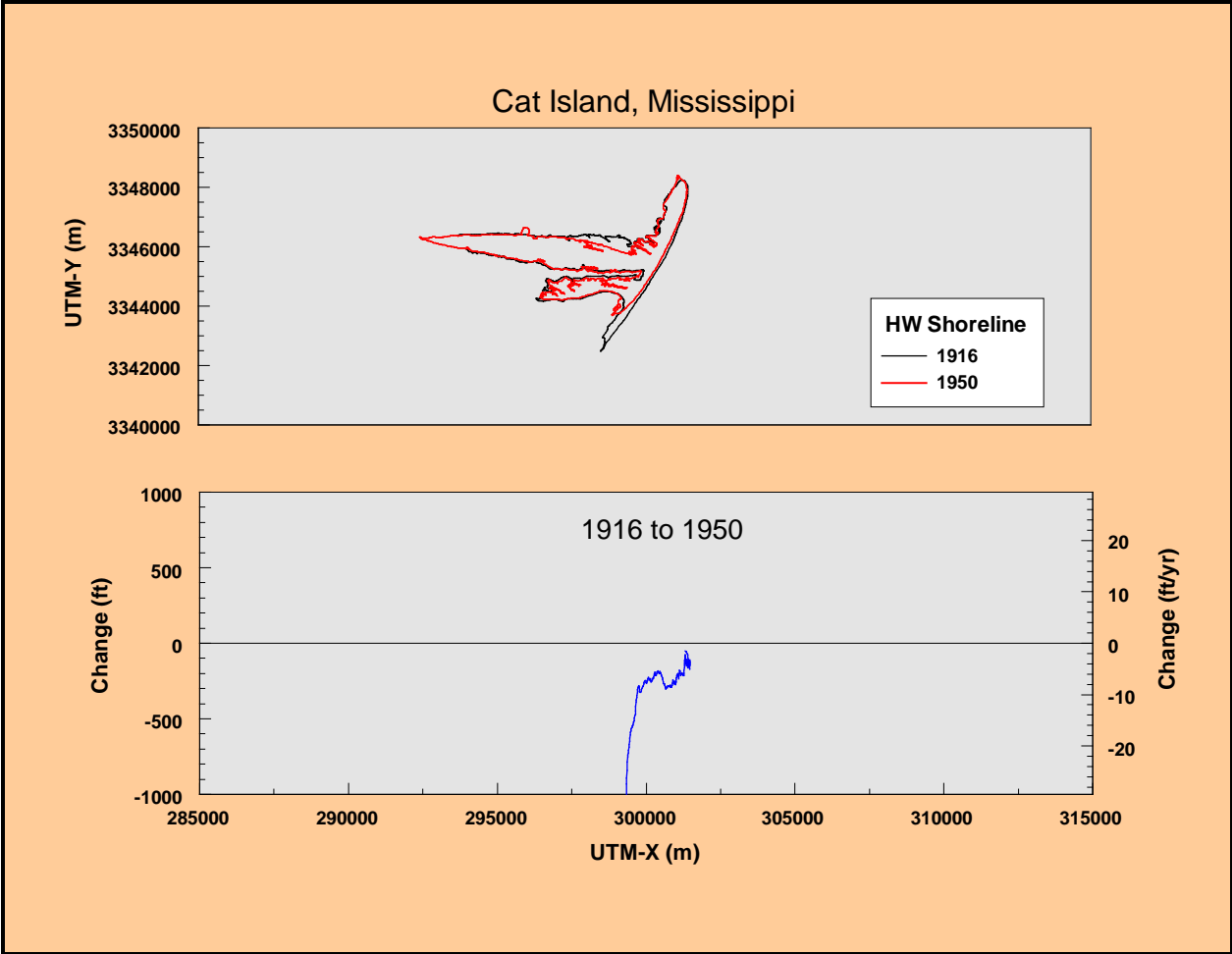


Figure x. Change in historical shoreline position for Cat Island, 1916 to 1950.

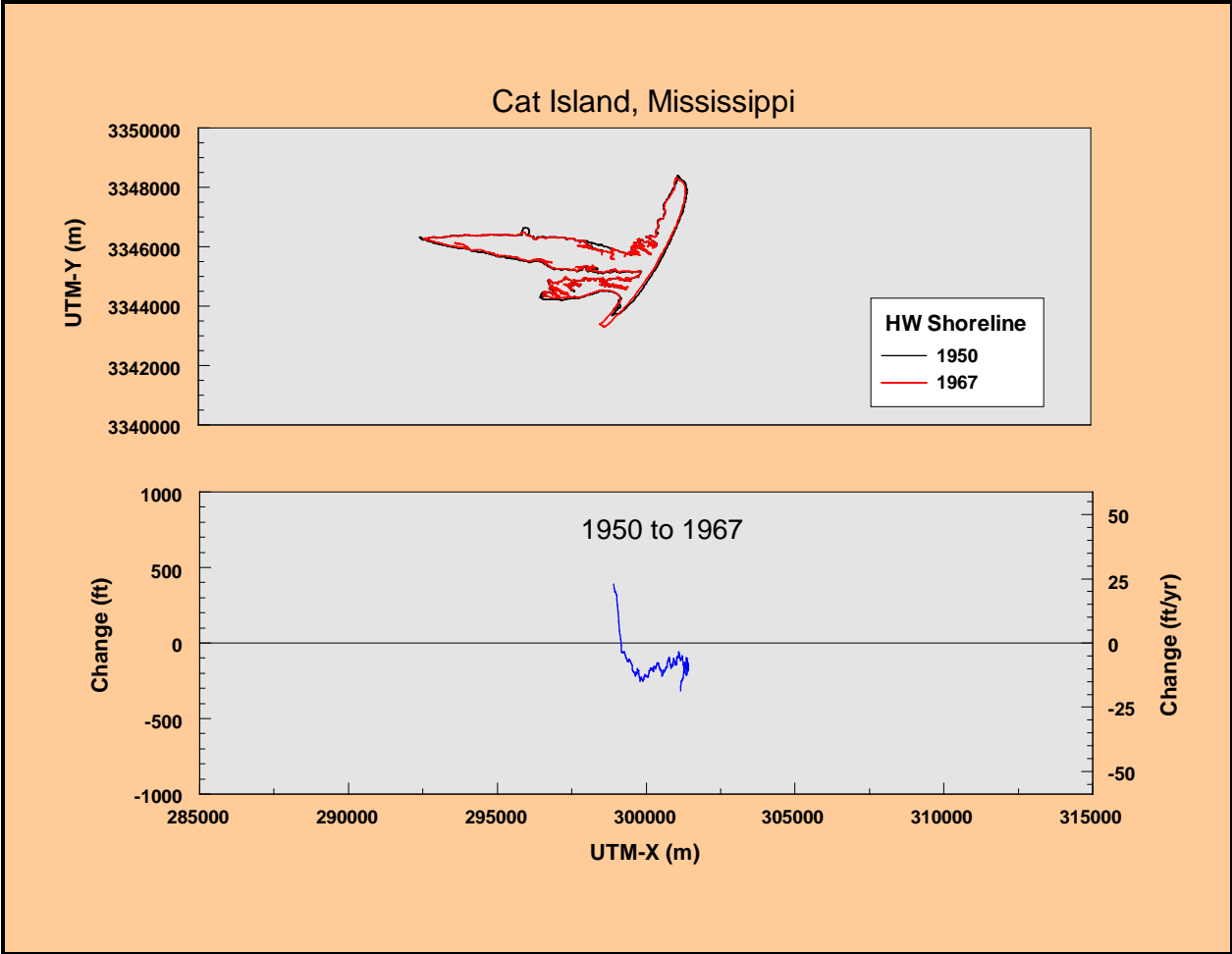


Figure x. Change in historical shoreline position for Cat Island, 1950 to 1967.

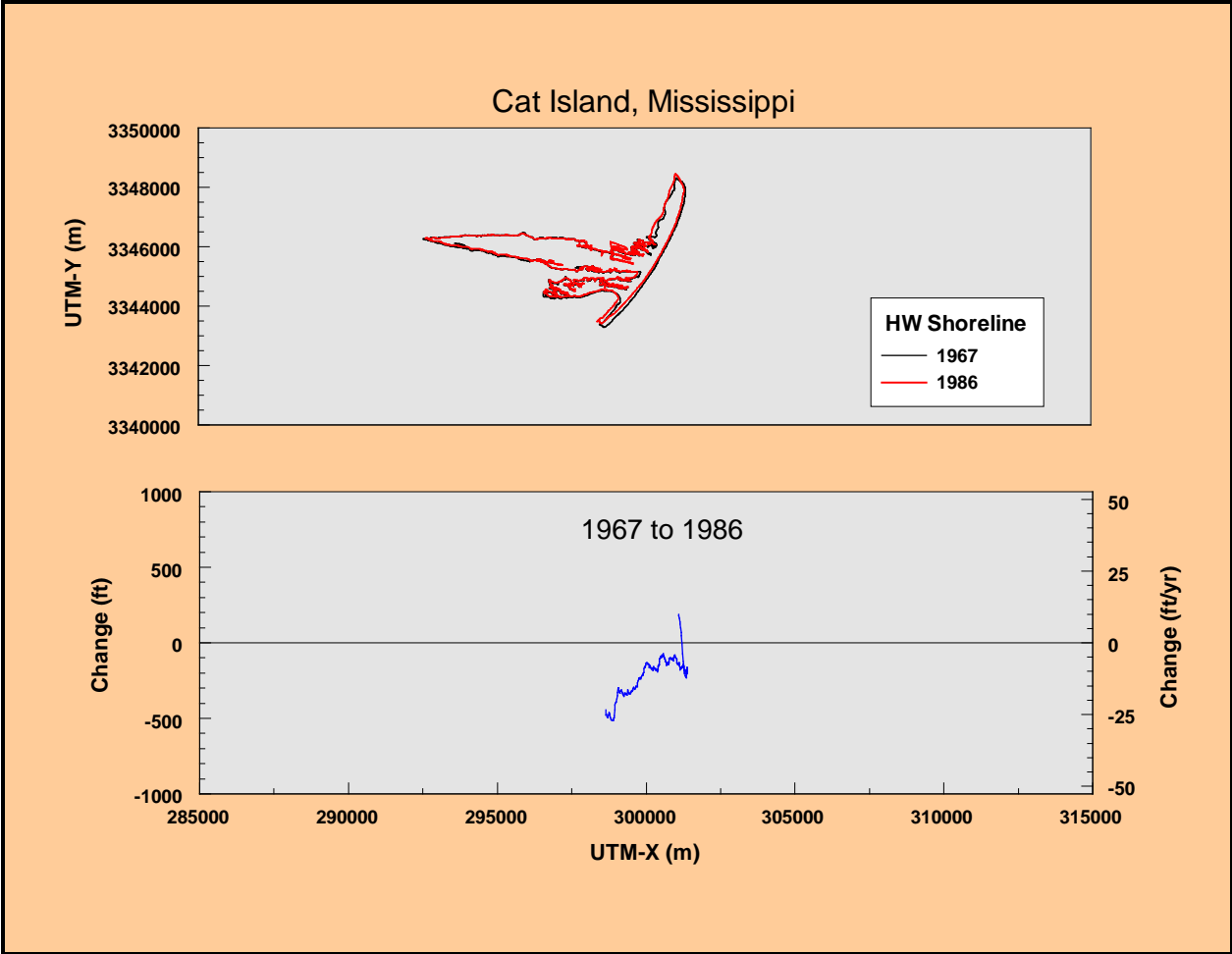


Figure x. Change in historical shoreline position for Cat Island, 1967 to 1986.



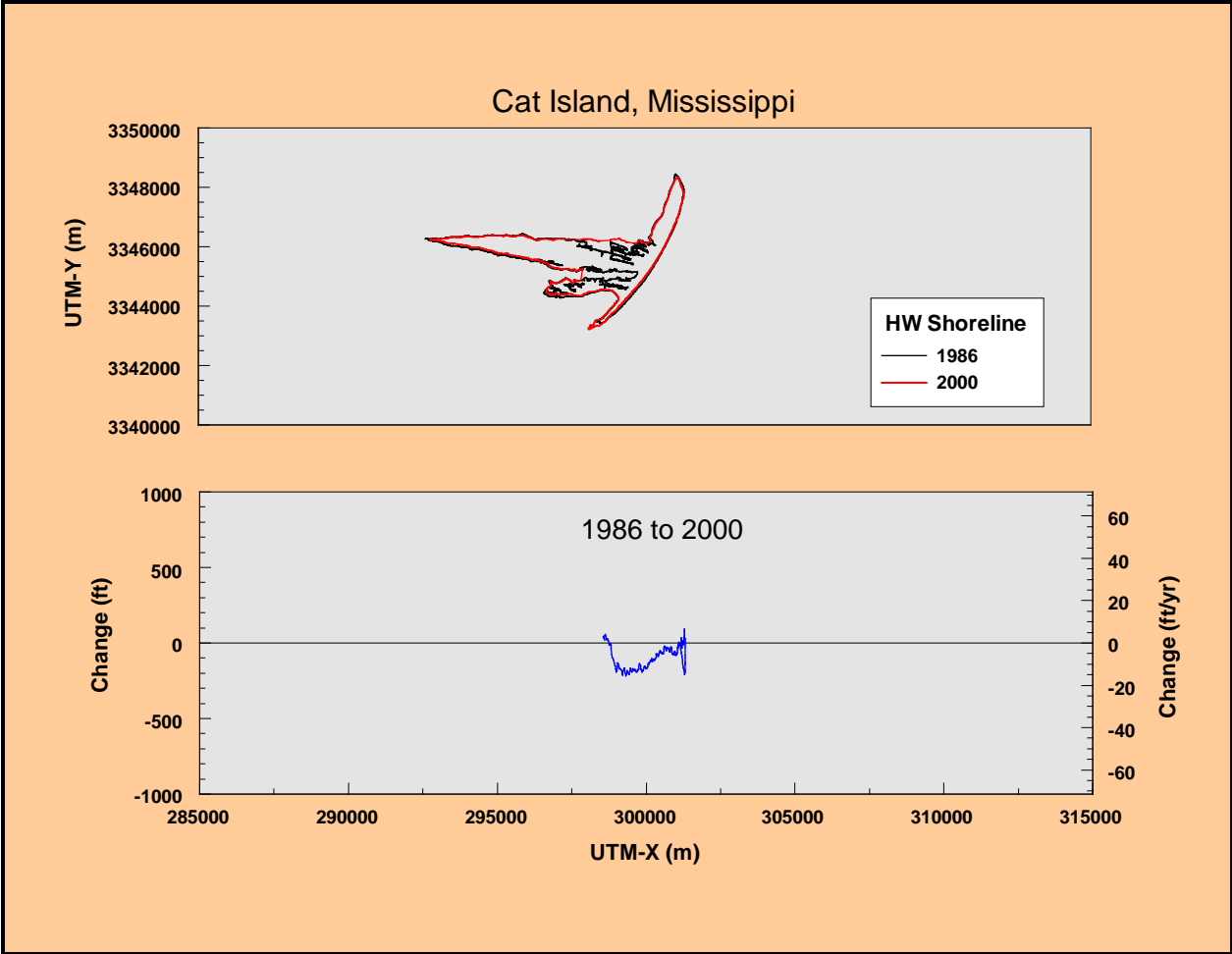


Figure x. Change in historical shoreline position for Cat Island, 1986 to 2000.

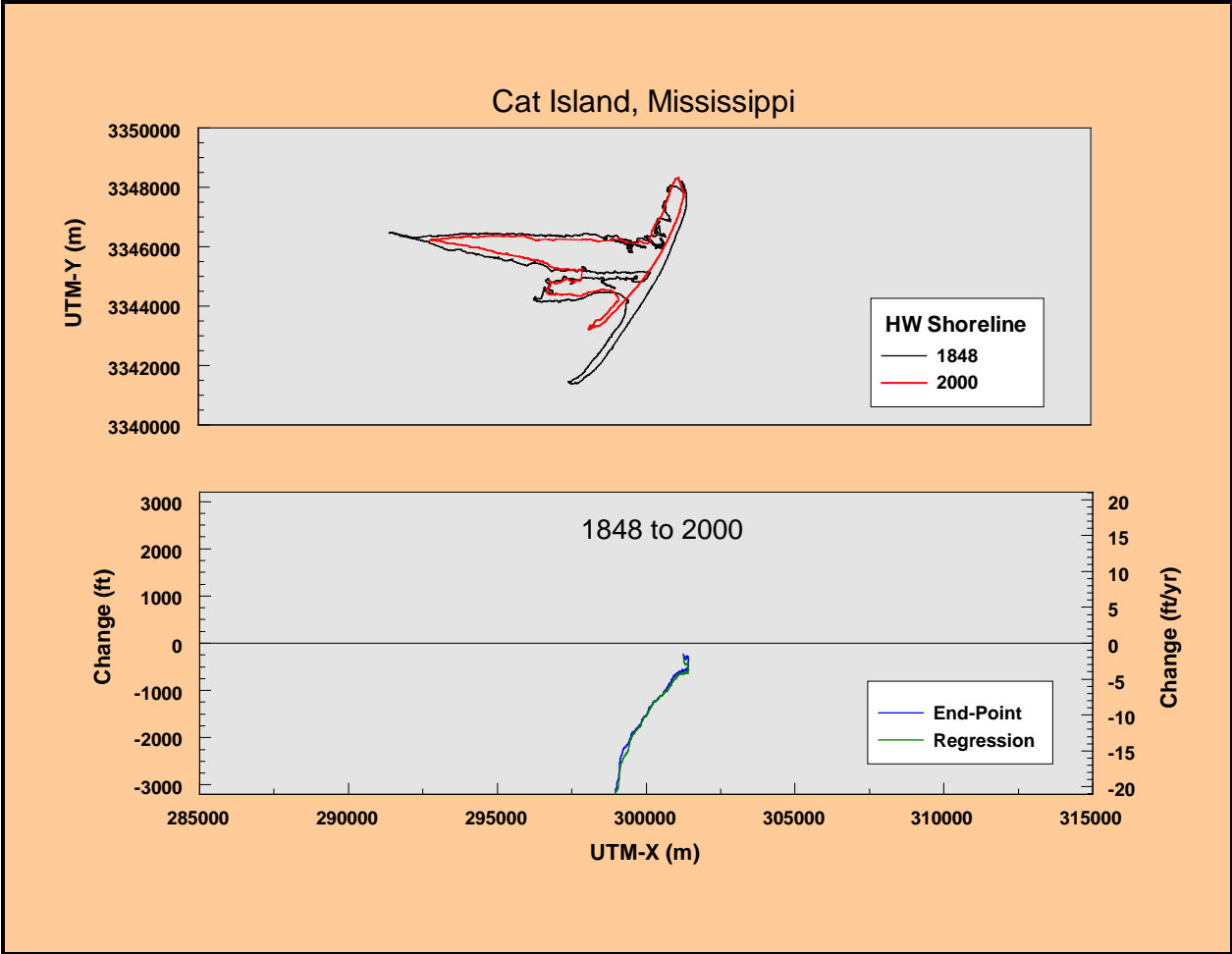


Figure x. Change in historical shoreline position for Cat Island, 1848 to 2000.

# Ship Island

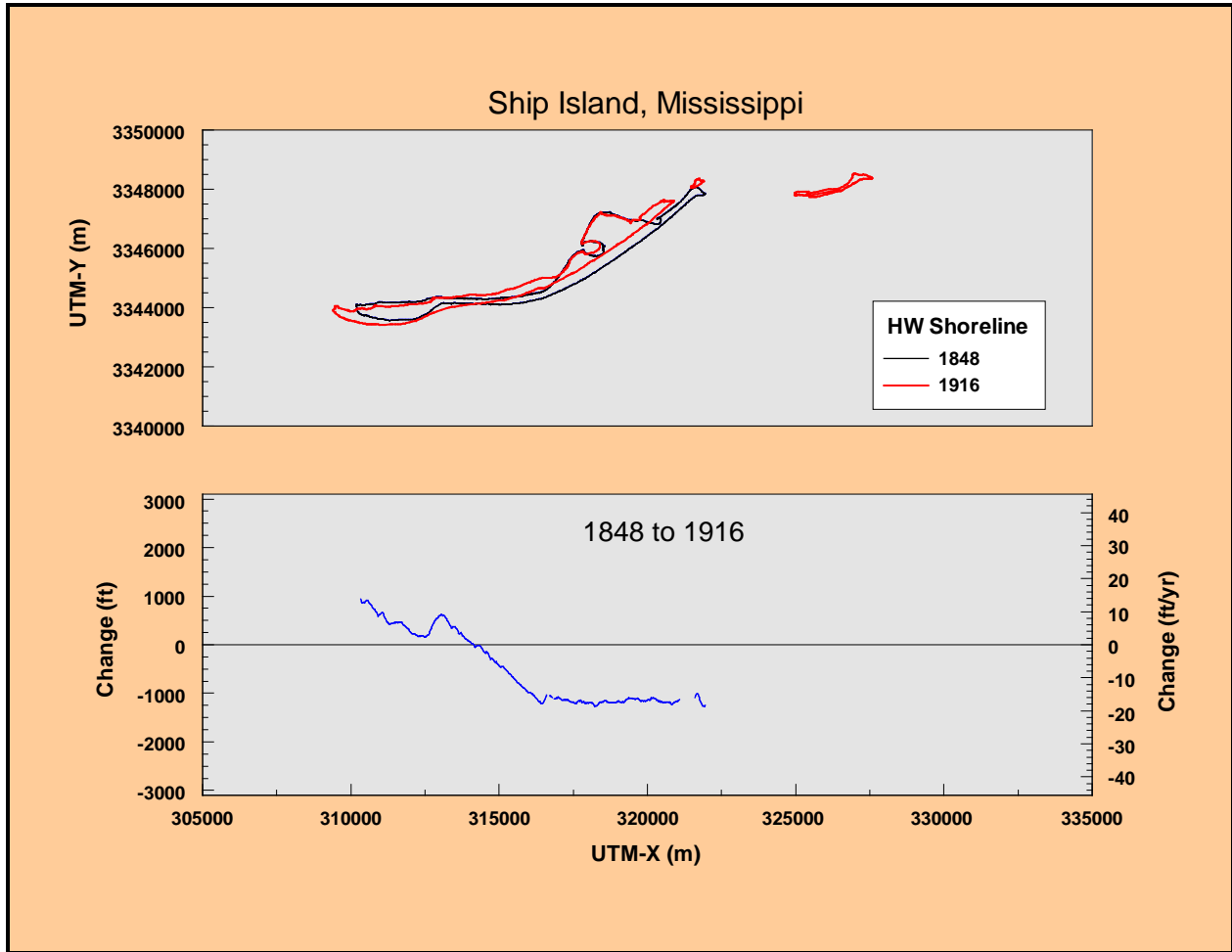


Figure x. Change in historical shoreline position for Ship Island, 1848 to 1916.

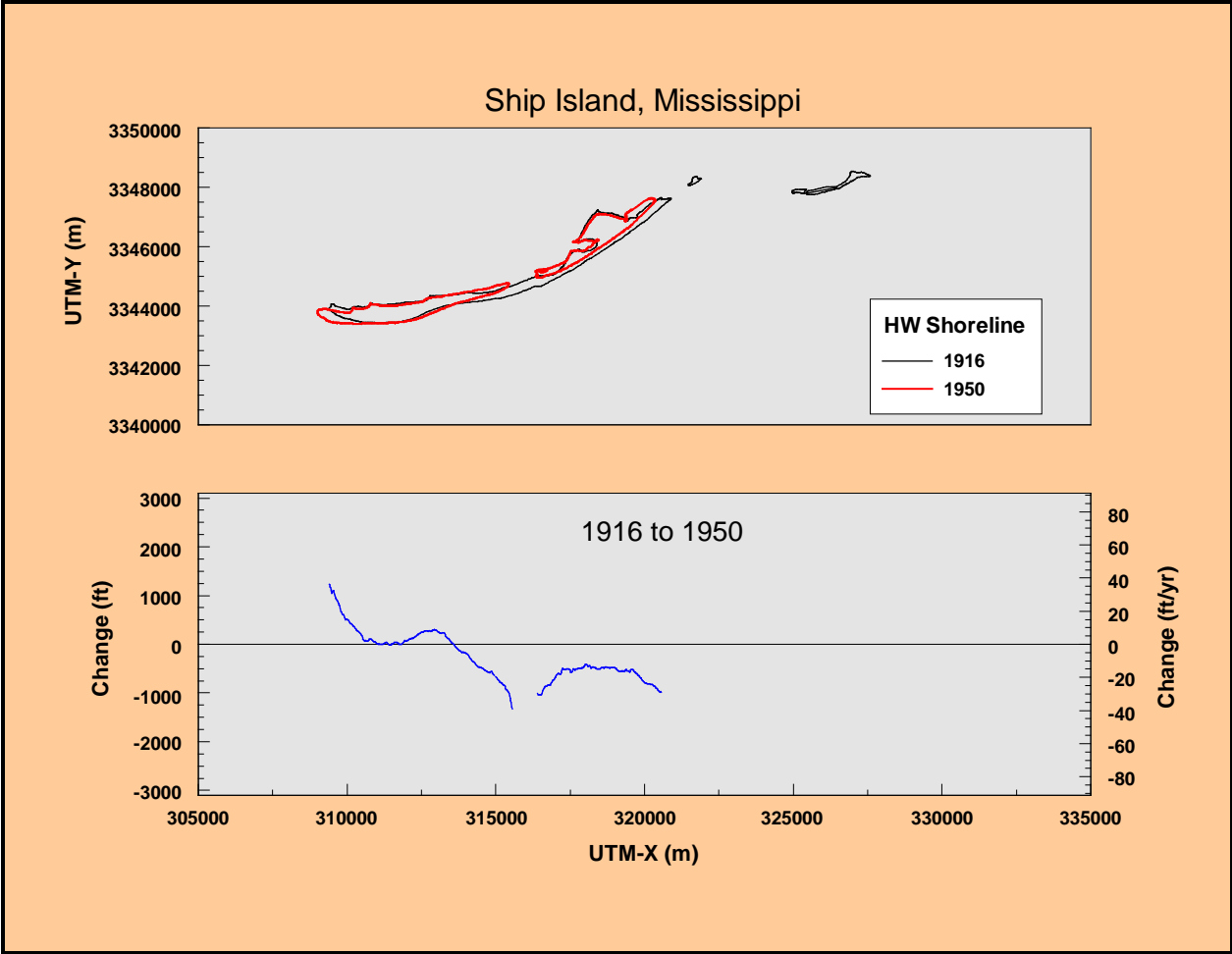


Figure x. Change in historical shoreline position for Ship Island, 1916 to 1950.

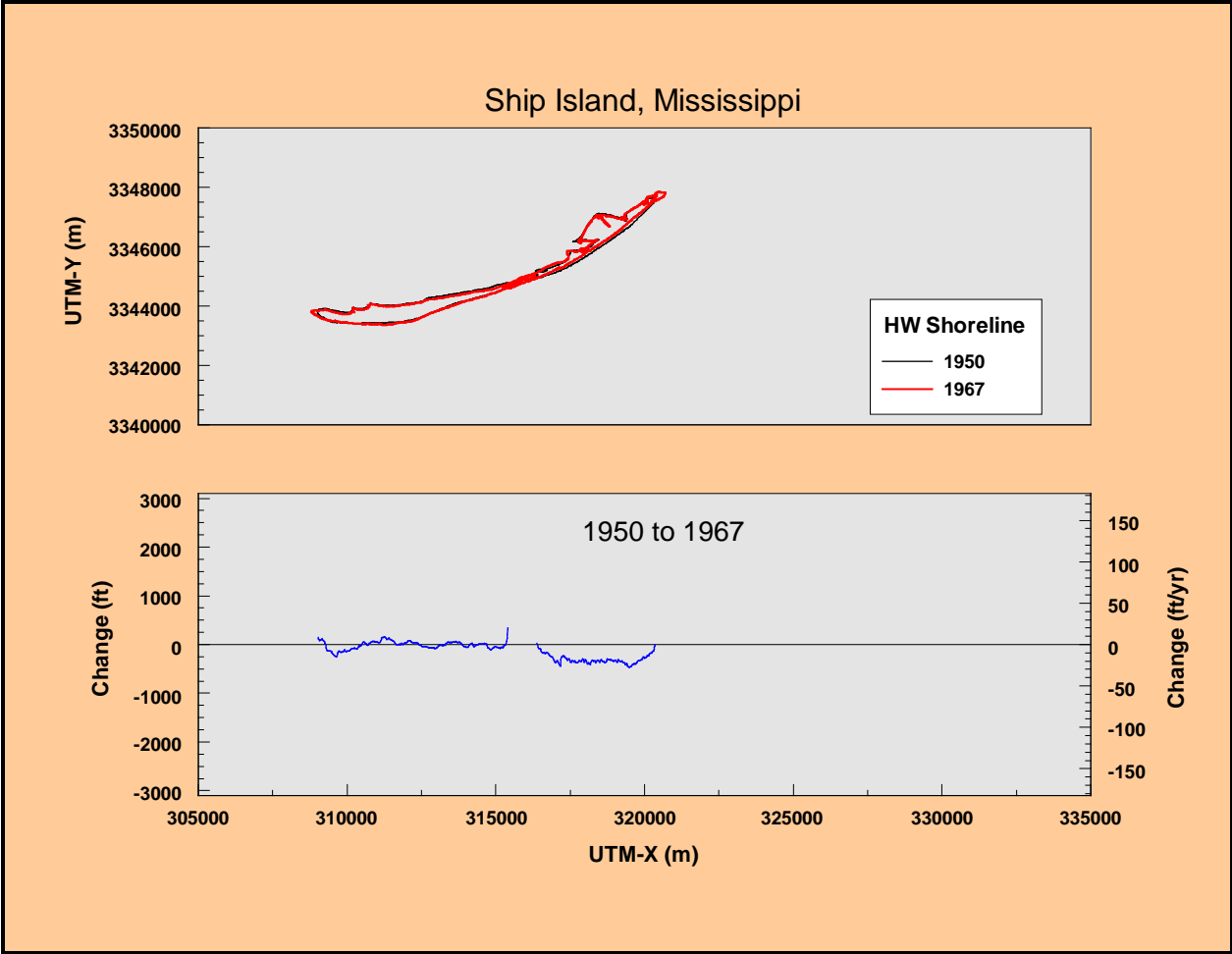


Figure x. Change in historical shoreline position for Ship Island, 1950 to 1967.

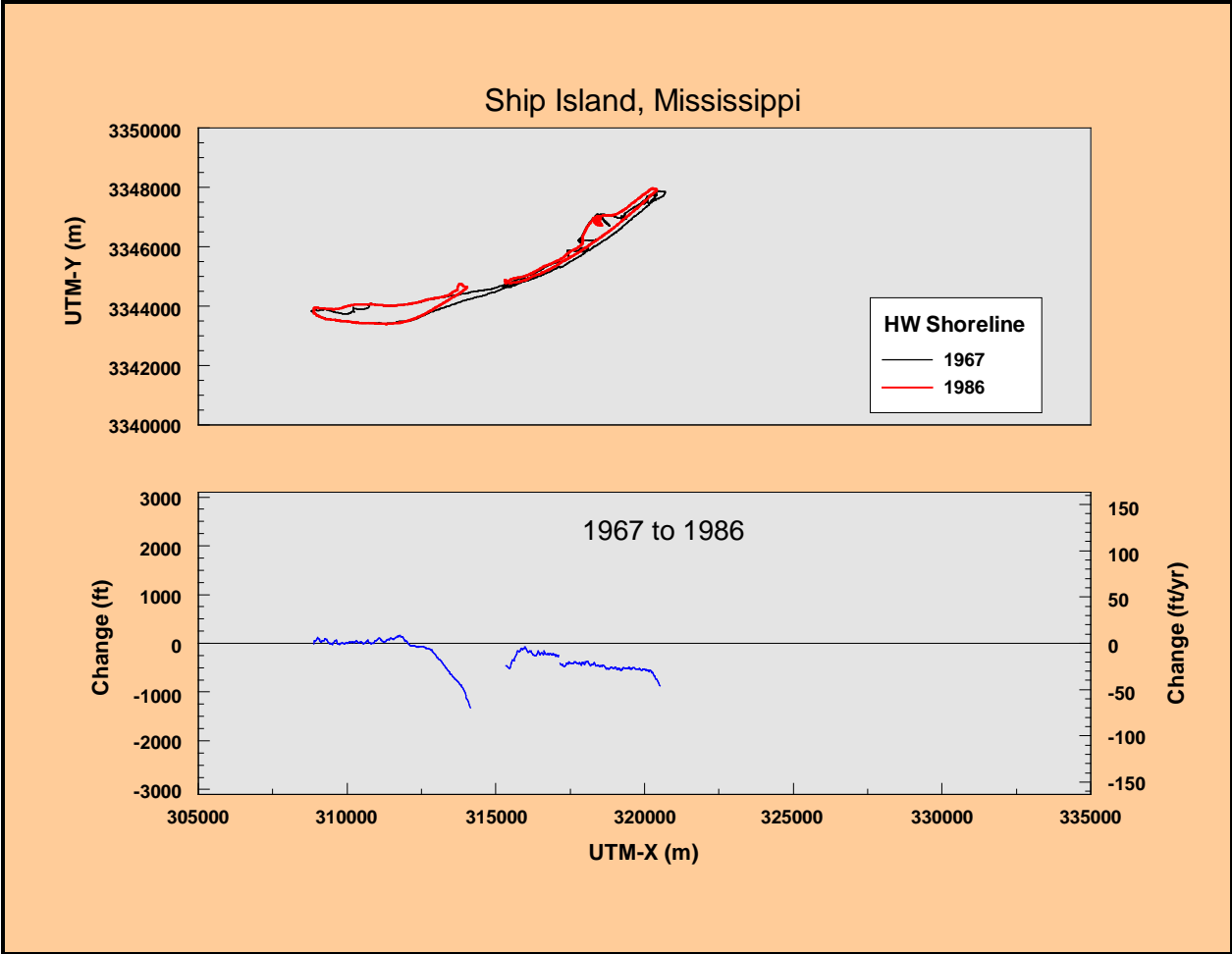


Figure x. Change in historical shoreline position for Ship Island, 1967 to 1986.

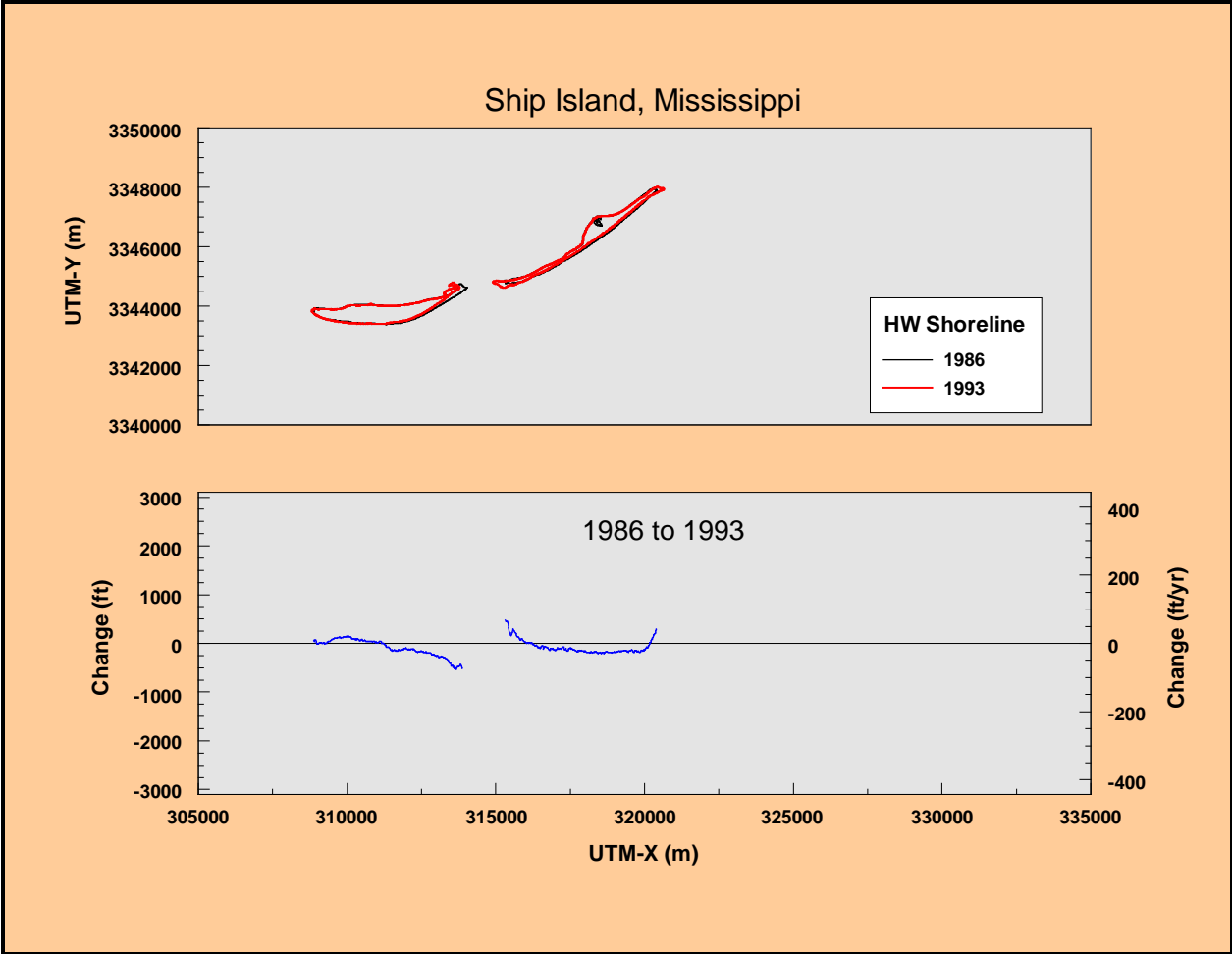


Figure x. Change in historical shoreline position for Ship Island, 1986 to 1993.



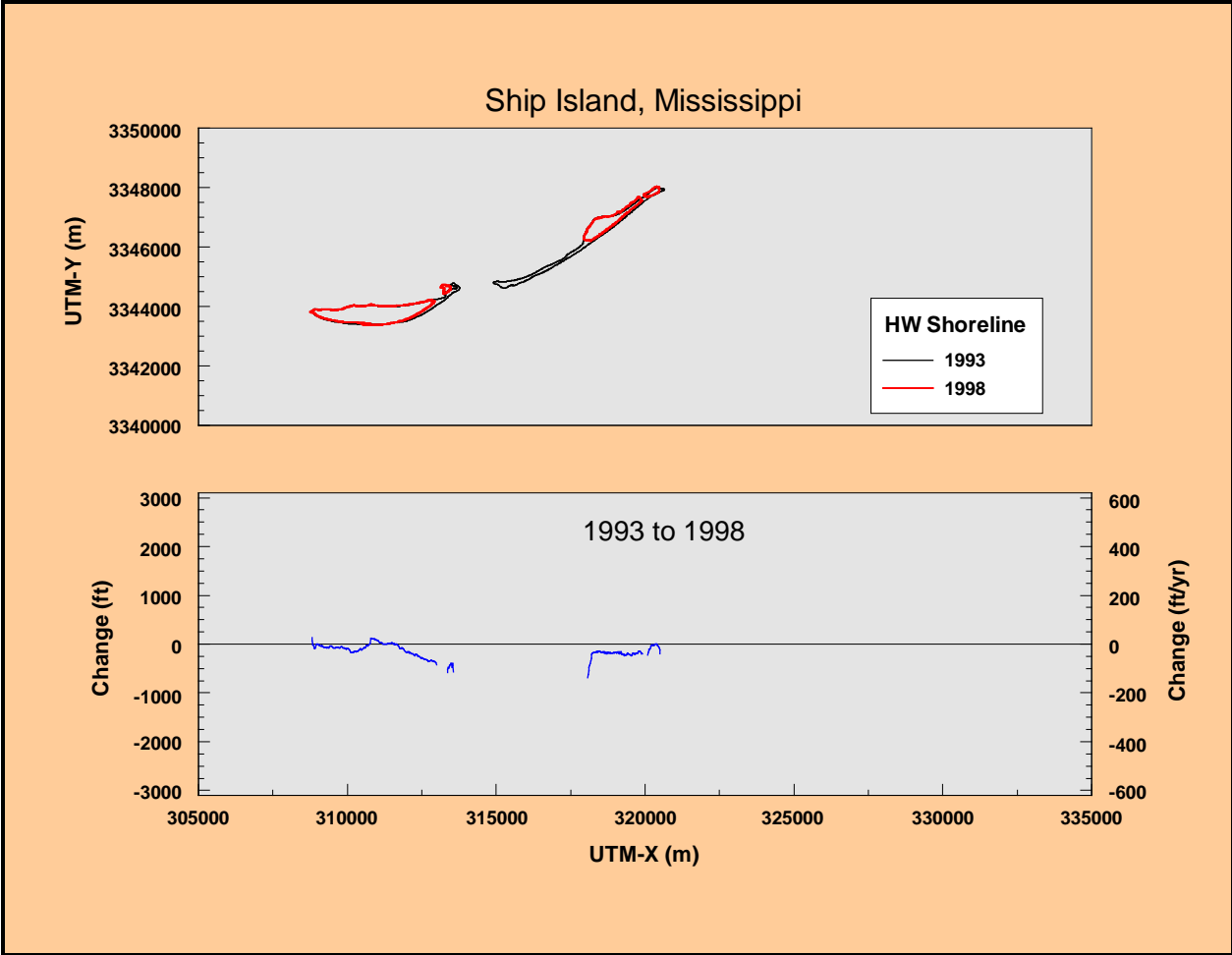


Figure x. Change in historical shoreline position for Ship Island, 1993 to 1998.

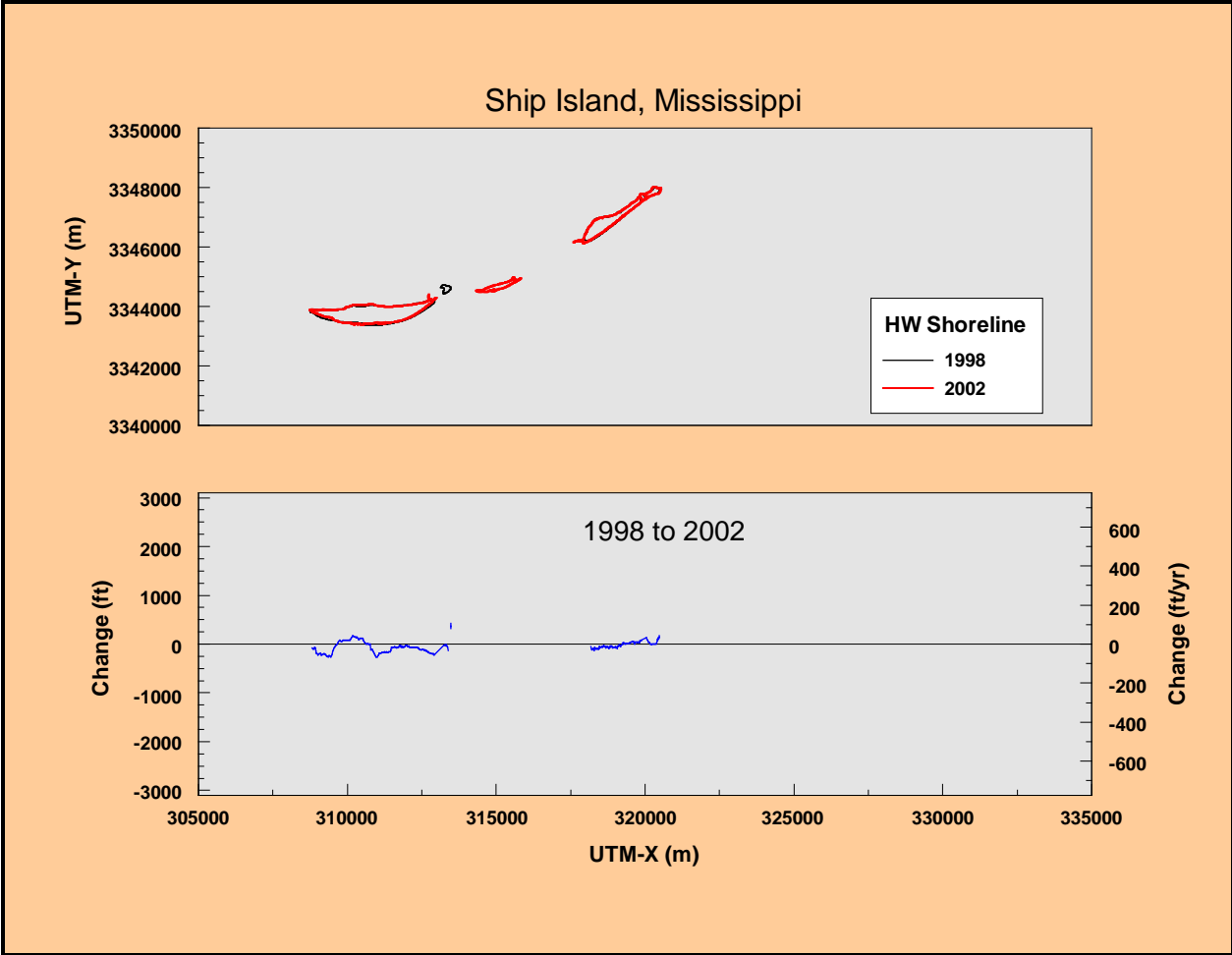


Figure x. Change in historical shoreline position for Ship Island, 1998 to 2002.

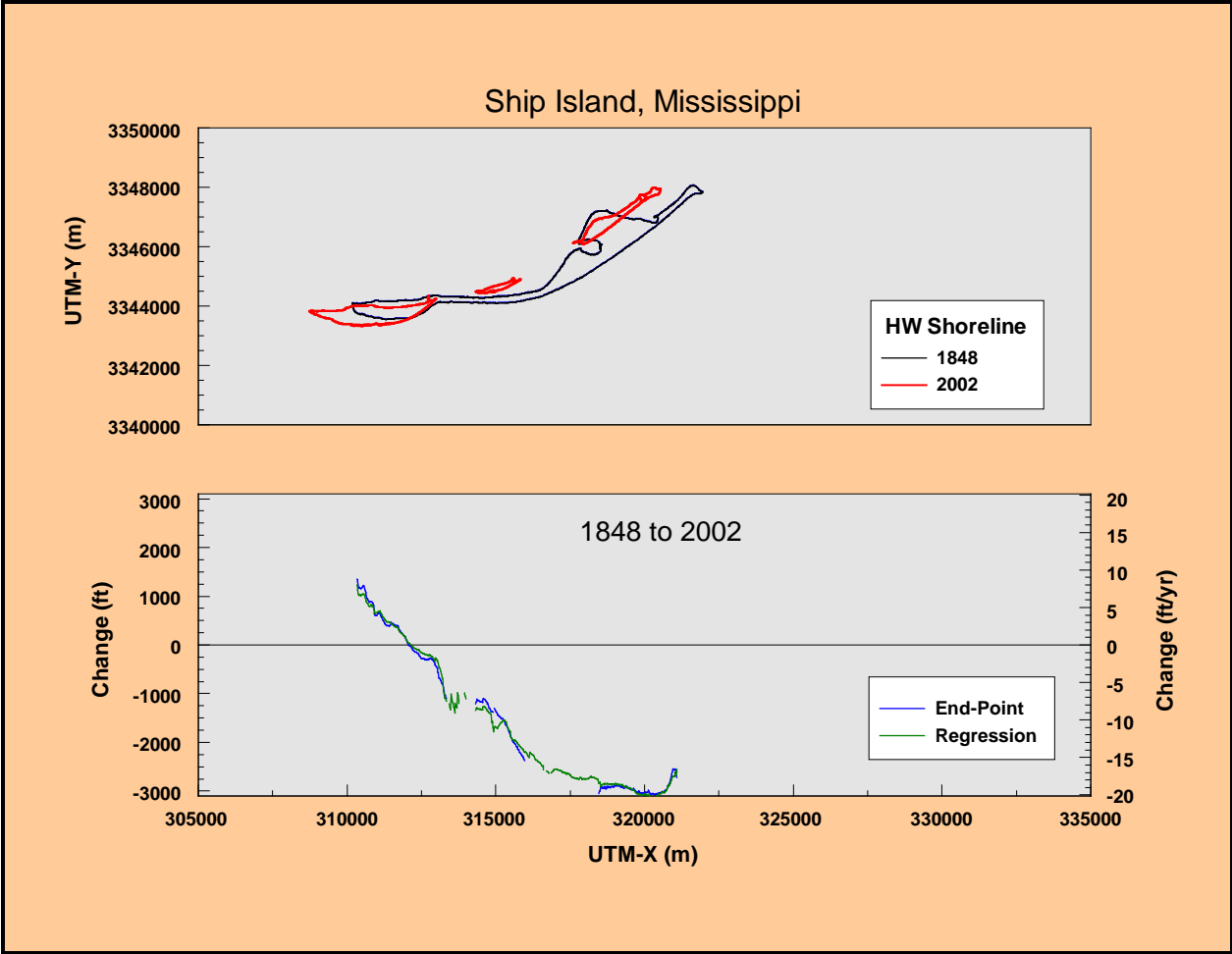


Figure x. Change in historical shoreline position for Ship Island, 1848 to 2002.

# Horn Island

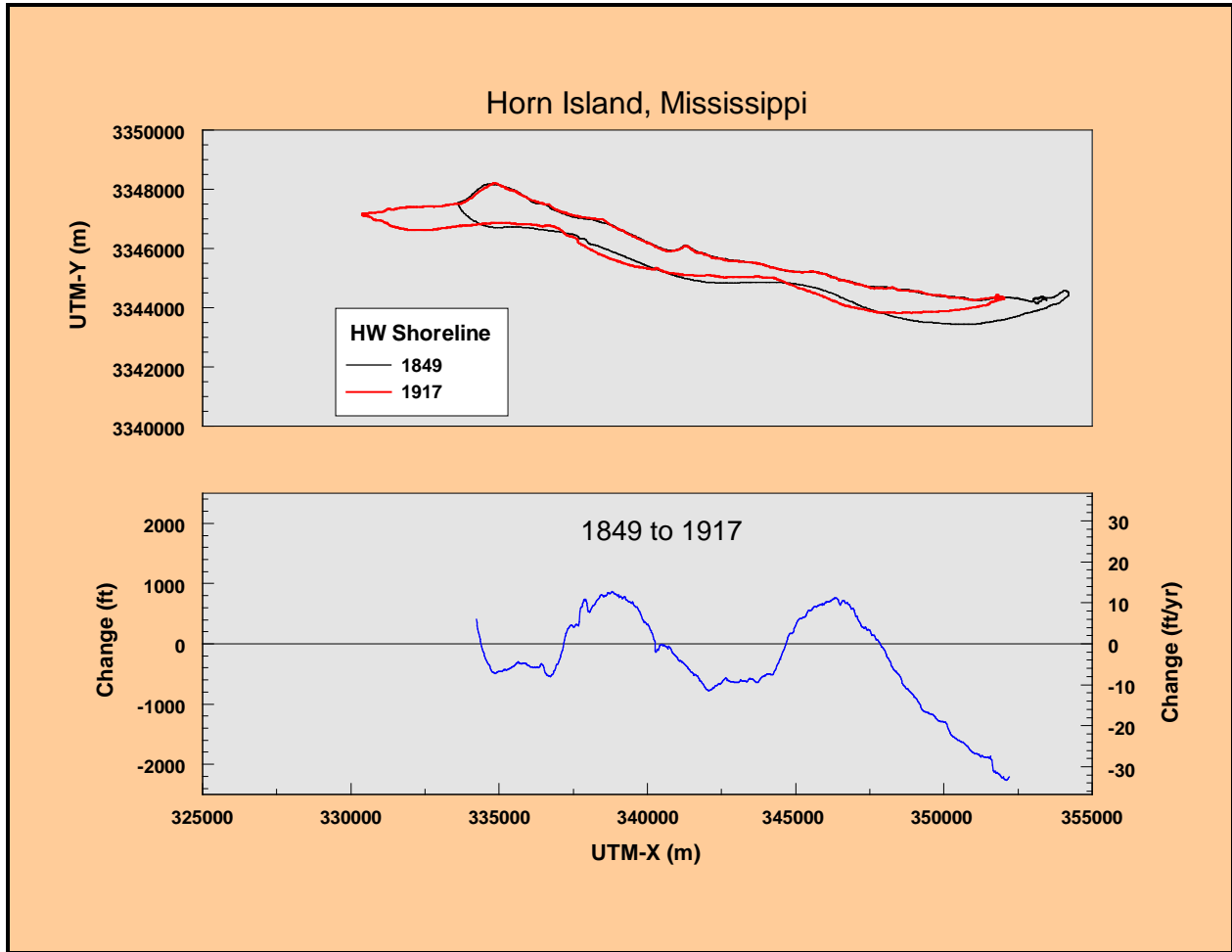


Figure x. Change in historical shoreline position for Horn Island, 1849 to 1917.

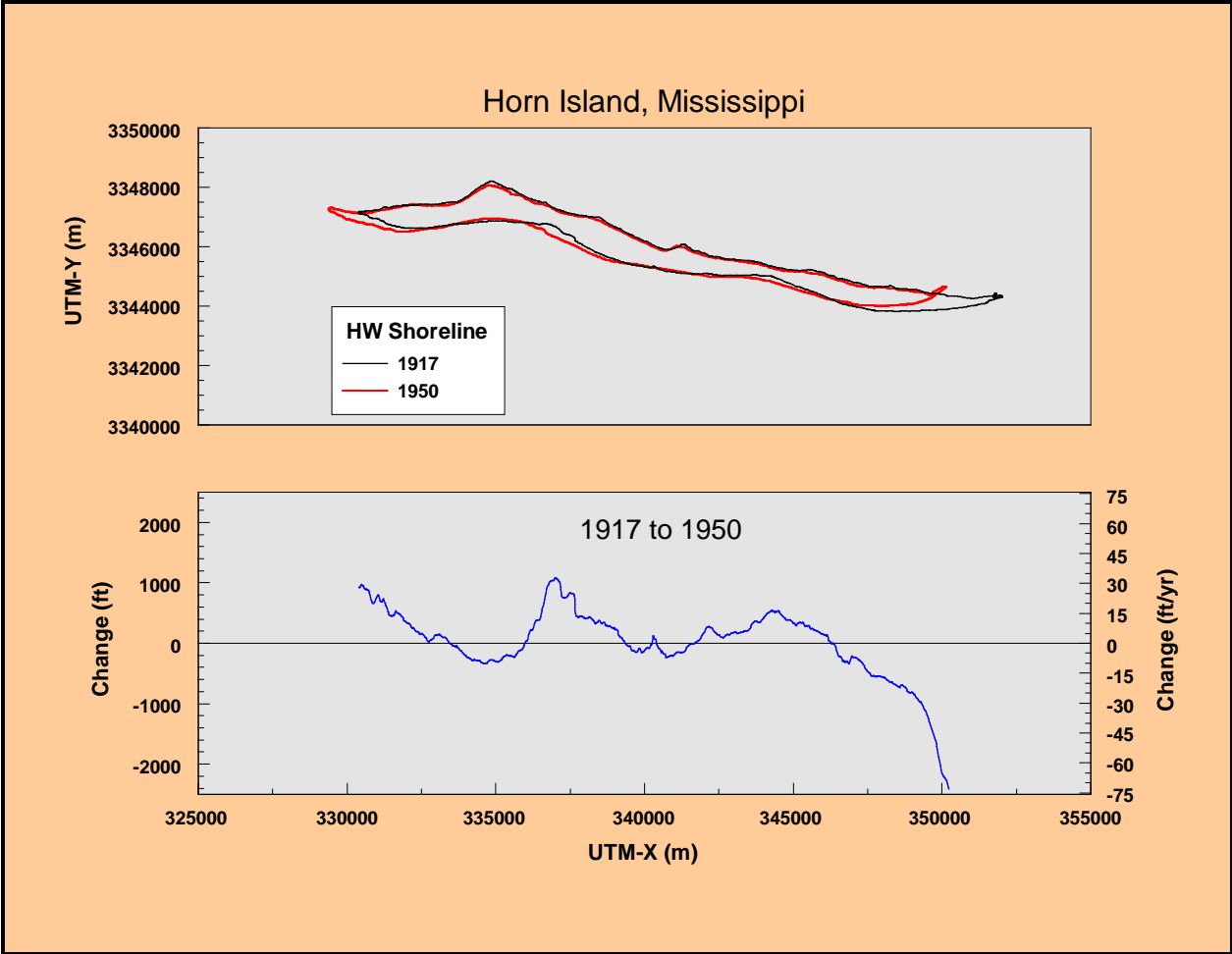


Figure x. Change in historical shoreline position for Horn Island, 1917 to 1950.

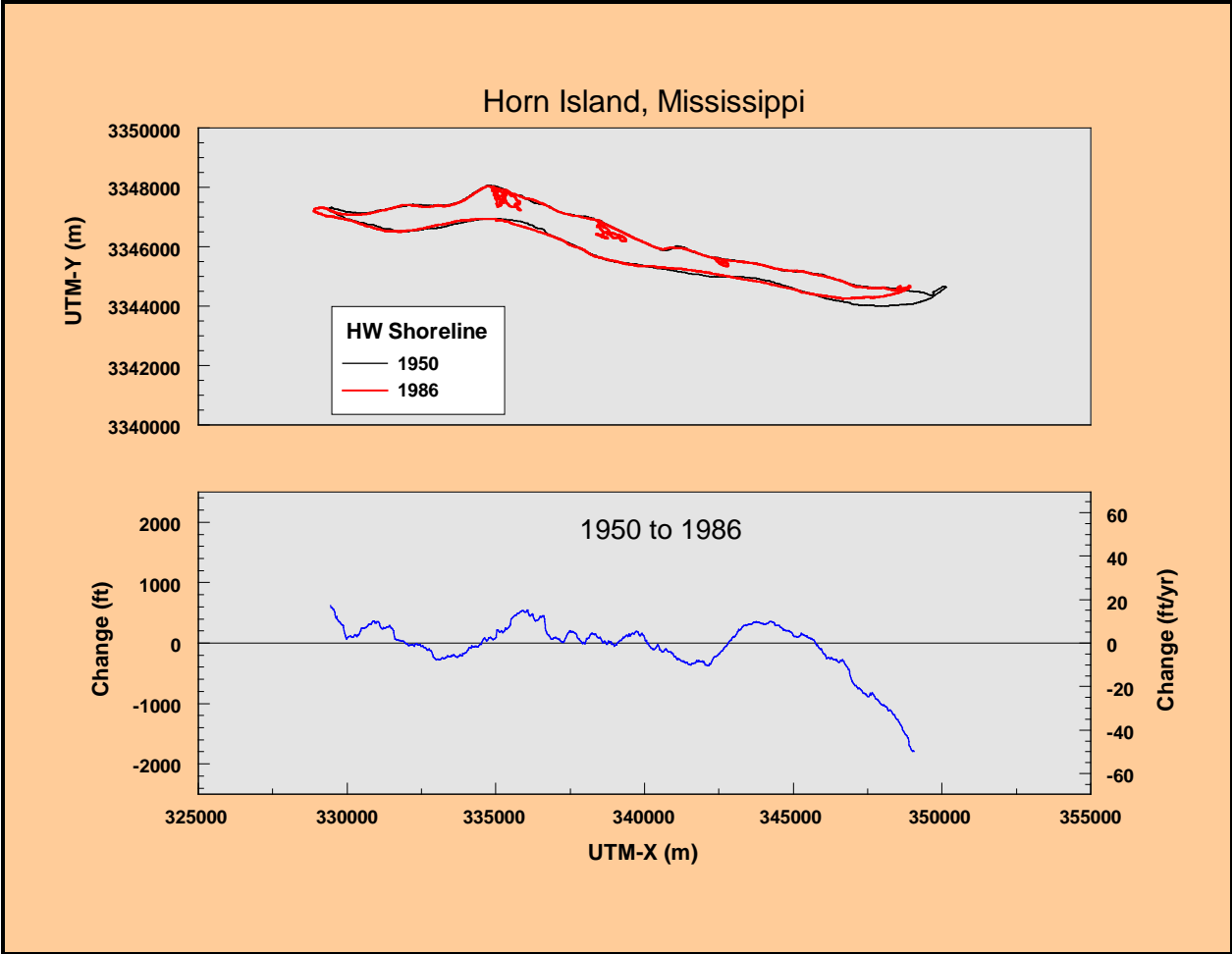


Figure x. Change in historical shoreline position for Horn Island, 1950 to 1986.

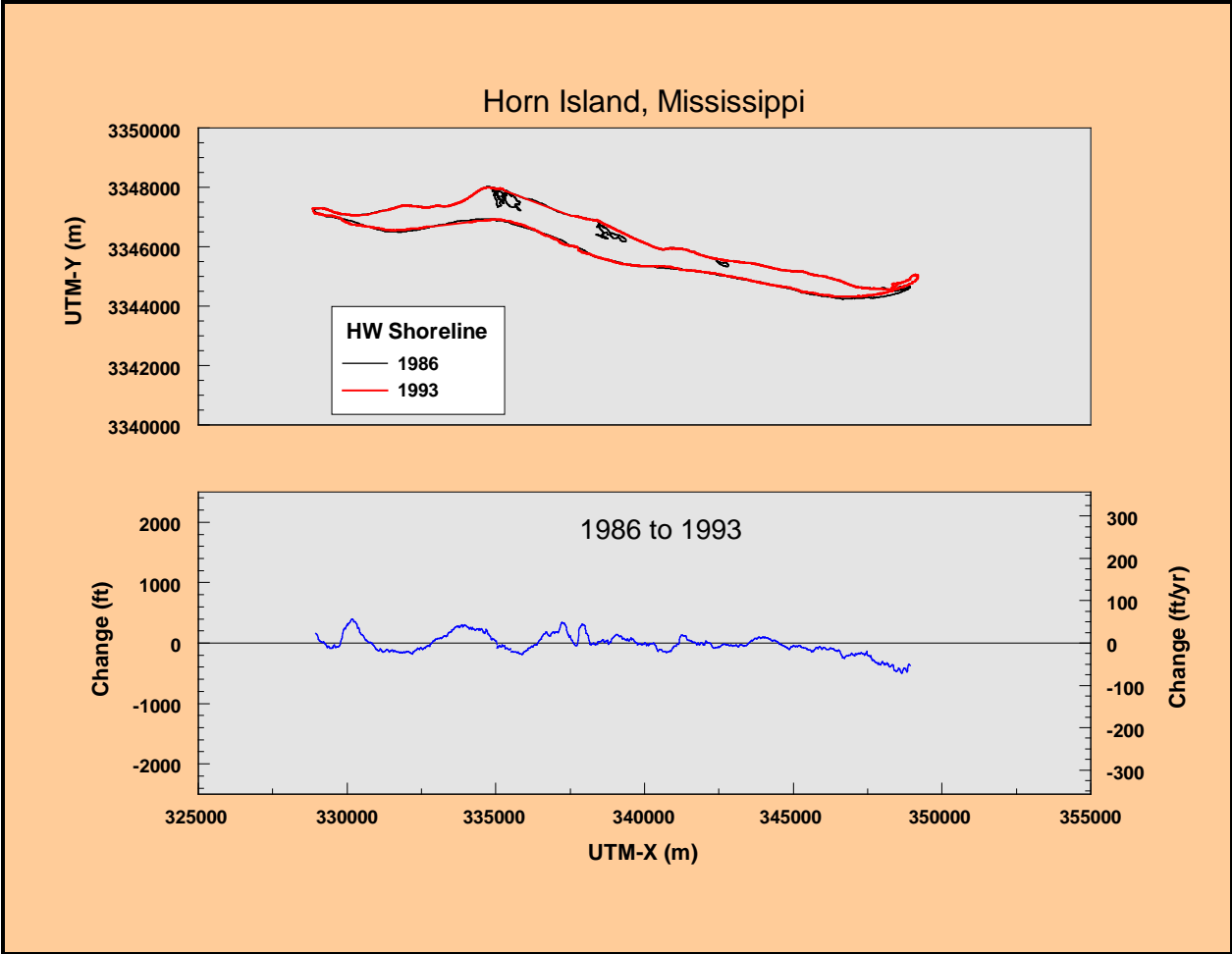


Figure x. Change in historical shoreline position for Horn Island, 1986 to 1993.



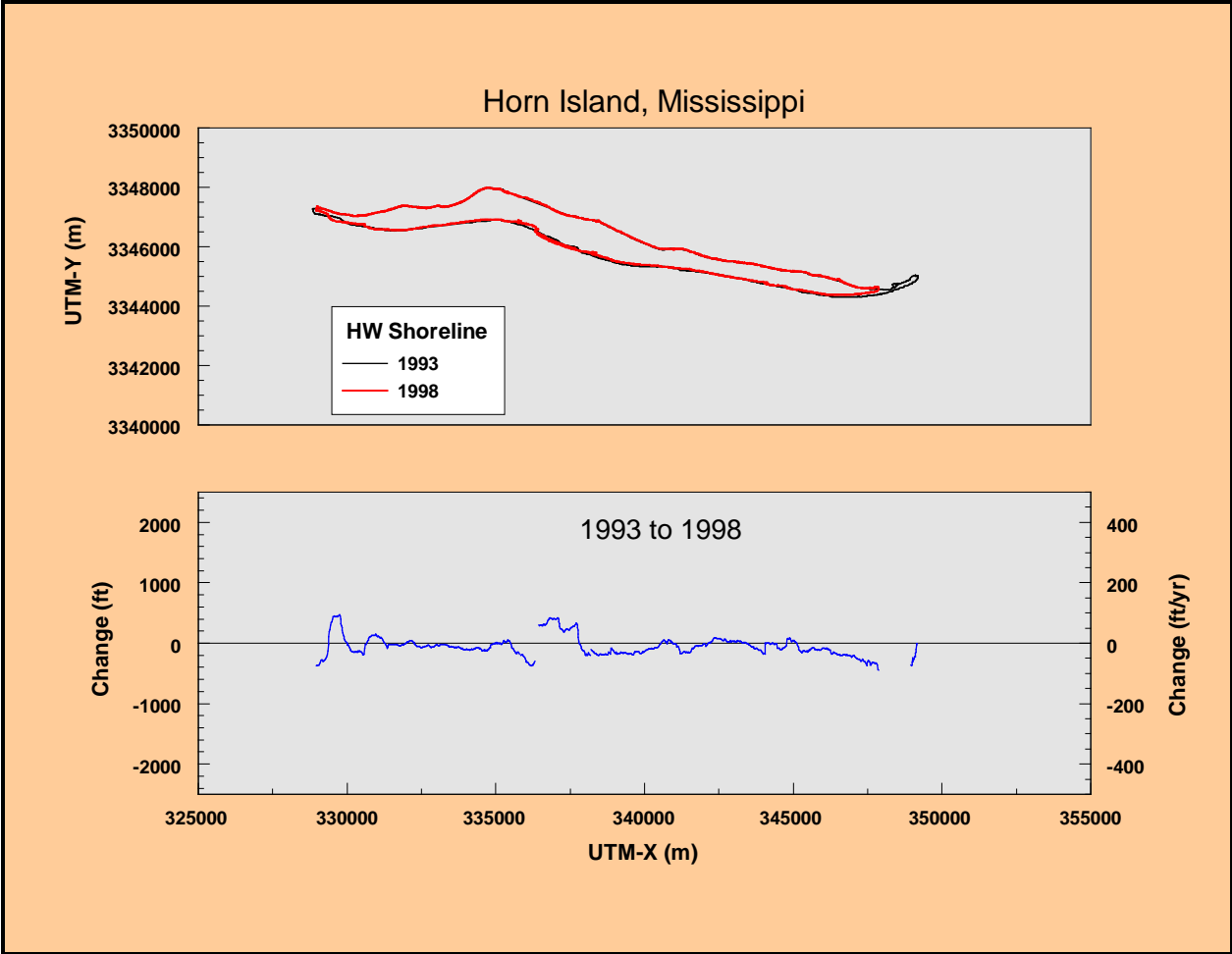


Figure x. Change in historical shoreline position for Horn Island, 1993 to 1998.

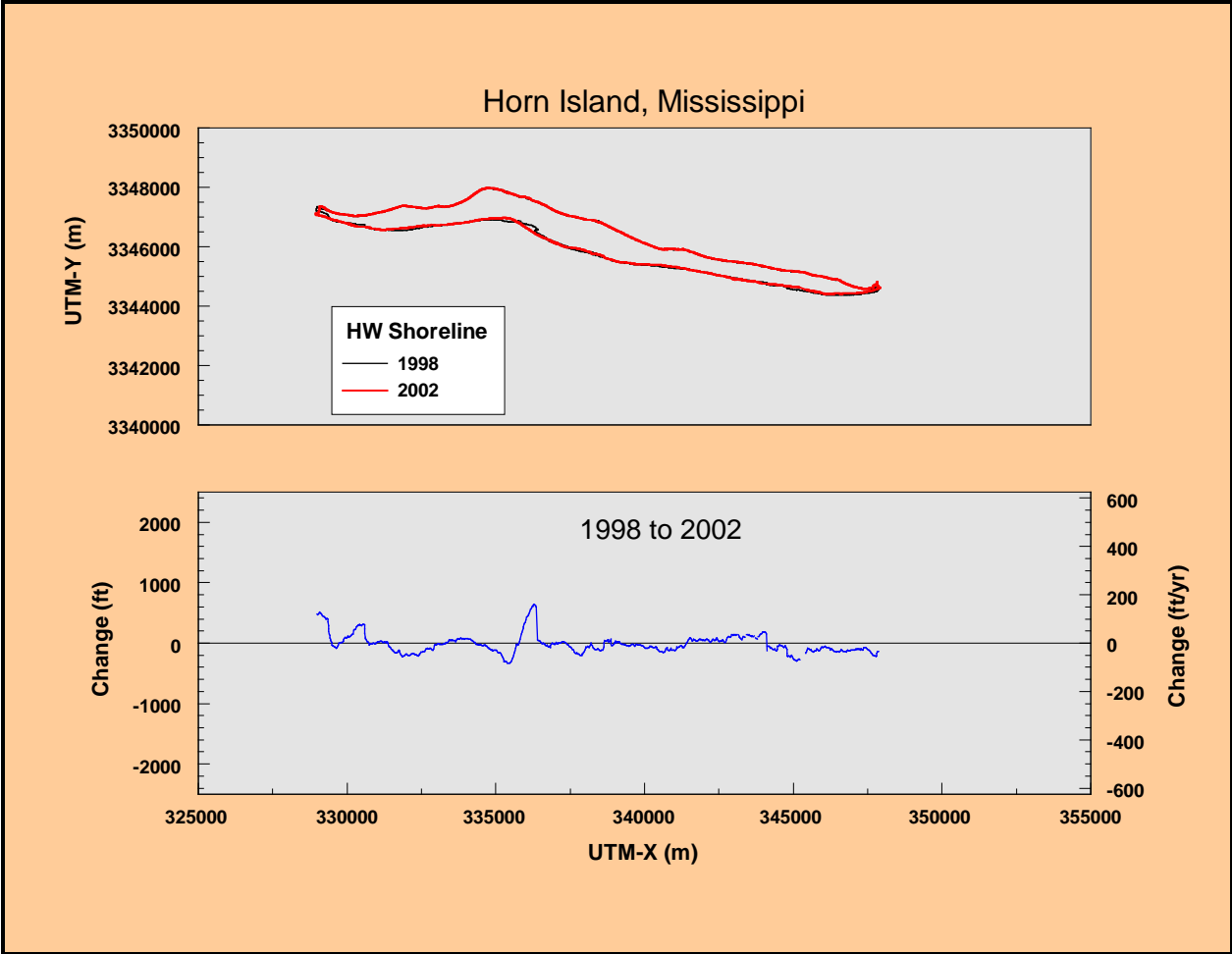


Figure x. Change in historical shoreline position for Horn Island, 1998 to 2002.

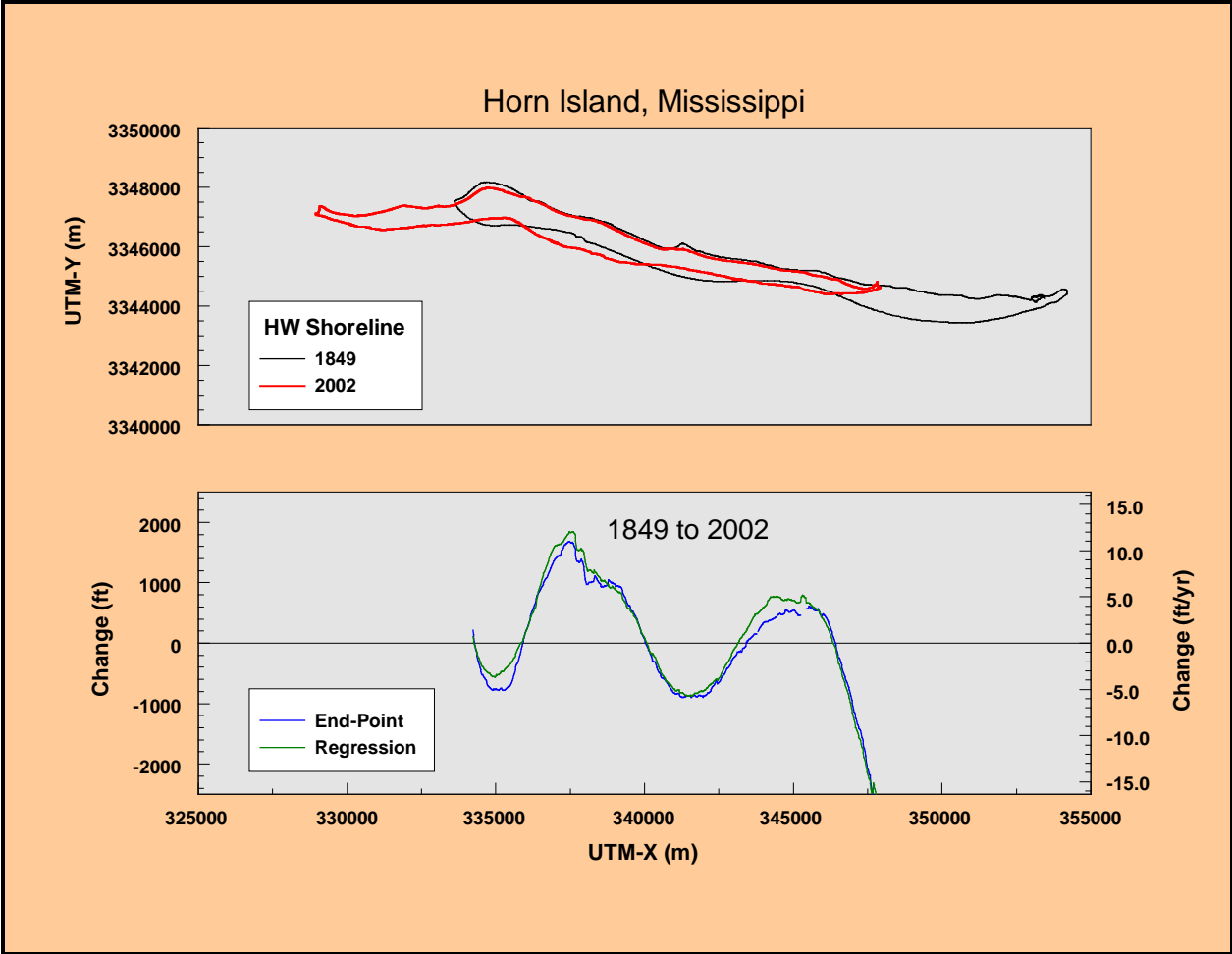


Figure x. Change in historical shoreline position for Horn Island, 1849 to 2002.

# Petit Bois Island

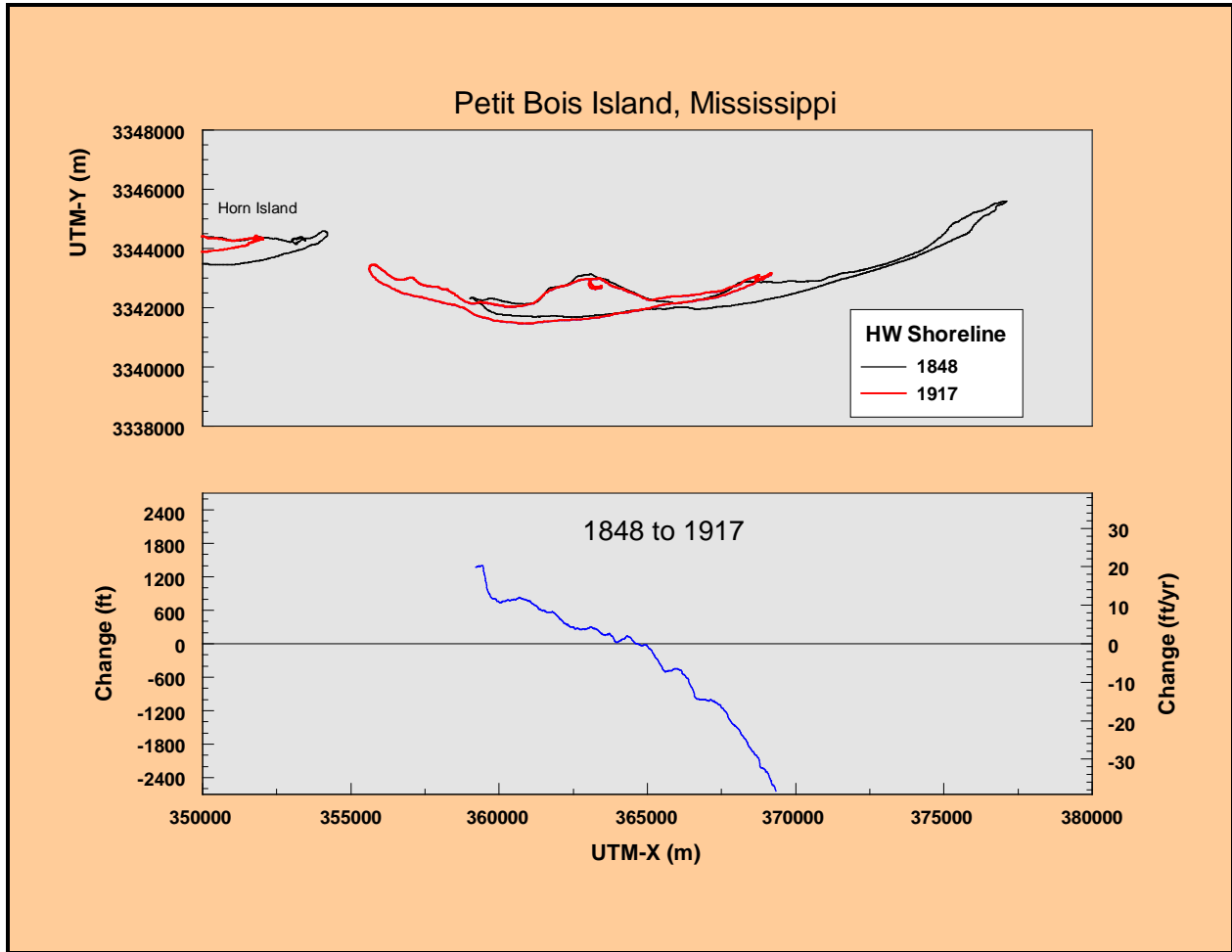


Figure x. Change in historical shoreline position for Petit Bois Island, 1848 to 1917.

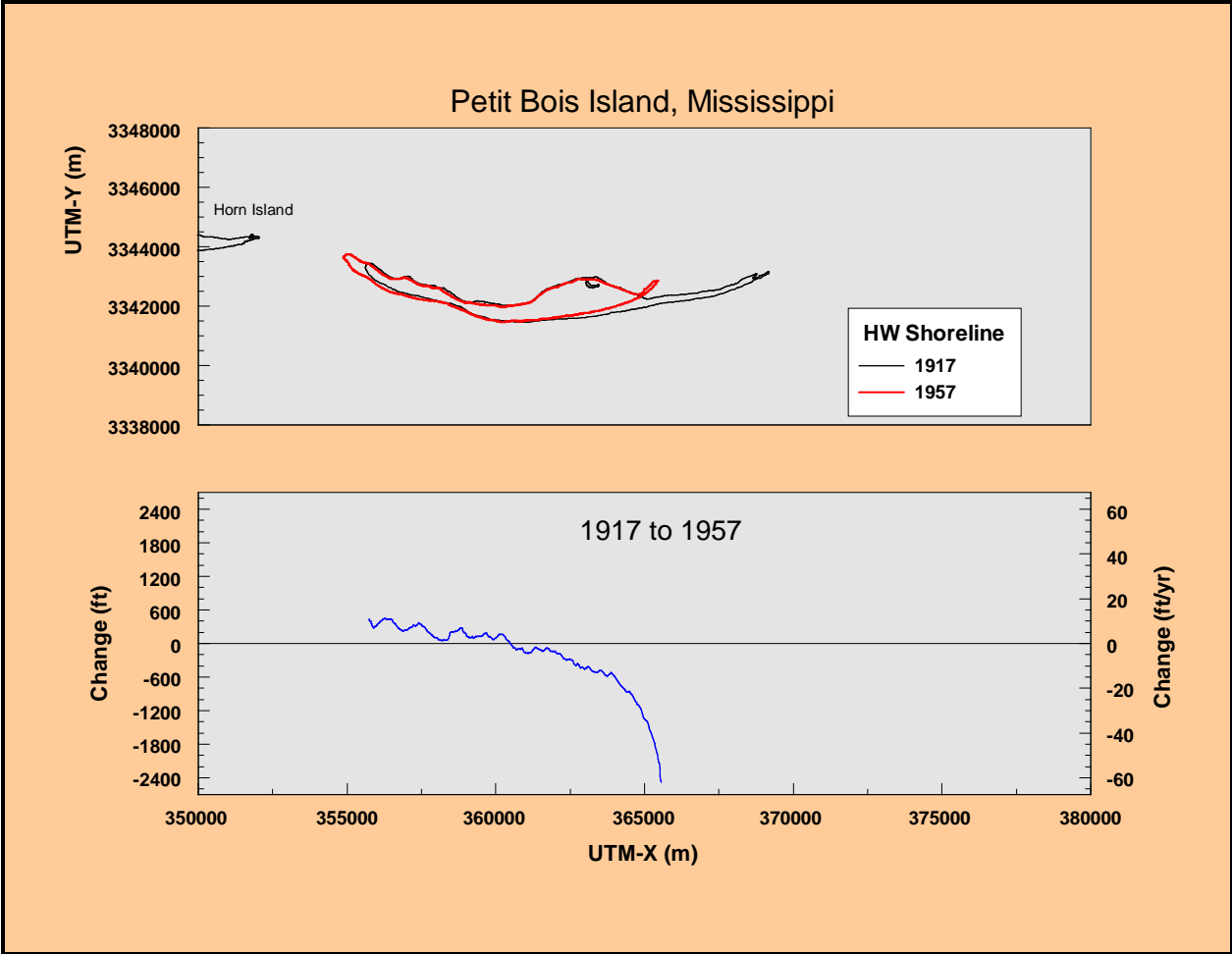


Figure x. Change in historical shoreline position for Petit Bois Island, 1917 to 1957.

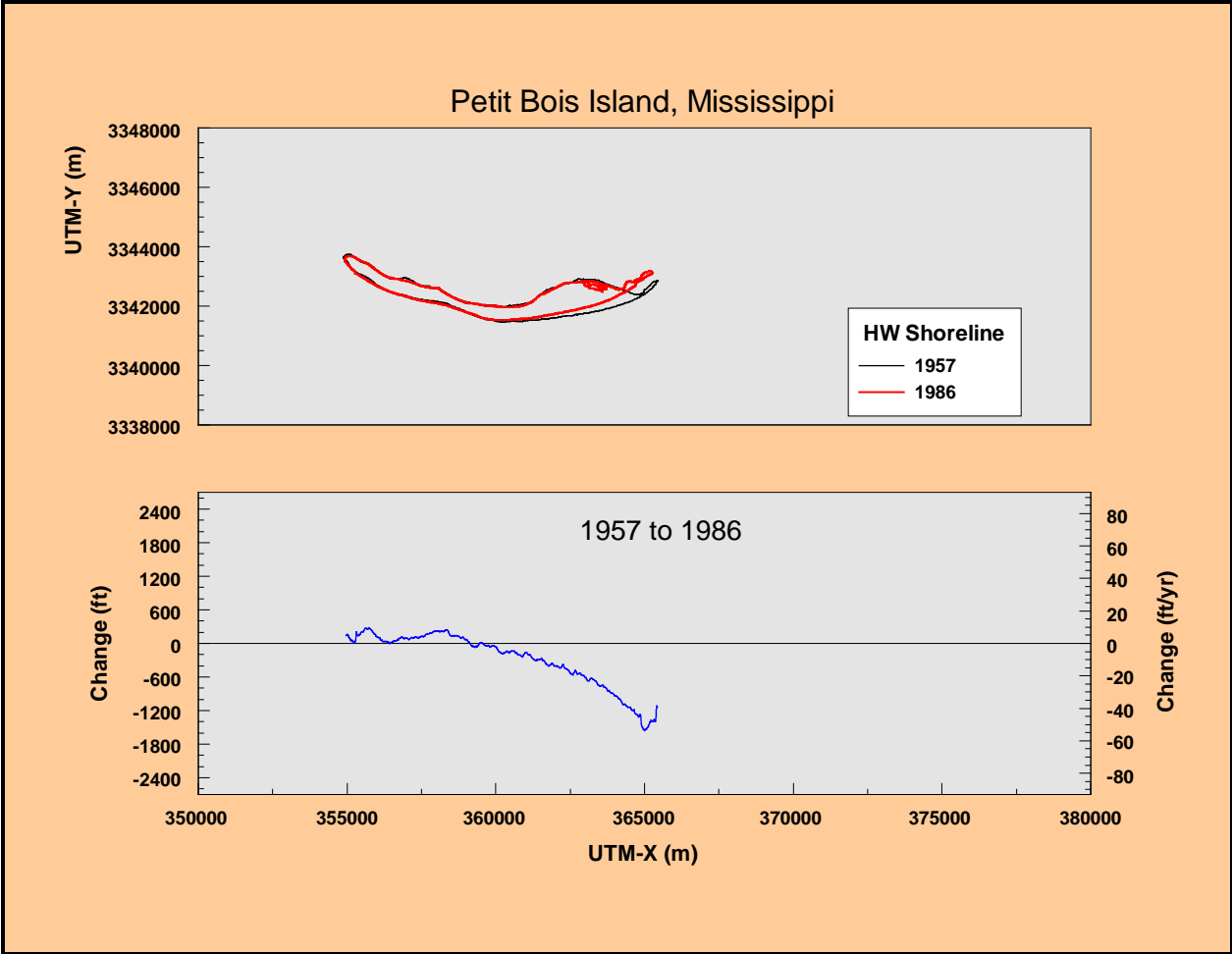


Figure x. Change in historical shoreline position for Petit Bois Island, 1957 to 1986.

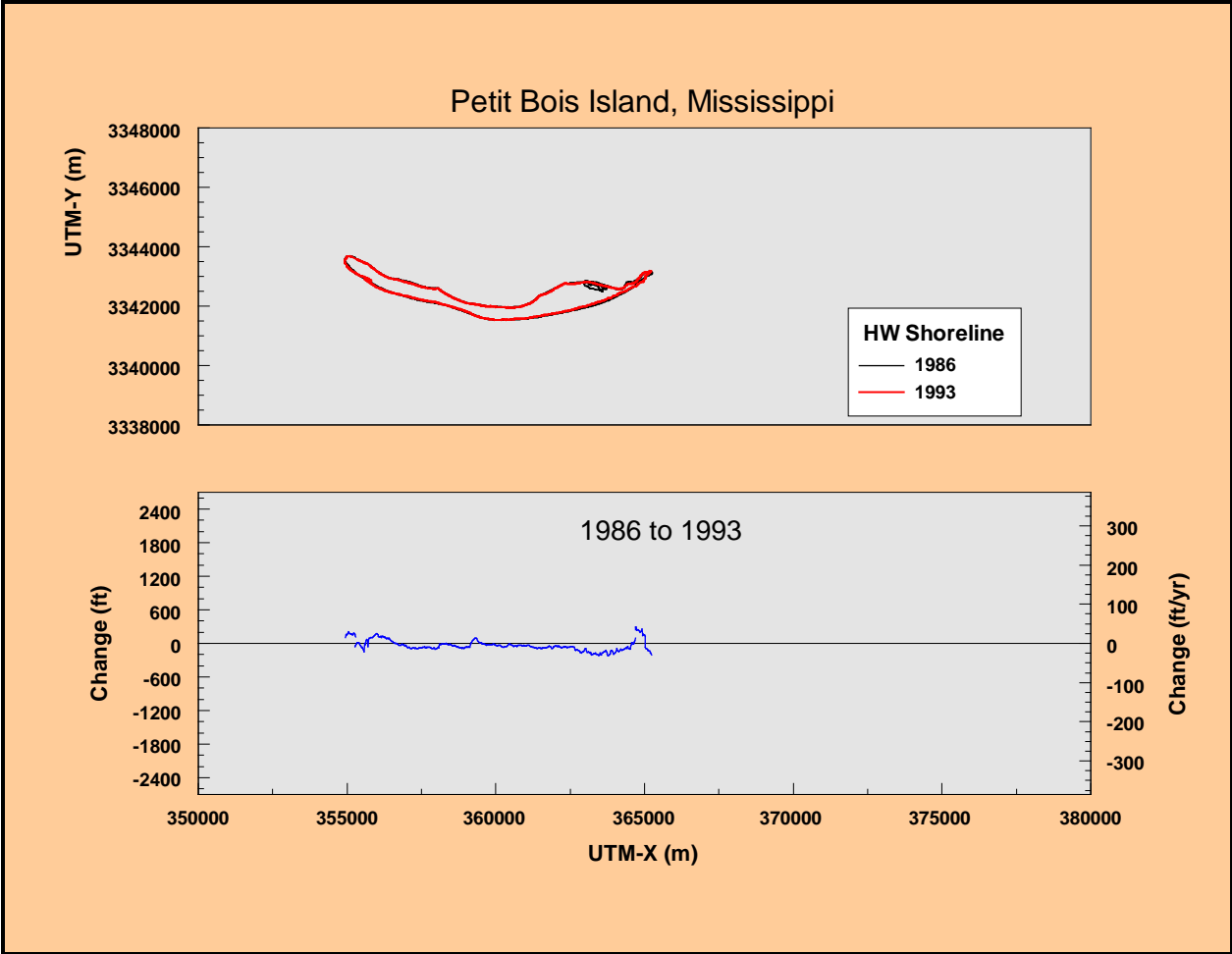


Figure x. Change in historical shoreline position for Petit Bois Island, 1986 to 1993.



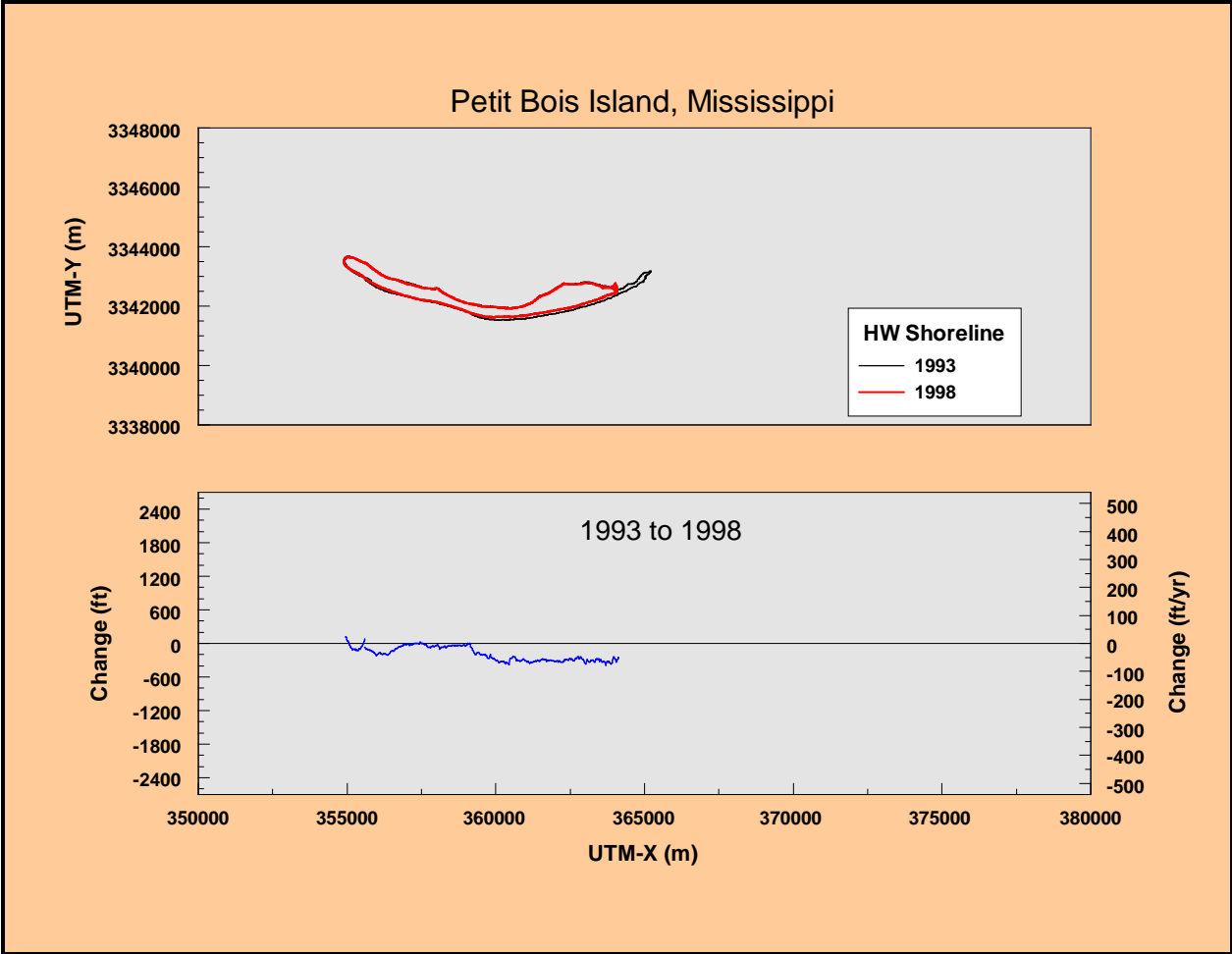


Figure x. Change in historical shoreline position for Petit Bois Island, 1993 to 1998.

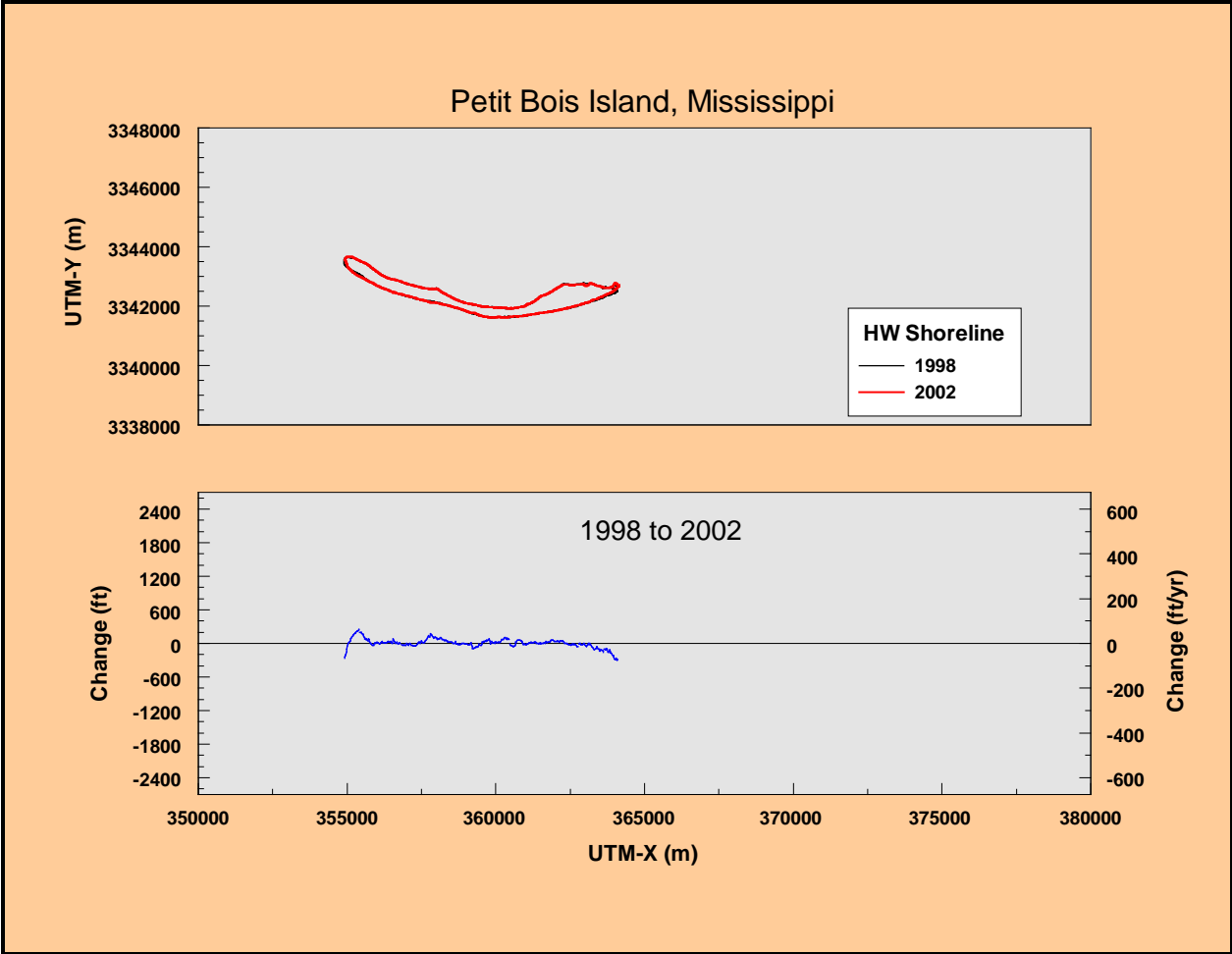


Figure x. Change in historical shoreline position for Petit Bois Island, 1998 to 2002.

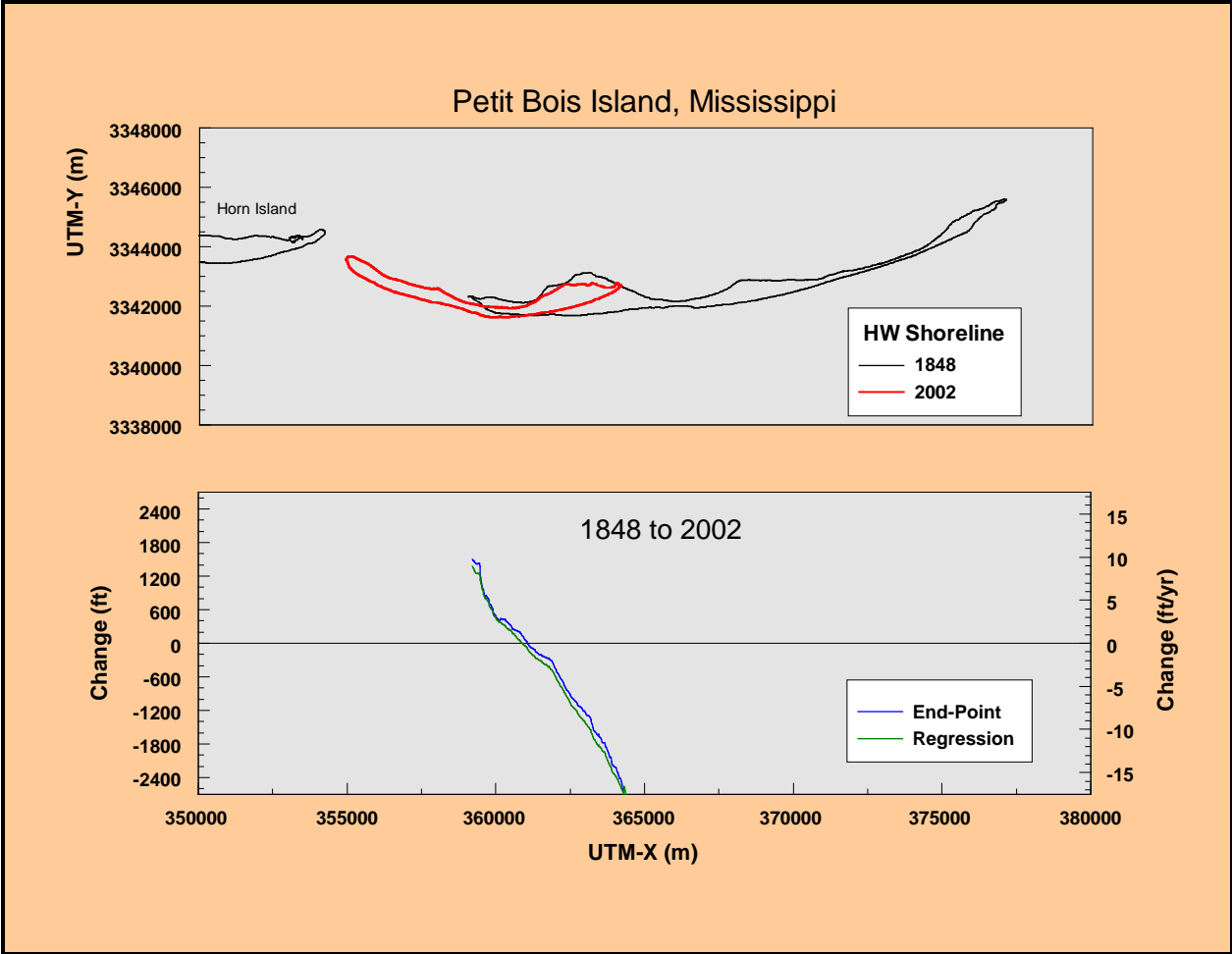


Figure x. Change in historical shoreline position for Petit Bois Island, 1848 to 2002.

# Dauphin Island

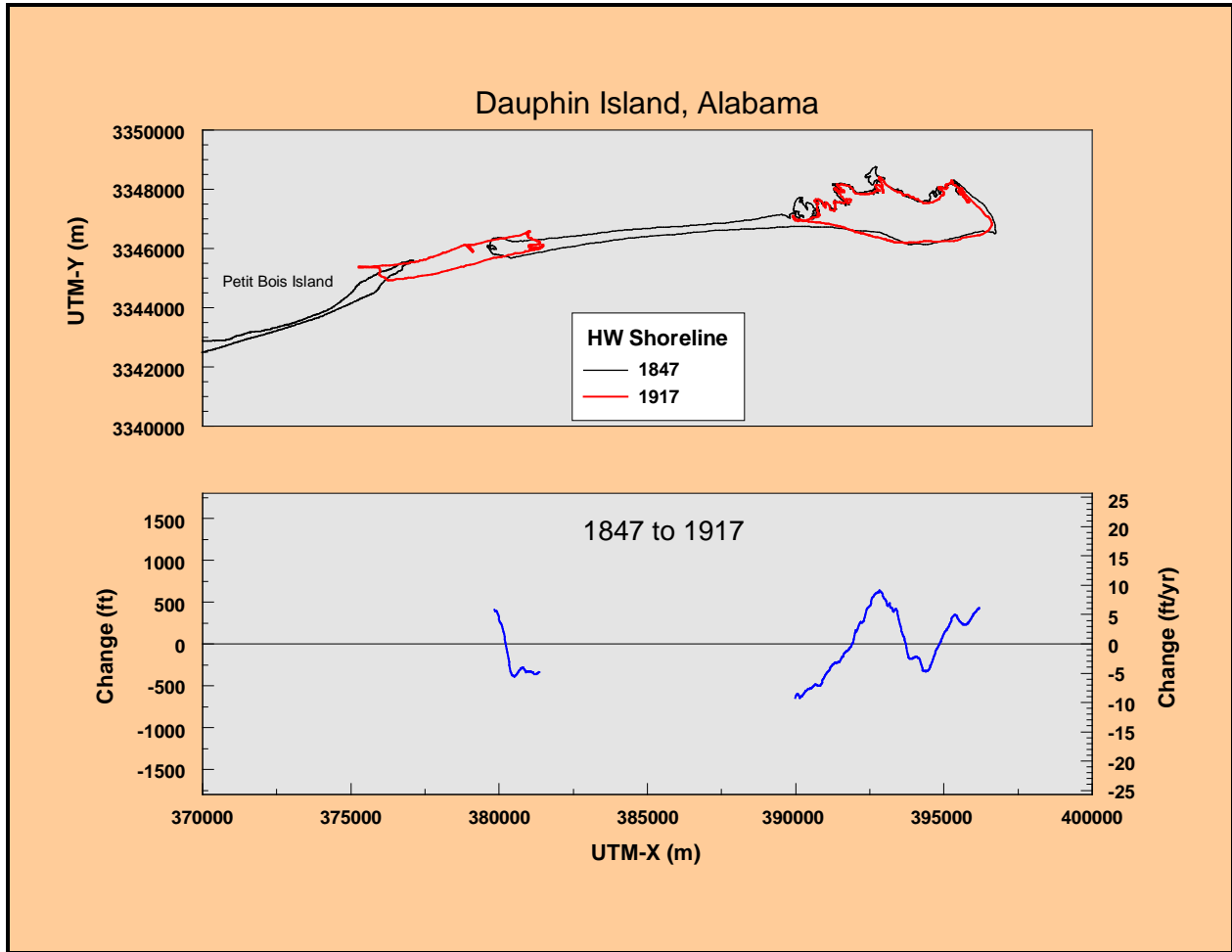


Figure x. Change in historical shoreline position for Dauphin Island, 1847 to 1917.

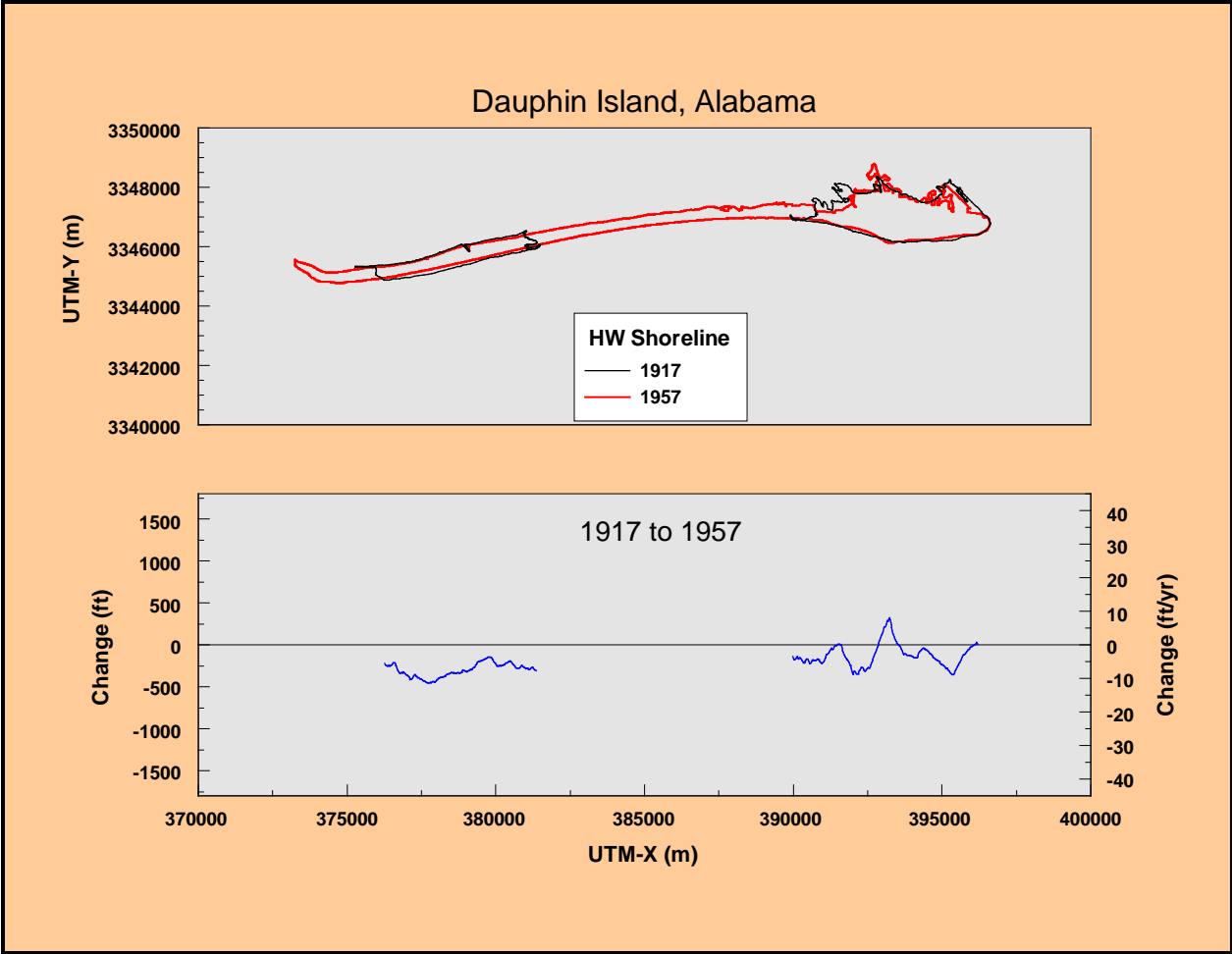


Figure x. Change in historical shoreline position for Dauphin Island, 1917 to 1957.

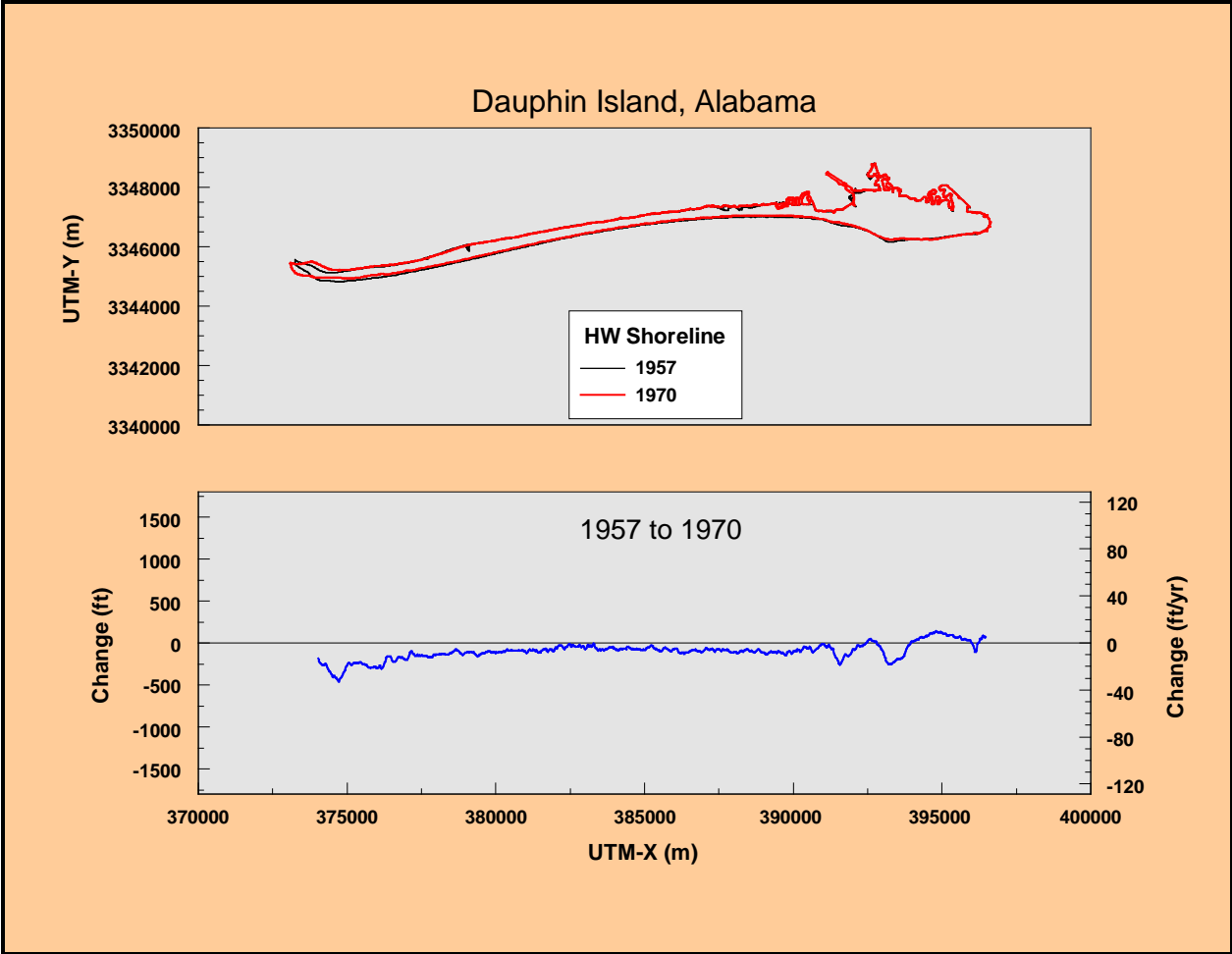


Figure x. Change in historical shoreline position for Dauphin Island, 1957 to 1970.

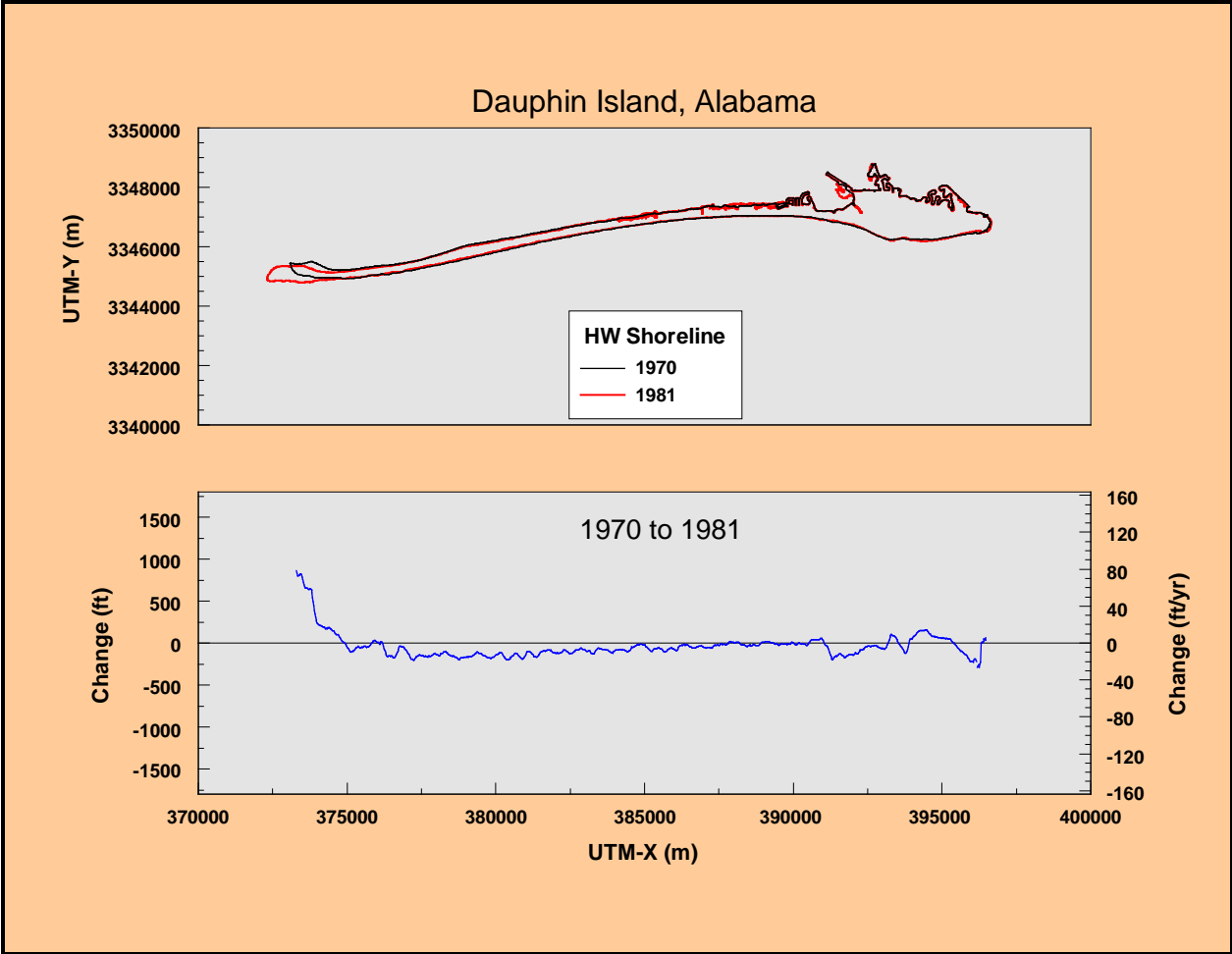


Figure x. Change in historical shoreline position for Dauphin Island, 1970 to 1981.

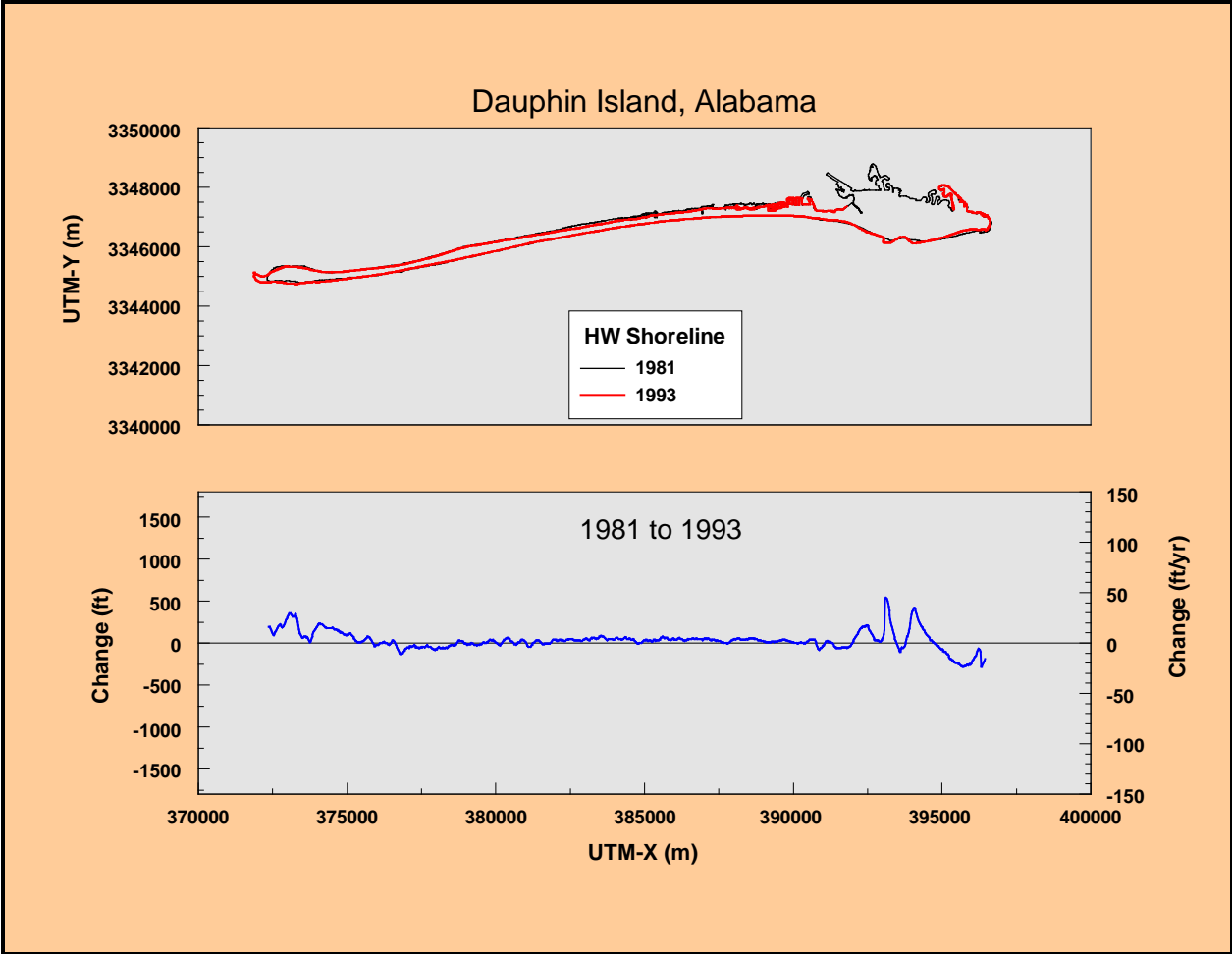


Figure x. Change in historical shoreline position for Dauphin Island, 1981 to 1993.



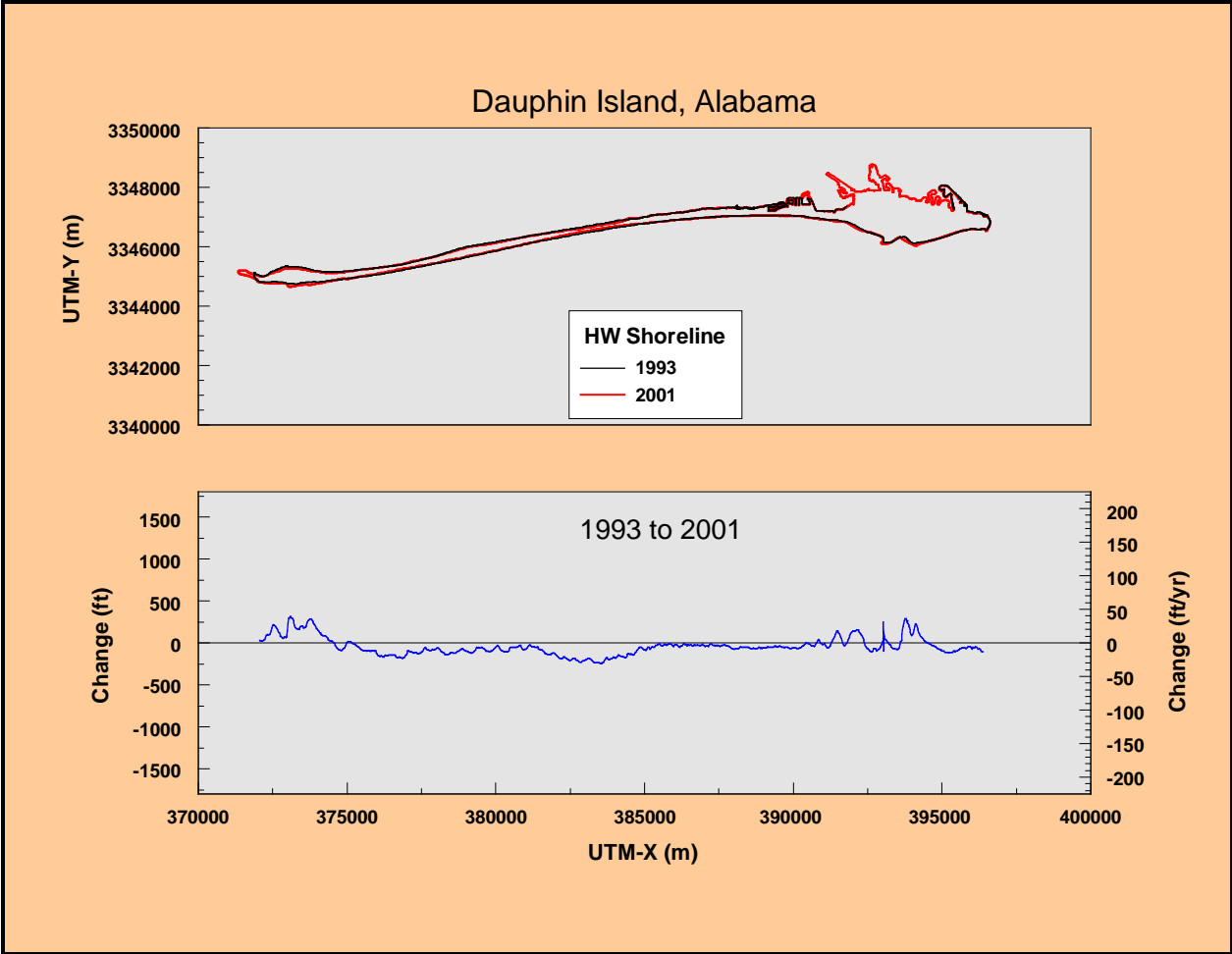


Figure x. Change in historical shoreline position for Dauphin Island, 1993 to 2001.

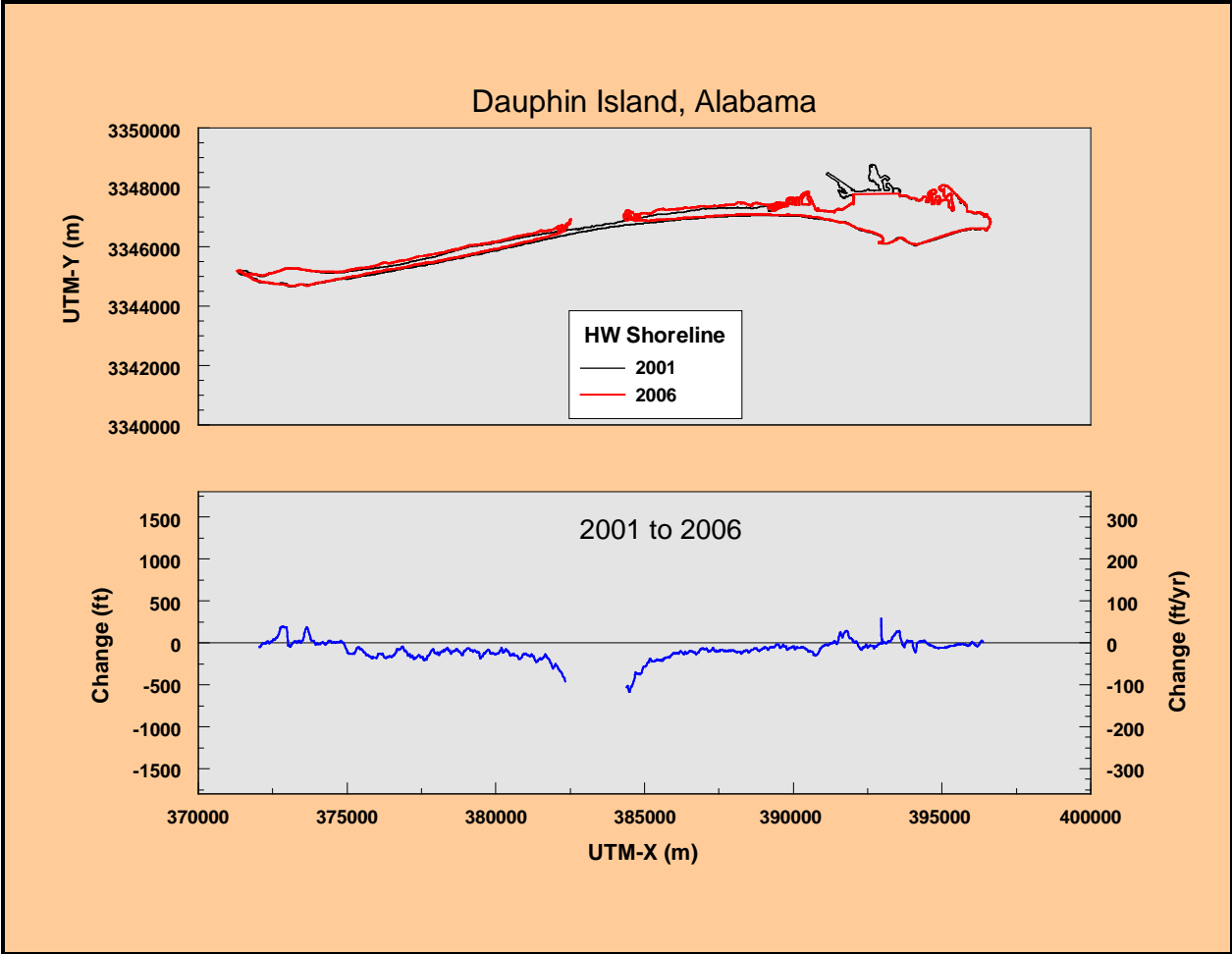


Figure x. Change in historical shoreline position for Dauphin Island, 2001 to 2006.

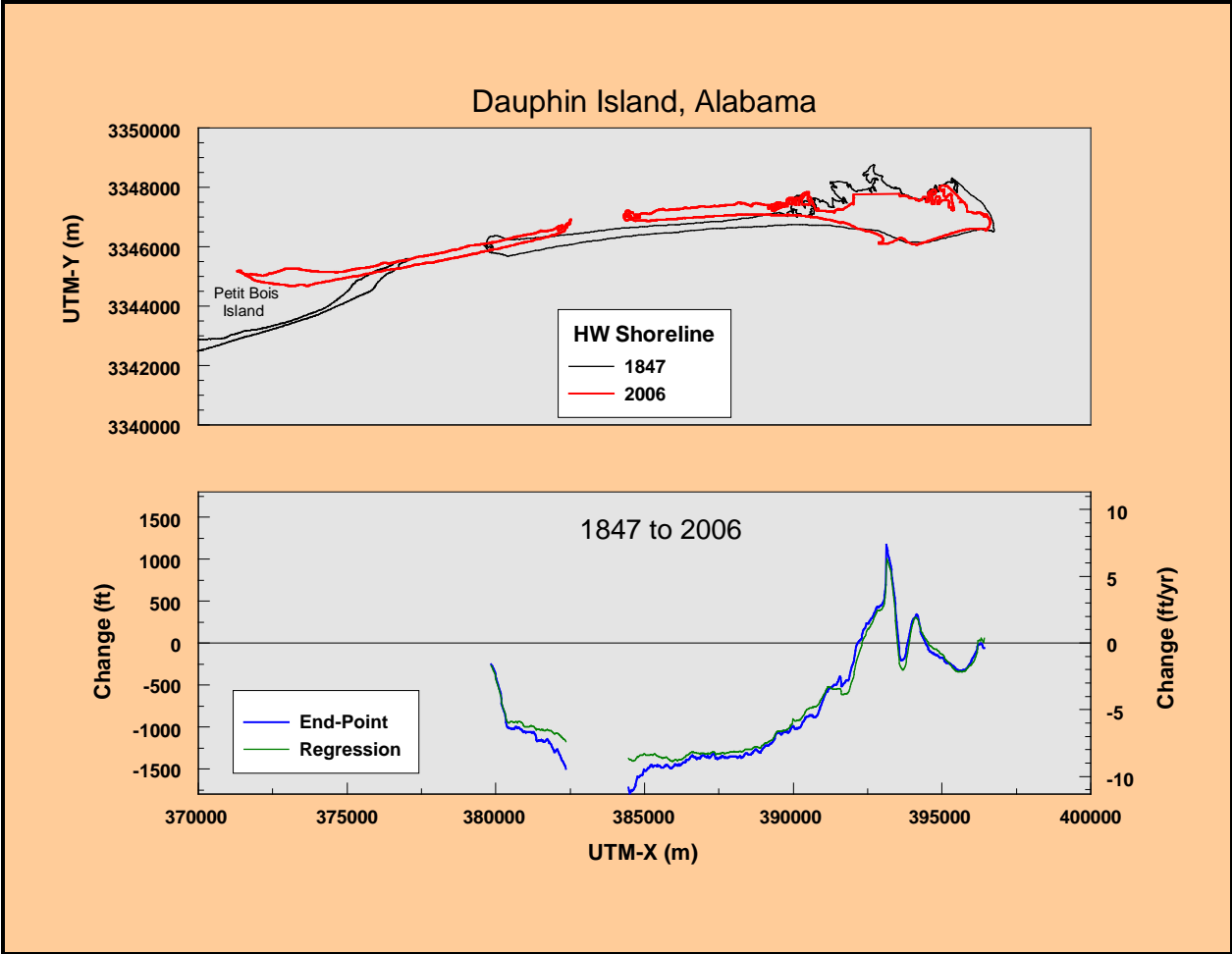


Figure x. Change in historical shoreline position for Dauphin Island, 1847 to 2006.

## Bathymetric Change

The primary goal of bathymetric change analysis is to identify regional sediment transport pathways and quantify net sediment volume changes associated with the historical evolution of nearshore morphology and adjacent beaches. Table 4 provides a summary of bathymetric data available for the Mississippi Sound area. Initial bathymetric surveys of the area were completed for the period 1847/56. Appendix B illustrates the location of field surveys as depicted on maps. All data have been compiled within a GIS framework, so metadata regarding coordinate system, vertical datum, measurement units, and timing of data collection are provided in the attribute table for each data set. These data, in addition to recorded shoreline changes, have been used to quantify regional sediment dynamics throughout the study area and evaluate the historical sediment budget for the period 1917/21 to 1960/71.

<b>Date</b>	<b>Data Source</b>	<b>Comments and Map Numbers</b>
1847/56	USC&GS Hydrographic Sheets 1:20,000	First regional bathymetric survey within the study area. 1847 - H-00191; 1847/48 - H-00192; 1848 - H-00193, H-00194; 1851 - H-00256, H-00261; 1852 - H-00329; 1853 - H-00328, H-00365; 1854 - H-00430; 1855 - H-00485, H-00488, H-00489; 1856 - H-00546.
1916/20	USC&GS Hydrographic Sheets 1:40,000 (all others) 1:80,000 (H-4171)	Second regional bathymetric survey in the study area. 1916/17 - H-03960; 1917 - H-04000; 1917/18 - H-04020, H-04021, H-04023; 1920 - H-04171.
1960/71	USC&GS Hydrographic Sheets 1:10,000 (H-08524, H-08525, H-08560, H-08561, H-08562, H-08642, H-08643, H-08644, H-08645, H-08646, H-08649 to 08652, H-08922, H-08923, H-08925, H-08970, H-09156, H-09177) 1:20,000 (all others)	Third regional bathymetric survey in the study area. 1960 - H-08524, H-08525, H-08562, H-08563); 1960/61 - H-08560, H-08561; 1961 - H-08642; 1961/62 - H-8643 to 08648; 1962 - H-08649 to 08652; 1966/68 - H-08922, H08923; 1967/68 - H-08924, H-08925; 1968 - 08970, H-08971; 1968/69 - H-09004; 1970 - 09103, H-09109; H-09028, H-09156, H-09177; 1971 - H-09200.
1984/89	USC&GS Hydrographic Sheets 1:20,000 (D-00079, F-00324, H-10179, H-10208, H-10226, H-10247, H-10261) 1:40,000 (D-00078, H-10206) 1:80,000 (D-00065)	Survey covering eastern portion of the study area; 1984/87 - D-00065, D-00078; 1985/87 - H-10179; 1985 - H-10206, H-10208; 1986/88 - H-10226; 1987 - H-10247, H-10261; 1988 - D-00079; 1989 - F-00324.

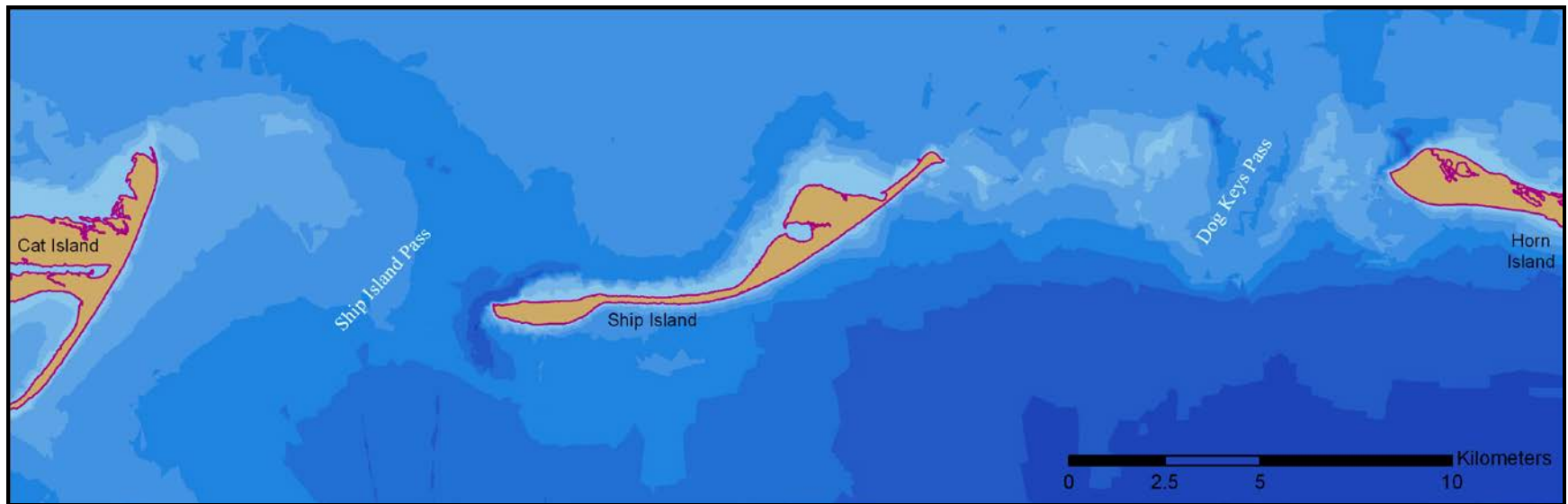
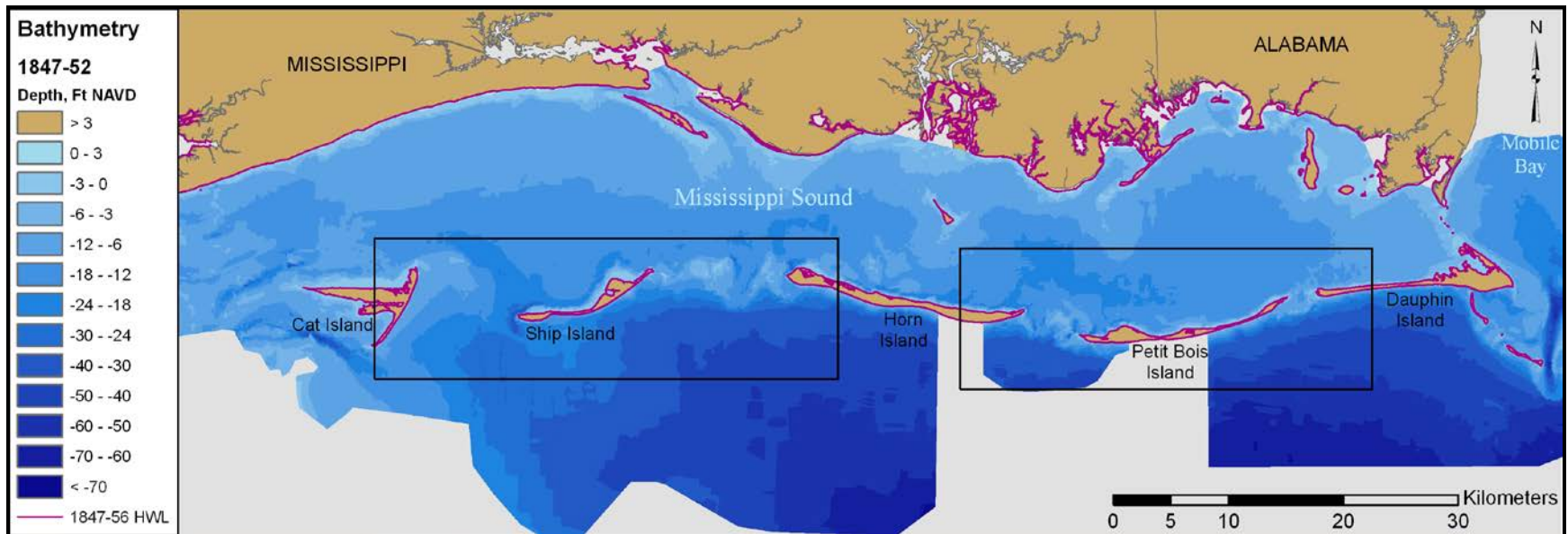


Figure x. 1847/52 bathymetric surface for the Mississippi Sound study area - Cat Island to western Horn Island.

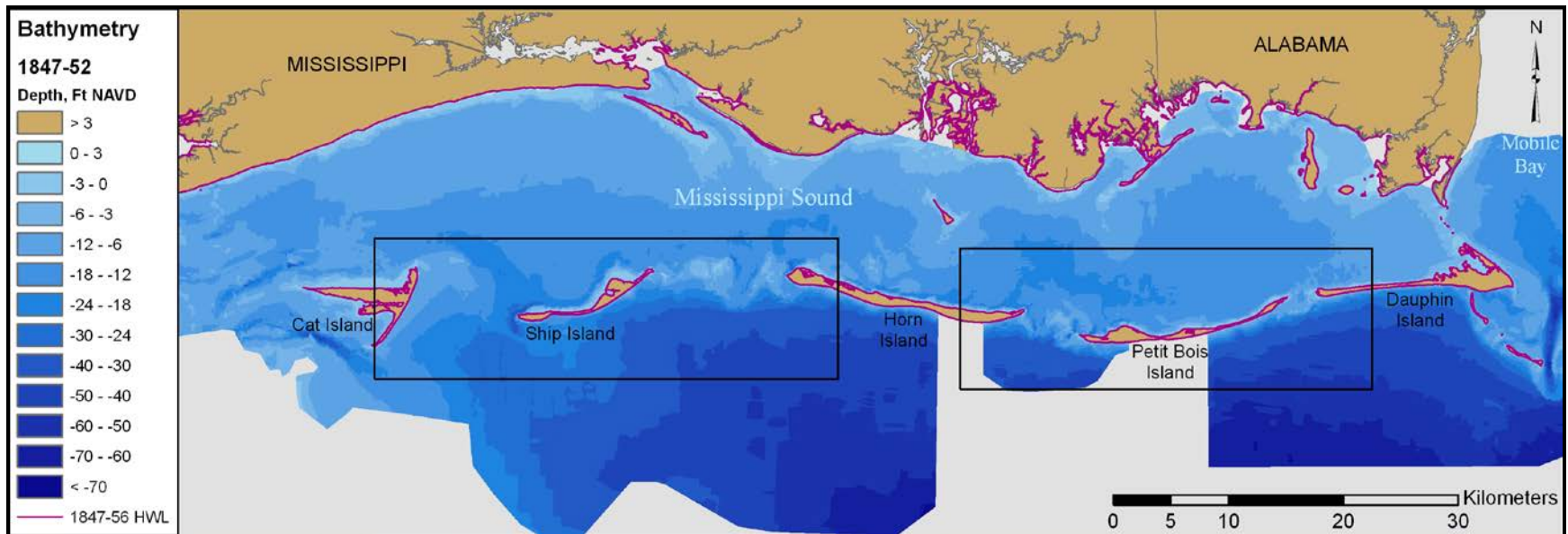


Figure x. 1847/52 bathymetric surface for the Mississippi Sound study area – Horn Island to western Dauphin Island.



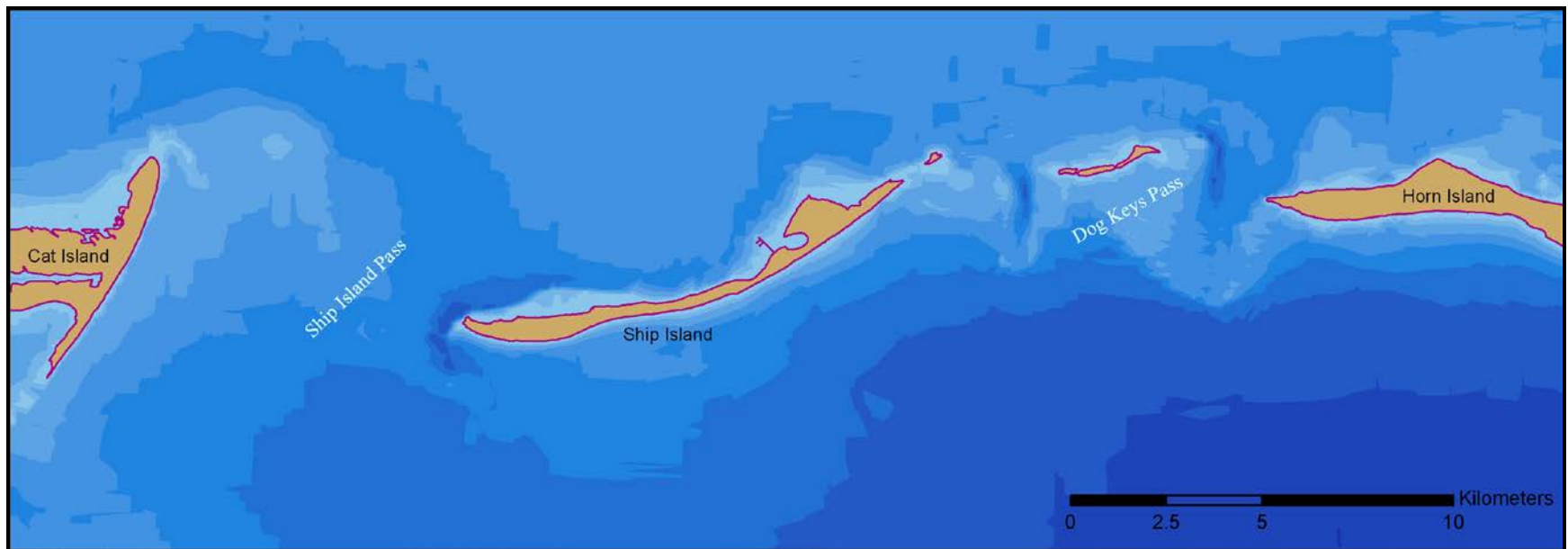
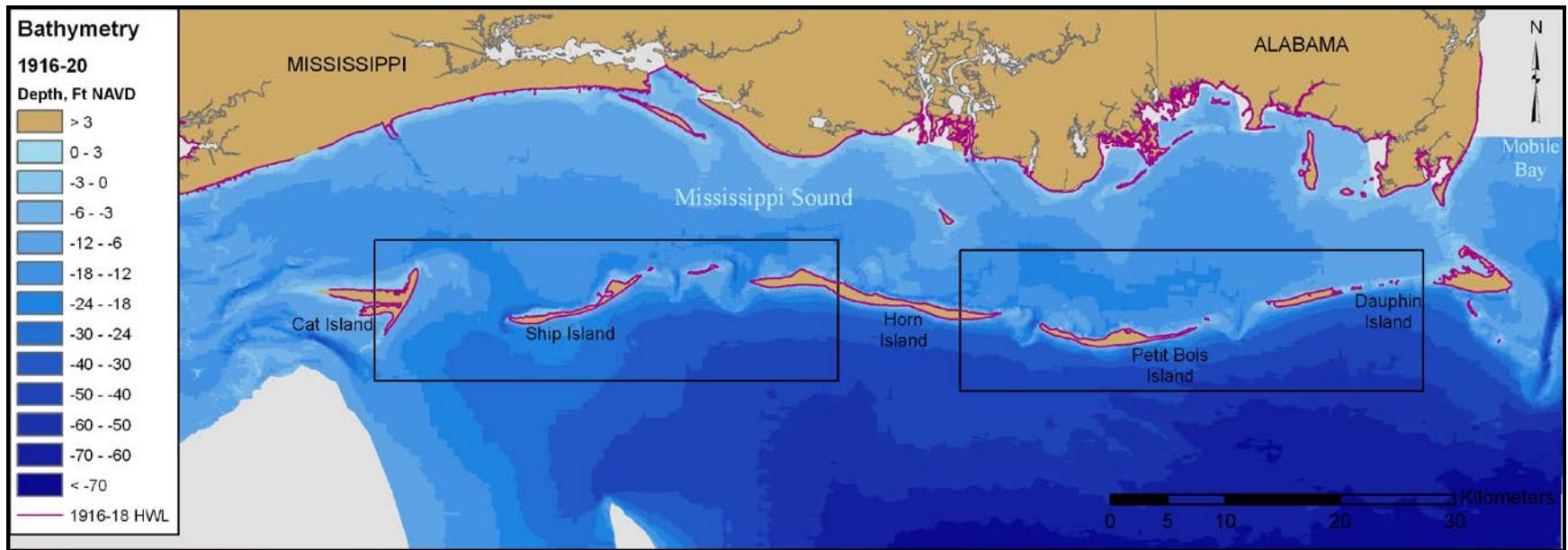


Figure x. 1916/20 bathymetric surface for the Mississippi Sound study area - Cat Island to western Horn Island.

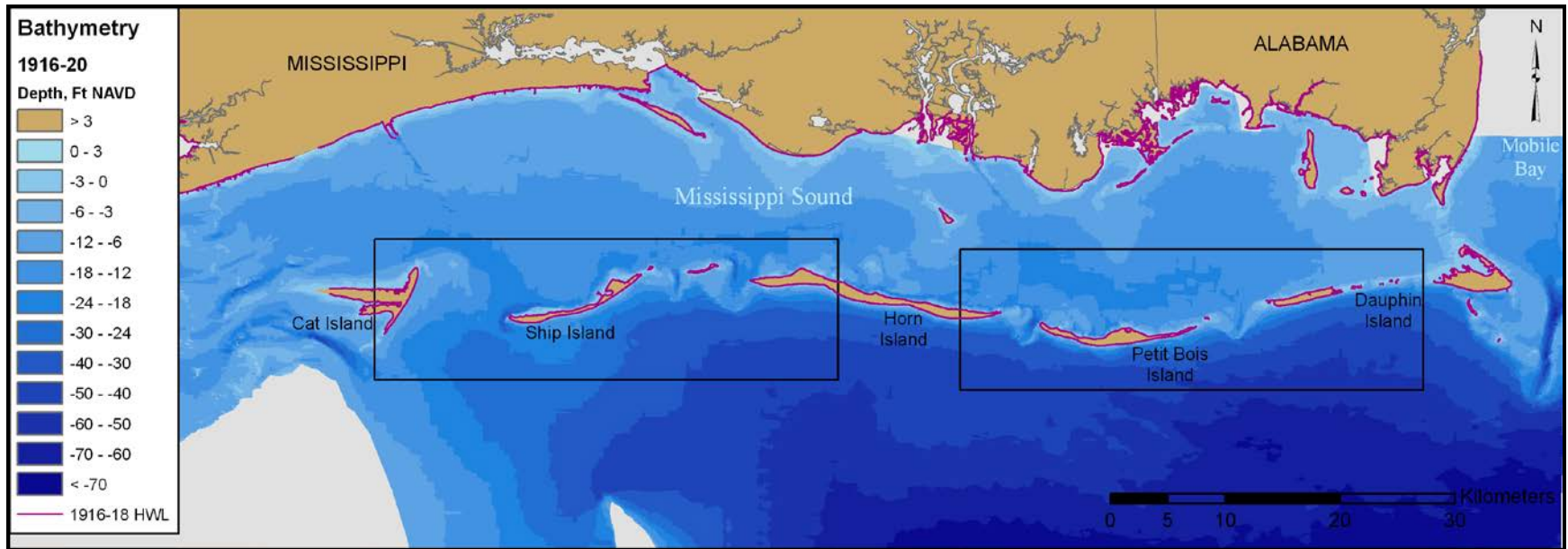


Figure x. 1916/20 bathymetric surface for the Mississippi Sound study area – Horn Island to western Dauphin Island.



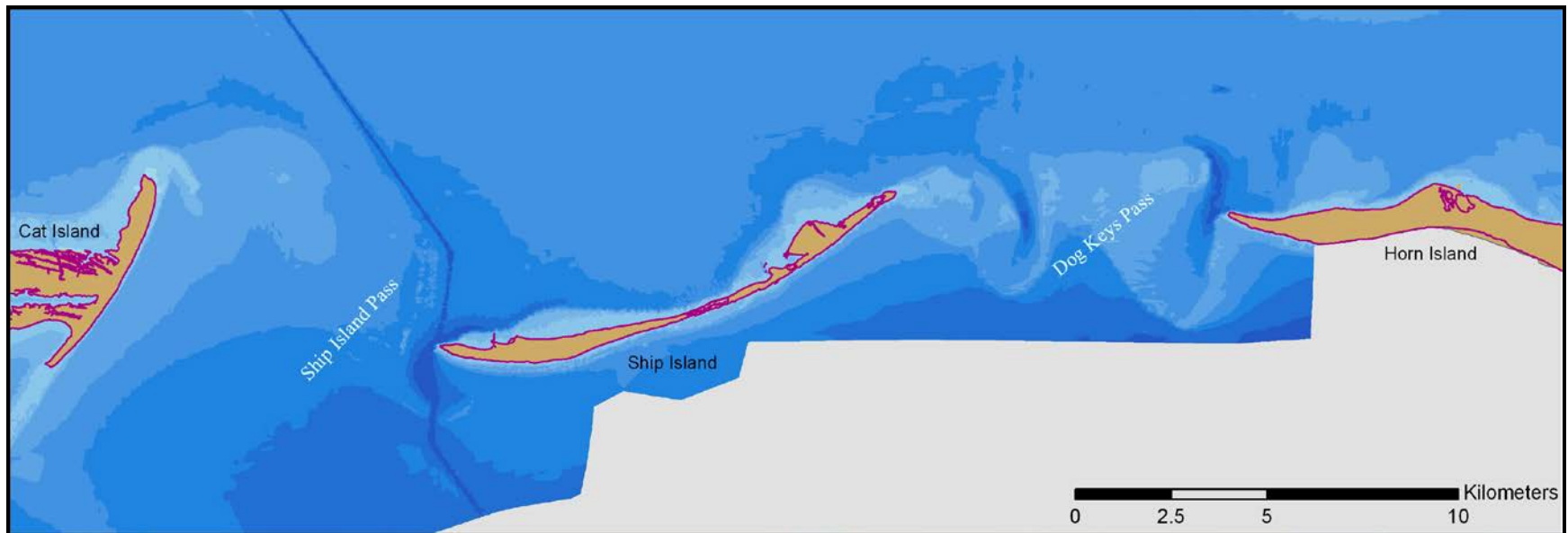
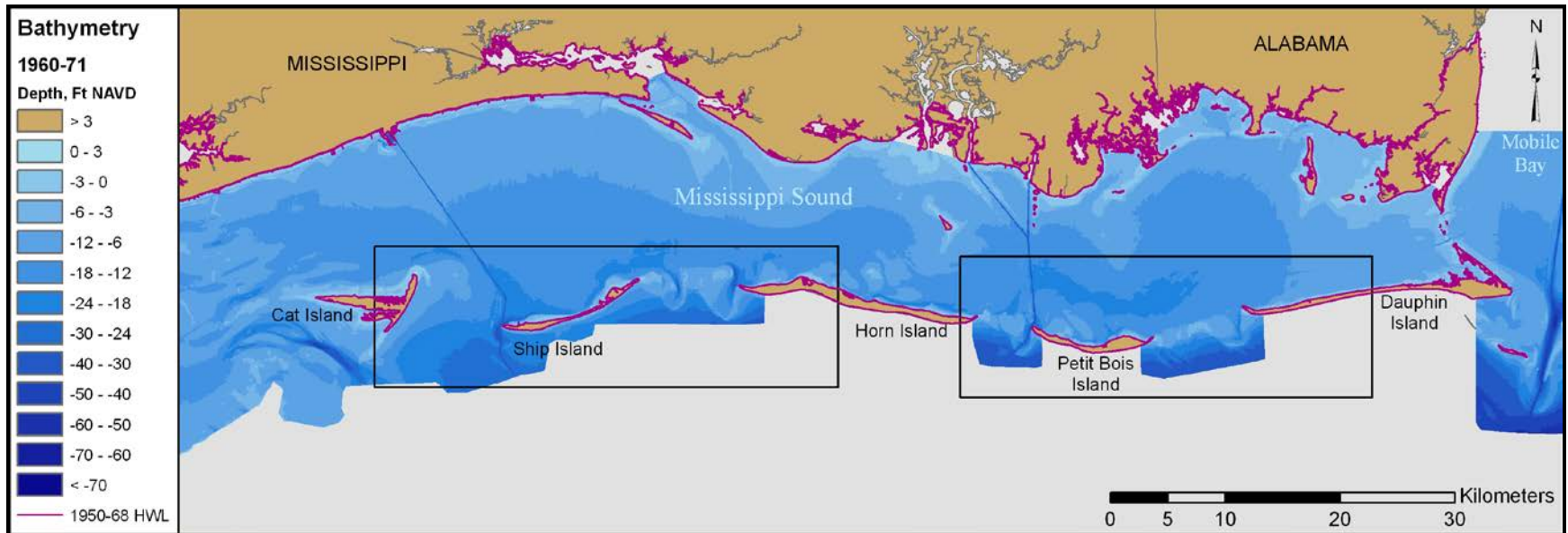


Figure x. 1960/71 bathymetric surface for the Mississippi Sound study area - Cat Island to western Horn Island.

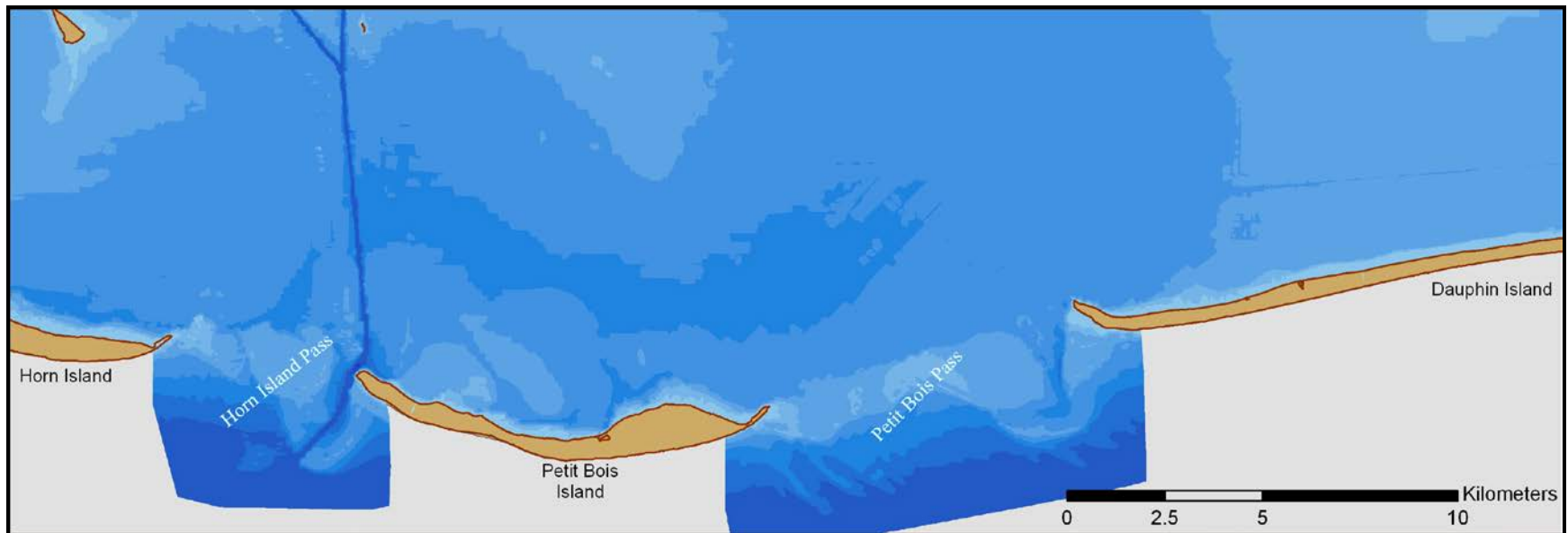
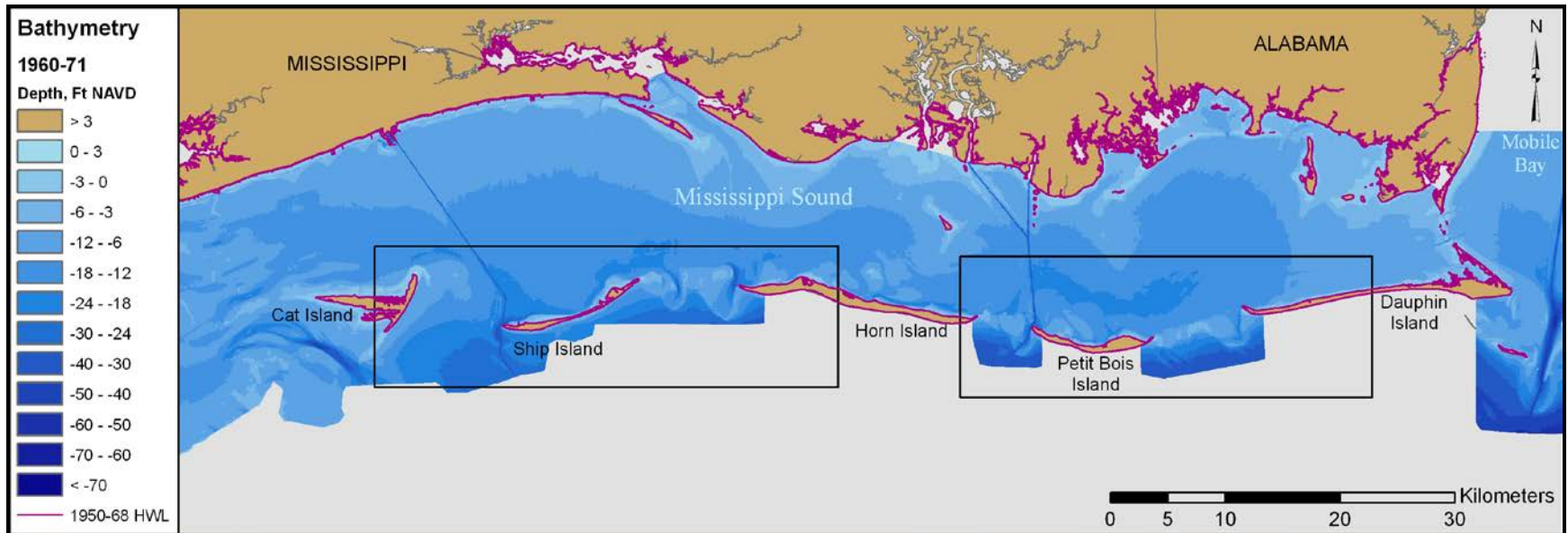


Figure x. 1960/71 bathymetric surface for the Mississippi Sound study area – Horn Island to western Dauphin Island.



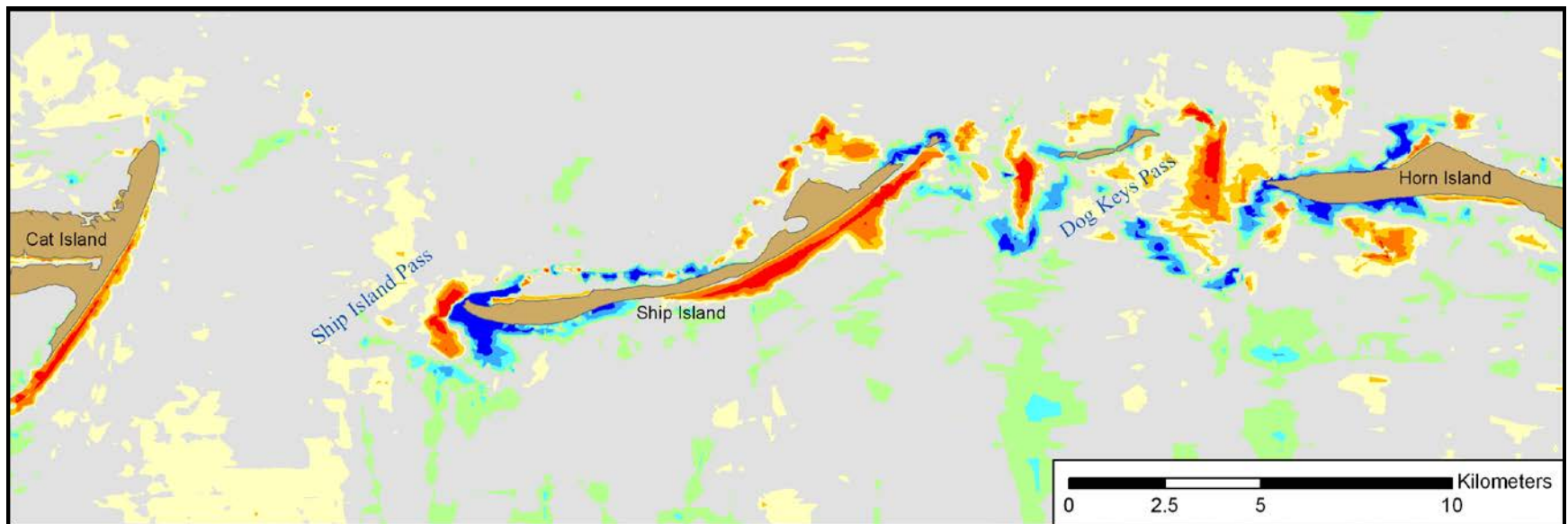
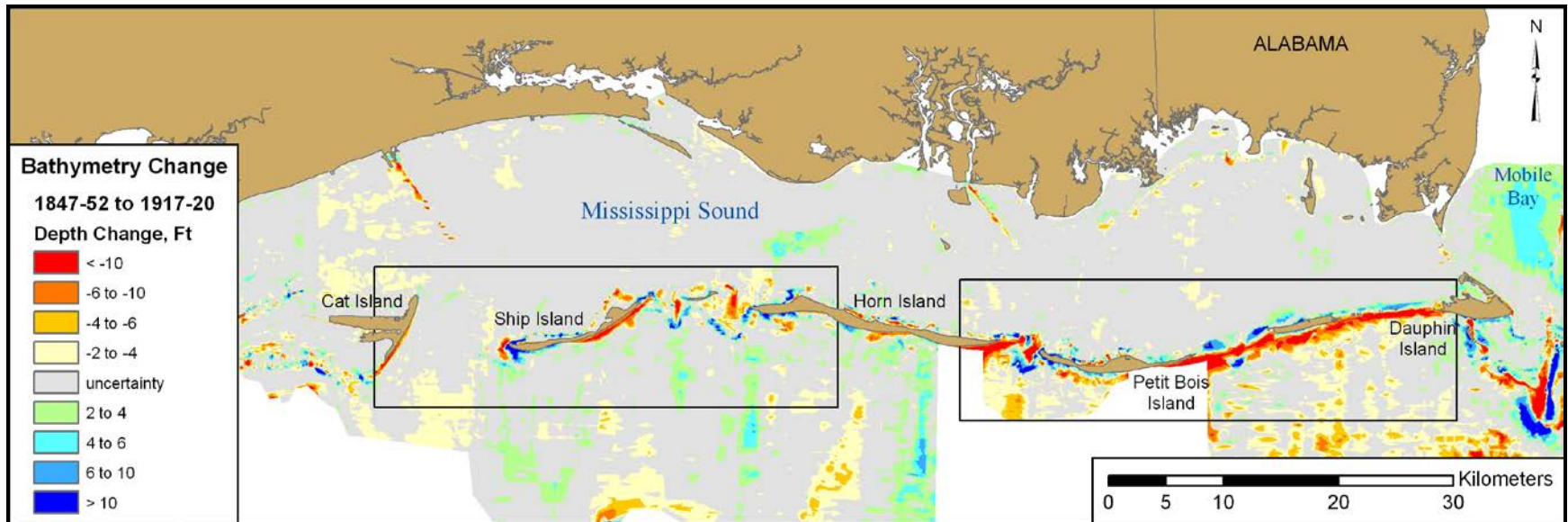


Figure x. Bathymetric change (1847/52 to 1917/20) for the Mississippi Sound study area - Cat Island to Horn Island.

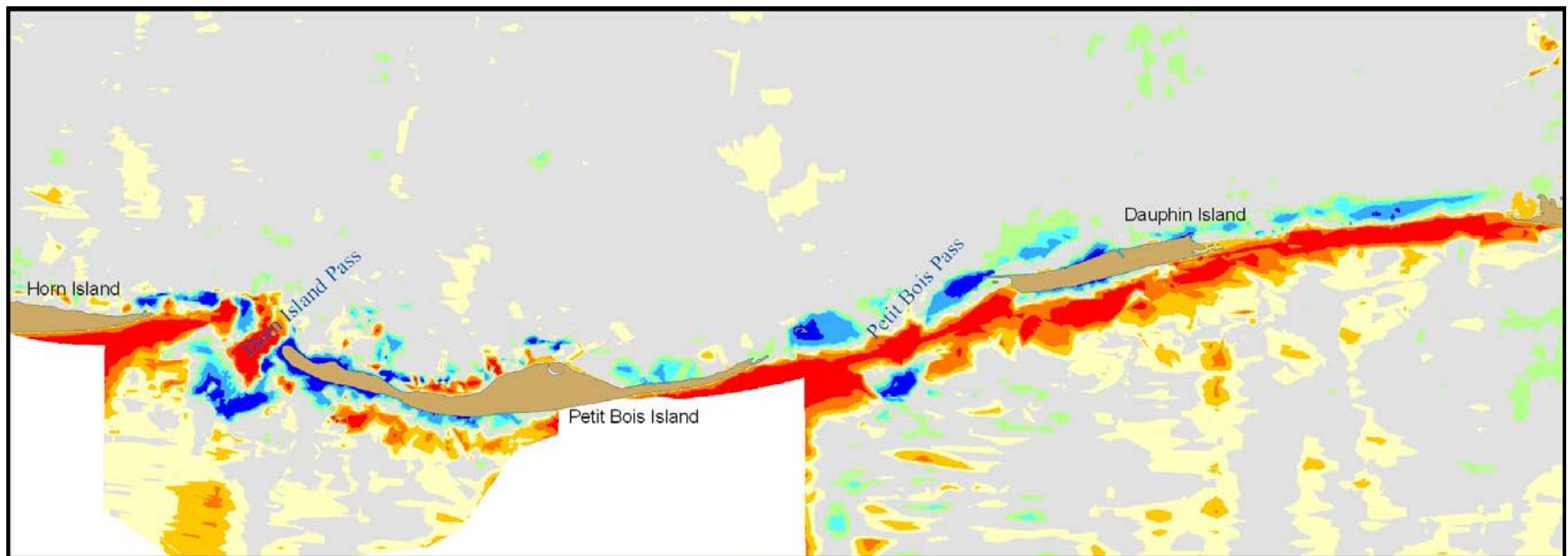
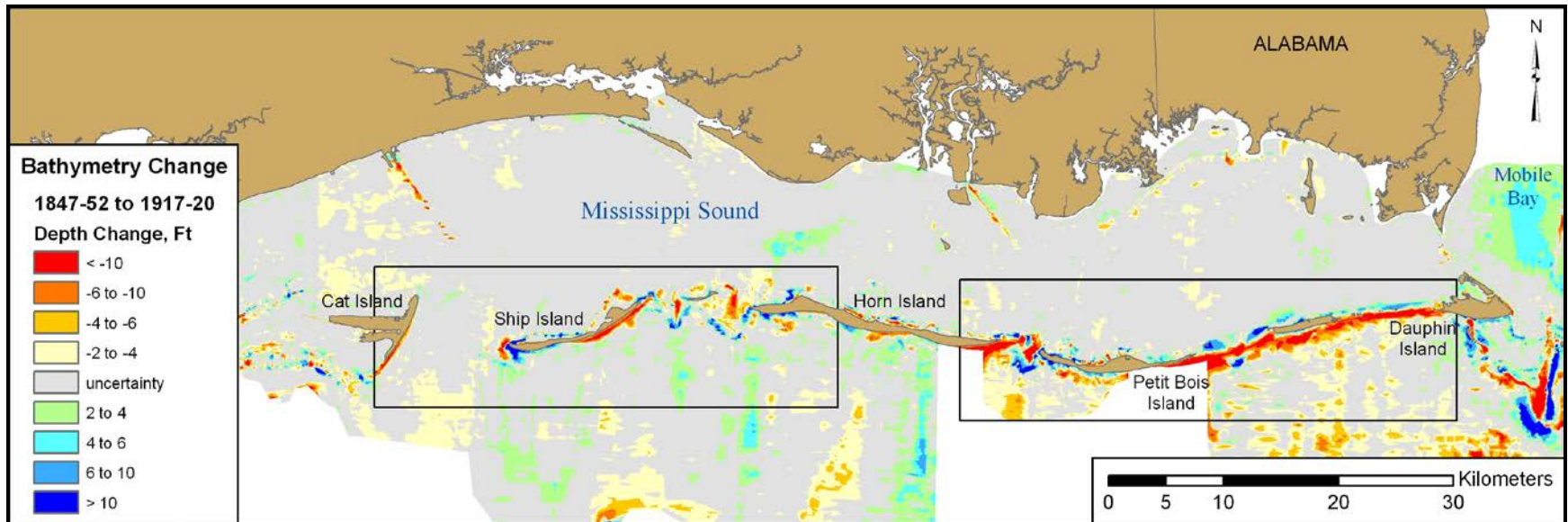


Figure x. Bathymetric change (1847/52 to 1917/20) for the Mississippi Sound study area - Horn Island to Dauphin Island.



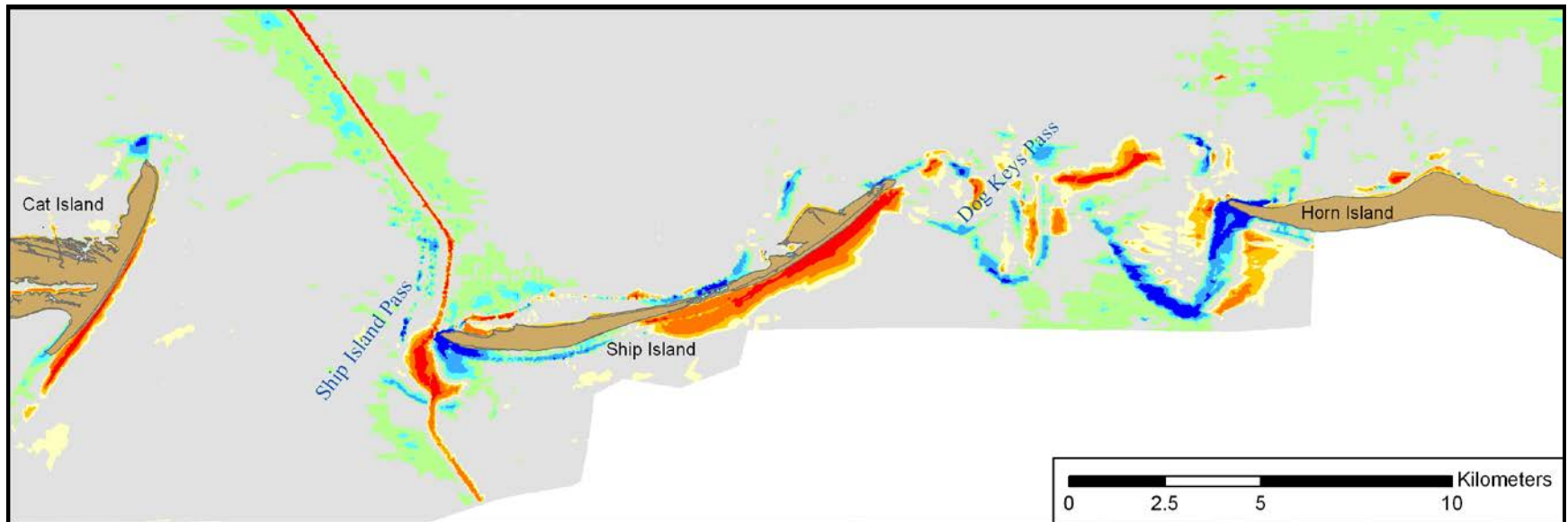
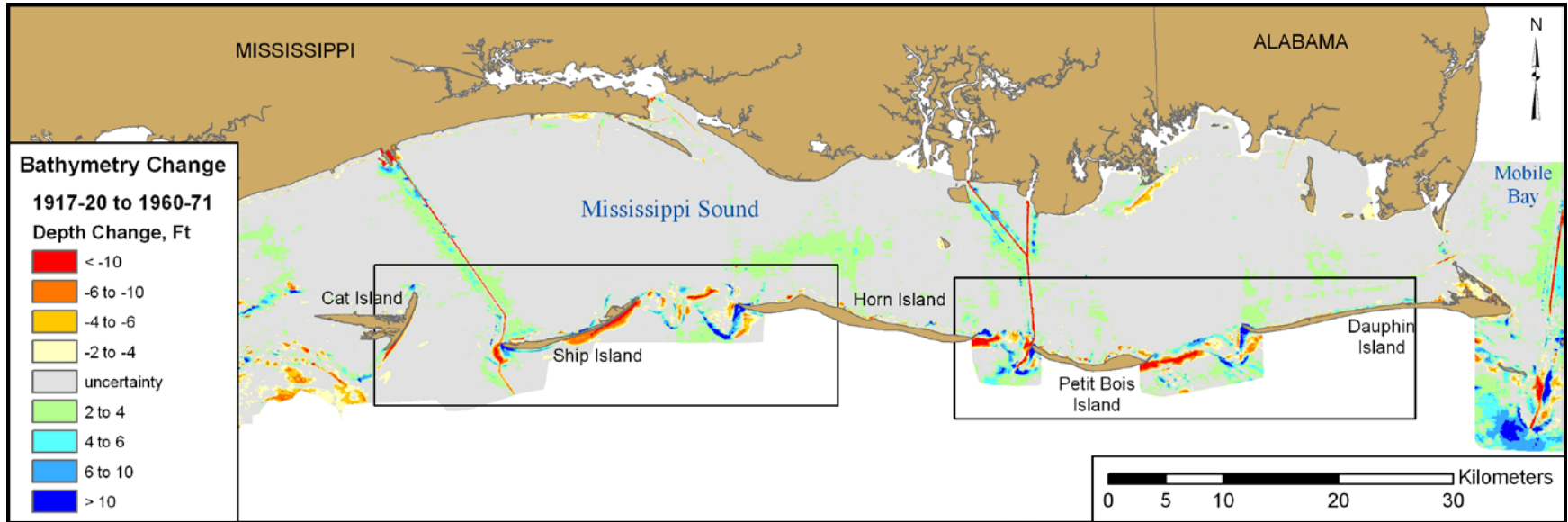


Figure x. Bathymetric change (1917/20 to 1960/71) for the Mississippi Sound study area - Cat Island to Horn Island.

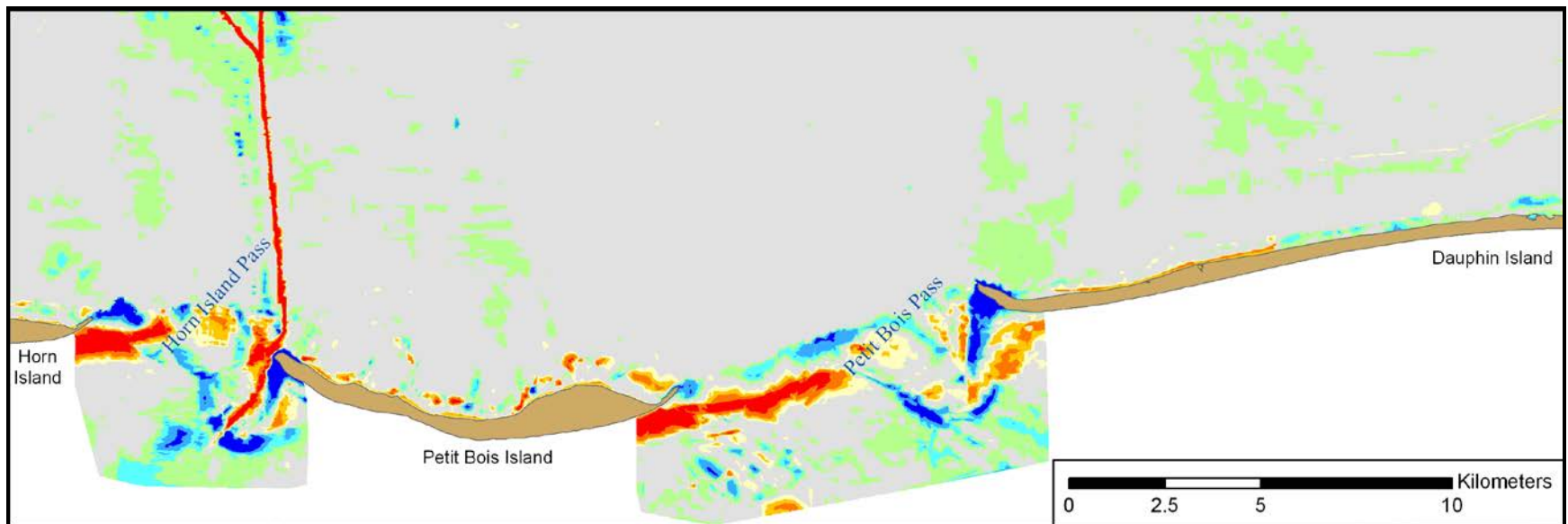
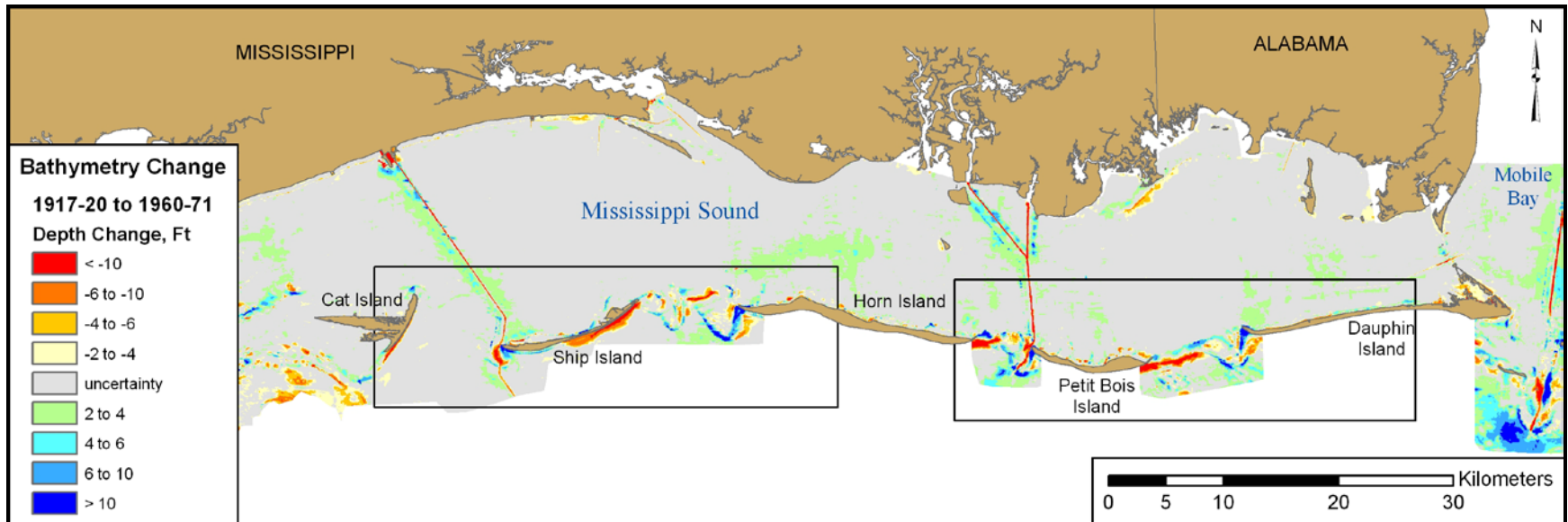


Figure x. Bathymetric change (1917/20 to 1960/71) for the Mississippi Sound study area - Horn Island to Dauphin Island.

## Sediment Budget

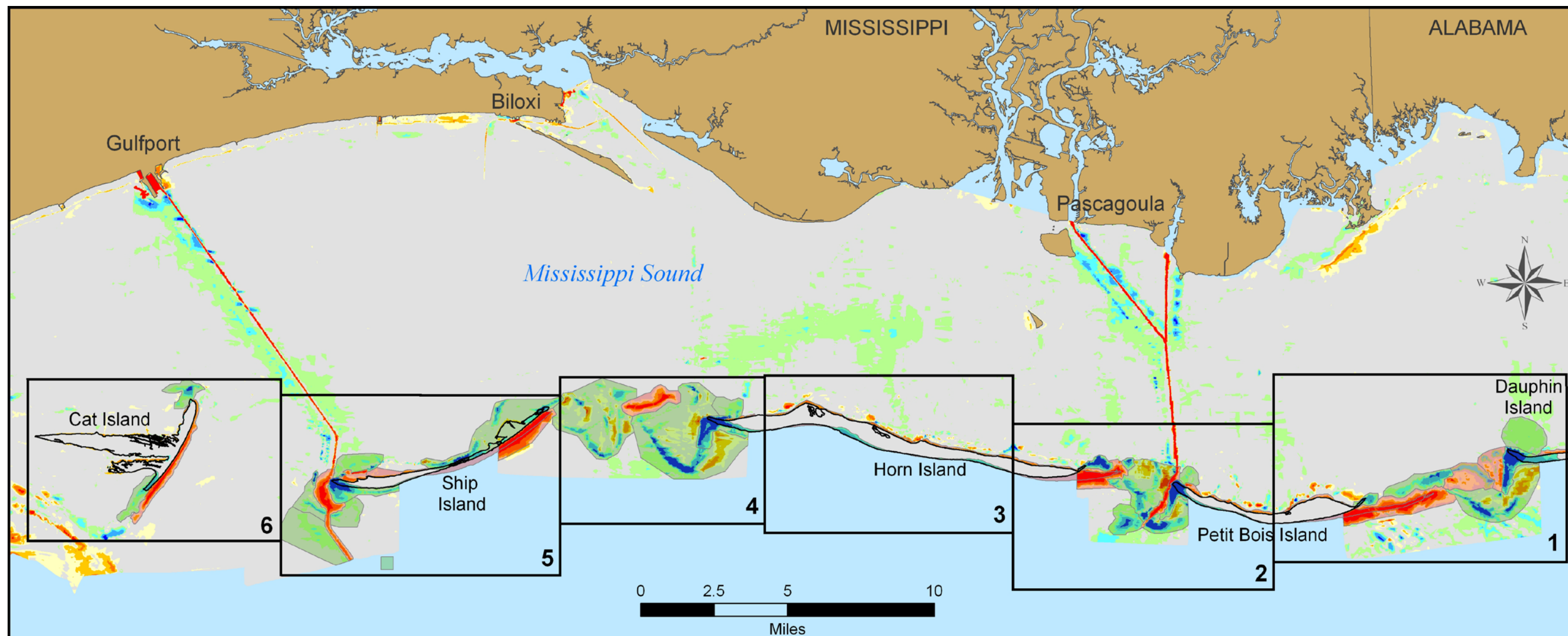


Figure x. Sediment budget compartments for the Mississippi Sound study area.



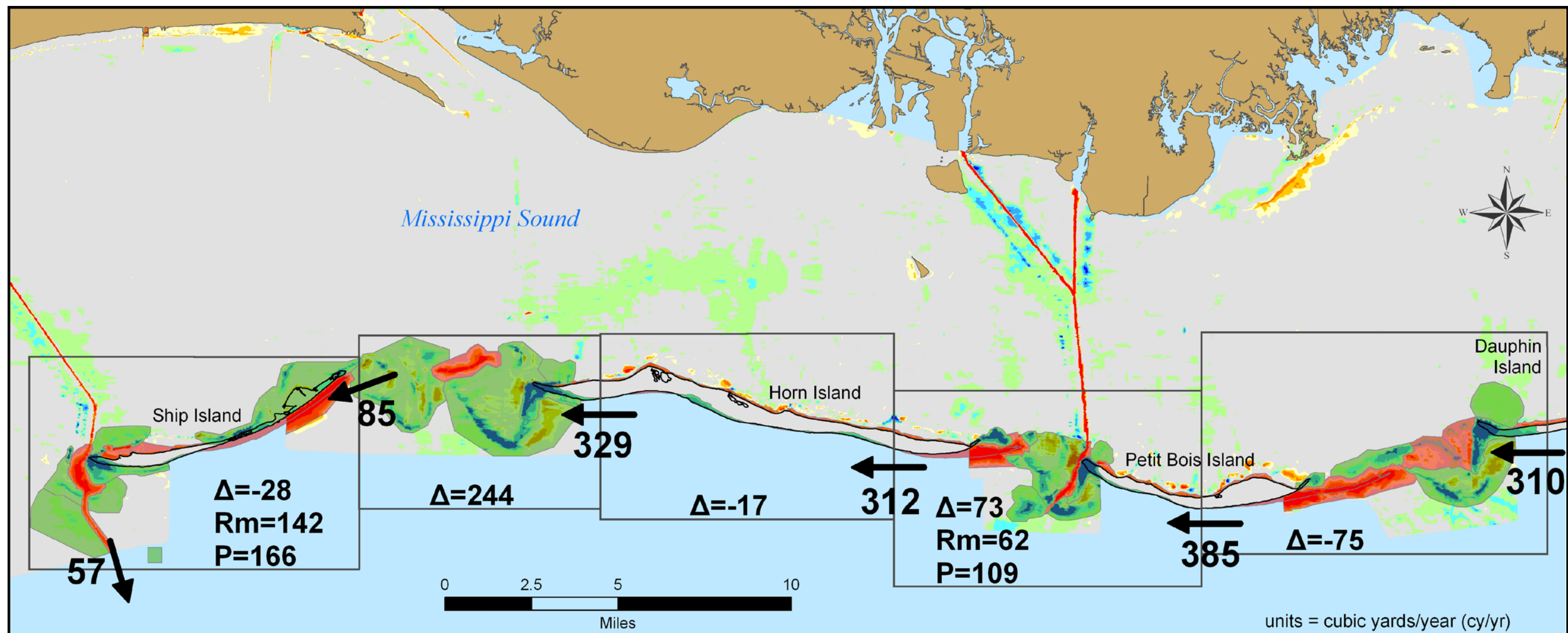


Figure x. Macro-scale sediment budget for the Mississippi Sound study area.

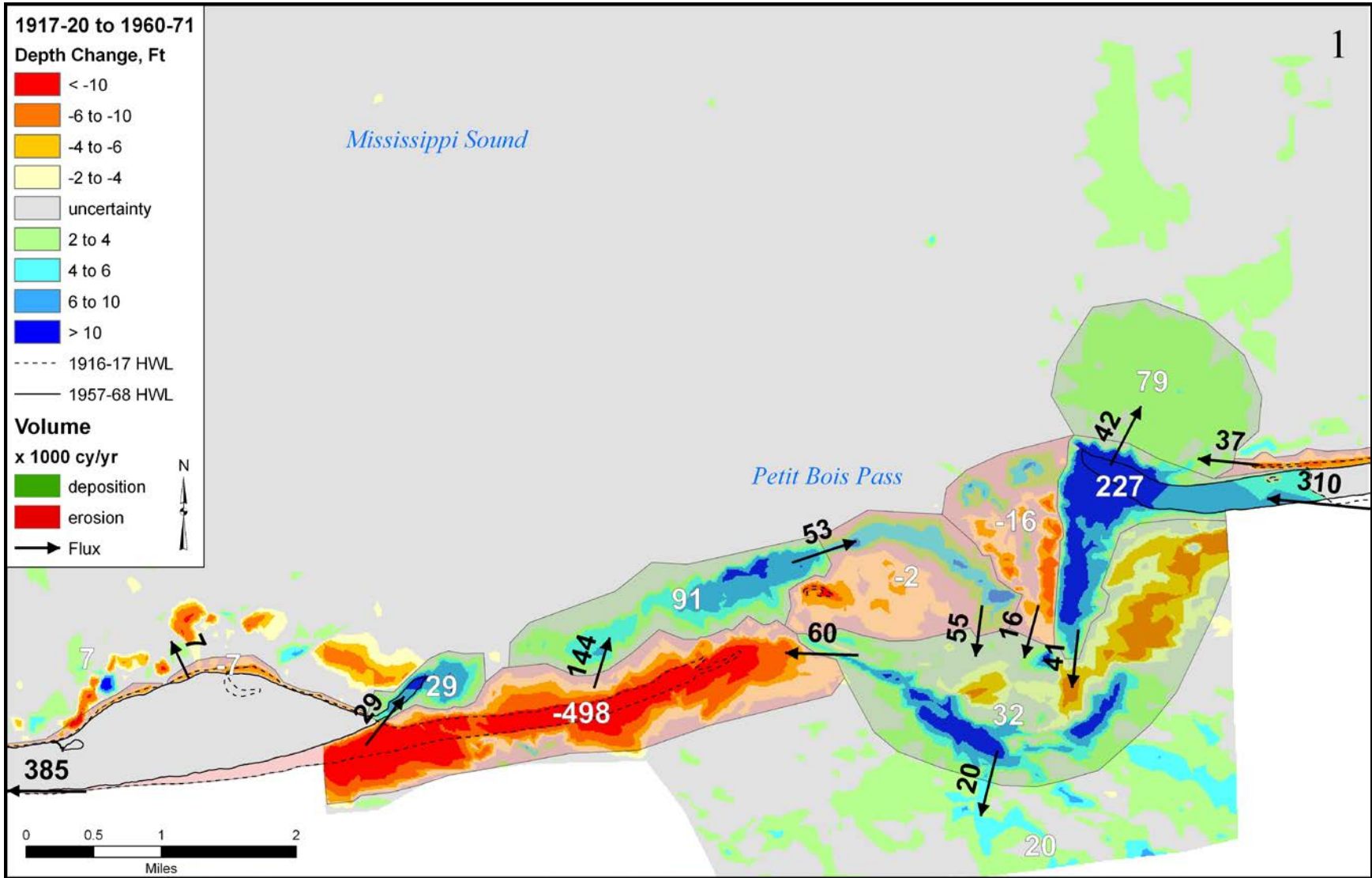


Figure x. Sediment transport pathways and quantities for Compartment 1.

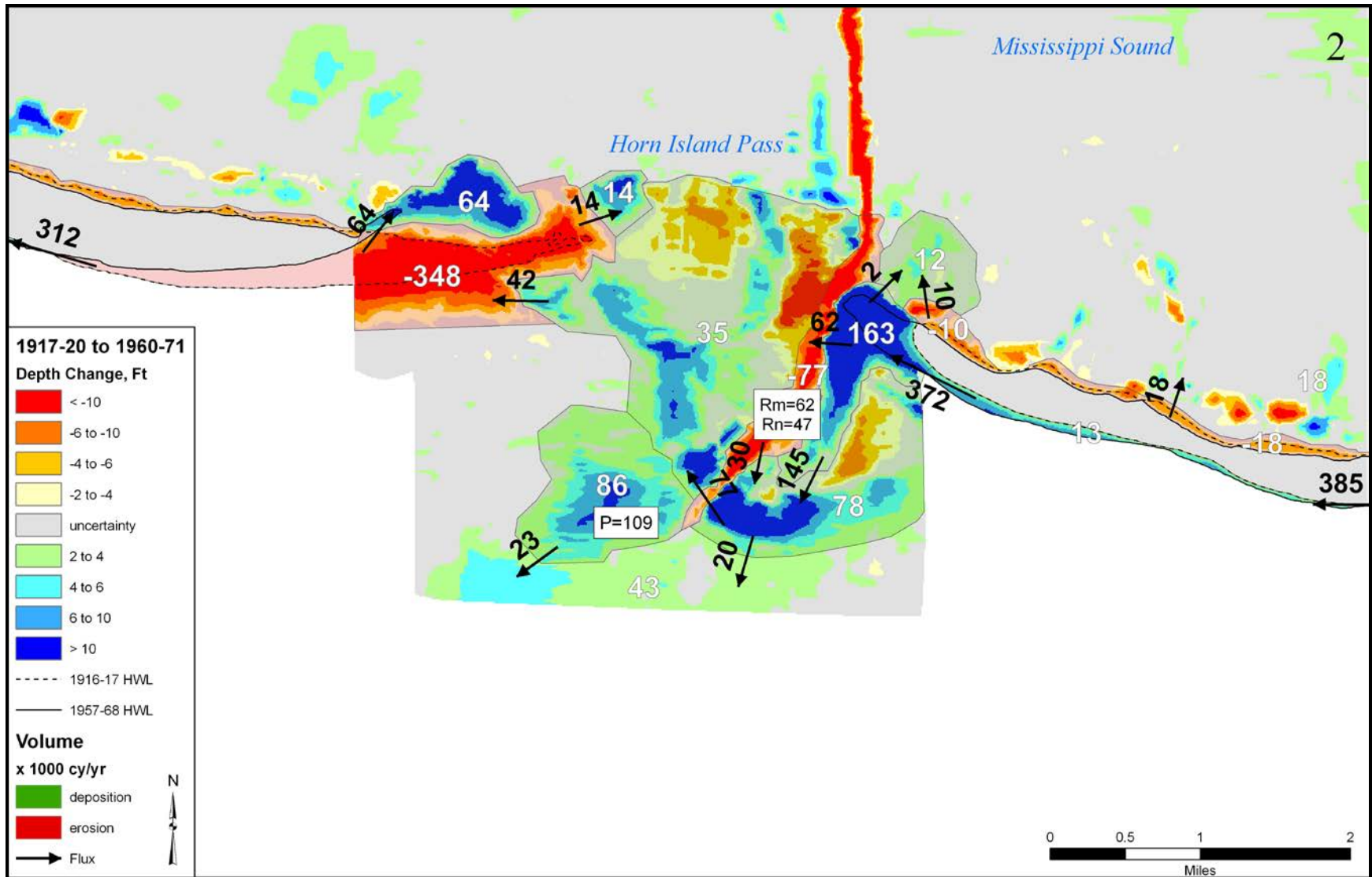


Figure x. Sediment transport pathways and quantities for Compartment 2.

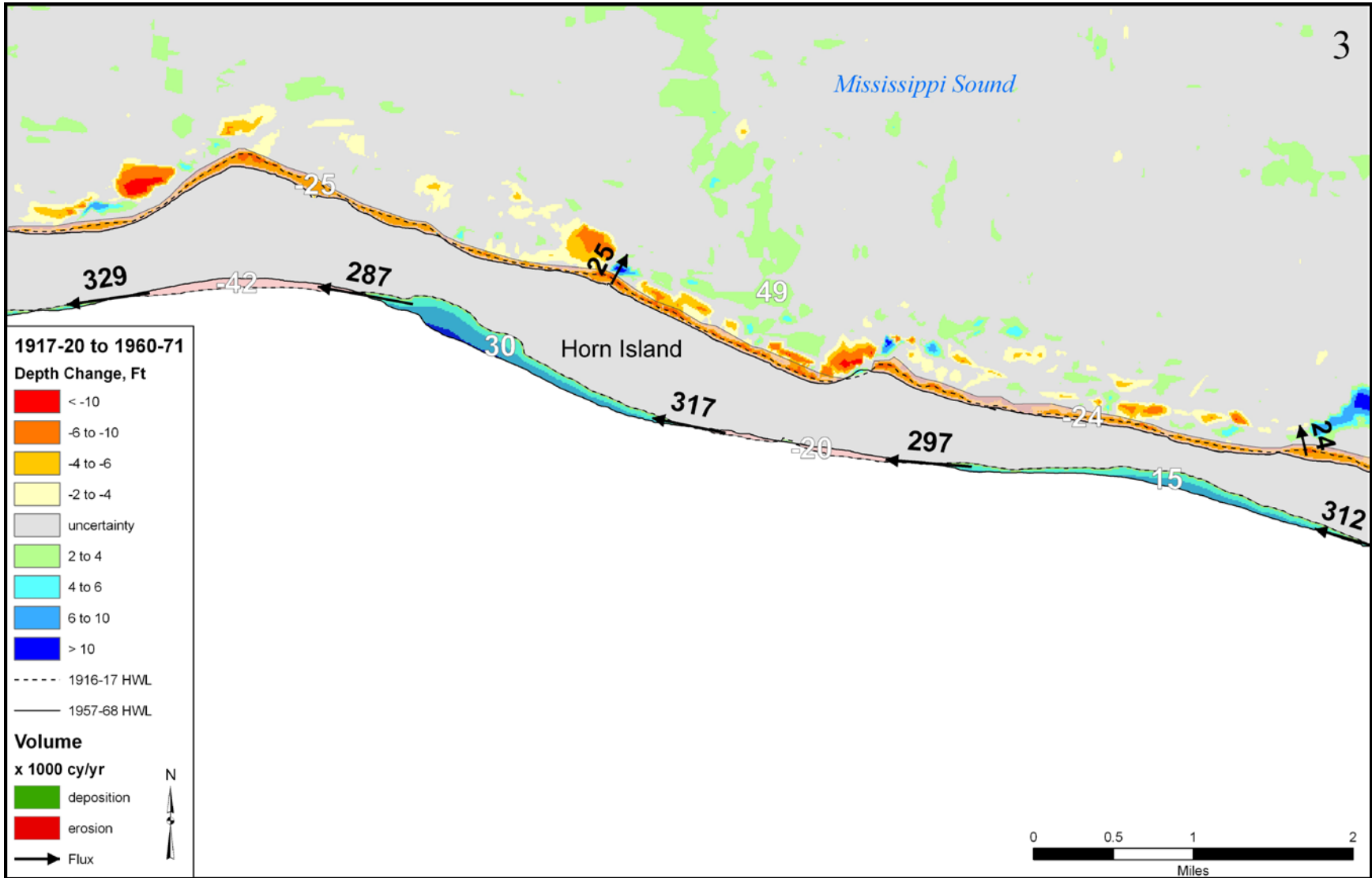


Figure x. Sediment transport pathways and quantities for Compartment 3.



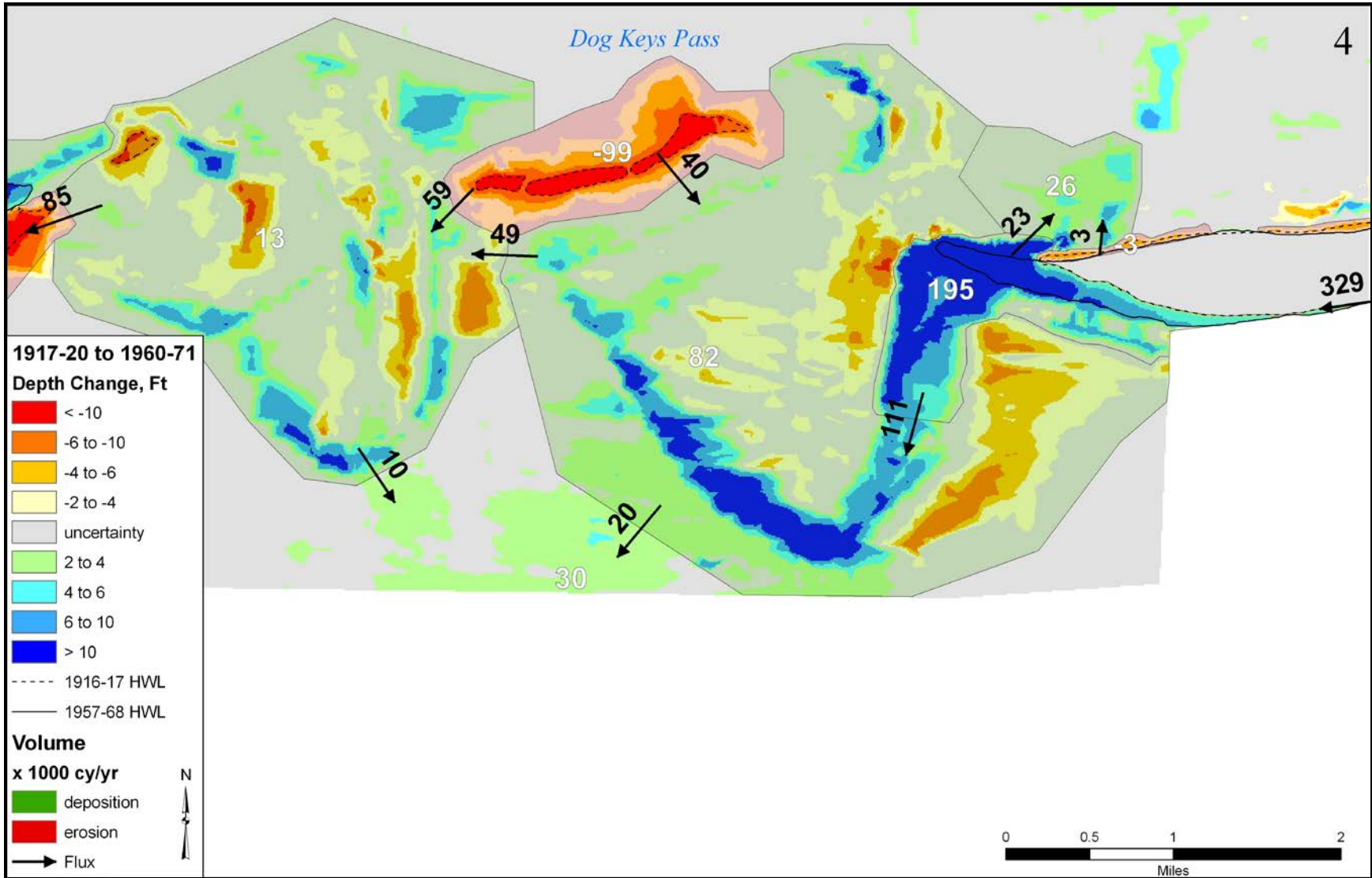


Figure x. Sediment transport pathways and quantities for Compartment 4.

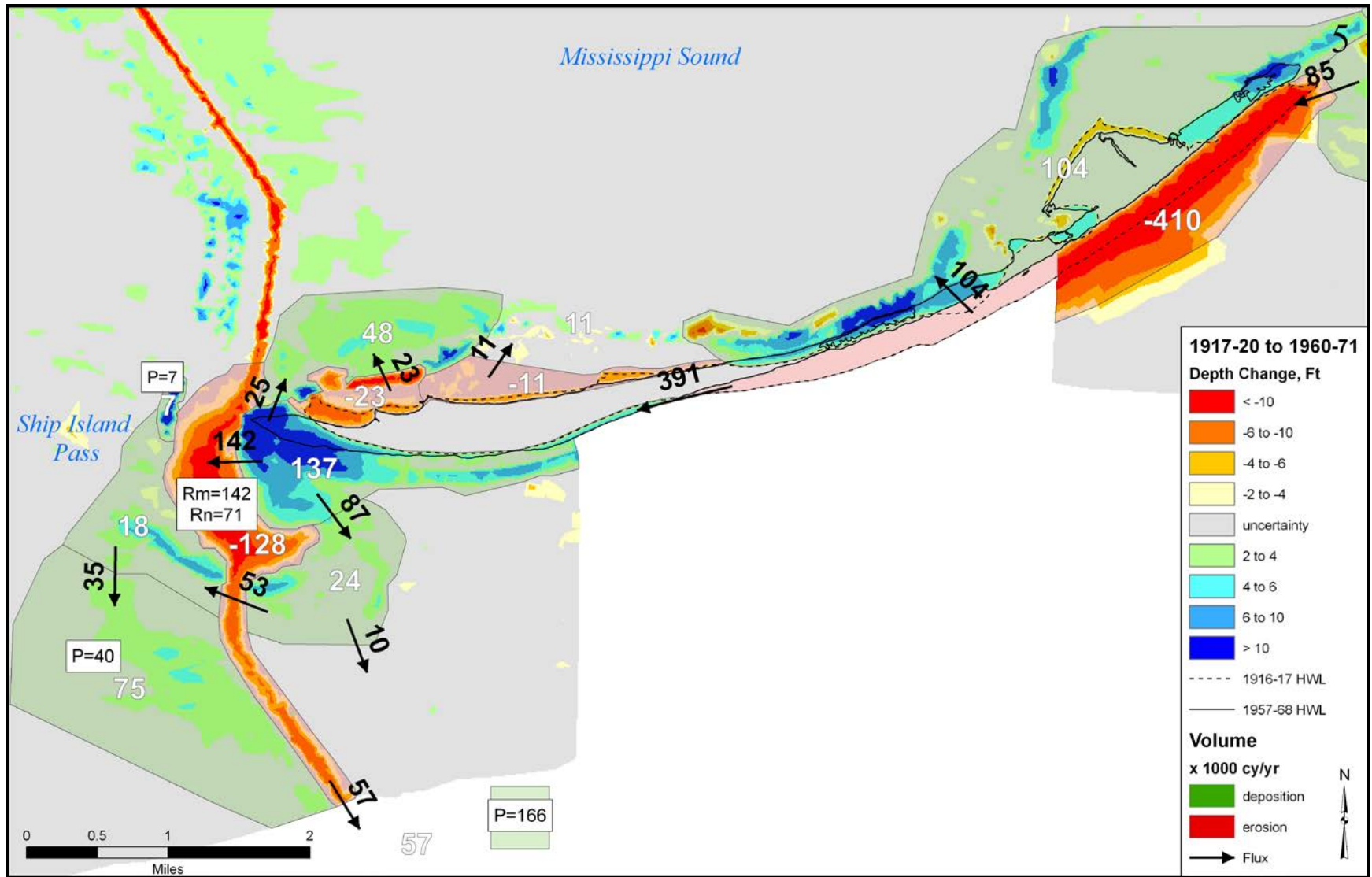


Figure x. Sediment transport pathways and quantities for Compartment 5.

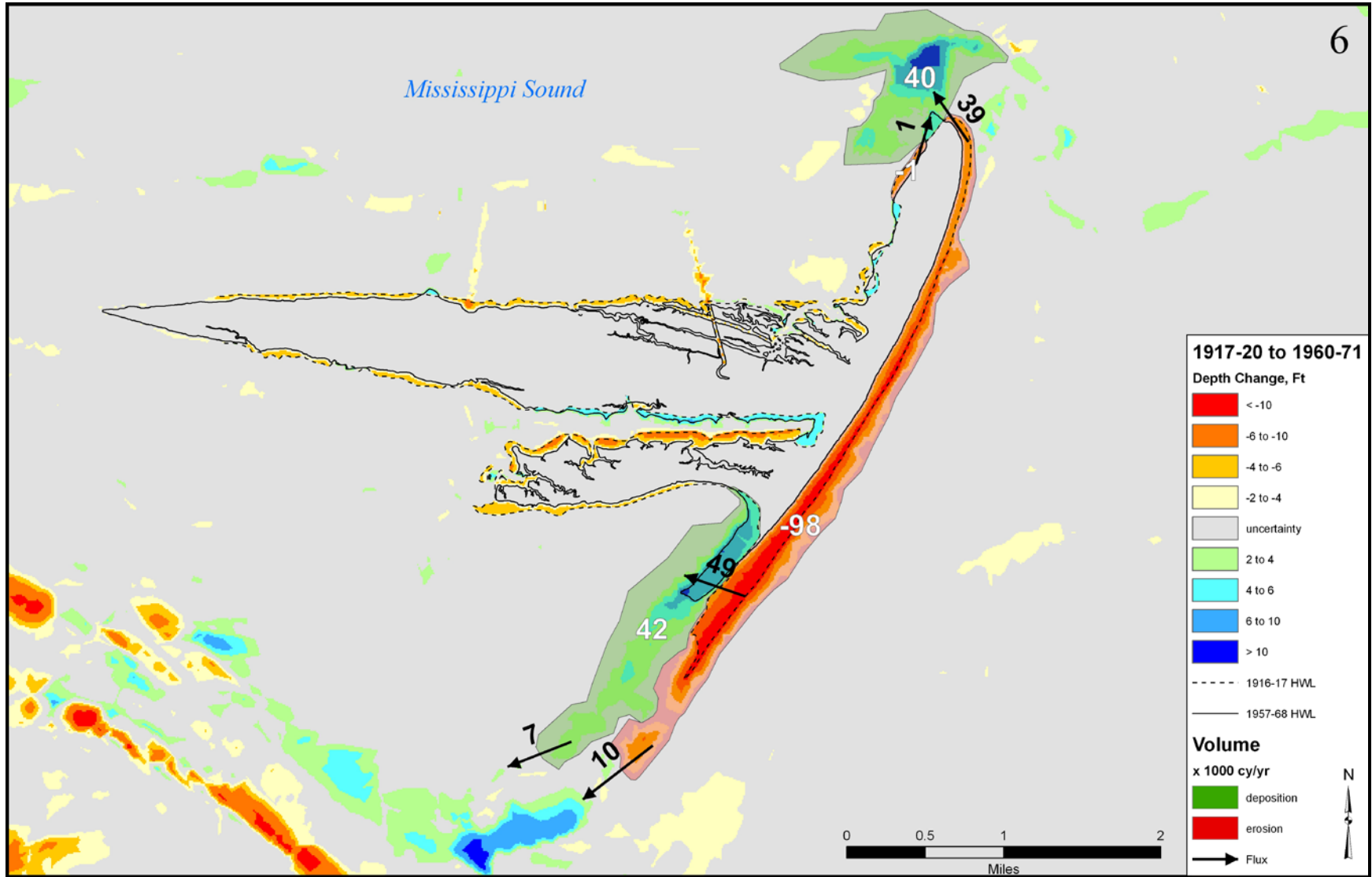
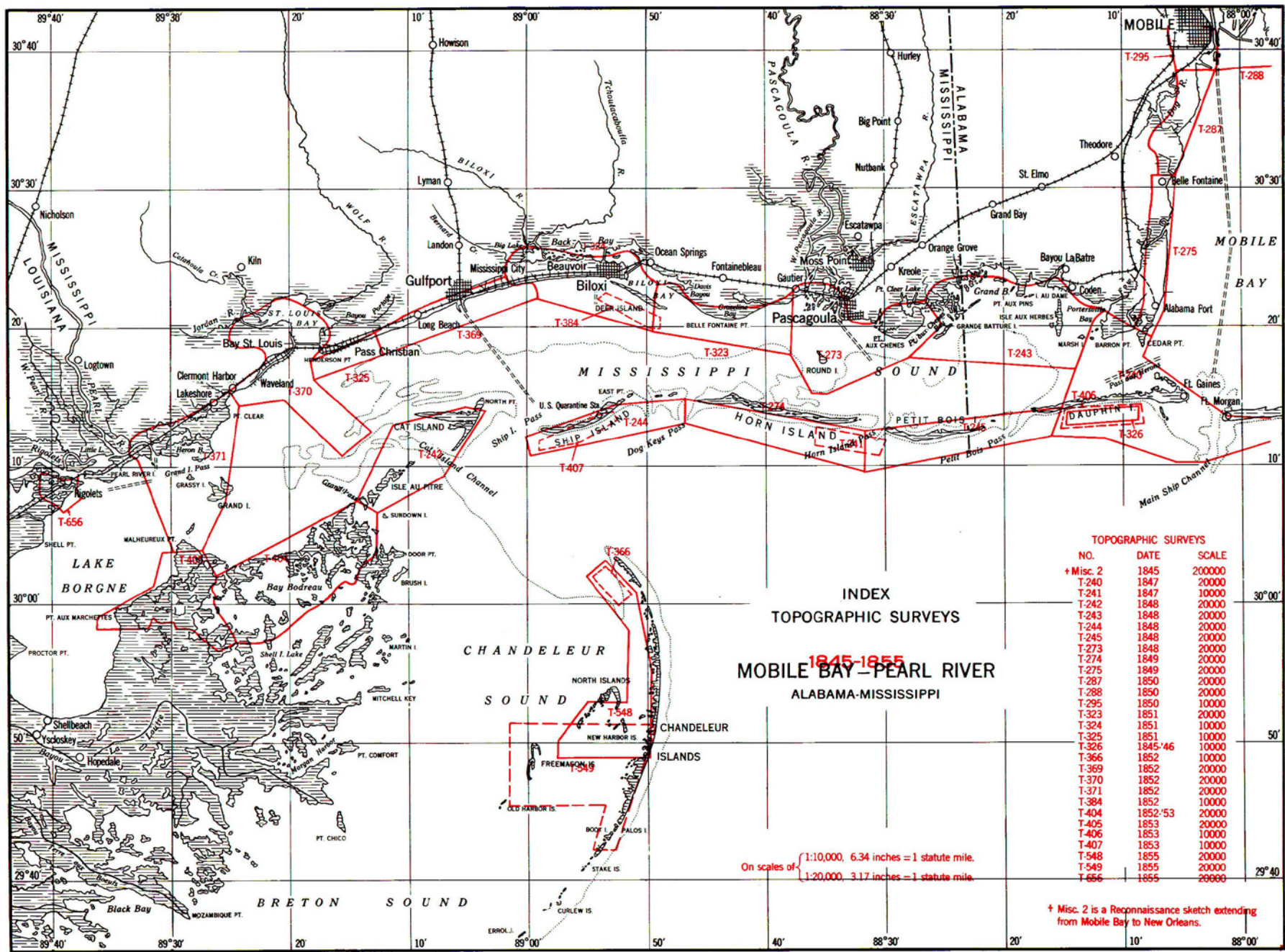


Figure x. Sediment transport pathways and quantities for Compartment 6.

# **Appendix A**

**NOS Index Maps for Historical Shoreline Surveys.**





INDEX  
TOPOGRAPHIC SURVEYS  
MOBILE BAY-PEARL RIVER  
ALABAMA-MISSISSIPPI

TOPOGRAPHIC SURVEYS

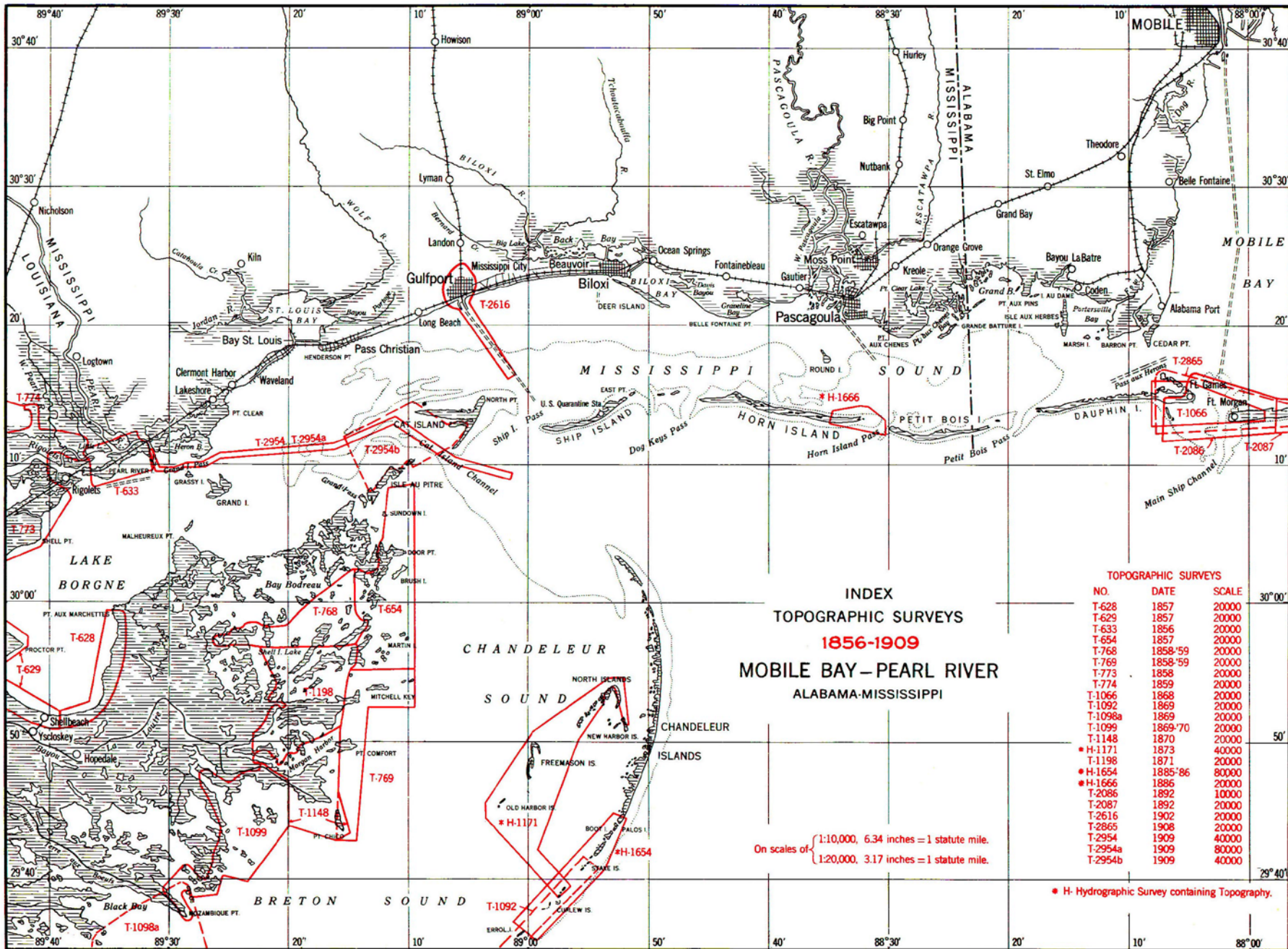
NO.	DATE	SCALE
+ Misc. 2	1845	200000
T-240	1847	20000
T-241	1847	10000
T-242	1848	20000
T-243	1848	20000
T-244	1848	20000
T-245	1848	20000
T-273	1848	20000
T-274	1849	20000
T-275	1849	20000
T-287	1850	20000
T-288	1850	20000
T-295	1850	10000
T-323	1851	20000
T-324	1851	10000
T-325	1851	10000
T-326	1845-46	10000
T-366	1852	10000
T-369	1852	20000
T-370	1852	20000
T-371	1852	20000
T-384	1852	10000
T-404	1852-53	20000
T-405	1853	20000
T-406	1853	10000
T-407	1853	10000
T-548	1855	20000
T-549	1855	20000
T-656	1855	20000

On scales of  $\left\{ \begin{array}{l} 1:10,000, 6.34 \text{ inches} = 1 \text{ statute mile.} \\ 1:20,000, 3.17 \text{ inches} = 1 \text{ statute mile.} \end{array} \right.$

+ Misc. 2 is a Reconnaissance sketch extending from Mobile Bay to New Orleans.

Topographic Index No. 77A





INDEX  
 TOPOGRAPHIC SURVEYS  
 1856-1909  
 MOBILE BAY - PEARL RIVER  
 ALABAMA-MISSISSIPPI

TOPOGRAPHIC SURVEYS		
NO.	DATE	SCALE
T-628	1857	20000
T-629	1857	20000
T-633	1856	20000
T-654	1857	20000
T-768	1858-'59	20000
T-769	1858-'59	20000
T-773	1858	20000
T-774	1859	20000
T-1066	1868	20000
T-1092	1869	20000
T-1098a	1869	20000
T-1099	1869-'70	20000
T-1148	1870	20000
H-1171	1873	40000
T-1198	1871	20000
H-1654	1885-'86	80000
H-1666	1886	20000
T-2086	1892	10000
T-2087	1892	20000
T-2516	1902	20000
T-2865	1908	20000
T-2954	1909	40000
T-2954a	1909	80000
T-2954b	1909	40000

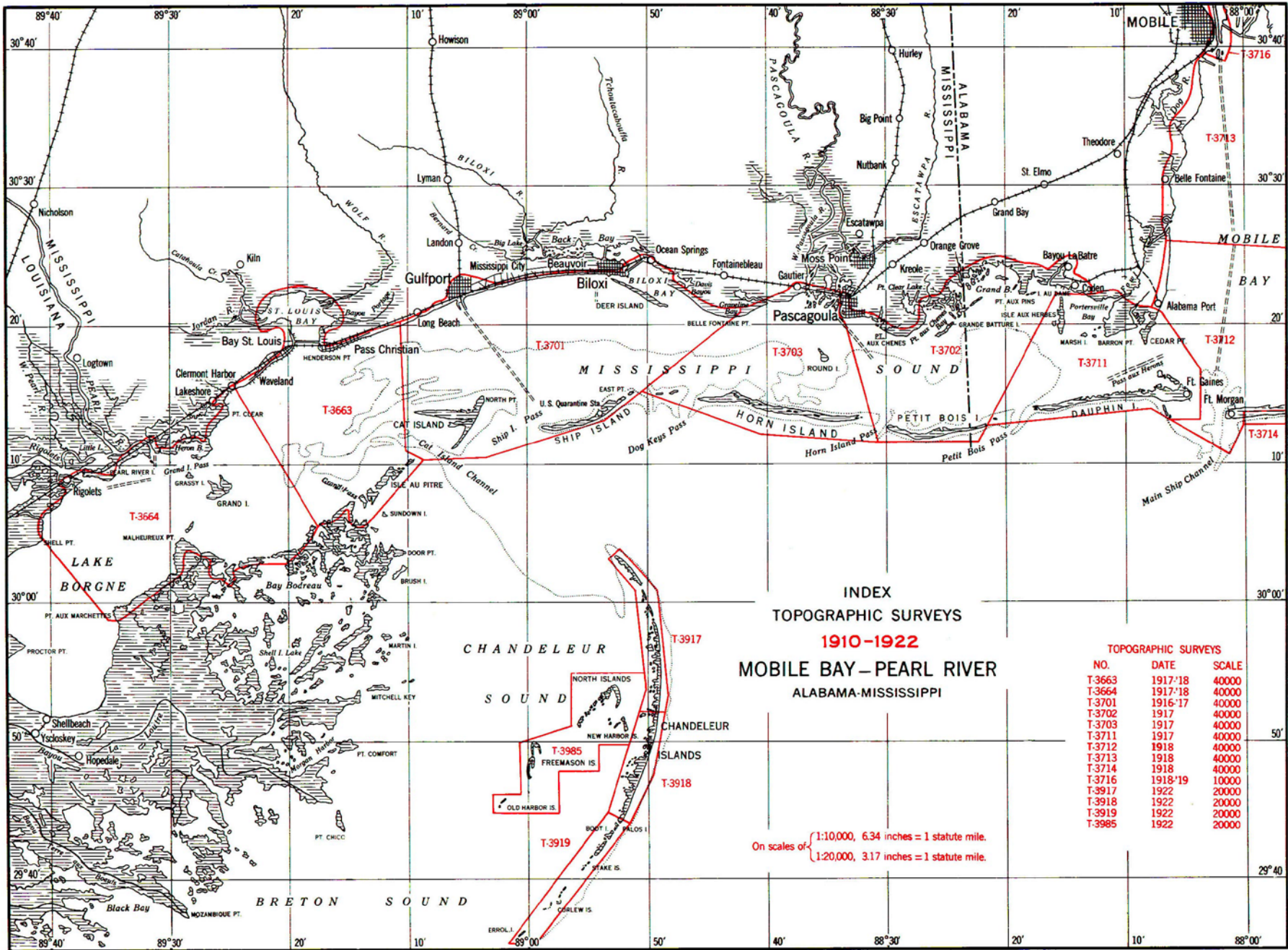
On scales of { 1:10,000, 6.34 inches = 1 statute mile.  
 1:20,000, 3.17 inches = 1 statute mile.

\* H - Hydrographic Survey containing Topography.

DEPARTMENT OF COMMERCE  
 U. S. Coast and Geodetic Survey  
 Washington, D. C.

Topographic Index No. 278





DEPARTMENT OF COMMERCE  
U. S. Coast and Geodetic Survey  
Washington, D. C.

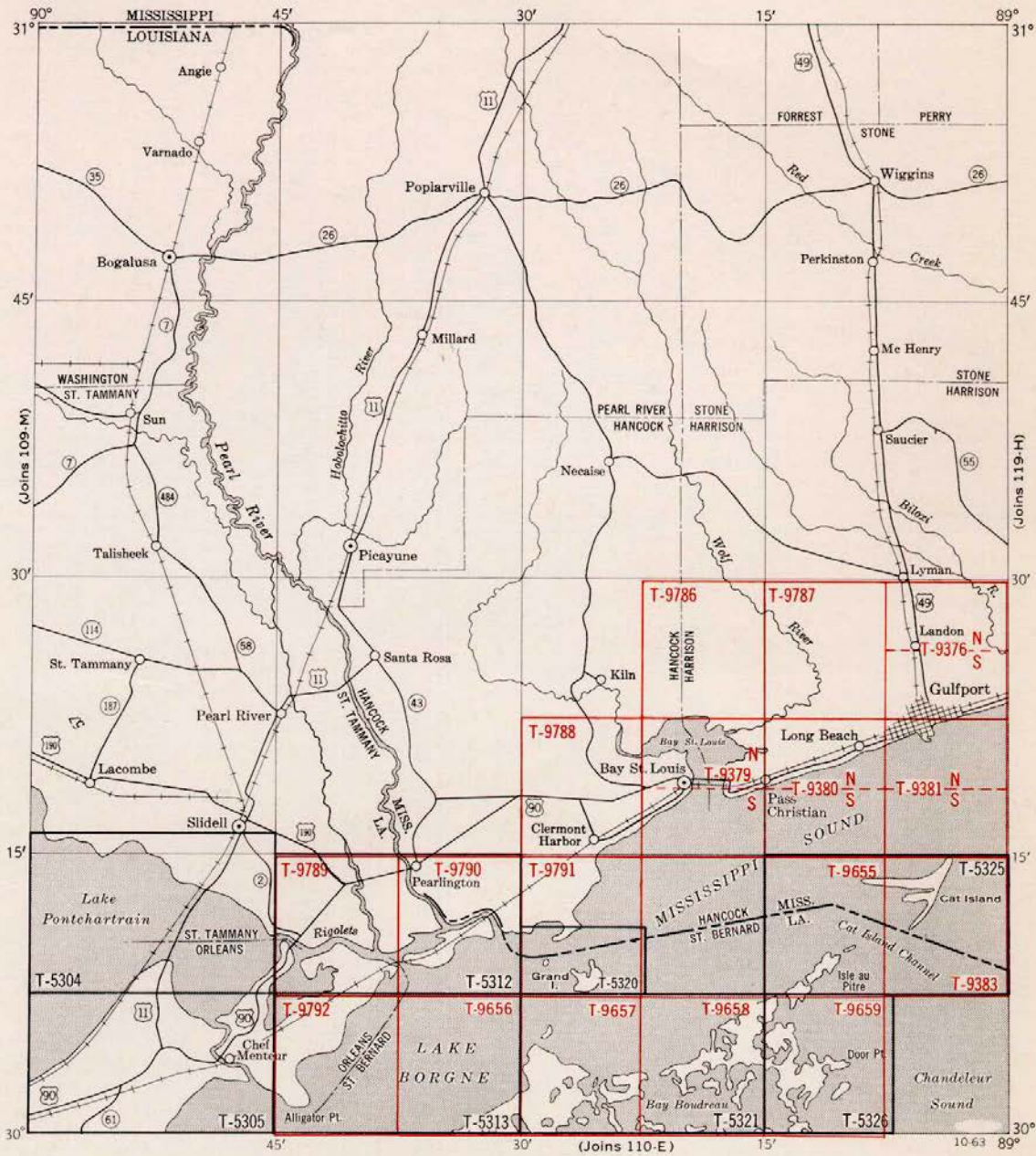
INDEX  
TOPOGRAPHIC SURVEYS  
1910-1922  
MOBILE BAY-PEARL RIVER  
ALABAMA-MISSISSIPPI

NO.	DATE	SCALE
T-3663	1917-'18	40000
T-3664	1917-'18	40000
T-3701	1916-'17	40000
T-3702	1917	40000
T-3703	1917	40000
T-3711	1917	40000
T-3712	1918	40000
T-3713	1918	40000
T-3714	1918	40000
T-3716	1918-'19	10000
T-3917	1922	20000
T-3918	1922	20000
T-3919	1922	20000
T-3985	1922	20000

On scales of  $\left\{ \begin{array}{l} 1:10,000, 6.34 \text{ inches} = 1 \text{ statute mile.} \\ 1:20,000, 3.17 \text{ inches} = 1 \text{ statute mile.} \end{array} \right.$

Topographic Index No. 27C



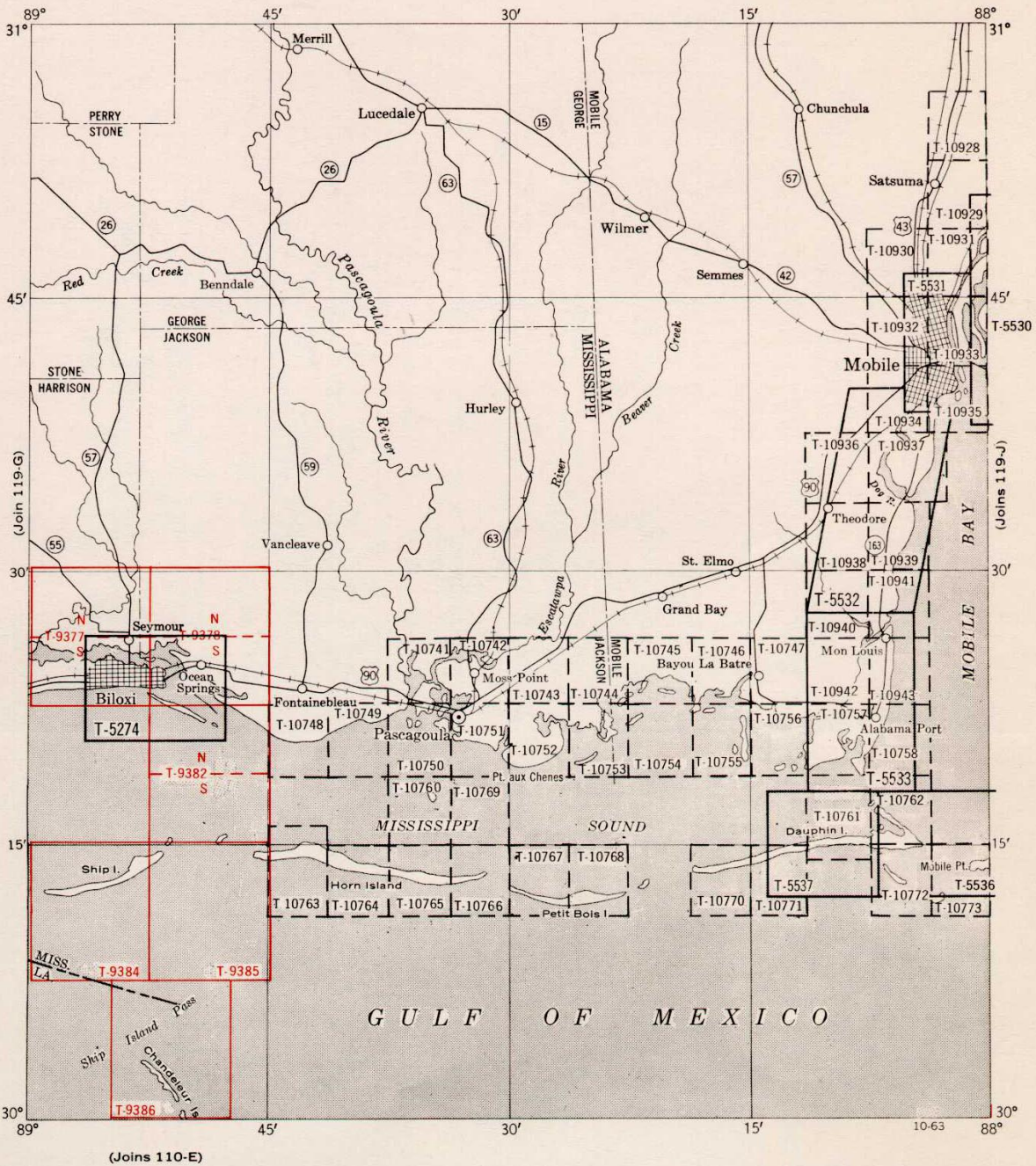


PLANIMETRIC MAPS: Show natural and cultural features within the map limits except contours and elevations. Maps at scale 1:20,000, T-5304, T-5305, T-5312, T-5313, T-5320, T-5321, T-5325 and T-5326, compiled from aerial photographs of November and December 1932.

TOPOGRAPHIC MAPS: Part of the 7½ minute series of standard topographic quadrangle maps of the United States. Maps at scale 1:10,000, T-9376, T-9379 to T-9381 compiled by the U.S. Coast and Geodetic Survey in two parts each (North and South); maps at scale 1:20,000, T-9655 to T-9659 from aerial photographs of February 1952; maps T-9786 to T-9792 from aerial photographs of April 1951; map T-9383 from aerial photographs of June 1950. Printed and distributed by the U.S. Geological Survey at scale of 1:24,000 or 1:25,000.

Note: With the exception of topographic maps, above listed T-Sheets will not be published, but ozalid prints of the original map manuscript can be furnished by the U.S. Coast and Geodetic Survey.

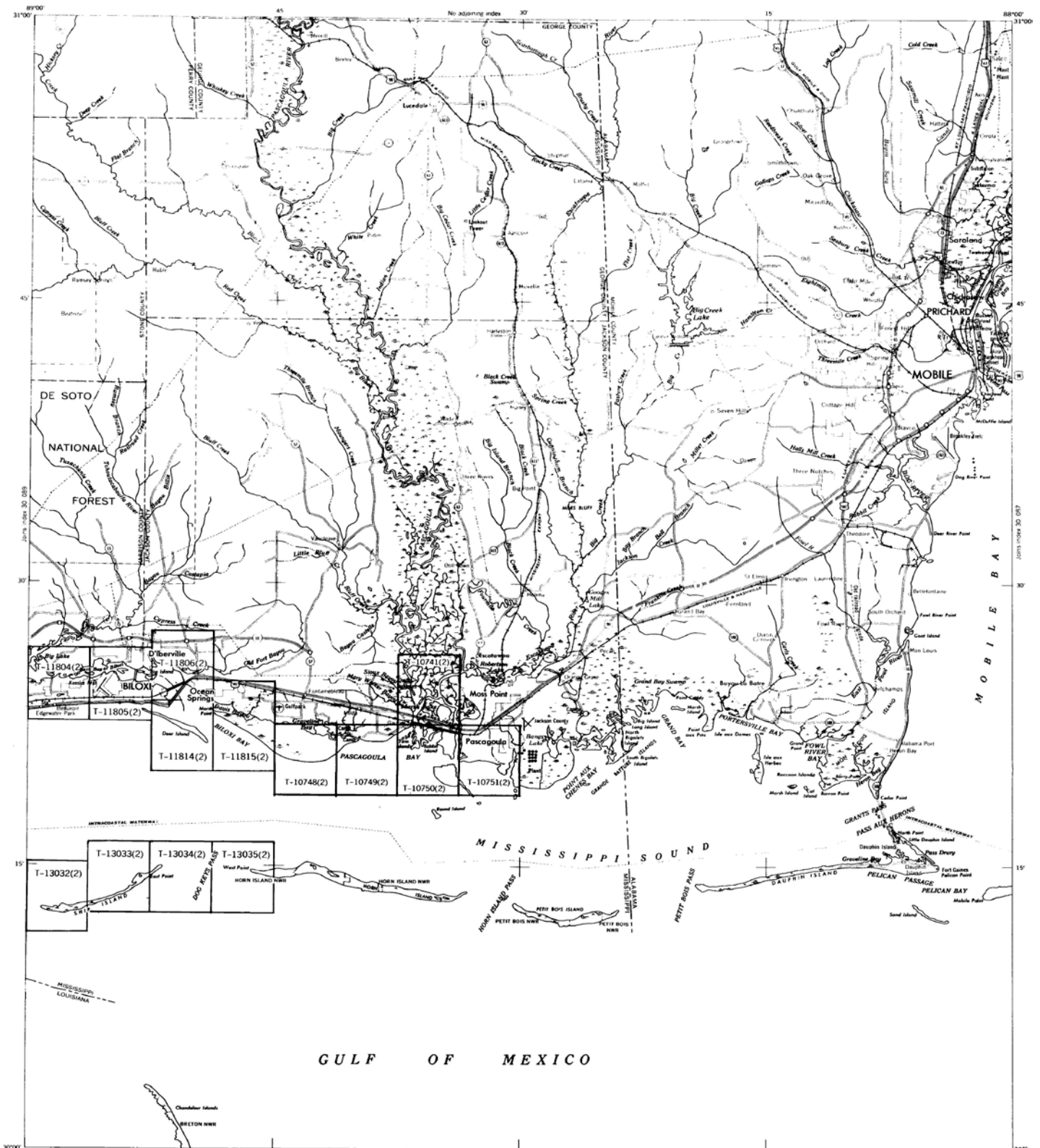




PLANIMETRIC MAPS: Show natural and cultural features within the map limits except contours and elevations. Maps at scale 1:20,000, T-5532 and T-5533, compiled from aerial photographs of June and July 1934; maps at scale 1:10,000, T-5531, T-5536 and T-5537 from aerial photographs of June and July 1934; T-5274 from aerial photographs of April 1943 and May 1945; T-10928 to T-10943, T-10741 to T-10758, and T-10760 to T-10773 from aerial photographs of November 1957.

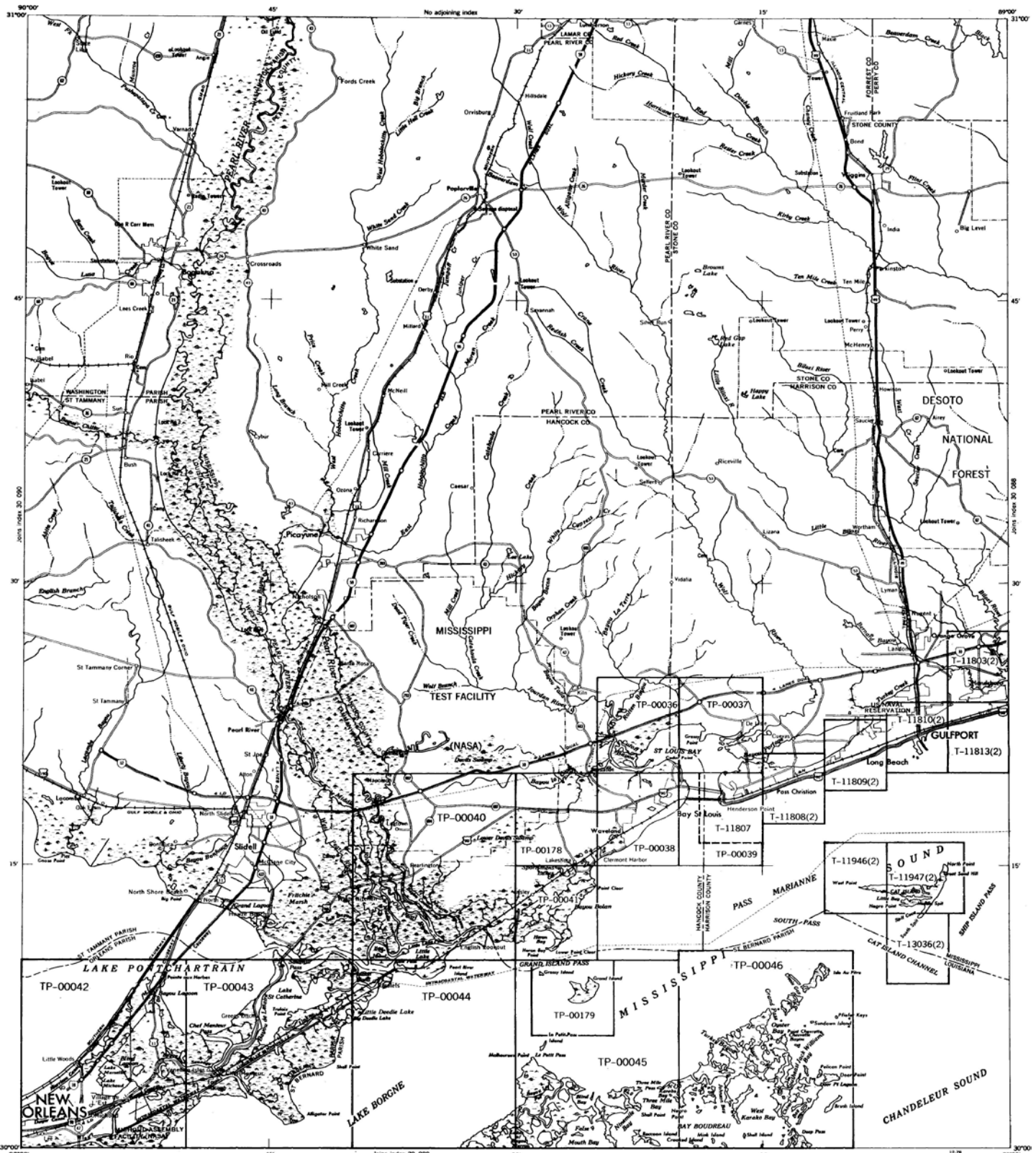
TOPOGRAPHIC MAPS: Part of the 7½ minute series of standard topographic quadrangle maps of the United States. Maps at scale 1:10,000 T-9377, T-9378 and T-9382 compiled by the U.S. Coast and Geodetic Survey in two parts each (North and South); maps at scale 1:20,000, T-9384 to T-9386 from aerial photographs of June 1950. Printed and distributed by the U.S. Geological Survey at scale of 1:24,000 or 1:25,000.

Note: With the exception of topographic maps, above listed T-Sheets will not be published, but ozalid prints of the original map manuscript can be furnished by the U.S. Coast and Geodetic Survey.



MAP NUMBER	DATE	SCALE	MAP NUMBER	DATE	SCALE	MAP NUMBER	DATE	SCALE	MAP NUMBER	DATE	SCALE
T-10741(2)		1:10,000	T-11805	1967	1:10,000	T-11815(2)		1:10,000	T-13035	1967	1:10,000
T-10748(2)		1:10,000	T-11805(2)		1:10,000	T-13032	1967	1:10,000	T-13035(2)		1:10,000
T-10749(2)		1:10,000	T-11806	1968	1:10,000	T-13032(2)		1:10,000			
T-10750(2)		1:10,000	T-11806(2)		1:10,000	T-13033	1967	1:10,000			
T-10751(2)		1:10,000	T-11814	1967	1:10,000	T-13033(2)		1:10,000			
T-11804	1967	1:10,000	T-11814(2)		1:10,000	T-13034	1967	1:10,000			
T-11804(2)		1:10,000	T-11815	1967	1:10,000	T-13034(2)		1:10,000			





MAP NUMBER	DATE	SCALE	MAP NUMBER	DATE	SCALE	MAP NUMBER	DATE	SCALE	MAP NUMBER	DATE	SCALE
T-11803	1967	1:10,000	T-11810	1968	1:10,000	T-13036	1968	1:10,000	TP-00042	1973	1:20,000
T-11803(2)		1:10,000	T-11810(2)		1:10,000	T-13036(2)		1:10,000	TP-00043	1973	1:20,000
T-11807	1967	1:10,000	T-11813	1967	1:10,000	TP-00036	1971	1:20,000	TP-00044	1972	1:20,000
T-11807(2)		1:10,000	T-11813(2)		1:10,000	TP-00037	1971	1:20,000	TP-00045	1971	1:20,000
T-11808	1967	1:10,000	T-11946	1968	1:10,000	TP-00038	1971	1:20,000	TP-00046	1971	1:20,000
T-11808(2)		1:10,000	T-11946(2)		1:10,000	TP-00039	1971	1:20,000	TP-00178	1971	1:20,000
T-11809	1968	1:10,000	T-11947	1968	1:10,000	TP-00040	1972	1:10,000	TP-00179	1971	1:20,000
T-11809(2)		1:10,000	T-11947(2)		1:10,000	TP-00041	1971	1:10,000			

## **Appendix B**

**NOS Index Maps for Historical Bathymetry Surveys.**



# **Appendix C**

## **Dredging History for Ship Island Pass**

Dredging History for the Channel at Ship Island Pass: 1881 to 2003					
Date	Authority	Description	New Work (cy)	Maintenance (cy)	Source
March 3, 1881	River and Harbor Act	Examination of the outlet and harbor of Ship Island was conducted by Thomas L. Harrison, Assistant Engineer in the summer of 1881. "After careful examination of the various channels, I find nothing less than 23 to 24 feet over the bar, with 4 to 5 fathoms inside at mean low-water." "After consultation with the pilots and several prominent citizens of Biloxi, I do not think there is anything at this pass, at present, requiring improvement."			ARCE, 1882; p. 1321-1322
July 13, 1892	River and Harbor Act	Provided for an examination of Mississippi Sound outside the range of islands of the Mississippi coast, with a view of making an entrance for vessels. The main channel had a depth of 22 feet on the crest of the bar at mean low-water. The desired depth was 24 feet. A.N. Damrell (Major of Engineers) states "the depth can be obtained by dredging, and probably the channel thus obtained would maintain itself, as there seems to be a gradual deepening from natural causes." "The bar is composed of coarse, compact sand and the distance between the 24-foot curve inside and out is very short." "The harbor is, in my opinion, worthy of improvement for the reason that the commerce is large and the cost is small."			ARCE, 1893; p. 1783
June 3, 1896	River and Harbor Act	Provided for a preliminary examination of Ship Island Pass, Mississippi, "with a view of obtaining a channel twenty-six feet deep at low tide in said pass between the Gulf of Mexico and Ship Island Harbor, with a view of dredging a channel five hundred feet wide and twenty-five feet deep to connect Ship Island Harbor with the railroad pier at Gulfport." Concluded that the channel was not worthy of improvement by the General Government.			ARCE, 1897; p. 1708-1710
June 16, 1898	River and Harbor Act	A survey was ordered to "determine a plan and estimate for a channel 26 feet deep at mean low water through Ship Island Pass, Mississippi."			ARCE, 1899; p. XIII
March 3, 1899	River and Harbor Act	Authorized a channel 19 feet deep and 300 feet wide from the anchorage basin at Ship Island to Gulfport, MS.			ARCE, 1899; p. XIII
March 3, 1899	River and Harbor Act	"complete a channel through Ship Island Pass, with a depth of 26 feet, in accordance with the report and estimate printed in House Document No. 120, fifty-fifth Congress, third session, \$40,000." Proposal for dredging were advertised on April 25, 1899, and bids were opened on May 25, 1899. Contract was awarded to the National Dredging Company of Wilmington, DE, at 22.5 cents per cubic yard on June 12, 1899. A channel 300 feet wide and 19 feet deep at mean low water was authorized from the anchorage basin at Ship Island Harbor to Gulfport, Mississippi.			ARCE, 1899; p. 1723
November 23, 1899		Work commenced on deepening and widening the channel at Ship Island Pass. Between November 23, 1899 and March 13, 1900, sand was excavated from a channel 26 feet deep and 4,000 feet long across the outer bar at Ship Island Pass.	163,401		ARCE, 1900; p. XIV
April 16, 1901		Dredging proceeded on the channel between Gulfport and Ship Island.			ARCE, 1906; p. 376
June 14, 1906		Final payment was made for construction of the channel between Gulfport and Ship Island to a completed depth of 19 feet and a width of 300 feet.			ARCE, 1906; p. 376
March 2, 1907	River and Harbor Act	Combined Ship Island Pass and Gulfport Harbor projects.			ARCE, 1907; p. 1392
March 3, 1909	River and Harbor Act	Approved \$10,000 for the maintenance work of dredging with the U.S. dredge <i>Barnard</i> in Ship Island Pass.			ARCE, 1909; p. 1432
October 11, 1909 to June 30, 1910		The U.S. dredge <i>Charleston</i> removed 389,079 cubic yards of sand from Ship Island Pass, all maintenance dredging.		398,071	ARCE, 1910; p. 1582-1583
Fiscal Year 1911		No dredging was completed during the fiscal year.			ARCE, 1911; p. 1725
Fiscal Year 1912		No dredging was completed during the fiscal year.			ARCE, 1912; p. 1945
Fiscal Year 1913		No dredging was completed during the fiscal year.			ARCE, 1913; p. 2171
Fiscal Year 1914		The U.S dredge <i>Charleston</i> dredged Ship Island Pass and outer bar channel to maintain authorized dimensions.		232,157	ARCE, 1914; p. 2215
Fiscal Year 1915		No dredging was completed during the fiscal year.			ARCE, 1915; p. 2557
Fiscal Year 1916		No dredging was completed during the fiscal year.			ARCE, 1916; p. 2404
March 21 to May 18, 1917		The U.S dredge <i>Charleston</i> dredged shoals from Ship Island Pass and outer bar channel to maintain authorized dimensions.		208,115	ARCE, 1917; p. 2495
July 1-6, 1917; March 2 to April 1, 1918		The U.S dredge <i>Charleston</i> dredged shoals from Ship Island Pass and outer bar channel to maintain authorized dimensions.		55,500	ARCE, 1918; p. 2631

<b>Dredging History for the Channel at Ship Island Pass: 1881 to 2003</b>					
<b>Date</b>	<b>Authority</b>	<b>Description</b>	<b>New Work (cy)</b>	<b>Maintenance (cy)</b>	<b>Source</b>
Fiscal Year 1919		No dredging was completed during the fiscal year.			ARCE, 1919; p. 2493
Fiscal Year 1920		No dredging was completed during the fiscal year.			ARCE, 1920; p. 2366
Fiscal Year 1921		No dredging was completed during the fiscal year.			ARCE, 1921; p. 911
Fiscal Year 1922		Maintenance dredging was conducted in Ship Island Pass Channel, securing a depth of 22 feet over the project width of 300 feet for a distance of 1.9 miles.		101,457	ARCE, 1922; p. 936-937
Fiscal Year 1923		No dredging was completed during the fiscal year.			ARCE, 1923; p. 813
Fiscal Year 1924		Maintenance dredging was conducted in Ship Island Pass Channel to an average depth of 23.5 feet over the project width of 300 feet.		303,010	ARCE, 1924; p. 808
Fiscal Year 1925		No dredging was completed during the fiscal year.			ARCE, 1925; p. 791
September 10-23, 1925		The U.S. dredge <i>Benyaurd</i> was operated in the Ship Island Bar Channel to restore the project depth (26 feet) over the project width (300 feet) for the length of the channel.		194,271	ARCE, 1926; p. 798
Fiscal Year 1927		No dredging was completed during the fiscal year.			ARCE, 1927; p. 824
January 21, 1927	River and Harbor Act	Authorized the Chief of Engineers to relocate the channel across Ship Island Bar "at such point as may be deemed most desirable in the interest of economy and navigation."			ARCE, 1927; p. 822
January 31, 1927	Chief of Engineers	Recommended modification of existing project to provide for a channel 27 feet deep and 300 feet wide across Ship Island Pass outer bar.			ARCE, 1927; p. 823
Fiscal Year 1928		No dredging was completed during the fiscal year.			ARCE, 1928; p. 858
Fiscal Year 1929		No dredging was completed during the fiscal year.			ARCE, 1929; p. 859-860
July 3, 1930	River and Harbor Act	Authorized a channel 27 feet deep and 300 feet wide across Ship Island Pass bar.			ARCE, 1930; p. 929
Fiscal Year 1930		No dredging was completed during the fiscal year.			ARCE, 1930; p. 930
Fiscal Year 1931		The U.S. hopper dredge <i>Benyaurd</i> was operated in the Ship Island Channel to maintain a project depth of 27 feet throughout the length of the 300-ft wide channel.		343,280	ARCE, 1931; p. 928
Fiscal Year 1932		No dredging was completed during the fiscal year.			ARCE, 1932; p. 828
Fiscal Year 1933		No dredging was completed during the fiscal year.			ARCE, 1933; p. 498
Fiscal Year 1934		No dredging was completed during the fiscal year.			ARCE, 1934; p. 583
Fiscal Year 1935		No dredging was completed during the fiscal year.			ARCE, 1935; p. 676
Fiscal Year 1936		No dredging was completed during the fiscal year.			ARCE, 1936; p. 666-667
Fiscal Year 1937		No dredging was completed during the fiscal year.			ARCE, 1937; p. 706-707
Fiscal Year 1938		No dredging was completed during the fiscal year.			ARCE, 1938; p. 747
Fiscal Year 1939		No dredging was completed during the fiscal year.			ARCE, 1939; p. 823
Fiscal Year 1940		No dredging was completed during the fiscal year.			ARCE, 1940; p. 818
Fiscal Year 1941		No dredging was completed during the fiscal year.			ARCE, 1941; p. 781
Fiscal Year 1942		No dredging was completed during the fiscal year.			ARCE, 1942; p. 691-692
Fiscal Year 1943		No dredging was completed during the fiscal year.			ARCE, 1943; p. 626
Fiscal Year 1944		No dredging was completed during the fiscal year.			ARCE, 1944; p. 611
Fiscal Year 1945		No dredging was completed during the fiscal year.			ARCE, 1945; p. 850-851
Fiscal Year 1946		No dredging was completed during the fiscal year.			ARCE, 1946; p. 917-918

<b>Dredging History for the Channel at Ship Island Pass: 1881 to 2003</b>					
<b>Date</b>	<b>Authority</b>	<b>Description</b>	<b>New Work (cy)</b>	<b>Maintenance (cy)</b>	<b>Source</b>
September 15-28, 1946		The U.S. hopper dredge <i>San Pablo</i> dredged material from the Ship Island Pass bar channel to maintain authorized dimensions.		77,395	ARCE, 1947; p. 899
February 24 to March 13, 1948		The U.S. hopper dredge <i>Lyman</i> dredged material from the Ship Island Pass bar channel to maintain authorized dimensions.		202,320	ARCE, 1948; p. 994-995
<b>March 3, 1899 to March 13, 1948</b>	<b>Existing River and Harbor Acts</b>	<b>Total dredging completed prior to authorizing a 32-ft deep by 300-ft wide channel at the Pass.</b>	<b>163,401</b>	<b>2,115,576 (43,175 cy/yr)</b>	
June 30, 1948	River and Harbor Act	Provides for a channel 32 feet deep, 300 feet wide, and about 8 miles long across Ship Island Pass bar.			ARCE, 1948; p. 994
Fiscal Year 1949		No dredging was completed during the fiscal year.			ARCE, 1949; p. 897
November 10 to December 31, 1949 and January 1-5, 1950		The U.S. hopper dredge <i>Gerig</i> removed 3,434,276 cubic yards of material from the Ship Island Pass bar channel at a cost of \$154,603.	3,434,276		ARCE, 1950; p. 906
April 2-29, 1950		The U.S. hopper dredge <i>Hyde</i> removed 244,768 cubic yards of material from the Ship Island Pass bar channel at a cost of \$56,645. The project authorized in 1948 was completed to a depth of 32 feet.	244,768		ARCE, 1950; p. 906
Fiscal Year 1951		No dredging was completed during the fiscal year.			ARCE, 1951; p. 737
April 30 to May 15, 1952		The U.S. hopper dredge <i>Gerig</i> removed material from the Ship Island Pass bar channel to maintain authorized project dimensions.		669,411	ARCE, 1952; p. 693
Fiscal Year 1953		No dredging was completed during the fiscal year.			ARCE, 1953; p. 648
August 4-26, 1953		The U.S. hopper dredge <i>Langfitt</i> removed material from the Ship Island Pass bar channel to maintain authorized project dimensions.		748,962	ARCE, 1954; p. 445
Fiscal Year 1955		No dredging was completed during the fiscal year.			ARCE, 1955; p. 439-440
Fiscal Year 1956		No dredging was completed during the fiscal year.			ARCE, 1956; p. 565-566
Fiscal Year 1957		No dredging was completed during the fiscal year.			ARCE, 1957; p. 562
Fiscal Year 1958		No dredging was completed during the fiscal year.			ARCE, 1958; p. 513
Fiscal Year 1959		No dredging was completed during the fiscal year.			ARCE, 1959; p. 535
Fiscal Year 1960		No dredging was completed during the fiscal year.			ARCE, 1960; p. 522-523
Fiscal Year 1961		No dredging was completed during the fiscal year.			ARCE, 1961; p. 575-576
August 20-26, 1961		The U.S. hopper dredge <i>Langfitt</i> agitated 1,046,246 cubic yards of material in the Ship Island Pass channel.			ARCE, 1962; p. 586
September 1 to October 26, 1962		The U.S. hopper dredge <i>Mackenzie</i> removed material from the Ship Island Pass bar channel to maintain authorized project dimensions.		2,501,989	ARCE, 1963; p. 524
Fiscal Year 1964		No dredging was completed during the fiscal year.			ARCE, 1964; p. 466
Fiscal Year 1965		No dredging was completed during the fiscal year.			ARCE, 1965; p. 458
December 12-30, 1965		The U.S. hopper dredge <i>Langfitt</i> removed material from the Ship Island Pass bar channel to maintain authorized project dimensions.		734,955	ARCE, 1966; p. 495-496
October 20-31, 1966		Contractor's pipeline dredge <i>Orleans</i> removed sediment from the Ship Island Pass channel to attain project dimensions (32 feet deep by 300 feet wide).		452,091 (net) 519,905 (gross)	ARCE, 1967; p. 486; Mobile District O&M
February 1-11, 1968		Contractor's pipeline dredge <i>Orleans</i> removed sediment from the Ship Island Pass channel to attain project dimensions.		369,246 (net) 482,604 (gross)	Mobile District O&M and ARCE, 1968; p. 372
March 26 to April 27, 1968		The U.S. hopper dredge <i>Mackenzie</i> removed material from the Ship Island Pass bar channel to maintain authorized project dimensions.		812,720	ARCE, 1968; p. 372

Dredging History for the Channel at Ship Island Pass: 1881 to 2003					
Date	Authority	Description	New Work (cy)	Maintenance (cy)	Source
December 8-18, 1968		The U.S. hopper dredge <i>Langfitt</i> removed sediment from the Ship Island Pass bar channel to maintain authorized project dimensions.		430,835	ARCE, 1969; p. 355
November 28 to December 28, 1969; January 10-17, 1970		The U.S. hopper dredge <i>Gerig</i> removed sediment from the Ship Island Pass bar channel to maintain authorized project dimensions.		1,278,981	ARCE, 1970; p. 340
July 9-28, 1970		Contractor's pipeline dredge <i>Port Arthur</i> removed sediment from the Ship Island Point to attain project dimensions (32 feet deep by 300 feet wide).		292,491 (net) 521,009 (gross)	ARCE, 1971; p. 10-10; Mobile District O&M
July 28-31, 1970		Contractor's pipeline dredge <i>Port Arthur</i> removed sediment from the Ship Island Point to attain project dimensions (32 feet deep by 300 feet wide).		93,314 (net) 124,788 (gross)	Mobile District O&M
December 22, 1970 to January 15, 1971		The U.S. hopper dredge <i>Gerig</i> removed sediment from the Ship Island Pass bar channel to maintain authorized project dimensions.		370,089	ARCE, 1971; p. 10-10
June 2-14, 1972		The U.S. hopper dredge <i>McFarland</i> removed sediment from the Ship Island Pass bar channel to maintain authorized project dimensions.		232,503	ARCE, 1972; p. 10-10
Fiscal Year 1973		No dredging was completed during the fiscal year.			ARCE, 1973; p. 10-10
March 1-24, 1974		Contractor's pipeline dredge <i>Orleans</i> removed sand and silt from the Ship Island Pass channel (Ship Island Point) to attain project dimensions.		334,701 (net) 546,210 (gross)	ARCE, 1974; p. 10-9 and Mobile District O&M
February 16 to March 15, 1975		The U.S. hopper dredge <i>Davison</i> removed sediment from the Ship Island Pass bar channel to maintain authorized project dimensions.		123,253 (net) 164,960 (gross)	ARCE, 1975; p. 10-9; Mobile District O&M
July 1-31, 1975		The U.S. hopper dredge <i>Hyde</i> removed sediment from the Ship Island Pass bar channel to maintain authorized project dimensions.		136,116 (net) 251,321 (gross)	ARCE, 1976; p. 10-9; Mobile District O&M
August 18 to September 28, 1977		Annual report makes reference to hopper dredging for channel surveys in the outer bar at a cost of \$700,000, but no dredged quantity is provided. Mobile District O&M recorded dredging in the Ship Island Pass outer bar by the U.S. hopper Dredge <i>Langfitt</i> .		1,784,707 (net) 2,892,761 (gross)	ARCE, 1977; p. 10-10; Mobile District O&M
Fiscal Year 1978		Annual report makes reference to hopper dredging at a cost of \$32,814, but no dredged quantity is provided.			ARCE, 1978; p. 10-11
September 15-30, 1979		The U.S. hopper dredge <i>Langfitt</i> removed sediment from the Ship Island Pass bar channel to maintain authorized project dimensions.		519,722 470,440 (net) 540,996 (gross)	ARCE, 1979; p. 10-11; Mobile District O&M
January 16 to April 12, 1980		Annual report makes reference to hired labor to remove sediment from Ship Island Pass bar channel at a cost of \$121,689. USACE – Mobile District O&M history card for this dredging period provides net and gross totals for dredging from Ship Island Point and sand borrow area. Sand was placed at Fort Massachusetts as nourishment.		21,567 132,226 (net) 154,598 (gross)	ARCE, 1980; p. 10-10; Mobile District O&M
December 24, 1980 to January 27, 1981		Contractor's hopper dredge <i>Dodge Island</i> removed sediment from the Ship Island Pass bar channel to attain project dimensions. Annual report provides a combined dredged volume of 3,239,555 cubic yards for dredging in the ship channel, harbor, and outer bar. USACE – Mobile District O&M history card for this dredging period provides net and gross totals for the bar channel.		831,438 (net) 1,800,943 (gross)	ARCE, 1981; p. 10-10; Mobile District O&M
August 16 to October 17, 1982		Contractor's dredge <i>Louisiana</i> removed sediment from the Ship Island Pass bar channel to attain project dimensions.		222,553 (net) 361,809 (gross)	Mobile District O&M
October 17 to December 14, 1983		Contractor's dredge <i>Fritz Jahncke</i> removed sediment from the Ship Island Point and placed at Fort Massachusetts as beach nourishment.		123,519 (net) 211,683 (gross)	Mobile District O&M
May 21 to June 28, 1984		Contractor's dredge <i>Atchafalaya</i> removed sediment from the Ship Island Pass bar channel to attain project dimensions.		779,596 (net) 996,597 (gross)	Mobile District O&M
September 22 to October 15, 1985		Contractor's dredge <i>Manhattan Island</i> removed sediment from the Ship Island Pass bar channel to attain project dimensions.		490,275 (net) 885,539 (gross)	Mobile District O&M
August 15, 1985	Supplemental Appropriations Act	Modify the existing Ship Channel to 36 x 300 feet in Mississippi Sound and 38 x 400 feet across the outer bar.			ARCE, 1985; Table 10-B

<b>Dredging History for the Channel at Ship Island Pass: 1881 to 2003</b>					
<b>Date</b>	<b>Authority</b>	<b>Description</b>	<b>New Work (cy)</b>	<b>Maintenance (cy)</b>	<b>Source</b>
September 26 to December 15, 1986		Contractor's dredge <i>Louisiana</i> removed sediment from the Ship Island Point to attain project dimensions.		32,494 (net) 74,671 (gross)	Mobile District O&M
April 23 to May 18, 1987		Contractor's dredge <i>Manhattan Island</i> removed sediment from the Ship Island Pass bar channel to attain project dimensions.		541,578 (net) 908,926 (gross)	Mobile District O&M
July 4 and September 23, 1988		Contractor's dredge <i>Louisiana</i> removed sediment from the Ship Island Inner and Outer Bar Channel to attain project dimensions.		300,410 (net) 492,709 (gross)	Mobile District O&M
October 25 to November 22, 1989		Contractor's dredge <i>Manhattan Island</i> removed sediment from the Ship Island Pass bar channel to attain project dimensions.		152,916 (net) 469,688 (gross)	Mobile District O&M
September 17-19, 1991		Contractor's dredge <i>Tom James</i> removed sediment from the Ship Island impoundment area.		58,129 (net) 58,472 (gross)	Mobile District O&M
May 16 to July 20, 1992		Contractor's dredge <i>Ouachita</i> removed sediment from the Ship Island Pass channel to attain pre-deepening project dimensions (32 feet deep by 300 feet wide). Sand was placed in the EPA East disposal area.		870,861 (gross)	Mobile District O&M
<b>March 3, 1899 to July 20, 1992</b>	<b>Existing River and Harbor Acts</b>	<b>Total dredging completed prior to authorizing a 38-ft deep by 400-ft wide channel at the Pass.</b>	<b>3,842,445</b>	<b>23,227,071 (249,753 cy/yr)</b>	
May 16 to July 20, 1992		Contractor's dredge <i>Ouachita</i> removed sediment from the Ship Island Pass channel as part of the Gulfport Harbor deepening project. Sand was placed in the EPA East disposal area.	3,388,743		Mobile District O&M
May 10 to September 10, 1992		Contractor's dredge <i>Yom James</i> removed sediment from the Ship Island Pass channel as part of the Gulfport Harbor deepening project. Sand was placed in the littoral zone.	4,619,205		Mobile District O&M
October 1 to November 29, 1993		Contractor's dredge <i>Yom James</i> removed sediment from the Ship Island Pass channel as part of the Gulfport Harbor deepening project. Sand was placed in the littoral zone.	1,688,040		Mobile District O&M
September 11-28, 1993		Contractor's dredge <i>Padre Island</i> removed sediment from the Ship Island Pass bar channel to maintain funded project dimensions (38 feet deep by 300 feet wide).		274,765 (gross)	Mobile District O&M
May 1-5, 1996		Contractor's dredge <i>Meridian</i> removed sediment from the Ship Island impoundment area. Sand was placed at Fort Massachusetts as beach nourishment.		50,000 (net) 56,453 (gross)	Mobile District O&M
August 9-27, 1996		Contractor's dredge <i>Padre Island</i> removed sediment from the Ship Island Pass bar channel to maintain funded project dimensions (38 feet deep by 300 feet wide).		623,254 (gross)	Mobile District O&M
September 18-22, 1996		Contractor's dredge <i>George D. Williams</i> removed sediment from the Ship Island Pass bar channel to maintain funded project dimensions (38 feet deep by 300 feet wide).		99,092 (gross)	Mobile District O&M
October 2-18, 1997		Contractor's dredge <i>Eagle 1</i> removed sediment from the Ship Island Pass bar channel to maintain funded project dimensions (38 feet deep by 300 feet wide).		914,561 (net) 1,066,935 (gross)	Mobile District O&M
June 19 to July 15, 1998		Contractor's dredge <i>Atchafalaya</i> removed sediment from the Ship Island Pass bar channel for emergency dredging purposes. Sand was placed in the littoral zone.		307,860 (gross)	Mobile District O&M
November 10-27, 1998		Contractor's dredge <i>R/N Weeks</i> removed sediment from the Ship Island Pass bar channel for emergency maintenance dredging in response to Hurricane Georges.		1,094,975 (net) 1,300,000 (gross)	Mobile District O&M
April 28 to May 7, 2002		Contractor's dredge <i>George Williams II</i> removed sediment from the Ship Island Pass borrow area for beach nourishment at Fort Massachusetts.		111,357 (gross)	Mobile District O&M
December 1, 2002 to January 5, 2003		Contractor's dredge <i>Manhattan Island</i> removed sediment from the Ship Island Pass bar channel for emergency maintenance dredging.		1,013,320 (net) 1,074,291 (gross)	Mobile District O&M
April 18-28, 2003		Contractor's dredge <i>Columbia</i> removed sediment from the Ship Island Pass bar channel to maintain funded project dimensions (38 feet deep by 300 feet wide).		542,810 (gross)	Mobile District O&M
<b>1899 to 2003</b>		<b>Total dredging in the Ship Island Pass Bar Channel</b>	<b>13,538,433</b>	<b>28,683,888 (275,807 cy/yr)</b>	

## **Appendix D**

### **Dredging History for Horn Island Pass**

Dredging History for the Channel at Horn Island Pass: 1881 to 2005					
Date	Authority	Description	New Work (cy)	Maintenance (cy)	Source
March 3, 1881	River and Harbor Act	Examination of the pass at Horn Island from the harbor in Mississippi Sound to the Gulf of Mexico was conducted by Thomas L. Harrison, Assistant Engineer in August and September of 1881. "There is a depth of 22 feet in the harbor, and a least depth of 16.5 feet at mean low-water in the pass." "The chief desire of the mill men and timber merchants is to obtain 21 to 22 feet through this pass at mean low-water, thus enabling vessels drawing more than 17 to 18 feet to come in and load, and saving the cost of a long, expensive, and dangerous tow to Ship Island ..." "The improvement can be made by dredging and probably would be reasonably permanent, as the pass appears to be slowly deepening from year to year, from natural causes." Estimated excavation for a channel 21 feet deep and 100 feet wide would be 86,000 cubic yards at a cost of about \$43,000.			ARCE, 1882; p. 1324-1325
July 5, 1884	Rivers and Harbors Act	An appropriation of \$5,000 was made for improvement of the pass. However, no project was submitted, as the amount was deemed inadequate to undertake the work. The appropriation was held until more funds became available.			ARCE, 1885; p. 1361-1362
December 4, 1894		Report by Maj. A.N. Damrell, Corps of Engineers, on "The bar recently formed in Horn Island Pass, Mississippi" authorized by the River and Harbor Act of August 17, 1894. Maj. Damrell stated "The bar formation took place during and after the storm of August 18, 1888, and was reported on, after a personal examination, February 2, 1893". He further states "This pass, in my opinion, is worthy of improvement by the General Government"; however, "I am unable to recommend the work until a careful survey has been made to determine whether the work when done will be reasonably permanent."			ARCE, 1895; p. 1714
June 3, 1896	River and Harbor Act	A survey for the improvement of Horn Island Pass was made in October, 1896. The project adopted was to dredge a channel 21 feet deep at mean low water through the pass (see Figure 1 for area dredged).			ARCE, 1897; p. 1693
February 11, 1897		Contract was entered into with the Rittenhouse Moore Dredging Company of Mobile, AL, for the removal of a shoal in what was know as the outer bar in Horn Island Pass. The area was 200 feet wide and 1,300 feet long, and there was a least depth of 18.7 feet mean low water. The contractor was paid 40 cents per cubic yard bin measurement. "Dredging operations were commenced on March 8, 1897, with the suction dredge <i>Jumbo</i> , attended by the steam tug <i>U.S. Grant</i> , and were completed on April 17, 1897, by the removal of 18,616 cubic yards of very fine white sand, and the result was a cut 200 feet wide and 1,300 feet long, with an average depth of 20.5 feet mean low water".	18,616		ARCE, 1897; p. 1694
May 7, 1898	River and Harbor Act	Report of Maj. W.T. Rossell, Corps of Engineers, on a survey of Horn Island Harbor and Pass, Mississippi "with a view of ascertaining the extent to which the channel leading to and from the pass should be dredged and improved in order to meet the necessities of commerce". Maj Rossell stated that "there was a depth of 19 feet mean low water over the shoal at the outer bar, but that the channel there can not be permanently improved by dredging." However, Rossell does believe that improvement of the anchorage area is warranted.			ARCE, 1897; p. 1784-1786
July 21, 1899		Contract awarded to Albert G. Delmas, of Scranton, Mississippi, to excavate a channel 150 feet wide and 4,000 feet long to a project depth of 20 feet across the "bulkhead" in Horn Island Harbor (outer bar) where the depth was previously about 17.5 feet. Dredging operations commenced on September 27, 1899 with a clam-shell patent dredge, three scows, two steam tugs, and a coal tender. Dredging was completed in the anchorage of Horn Island Harbor on May 7, 1900.	50,064		ARCE, 1900; p. 2211
March 25, 1901		Dredging commenced and by June 30, 116,658 cubic yards had been excavated from the Horn Island anchorage, chiefly compact sand, and the cut of 150 feet wide by 20 feet deep was widened to 400 feet for the 4,000 feet length of channel.	116,658		ARCE, 1901; p. 1842
February 28, 1902		From July 1, 1901 to February 28, 1902, the channel at Horn Island Harbor was widened from 400 to 500 feet through the length of 4,000 feet to a depth of 20 feet. Dredging was completed by Albert Demas	66,665		ARCE, 1902; p. 1305
February 2, 1904		Pursuant to a requirement of the River and Harbor Act of June 13, 1902, a preliminary examination and survey of Horn Island Pass, Mississippi, with a view of securing a channel 25 feet deep and 300 feet wide across the outer bar, was completed by Captain Craighill on November 7, 1903 and reported by the Office of the Chief of Engineers.			ARCE, 1904; p. 1863-1867
March 3, 1905	River and Harbor Act	Provides for obtaining a 21-foot channel through the outer and inner bars of the Pass, with a maximum depth of 25 feet and channel widths of 300 feet across the outer bar and 200 feet elsewhere.			ARCE, 1905; p. 1421-1422
August 15, 1906		The U.S. dredge <i>Charleston</i> , borrowed from the Charleston District, began dredging the inner and outer bars at Horn Island Pass to dimensions authorized by the March 3, 1905 River and Harbor Act. Specified channel dimensions were completed by the end of the fiscal year.	353,230		ARCE, 1907; p. 1390
June 15, 1907		Channel was completed from the Pascagoula River across Mississippi Sound to Horn Island Pass. Channel width was 125 feet and channel depth was 17 feet mean low water.			ARCE, 1907; p. 1385



<b>Dredging History for the Channel at Horn Island Pass: 1881 to 2005</b>					
<b>Date</b>	<b>Authority</b>	<b>Description</b>	<b>New Work (cy)</b>	<b>Maintenance (cy)</b>	<b>Source</b>
July 1, 1907		"During the past fiscal year, the U.S. dredge <i>Charleston</i> removed 184,017 cubic yards of material from this channel...". The maintenance work completed resulted in full depth and widths authorized by the project. "The channel shoals rapidly and requires constant attention to maintain it."		184,017	ARCE, 1907; p. 1447
August 1 to October 10, 1909		The U.S. <i>Charleston</i> removed all shoals in the channel through Horn Island Pass, restoring it to its project depth and width.		158,470	ARCE, 1910; p. 1581
Fiscal Year 1911		No dredging was completed during the fiscal year.			ARCE, 1911; p. 1722
Fiscal Year 1912		No dredging was completed during the fiscal year.			ARCE, 1912; p. 1943
January 30 to February 14, 1913		The U.S dredge <i>Charleston</i> removed shoals from Horn Island Pass (1,702 cubic yards) and the outer bar channel (23,565 cubic yards).		25,267	ARCE, 1913; p. 2165
February 7 to March 19, 1914		The U.S dredge <i>Charleston</i> worked on maintenance dredging in the Horn Island Pass outer bar channel.		37,807	ARCE, 1914; p. 2208-2209
Fiscal Year 1915		No dredging was completed during the fiscal year.			ARCE, 1915; p. 2552
Fiscal Year 1916		No dredging was completed during the fiscal year.			ARCE, 1916; p. 2399
Fiscal Year 1917		No dredging was completed during the fiscal year.			ARCE, 1917; p. 2493
August 22 to October 2, 1917; April 2-22, 1918		The U.S dredge <i>Charleston</i> dredged shoals from Horn Island Pass and outer bar channel to maintain authorized dimensions.		79,643	ARCE, 1918; p. 2543
Fiscal Year 1919		No dredging was completed during the fiscal year.			ARCE, 1919; p. 2629
Fiscal Year 1920		No dredging was completed during the fiscal year.			ARCE, 1920; p. 2364
Fiscal Year 1921		Maintenance dredging was conducted in Horn Island Pass to bring the project to authorized dimensions (300 feet wide by 21 feet deep); only able to complete maintenance dredging over one-third the channel length.		27,811	ARCE, 1921; p. 906
Fiscal Year 1922		No dredging was completed during the fiscal year.			ARCE, 1922; p. 906
Fiscal Year 1923		No dredging was completed during the fiscal year. As of June 5, 1923, the controlling depth in Horn Island Pass channel was 21 feet.			ARCE, 1923; p. 809
Fiscal Year 1924		No dredging was completed during the fiscal year.			ARCE, 1924; p. 804
Fiscal Year 1925		No dredging was completed during the fiscal year.			ARCE, 1925; p. 787
Fiscal Year 1926		No dredging was completed during the fiscal year.			ARCE, 1926; p. 794
Fiscal Year 1927		No dredging was completed during the fiscal year.			ARCE, 1927; p. 819
Fiscal Year 1928		No dredging was completed during the fiscal year.			ARCE, 1928; p. 854
Fiscal Year 1929		No dredging was completed during the fiscal year.			ARCE, 1929; p. 855-856
Fiscal Year 1930		No dredging was completed during the fiscal year.			ARCE, 1930; p. 926
Fiscal Year 1931		No dredging was completed during the fiscal year.			ARCE, 1931; p. 924
Fiscal Year 1932		No dredging was completed during the fiscal year.			ARCE, 1932; p. 824
Fiscal Year 1933		No dredging was completed during the fiscal year.			ARCE, 1933; p. 496
Fiscal Year 1934		No dredging was completed during the fiscal year.			ARCE, 1934; p. 581
Fiscal Year 1935		No dredging was completed during the fiscal year.			ARCE, 1935; p. 674
Fiscal Year 1936		No dredging was completed during the fiscal year.			ARCE, 1936; p. 661
Fiscal Year 1937		No dredging was completed during the fiscal year.			ARCE, 1937; p. 702

<b>Dredging History for the Channel at Horn Island Pass: 1881 to 2005</b>					
<b>Date</b>	<b>Authority</b>	<b>Description</b>	<b>New Work (cy)</b>	<b>Maintenance (cy)</b>	<b>Source</b>
Fiscal Year 1938		No dredging was completed during the fiscal year.			ARCE, 1938; p. 741-742
Fiscal Year 1939		No dredging was completed during the fiscal year.			ARCE, 1939; p. 817-818
April 22 to June 15, 1940		The U.S. hopper dredge <i>Banyaard</i> dredged the channel at Horn Island Pass to the maximum authorized depth of 25 feet and a width of 300 feet. This required new work and maintenance dredging.	291,515	313,131	ARCE, 1940; p. 811-812
Fiscal Year 1941		No dredging was completed during the fiscal year.			ARCE, 1941; p. 775
July 21 to August 7, 1941; January 7-28, 1942		The U.S. hopper dredge <i>Banyaard</i> , operating in Horn Island Pass channel, removed 527,419 cubic yards of material to maintain an authorized channel depth of 25 feet and a width of 300 feet.		527,419	ARCE, 1942; p. 687
May 11-29, 1943		The U.S. hopper dredge <i>Banyaard</i> , operating in Horn Island Pass channel, removed 152,077 cubic yards of material to maintain an authorized channel depth of 25 feet and a width of 300 feet.		152,077	ARCE, 1943; p. 621
Fiscal Year 1944		No dredging was completed during the fiscal year.			ARCE, 1944; p. 607
Fiscal Year 1945		No dredging was completed during the fiscal year.			ARCE, 1945; p. 846
January 14, 1946		The U.S. hopper dredge <i>Banyaard</i> , operating in Horn Island Pass channel, removed 1,037 cubic yards of material.		1,037	ARCE, 1946; p. 913
September 29 to October 12, 1946		The U.S. hopper dredge <i>San Pablo</i> dredged material from the Horn Island Pass channel to maintain authorized dimensions.		59,938	ARCE, 1947; p. 894-895
February 9-21 and March 15-20, 1948		The U.S. hopper dredge <i>Lyman</i> dredged material from the Horn Island Pass channel to maintain authorized dimensions.		169,200	ARCE, 1948; p. 989
<b>February 11, 1897 to March 20, 1948</b>	<b>Existing River and Harbor Acts</b>	<b>Total dredging completed under the River and Harbor Acts of 1896, 1898, and 1905 (channel depth of 25 feet and width of 300 feet).</b>	<b>896,748</b>	<b>1,735,817 (34,000 cy/yr)</b>	
May 2 to June 16, 1949		The U.S. hopper dredge <i>Langfitt</i> dredged 966,300 cubic yards of new material from the Horn Island Pass channel from about Buoy No. 9 to the 35-foot contour in the Gulf of Mexico. The controlling depth in Horn Island Pass in June, 1949, was 32 feet, far deeper than that authorized by the 1905 River and Harbor Act (controlling legislation). According the 1948 ARCE (p. 895), the controlling depth in Horn Island Pass in June, 1948, was 24 feet. This apparent unauthorized modification was explained in the 1956 ARCE (p. 562): "The project was modified by local interest, at their expense, to provide a channel 35 feet deep and 325 feet wide through Horn Island Pass."	966,300		ARCE, 1949; p. 891
Fiscal Year 1950		No dredging was completed during the fiscal year.			ARCE, 1950; p. 899
Fiscal Year 1951		No dredging was completed during the fiscal year.			ARCE, 1951; p. 730-731
Fiscal Year 1952		No dredging was completed during the fiscal year.			ARCE, 1952; p. 687
Fiscal Year 1953		No dredging was completed during the fiscal year. The controlling depth for the channel in April, 1953, was 25 feet.			ARCE, 1953; p. 642
Fiscal Year 1954		No report submitted for Pascagoula Harbor/Horn Island Pass this fiscal year.			ARCE, 1954; p. 413
September 3, 1954	River and Harbor Act	Authorized modification of the existing project in accordance with plans on file in the office of the Chief of Engineers. Provides for the Federal Government to assume maintenance of the existing project at Pascagoula Harbor as modified by local interests in 1949, at their expense, to provide a channel 35 feet deep and 325 feet wide.			ARCE, 1958; p. 508
Fiscal Year 1955		No dredging was completed during the fiscal year.			ARCE, 1955; p. 436
September 21-25, 1955		The U.S. hopper dredge <i>Langfitt</i> removed material from the Ship Island Pass bar channel to maintain the March 1905 authorized project dimensions (25 feet deep and 300 feet wide).		84,080	ARCE, 1956; p. 562-563
Fiscal Year 1957		No dredging was completed during the fiscal year.			ARCE, 1957; p. 557-559
Fiscal Year 1958		No dredging was completed during the fiscal year.			ARCE, 1958; p. 508-509
July 14-31, 1958		The U.S. hopper dredge <i>Mackenzie</i> agitated 968,229 cubic yards in Horn Island Pass channel.			ARCE, 1959; p. 532

Dredging History for the Channel at Horn Island Pass: 1881 to 2005					
Date	Authority	Description	New Work (cy)	Maintenance (cy)	Source
March 1 to April 23, 1960		The U.S. hopper dredge <i>Mackenzie</i> removed material from the Horn Island Pass channel to maintain channel dimensions dredged in 1949 (paid for by local interests) in accordance with the 1954 River and Harbor Act authorization. In June 1960, the channel depth at Horn Island Pass was 33 feet.		927,015	ARCE, 1960; p. 519-520
July 14, 1960	River and Harbor Act	Authorized deepening of the Horn Island Pass channel from 35 feet (as authorized in 1954) to 38 feet and 325 feet wide for a distance of about 2.8 miles, from the 38-ft depth contour in the Gulf of Mexico through Horn Island Pass to Mississippi Sound.			ARCE, 1961; p. 571-572
July 1-22, 1960		The U.S. hopper dredge <i>Mackenzie</i> performed new work in Horn Island Pass channel as per the 1960 River and Harbor Act.	438,165		ARCE, 1961; p. 572
July 25-29 and August 3-12, 1960		The U.S. hopper dredge <i>Langfitt</i> performed new work in Horn Island Pass channel as per the 1960 River and Harbor Act.	457,150		ARCE, 1961; p. 572
October 1-30, 1960		The U.S. hopper dredge <i>Hyde</i> removed material from the Horn Island Pass channel to maintain project dimensions.		333,718	ARCE, 1961; p. 572
March 16-25 and April 1-10, 1961		The U.S. hopper dredge <i>Gerig</i> removed 169,010 cubic yards of material from the Horn Island Pass channel to maintain project dimensions and agitated an addition 1,334,598 cubic yards. Horn Island Pass had a controlling depth of 35 feet in March 1961		169,010	ARCE, 1961; p. 572
May 10 to June 13, 1962		The U.S. hopper dredge <i>Gerig</i> performed new work in Horn Island Pass channel as per the 1960 River and Harbor Act.	1,049,220		ARCE, 1962; p. 582-583
October 1-18, 1962		The U.S. hopper dredge <i>Langfitt</i> removed material from the Horn Island Pass channel to maintain project dimensions at a cost of \$87,087.		569,714	ARCE, 1963; p. 520
October 23, 1962	River and Harbor Act	Authorized enlarging Horn Island Pass channel to 40 feet deep and 350 feet wide, including an impounding area for littoral drift, 40 feet deep, 200 feet wide, and about 1,500 feet long adjacent to the western end of Petit Bois Island.			ARCE, 1963; p. 519-520
February 10 to March 6, 1964		The U.S. hopper dredge <i>Hyde</i> removed material from the Horn Island Pass channel to attain project dimensions.		192,949	ARCE, 1964; p. 472
January 2-16, 1965		The U.S. hopper dredge <i>Langfitt</i> removed material from the Horn Island Pass channel to attain project dimensions.		435,439	ARCE, 1965; p. 463
<b>February 11, 1897 to January 16, 1965</b>	<b>Existing River and Harbor Acts</b>	<b>Total dredging completed under the River and Harbor Acts of 1896, 1898, 1905, 1954, and 1960 (channel depth of 38 feet, width of 325 feet, and length of 2.8 miles).</b>	<b>3,807,583</b>	<b>4,447,742 (64,400 cy/yr)</b>	
April 21 to May 28, 1965		The U.S. hopper dredge <i>Gerig</i> performed new work in Horn Island Pass channel as per the 1962 River and Harbor Act.	997,462		ARCE, 1965; p. 463
July 30 to August 12, 1965		The U.S. hopper dredge <i>Gerig</i> performed new work in Horn Island Pass channel as per the 1962 River and Harbor Act.	308,127		ARCE, 1966; p. 500
October 2-28, 1965		The U.S. hopper dredge <i>Gerig</i> removed material from the Horn Island Pass channel to attain project dimensions. Controlling depth in March 1966 was 40 feet.		507,385	ARCE, 1966; p. 500
October 20 to November 18, 1966		The U.S. hopper dredge <i>Gerig</i> removed material from the Horn Island Pass channel to attain project dimensions		704,210	ARCE, 1967; p. 490
March 26 to April 26, 1968		Contractor's pipeline dredge <i>Fritz Jahncke</i> removed sand from the Horn Island Pass channel to attain project dimensions.		645,600 (net) 717,836 (gross)	ARCE, 1968; p. 375; Mobile District O&M
Fiscal Year 1969		No dredging was completed during the fiscal year.			ARCE, 1969; p. 357
September 1 to October 15, 1969		The U.S. hopper dredge <i>McFarland</i> removed material from the Horn Island Pass channel on an emergency basis related to channel shoaling from Hurricane Camille.		1,994,454	ARCE, 1970; p. 342
January 27 to February 14, 1970		The U.S. hopper dredge <i>Gerig</i> removed material from the Horn Island Pass channel on an emergency basis related to channel shoaling from Hurricane Camille.		445,477	ARCE, 1970; p. 342
December 6-22, 1970		The U.S. hopper dredge <i>Gerig</i> removed sediment from the Horn Island Pass outer bar channel to attain project dimensions (40 feet deep by 350 feet wide).		342,542	ARCE, 1971; p. 10-13
Fiscal Year 1972		No dredging was completed during the fiscal year.			ARCE, 1972; p. 10-12
August 26 to September 22, 1972		Contractor's dredge <i>Tom James</i> removed sediment from the Horn Island Pass bar channel to attain project dimensions.		681,111	ARCE, 1973; p. 10-13
July 10-24, 1974		The U.S. hopper dredge <i>Gerig</i> removed sediment from the Horn Island Pass bar channel to maintain authorized project dimensions.		117,506 (net) 150,067 (gross)	Mobile District O&M
March 18-31, 1975		The U.S. hopper dredge <i>Davison</i> removed sediment from the Horn Island Pass bar channel to maintain authorized project dimensions.		454,407 309,676 (gross)	ARCE, 1975; p. 10-11; Mobile District O&M

Dredging History for the Channel at Horn Island Pass: 1881 to 2005					
Date	Authority	Description	New Work (cy)	Maintenance (cy)	Source
June 14-30, 1976		The U.S. hopper dredge <i>Gerig</i> removed sediment from the Horn Island Pass bar channel to maintain authorized project dimensions.		304,780 810,231 (gross)	ARCE, 1976; p. 10-11; Mobile District O&M
April 30 to May 15, 1977 and June 14-21, 1977		The U.S. hopper dredge <i>McFarland</i> removed sediment from the Horn Island Pass bar channel to maintain authorized project dimensions.		208,804 (net) 558,632 (gross)	ARCE, 1977; p. 10-12; Mobile District O&M
February 17-27, 1978		The U.S. hopper dredge <i>McFarland</i> removed sediment from the Horn Island Pass bar channel to maintain authorized project dimensions.		122,551 (net) 331,699 (gross)	ARCE, 1978; p. 10-13; Mobile District O&M
August 31 to October 1, 1978		Contractor's dredge <i>Pontchartrain</i> removed sediment from the Horn Island Impoundment Area.		334,991 (net) 407,147 (gross)	Mobile District O&M
October 5-15, 1979		The U.S. hopper dredge <i>Langfitt</i> removed sediment from the Horn Island Pass bar channel at a cost of \$297,975.		133,612 (net) 220,870 (gross)	ARCE, 1980; p. 10-12; Mobile District O&M
October 10 to November 18, 1979		Contractor's dredge <i>Blackburn</i> removed sediment from the Horn Island Impoundment Area.		28,780 (net) 85,070 (gross)	Mobile District O&M
January 24 to March 11, 1981		The U.S. hopper dredge <i>Langfitt</i> removed sediment from the Horn Island Pass bar channel to maintain authorized project dimensions.		168,134 (gross)	Mobile District O&M
September 14-25, 1981		Contractor's dredge <i>Fritz Jahncke</i> removed sediment from the Horn Island Impoundment Area.		118,930 (net) 137,290 (gross)	ARCE, 1981; p. 10-12; Mobile District O&M
September -November, 1982		Contractor's dredge <i>Mermentau</i> removed sediment from the Horn Island Pass bar channel to attain project dimensions.		610,047 (gross)	Mobile District O&M
June 4-22, 1983		Contractor's dredge <i>Buster Bean</i> removed sediment from the Horn Island Impoundment Area.		248,181 (net) 389,552 (gross)	Mobile District O&M
November -December, 1983		Contractor's dredge <i>Atchafalaya</i> removed sediment from the Horn Island Pass bar channel to attain project dimensions.		493,175 (gross)	Mobile District O&M
December 1984		Contractor's dredge <i>Port Arthur</i> removed sediment from the Horn Island Impoundment Area.		201,499 (gross)	Mobile District O&M
July 24 to August 19, 1985		Contractor's dredge <i>Sugar Island</i> removed sediment from the Horn Island Pass bar channel to attain project dimensions.		753,530 (net) 1,108,333 (gross)	Mobile District O&M
October 1985 to January 1986		Contractor's dredge <i>Port Arthur</i> removed sediment from the Horn Island Pass Bar Channel and the Impoundment Area.		255,186 (net) 536,926 (gross)	Mobile District O&M
November 17, 1986	Water Resources Development Act	Authorized deepening and widening the Gulf entrance channel to 44 by 550 feet; widening Horn Island channel to 600 feet, and relocating the channel about 500 feet westwardly.			ARCE, 1987, see Table 10-B
October 31, 1986 to January 3, 1987		Contractor's dredge <i>Mermentau</i> removed sediment from the Horn Island Pass bar channel to attain project dimensions.		251,914 (net) 481,788 (gross)	Mobile District O&M
September 14-19, 1987		Contractor's dredge <i>Tom James</i> removed sediment from the Horn Island Pass bar channel to attain project dimensions.		104,647 (net) 179,946 (gross)	Mobile District O&M
December 28, 1989 to January 10, 1990		Contractor's dredge <i>Blackburn</i> removed sediment from the Horn Island Pass bar channel to attain project dimensions.		192,046 (net) 254,152 (gross)	Mobile District O&M
November 1-26, 1990		Contractor's dredge <i>Manhattan Island</i> removed sediment from the Horn Island Pass bar channel to attain project dimensions.		310,987 (net) 535,333 (gross)	Mobile District O&M
September 17-18, 1992		Contractor's dredge <i>Missouri H</i> removed sediment from the Horn Island Impoundment Area.		224,127 (net) 248,113 (gross)	Mobile District O&M
September 7-15, 1993		Contractor's dredge <i>Manhattan Island</i> removed sediment from the Horn Island Pass bar channel to attain project dimensions.		607,419 (net) 1,161,822 (gross)	Mobile District O&M
<b>February 11, 1897 to September 15, 1993</b>	<b>Existing River and Harbor Acts</b>	<b>Total dredging completed under the River and Harbor Acts of 1896, 1898, 1905, 1954, 1960, and 1962 (channel depth of 40 feet, width of 350 feet, and impoundment area along the western end of Petit Bois Island).</b>	<b>5,113,172</b>	<b>19,220,259 (200,200 cy/yr)</b>	
September 12-19, 1995		New work was completed using various contracted bucket dredges to dredge the Horn Island Pass bar channel to authorized project dimensions (44 feet deep by 550 feet wide).	546,388		Mobile District O&M

<b>Dredging History for the Channel at Horn Island Pass: 1881 to 2005</b>					
<b>Date</b>	<b>Authority</b>	<b>Description</b>	<b>New Work (cy)</b>	<b>Maintenance (cy)</b>	<b>Source</b>
September to November, 1995		Contractor's dredge <i>Tom James</i> removed sediment from the Horn Island Pass bar channel to attain authorized project dimensions (44 feet deep by 550 feet wide).	2,411,260		Mobile District O&M
November 27 to December 4, 1995		Contractor's dredge <i>Eagle I</i> removed sediment from the Horn Island Pass bar channel to attain authorized project dimensions (44 feet deep by 550 feet wide).	160,010		Mobile District O&M
August 14-24, 1997		Contractor's dredge <i>Missouri H</i> removed sediment from the Horn Island Pass bar channel to attain project dimensions (44 feet deep by 550 feet wide).		137,180 (net) 151,489 (gross)	Mobile District O&M
October 12-29, 1998		Contractor's dredge <i>Meridian</i> removed sediment from the Horn Island Pass bar channel to attain project dimensions.		617,757 (net) 659,256 (gross)	Mobile District O&M
April 7-27, 2002		Contractor's dredge <i>George D. Williams II</i> removed sediment from the Horn Island Pass bar channel to attain project dimensions.		432,266 (net) 531,403 (gross)	Mobile District O&M
March 11 to April 2, 2004		Contractor's dredge <i>Meridian</i> removed sediment from the Horn Island Impoundment Area.		508,943 (net) 715,548 (gross)	Mobile District O&M
September 17 to October 1, 2005		Contractor's dredge <i>Missouri H</i> removed sediment from the Horn Island Pass bar channel to attain project dimensions (44 feet deep by 550 feet wide).		252,708 (gross)	Mobile District O&M
October 9-21, 2005		Contractor's dredge <i>Newport</i> removed sediment from the Horn Island Pass bar channel to attain project dimensions.		120,901 (gross)	Mobile District O&M
October 13 to November 5, 2005		Contractor's dredge <i>Missouri H</i> removed sediment from the Horn Island Impoundment Area.		555,407 (gross)	Mobile District O&M
<b>1897 to 2005</b>		<b>Total dredging in the Horn Island Pass Outer Bar Channel</b>	<b>8,230,830</b>	<b>22,206,971 (205,600 cy/yr)</b>	