University of New Orleans
ScholarWorks@UNO

Pontchartrain Institute Reports and Studies | Pontchartrain Institute for Environmental Sciences (PIES)

6-2011

Louisiana Barrier Island Comprehensive Monitoring Program (BICM) Volume 3: Bathymetry and Historical Seafloor Change 1869-2007 Part 4: Historical Seafloor Change Analysis

Michael Miner
University of New Orleans Pontchartrain Institute for Environmental Sciences

Dallon Weathers
University of New Orleans Pontchartrain Institute for Environmental Sciences

Mark Kulp
University of New Orleans Pontchartrain Institute for Environmental Sciences

Rebecca Rafferty
University of New Orleans Pontchartrain Institute for Environmental Sciences

Follow this and additional works at: https://scholarworks.uno.edu/pies_rpts

 Part of the Environmental Sciences Commons

Recommended Citation

Miner, Michael; Weathers, Dallon; Kulp, Mark; and Rafferty, Rebecca, "Louisiana Barrier Island Comprehensive Monitoring Program (BICM) Volume 3: Bathymetry and Historical Seafloor Change 1869-2007 Part 4: Historical Seafloor Change Analysis" (2011). *Pontchartrain Institute Reports and Studies.* Paper 7.
https://scholarworks.uno.edu/pies_rpts/7

This Report is brought to you for free and open access by the Pontchartrain Institute for Environmental Sciences (PIES) at ScholarWorks@UNO. It has been accepted for inclusion in Pontchartrain Institute Reports and Studies by an authorized administrator of ScholarWorks@UNO. For more information, please contact scholarworks@uno.edu.

Louisiana Barrier Island Comprehensive Monitoring Program (BICM)
Volume 3: Bathymetry and Historical Seafloor Change 1869-2007
Part 4: Historical Seafloor Change Analysis

June 2011

Michael Miner, Dallon Weathers, Mark Kulp, and Rebecca Rafferty
University of New Orleans, Pontchartrain Institute for Environmental Sciences,
2000 Lakeshore Dr., New Orleans, LA 70148

Louisiana Barrier Island Comprehensive Monitoring Program (BICM)

Volume 3: Bathymetry and Historical Seafloor Change 1869-2007

Part 4: Historical Seafloor Change Analysis

Final Report

February 2009

Michael Miner, Dallon Weathers, Mark Kulp, and Rebecca Rafferty

University of New Orleans, Pontchartrain Institute for Environmental Sciences, 2000 Lakeshore Dr., New Orleans, LA, 70148

Funding for this project was provided by the LCA Science & Technology Program, a partnership between the Louisiana Department of Natural Resources (LDNR) and the U.S. Army Corps of Engineers, through LDNR Interagency Agreement No. 2512-06-06.

INTRODUCTION

It is widely recognized and well documented that barrier islands and deltaic headland shorelines of the Louisiana Coastal Zone are rapidly retreating landward and degrading (e.g. LCA, 2005). High rates of delta plain subsidence, ongoing eustatic sea-level rise, sediment starvation, and processes such as storm impacts collectively contribute to this shoreline loss as shoreline sediment is eroded or becomes inundated by marine waters (Penland and Ramsey, 1990). The amount of shoreline retreat along coastal Louisiana has been shown to be as much as 25 m/yr locally (Williams et al., 1992; Martinez et al., 2009), and has been a contributing factor to the more than 100 km^2 of annual land loss that has been documented for some select historic time frames across the region (Barras et al., 2004).

PURPOSE

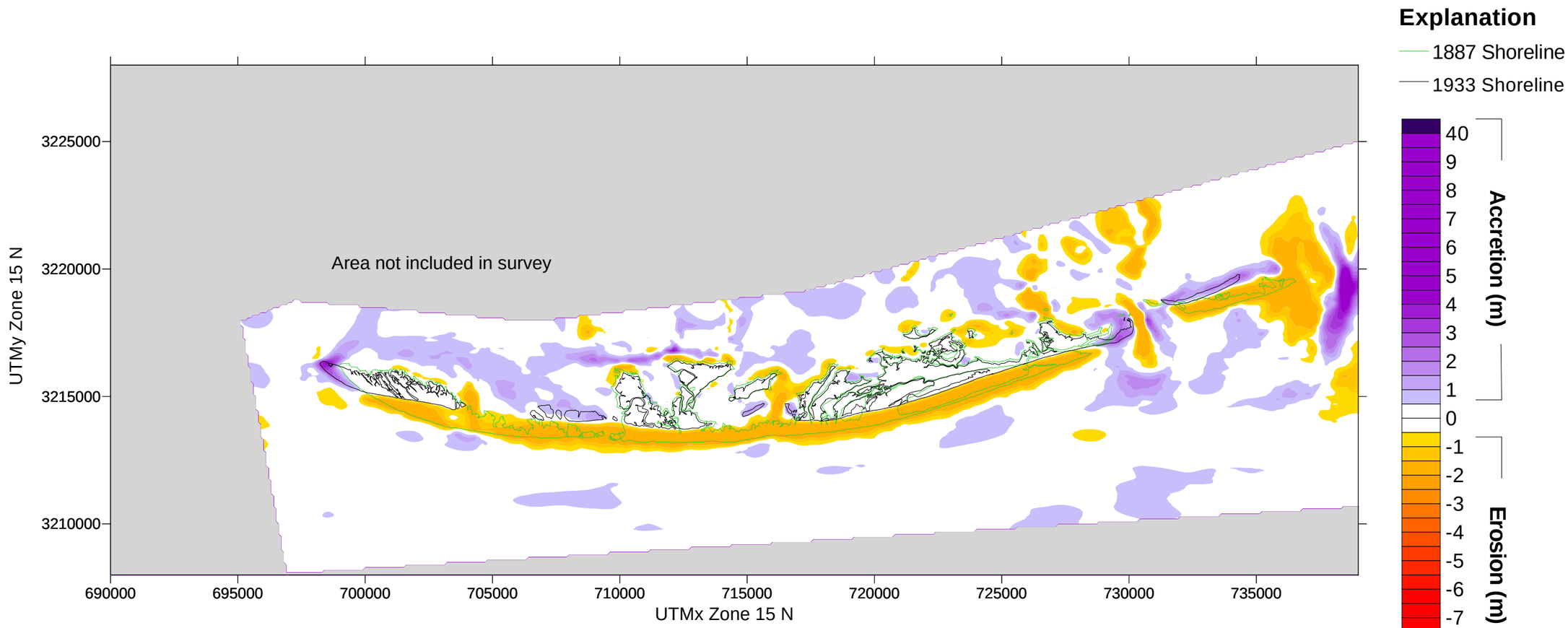
To more effectively identify the magnitude, rates, and processes of shoreline change a Barrier Island Comprehensive Monitoring program (BICM) has been developed by the Louisiana Department of Natural Resources (LDNR), and implemented by LDNR, University of New Orleans-Pontchartrain Institute for Environmental Sciences (UNO-PIES), and the U.S. Geological Survey (USGS) as a framework for a coast-wide monitoring effort. A significant component of this effort includes documenting the historically dynamic morphology of the Louisiana nearshore, shoreline, and backshore zones. This aspect of the program is designed to complement other more area-specific monitoring programs that are currently underway through the support of agencies such as the Louisiana Department of Natural Resources and U.S. Army Corp of Engineers.

The advantage of BICM over current project-specific monitoring efforts is that it will provide long-term morphological datasets on all of Louisiana's barrier islands and shorelines; rather than just those islands and areas that are slated for coastal engineering projects or have had construction previously completed. BICM additionally specifically provides a larger proportion of unified, long-term datasets that will be available to monitor constructed projects, plan and design future barrier island projects, develop operation and maintenance activities, and assess the range of impacts created by past and future tropical storms. The development of coastal models, such as those quantifying littoral sediment budgets, and a more advanced knowledge of mechanisms forcing large-scale coastal evolution becomes increasingly feasible with the availability of BICM regional datasets. These factors constitute critically important elements of any effort that is aimed at effective coastal restoration, sediment nourishment, or management.

THIS REPORT

This report is the fourth part of BICM Volume 3, a series focusing on the bathymetry and seafloor change for the Louisiana Coastal Zone. Part 4 specifically focuses on the historical seafloor change analysis. It is not intended to be used as a stand-alone reference without a complete understanding of the methodology detailed in Part 1 of Volume 3 and the bathymetric maps in Parts 2 and 3 upon which the change analysis are based. Parts 1-3 also document the sources of pre-2007 bathymetric data and the methods used to create, from these sources, digital data that is based on common vertical and horizontal reference frames. Shorelines used in this report were generated for BICM Volume 2, *Shoreline Change Analysis, 1800's to 2005* by Martinez et al. (2009). A detailed account of the methods and data sources for the shorelines can be found in Martinez et al. (2009).

Isles Derniere Region 1890’s to 1930’s Seafloor Change



Seafloor Change Analysis

Bathymetric data from List et al. (1994). In order to account for relative sea levelrise (RSLR), a shift of -0.50 m was applied to the 1930’s data and -0.77 m was applied to the 1880’s data based on both the RSLR rates at Grand Isle (0.92 cm/yr for 1947-2006), and a seafloor change analysis conducted by Jaffe et al. (1991). Additional informationon methods and uncertainty analysis can be found in Parts1 and 3 of this Volume.

Scale:

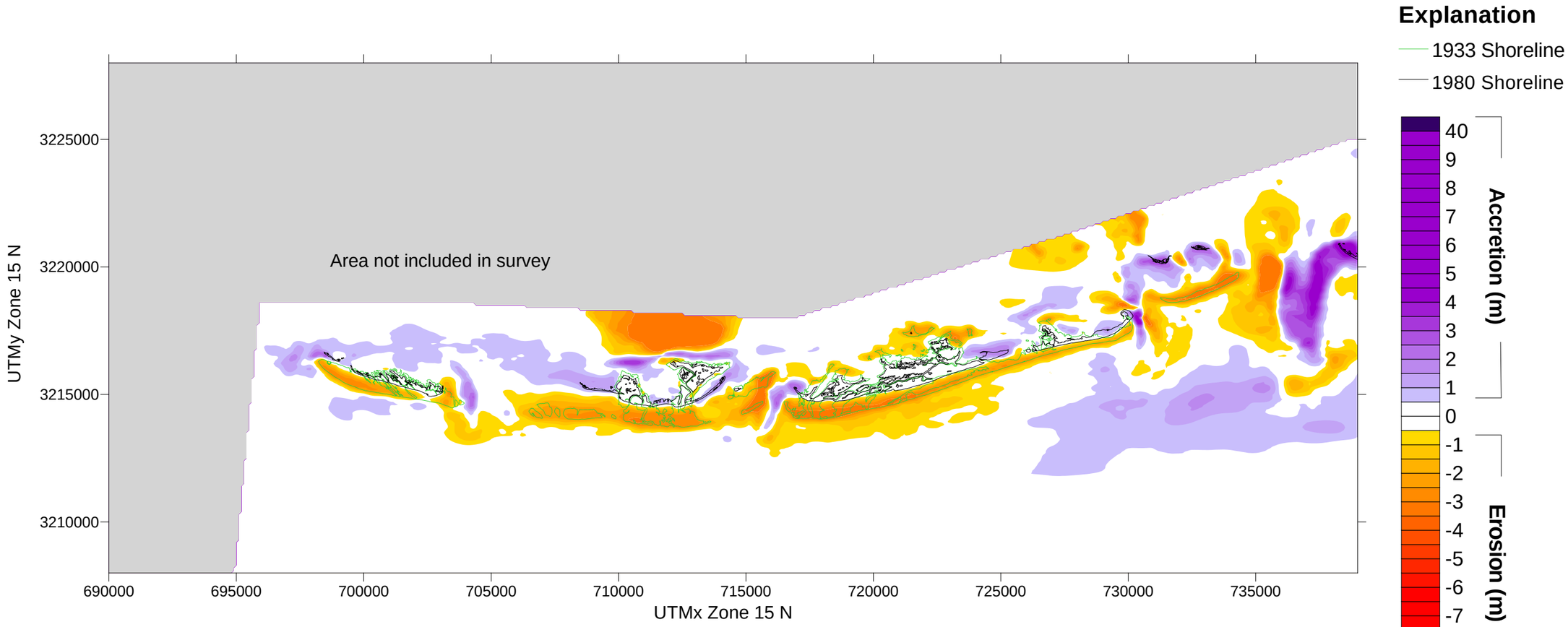
0 10 km

Horizontal datum: North American Datum 1983

Shoreline Data

The shoreline data for 1884 and1933 were derived from T-Sheets scanned into digital format at a scale of 1:20,000. Detailed information on shoreline data can be found in Martinez et al. (2009).

Isles Derniere Region 1930's to 1980's Seafloor Change



Seafloor Change Analysis

Bathymetric data from List et al. (1994). In order to account for relative sea levelrise (RSLR), a shift of -0.16 m was applied to the 1980's data based on a RSLR rate of 0.92 cm/yr at the Grand Isle tide gauge from 1947-2006. A shift of -0.50 m was applied to the 1930's data based on both the RSLR rates at Grand Isle, and a seafloor change analysis conducted by Jaffe et al. (1991). Additional informationon methods and uncertainty analysis can be found in Parts1 and 3 of this Volume.

Scale:

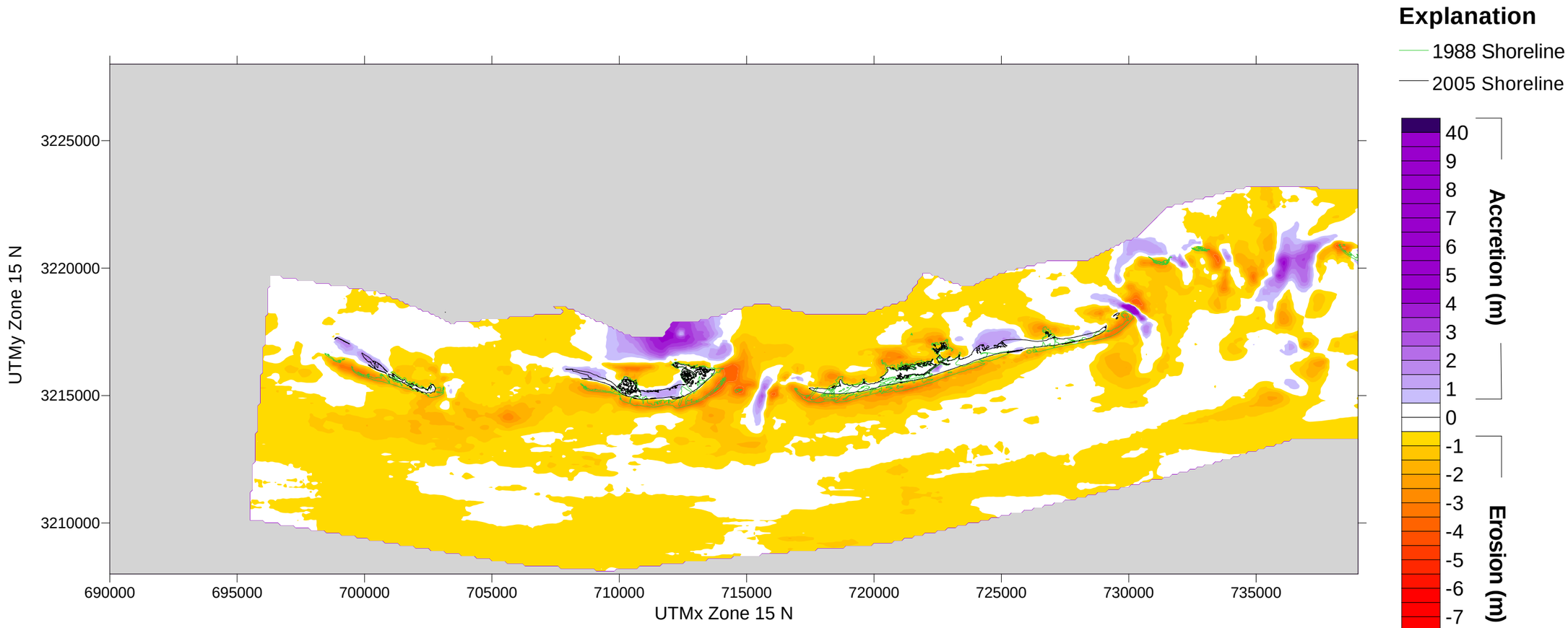
0 10 km

Horizontal datum: North American Datum 1983

Shoreline Data

The shoreline data for 1933 were derived from T-Sheets scanned into digital format at a scale of 1:20,000. 1988 Shorelines were derived from black and white vertical aerial photography. Detailed information on shoreline data can be found in Martinez et al. (2009).

Isles Derniere Region 1980's to 2006 Seafloor Change



Seafloor Change Analysis

The 1980's bathymetric data is from List et al. (1994). In order to account for relative sea level rise (RSLR), a shift of -0.16 m was applied to the 1980's data based on a RSLR rate of 0.92 cm/yr at the Grand Isle tide gauge from 1947-2006. Additional information on methods and uncertainty analysis can be found in Parts 1 and 3 of this Volume.

Scale:

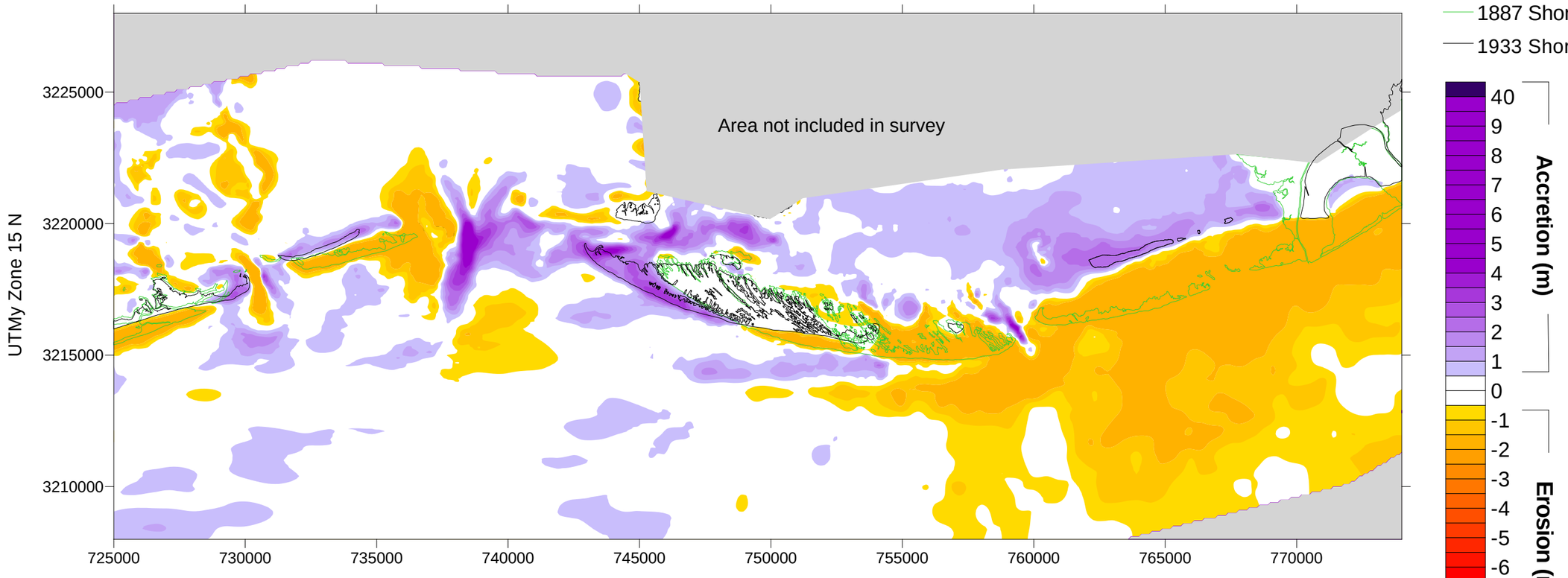
0 10 km

Horizontal datum: North American Datum 1983

Shoreline Data

1988 shorelines were derived from black and white vertical aerial photography.The shoreline data for 2005 were derived from a combination of Digital Ortho-Quarter Quads (DOQQs) and Digital Globe Quickbird satellite imagery. Detailed information on shoreline data can be found in Martinez et al. (2009).

Timbalier Region 1890’s to 1930’s Seafloor Change



Explanation

1887 Shoreline

1933 Shoreline

Accretion (m)

40 9 8 7 6 5 4 3 2 1 0

Erosion (m)

-1 -2 -3 -4 -5 -6 -7 -8 -9 -40

Seafloor Change Analysis

Bathymetric data from List et al. (1994). In order to account for relative sea levelrise (RSLR), a shift of -0.50 m was applied to the 1930’s data and -0.77 m was applied to the 1890’s data based on both the RSLR rates at Grand Isle (0.92 cm/yr for 1947-2006), and a seafloor change analysis conducted by Jaffe et al. (1991). Additional information on methods and uncertainty analysis can be found in Parts1 and 3 of this Volume.

Scale:

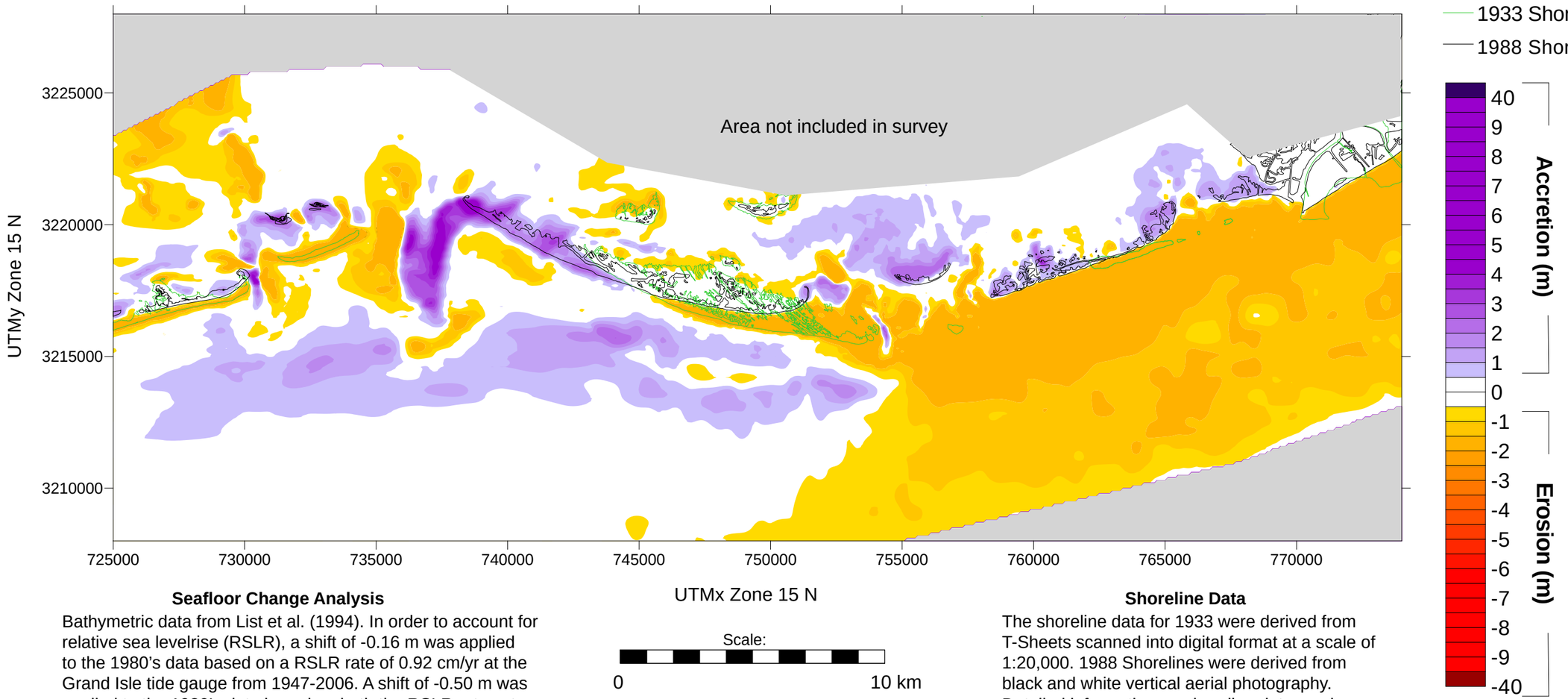
0 10 km

Horizontal datum: North American Datum 1983

Shoreline Data

The shoreline data for 1884 and1933 were derived from T-Sheets scanned into digital format at a scale of 1:20,000. Detailed information on shoreline data can be found in Martinez et al. (2009).

Timbalier Region 1930’s to 1980’s Seafloor Change



Seafloor Change Analysis

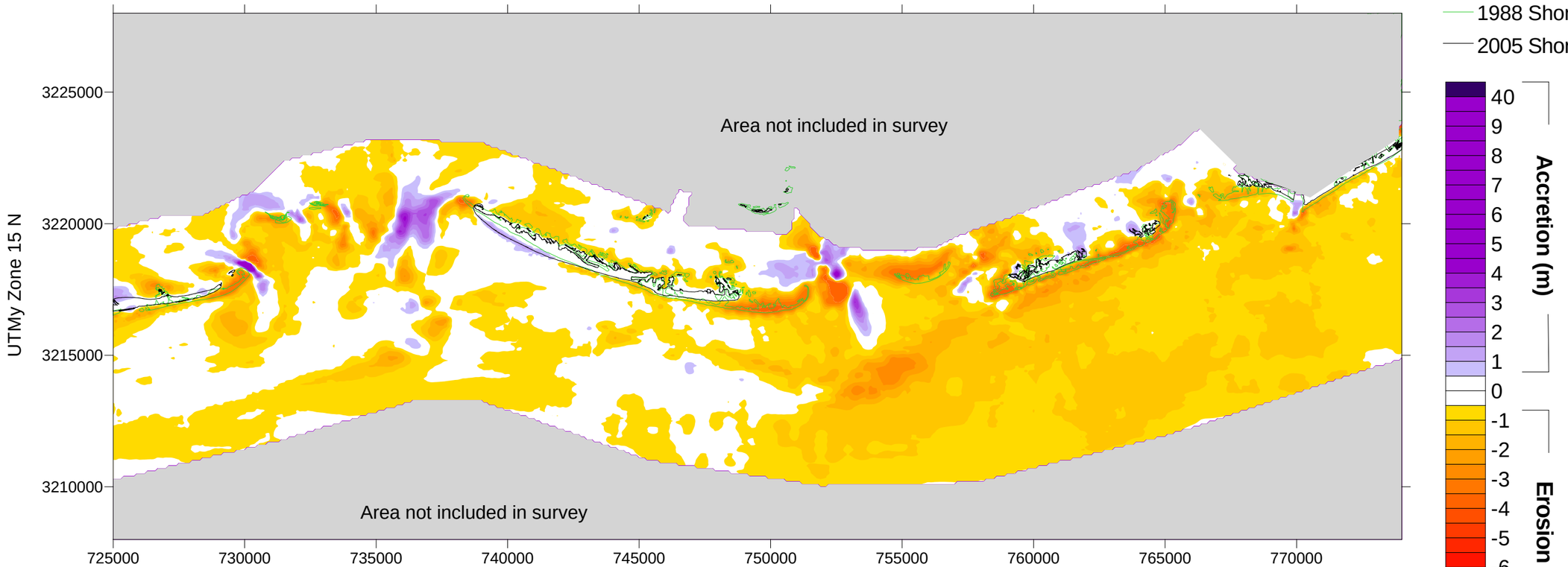
Bathymetric data from List et al. (1994). In order to account for relative sea levelrise (RSLR), a shift of -0.16 m was applied to the 1980’s data based on a RSLR rate of 0.92 cm/yr at the Grand Isle tide gauge from 1947-2006. A shift of -0.50 m was applied to the 1930’s data based on both the RSLR rates at Grand Isle, and a seafloor change analysis conducted by Jaffe et al. (1991). Additional information on methods and uncertainty analysis can be found in Parts1 and 3 of this Volume.

Horizontal datum: North American Datum 1983

Shoreline Data

The shoreline data for 1933 were derived from T-Sheets scanned into digital format at a scale of 1:20,000. 1988 Shorelines were derived from black and white vertical aerial photography. Detailed information on shoreline data can be found in Martinez et al. (2009).

Timbalier Region 1980's to 2006 Seafloor Change



Seafloor Change Analysis

The 1980's bathymetric data is from List et al. (1994). In order to account for relative sea level rise (RSLR), a shift of -0.16 m was applied to the 1980's data based on a RSLR rate of 0.92 cm/yr at the Grand Isle tide gauge from 1947-2006. Additional information on methods and uncertainty analysis can be found in Parts 1 and 3 of this Volume.

Horizontal datum: North American Datum 1983

Shoreline Data

1988 shorelines were derived from black and white vertical aerial photography.The shoreline data for 2005 were derived from a combination of Digital Ortho-Quarter Quads (DOQQs) and Digital Globe Quickbird satellite imagery. Detailed information on shoreline data can be found in Martinez et al. (2009).

Explanation

1988 Shoreline

2005 Shoreline

Accretion (m)

40
9
8
7
6
5
4
3
2
1
0

Erosion (m)

-1
-2
-3
-4
-5
-6
-7
-8
-9
-40

Barataria Region 1890's to 1930's Seafloor Change

Seafloor Change Analysis

Bathymetric data from List et al. (1994). In order to account for relative sea levelrise (RSLR), a shift of -0.50 m was applied to the 1930's data and -0.77 m was applied to the 1880's data based on both the RSLR rates at Grand Isle (0.92 cm/yr for 1947-2006), and a seafloor change analysis conducted by Jaffe et al. (1991). Additional information on methods and uncertainty analysis can be found in Parts 1 and 3 of this Volume.

Shoreline Data

The shoreline data for 1884 and 1933 were derived from T-Sheets scanned into digital format at a scale of 1:20,000. Detailed information on shoreline data can be found in Martinez et al. (2009).

Area not included in survey

Area not included in survey

Explanation

1884 Shoreline

1933 Shoreline

Accretion (m)

40
9
8
7
6
5
4
3
2
1
0

Erosion (m)

-1
-2
-3
-4
-5
-6
-7
-8
-9
-40

Scale:

0 10 km

Horizontal datum: North American Datum 1983

UTMy Zone 15 N

3250000
3245000
3240000
3235000
3230000
3225000
3220000
3215000

760000 765000 770000 775000 780000 785000 790000 795000 800000 805000

UTMx Zone 15 N

Barataria Region 1930's to 1980's Seafloor Change

Seafloor Change Analysis

Bathymetric data from List et al. (1994). In order to account for relative sea levelrise (RSLR), a shift of -0.16 m was applied to the 1980's data based on a RSLR rate of 0.92 cm/yr at the Grand Isle tide gauge from 1947-2006. A shift of -0.50 m was applied to the 1930's data based on both the RSLR rates at Grand Isle, and a seafloor change analysis conducted by Jaffe et al. (1991). Additional informationon methods and uncertainty analysis can be found in Parts1 and 3 of this Volume.

Shoreline Data

The shoreline data for 1933 were derived from T-Sheets scanned into digital format at a scale of 1:20,000. 1988 Shorelines were derived from black and white vertical aerial photography. Detailed information on shoreline data can be found in Martinez et al. (2009).

Area not included in survey

Area not included in survey

Explanation

1933 Shoreline

1988 Shoreline

Accretion (m)

40
9
8
7
6
5
4
3
2
1
0

Erosion (m)

-1
-2
-3
-4
-5
-6
-7
-8
-9
-40

Scale:

0 10 km

Horizontal datum: North American Datum 1983

UTMy Zone 15 N

3250000
3245000
3240000
3235000
3230000
3225000
3220000
3215000

760000
765000
770000
775000
780000
785000
790000
795000
800000
805000

Barataria Region 1980's to 2006 Seafloor Change

Seafloor Change Analysis

The 1980's bathymetric data is from List et al. (1994). In order to account for relative sea level rise (RSLR), a shift of -0.16 m was applied to the 1980's data based on a RSLR rate of 0.92 cm/yr at the Grand Isle tide gauge from 1947-2006. Additional information on methods and uncertainty analysis can be found in Parts 1 and 3 of this Volume.

Shoreline Data

1988 shorelines were derived from black and white vertical aerial photography.The shoreline data for the 2005 were derived from a combination of Digital Ortho-Quarter Quads (DOQQs) and Digital Globe Quickbird satellite imagery. Detailed information on shoreline data can be found in Martinez et al. (2009).

Area not included in survey

Area not included in survey

Explanation

1988 Shoreline

2006 Shoreline

Accretion (m)

40
9
8
7
6
5
4
3
2
1
0

Erosion (m)

-1
-2
-3
-4
-5
-6
-7
-8
-9
-40

Scale:

0 10 km

Horizontal datum: North American Datum 1983

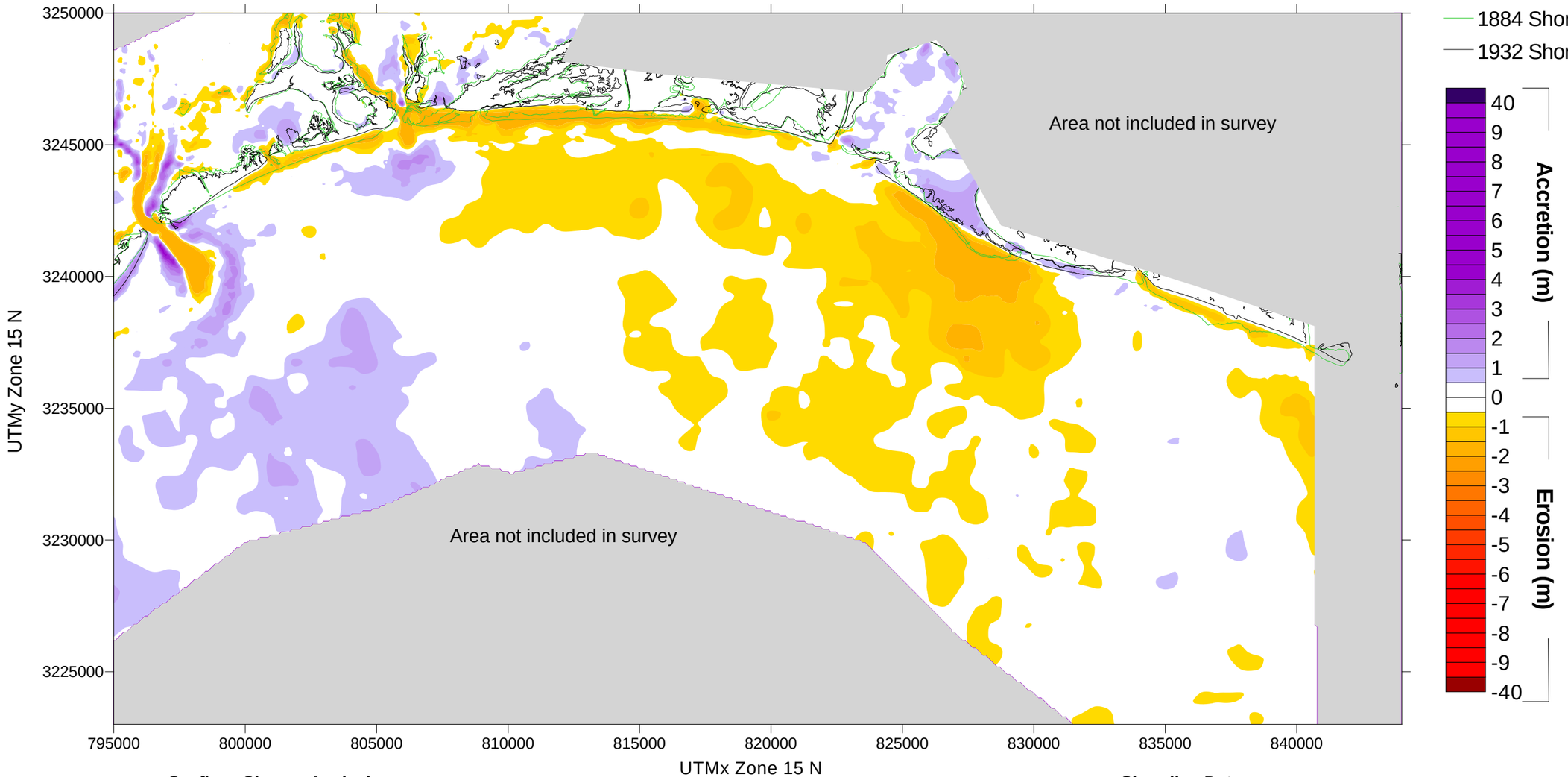
UTMy Zone 15 N

3250000
3245000
3240000
3235000
3230000
3225000
3220000
3215000

760000 765000 770000 775000 780000 785000 790000 795000 800000 805000

UTMx Zone 15 N

Plaquemines Region 1890’s to 1930’s Seafloor Change



Explanation

1884 Shoreline

1932 Shoreline

Accretion (m)

40 9 8 7 6 5 4 3 2 1 0

Erosion (m)

-1 -2 -3 -4 -5 -6 -7 -8 -9 -40

Seafloor Change Analysis

Bathymetric data from List et al. (1994). In order to account for relative sea levelrise (RSLR), a shift of -0.50 m was applied to the 1930’s data and -0.77 m was applied to the 1890’s data based on both the RSLR rates at Grand Isle (0.92 cm/yr for 1947-2006), and a seafloor change analysis conducted by Jaffe et al. (1991). Additional informationon methods and uncertainty analysis can be found in Parts1 and 3 of this Volume.

Scale:

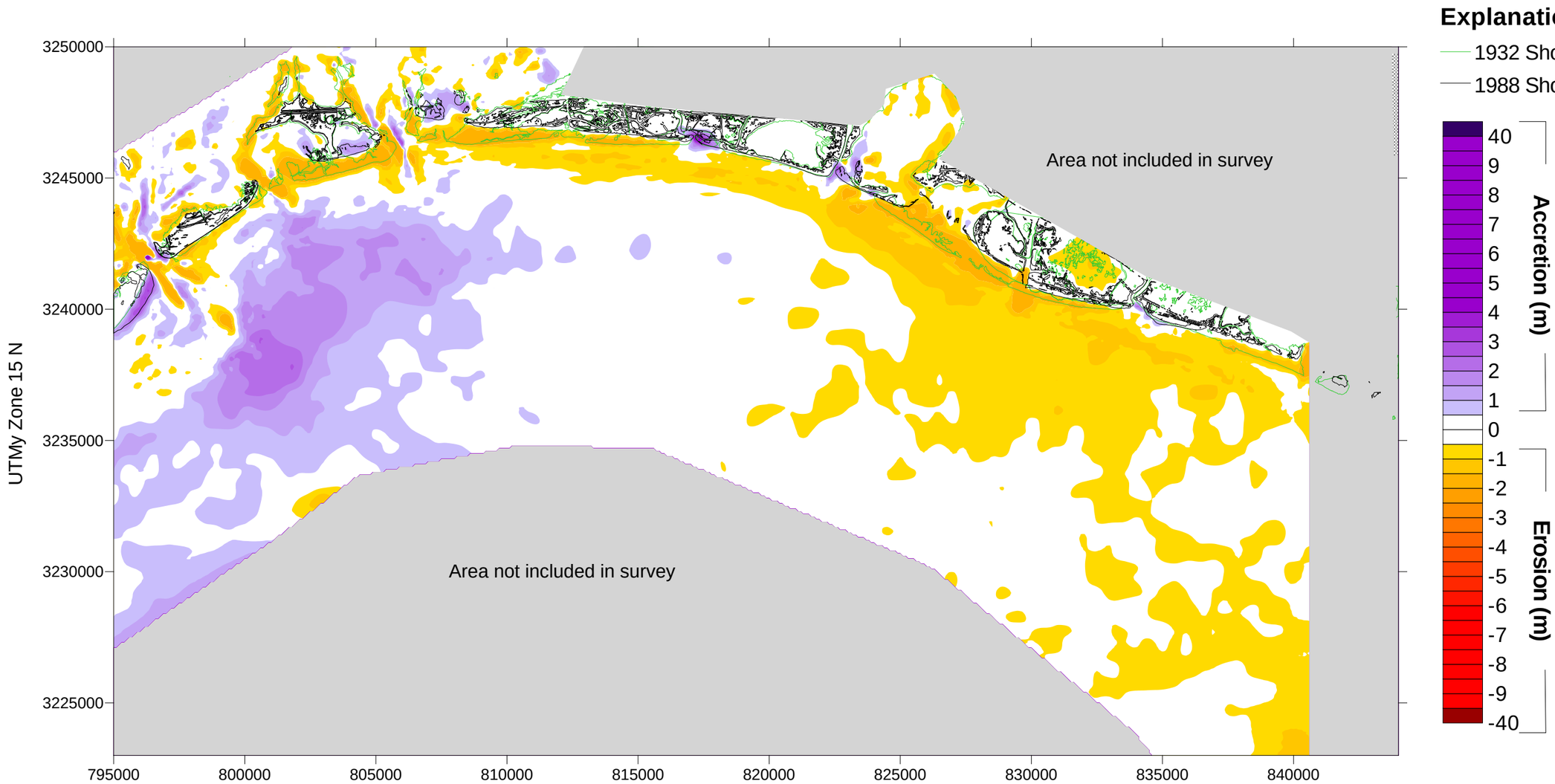
0 10 km

Horizontal datum: North American Datum 1983

Shoreline Data

The shoreline data for 1884 and1933 were derived from T-Sheets scanned into digital format at a scale of 1:20,000. Detailed information on shoreline data can be found in Martinez et al. (2009).

Plaquemines Region 1930's to 1980's Seafloor Change



Explanation

1932 Shoreline

1988 Shoreline

Accretion (m): 40, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0

Erosion (m): -1, -2, -3, -4, -5, -6, -7, -8, -9, -40

Scale: 0 — 10 km

Horizontal datum: North American Datum 1983

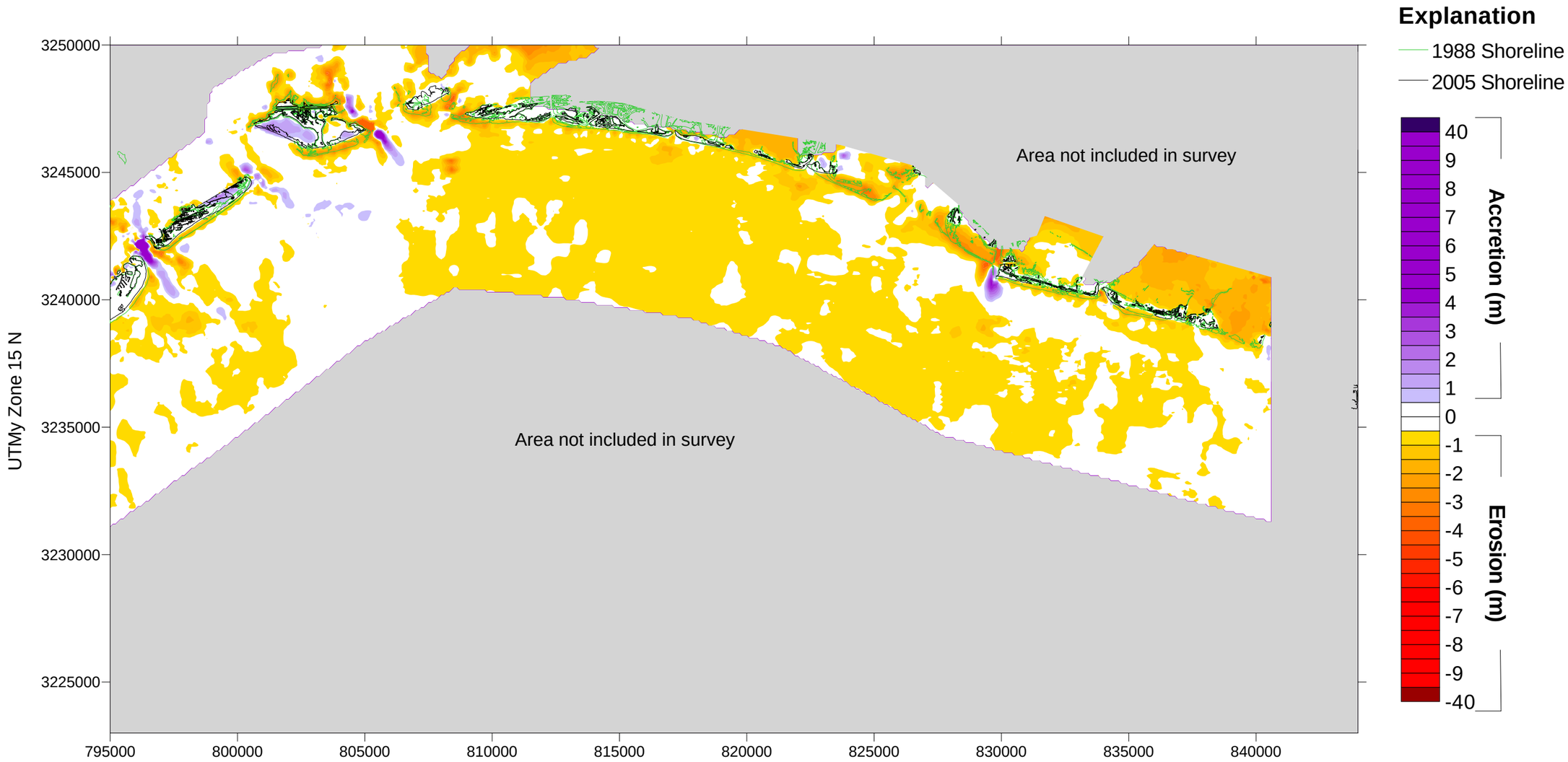
Seafloor Change Analysis

Bathymetric data from List et al. (1994). In order to account for relative sea levelrise (RSLR), a shift of -0.16 m was applied to the 1980's data based on a RSLR rate of 0.92 cm/yr at the Grand Isle tide gauge from 1947-2006. A shift of -0.50 m was applied to the 1930's data based on both the RSLR rates at Grand Isle, and a seafloor change analysis conducted by Jaffe et al. (1991). Additional informationon methods and uncertainty analysis can be found in Parts1 and 3 of this Volume.

Shoreline Data

The shoreline data for 1933 were derived from T-Sheets scanned into digital format at a scale of 1:20,000. 1988 Shorelines were derived from black and white vertical aerial photography. Detailed information on shoreline data can be found in Martinez et al. (2009).

Plaquemines Region 1980's to 2006 Seafloor Change



Seafloor Change Analysis

The 1980's bathymetric data is from List et al. (1994). In order to account for relative sea level rise (RSLR), a shift of -0.16 m was applied to the 1980's data based on a RSLR rate of 0.92 cm/yr at the Grand Isle tide gauge from 1947-2006. Additional information on methods and uncertainty analysis can be found in Parts 1 and 3 of this Volume.

Scale:

0 10 km

Horizontal datum: North American Datum 1983

Shoreline Data

1988 shorelines were derived from black and white vertical aerial photography.The shoreline data for 2005 were derived from a combination of Digital Ortho-Quarter Quads (DOQQs) and Digital Globe Quickbird satellite imagery. Detailed information on shoreline data can be found in Martinez et al. (2009).

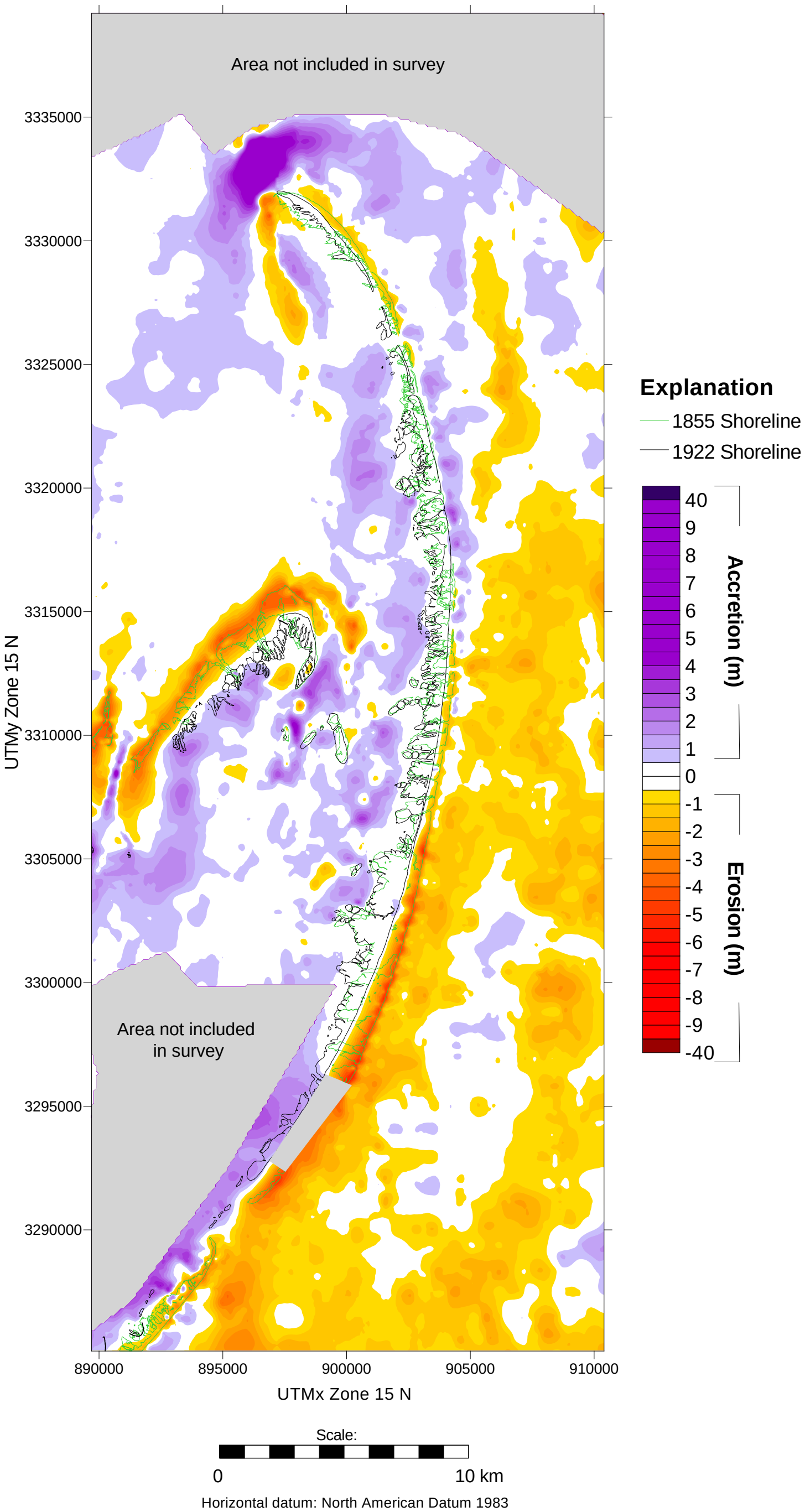
Northern Chandeleur Islands 1870's to 1920's Seafloor Change

Seafloor Change Analysis

1870's bathymetric data were digitized from USCGS H-Sheets and1920's bathymetry was provided by National Ocean Service, Office of Coast Survey in digital format. In order to account for relative sea level rise (RSLR) of ~5 mm/yr, static shifts of -0.42 m for the 1920's and -0.69 m for the 1870's were applied to the original soundings data. Additional information on methods and uncertainty analysis can be found in Parts 1 and 3 of this Volume.

Shoreline Data

The shoreline data for 1869 and 1922 were derived from T-Sheets scanned into digital format at a scale of 1:20,000. Detailed information on shoreline data can be found in Martinez et al. (2009).



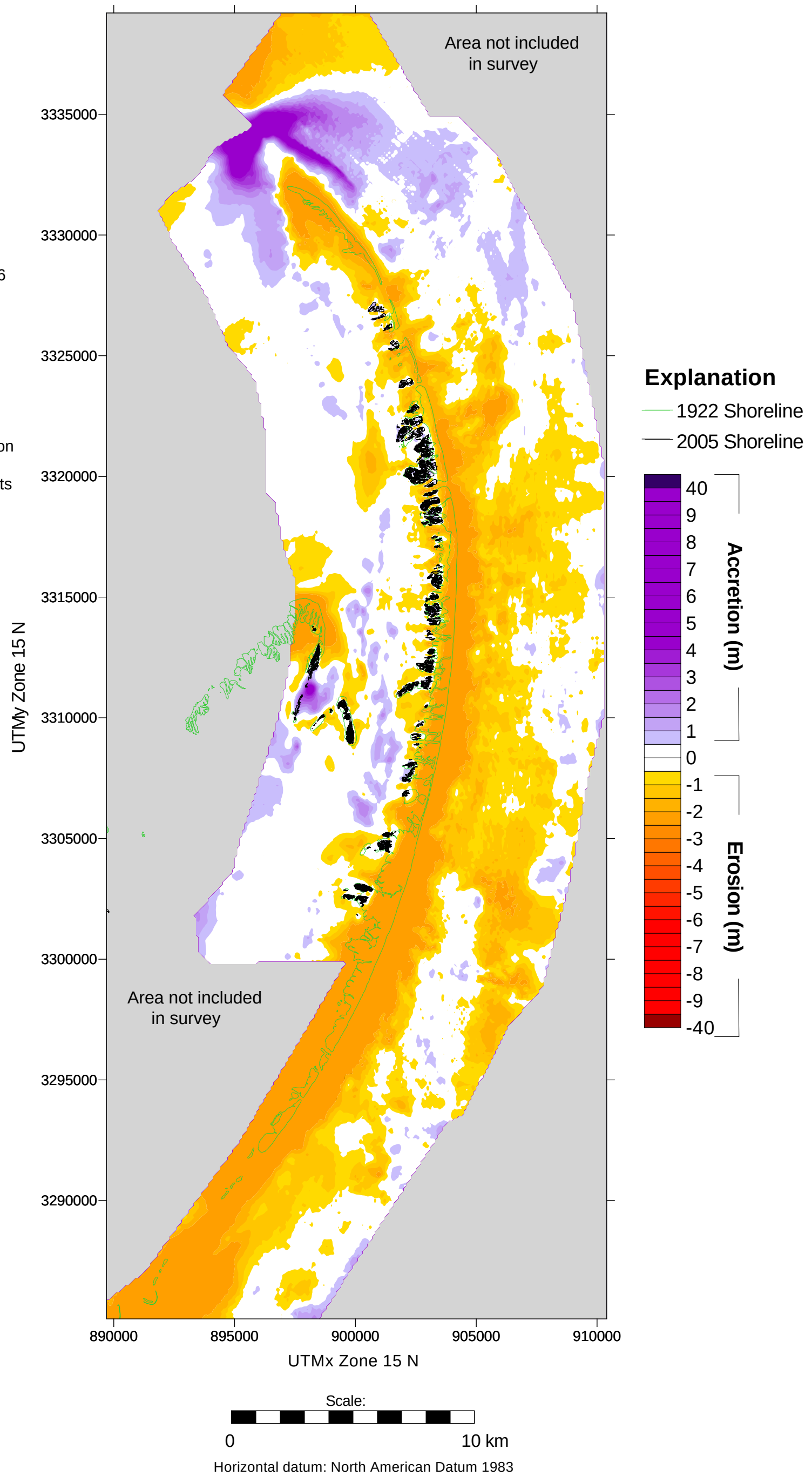
Northern Chandeleur Islands 1920's to 2006 Seafloor Change

Seafloor Change Analysis

1920's bathymetry was provided by National Ocean Service, Office of Coast Survey in digital format. 2006 bathymetry was collected by UNO-PIES and USGS as part of the BICM effort. In order to account for relative sea level rise (RSLR) of ~5 mm/yr, a static shift of -0.42 m was applied to the original 1920's soundings data. Additional information on methods and uncertainty analysis can be found in Parts 1 and 3 of this Volume.

Shoreline Data

The shoreline data for 1922 were derived from T-Sheets scanned into digital format at a scale of 1:20,000. Shoreline data for 2005 were derived from a combination of Digital Ortho-Quarter Quads (DOQQs) and Digital Globe Quickbird satellite imagery. For details on shoreline data see Martinez et al. (2009).



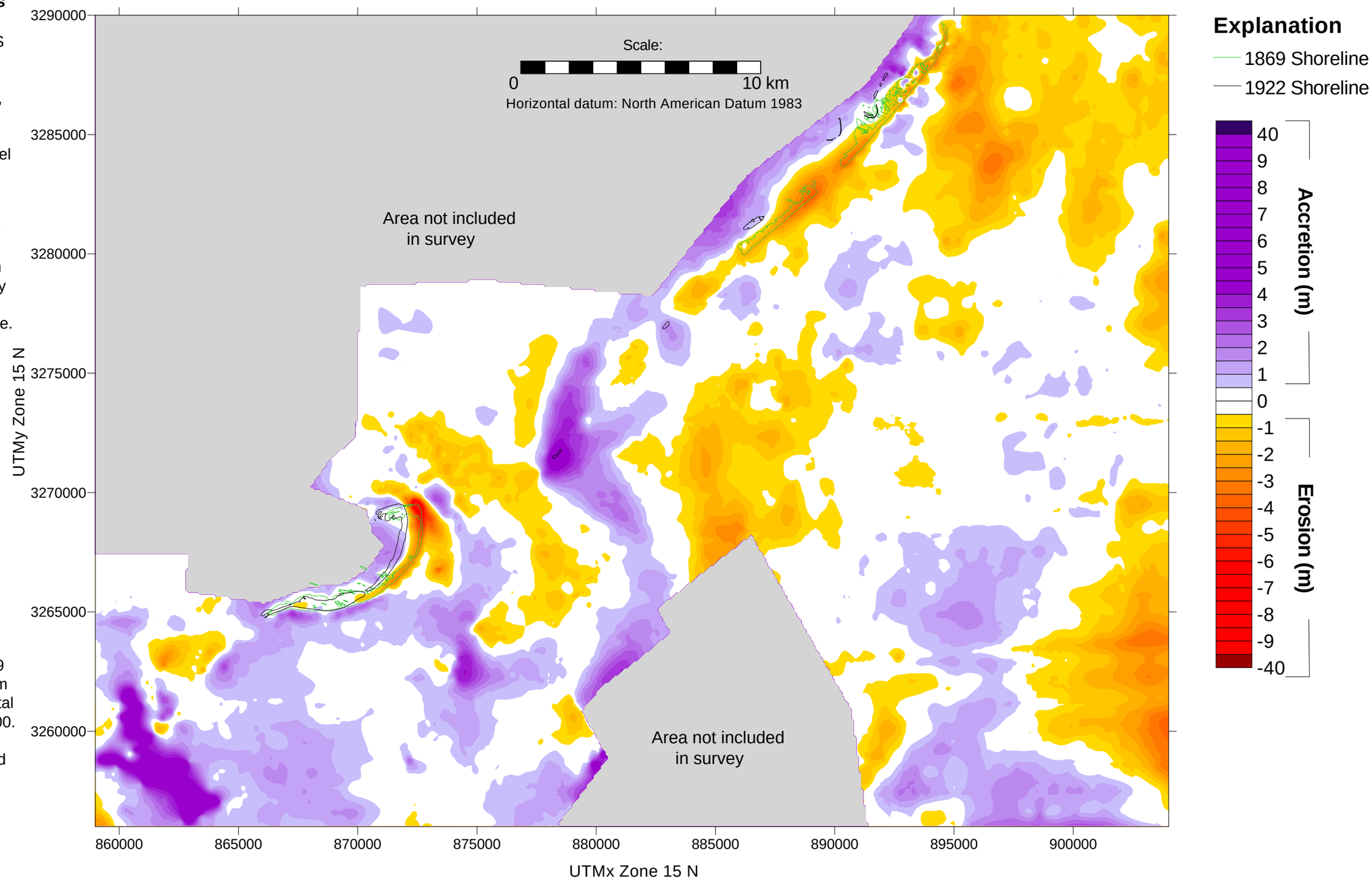
Southern Chandeleur Islands 1870's to 1920's Seafloor Change

Seafloor Change Analysis

1870's bathymetric data were digitized from USCGS H-Sheets and1920's bathymetry was provided by National Ocean Service, Office of Coast Survey in digital format. In order to account for relative sea level rise (RSLR) of ~5 mm/yr, static shifts of -0.42 m for the 1920's and -0.69 m for the 1870's were applied to the original soundings data. Additional information on methods and uncertainty analysis can be found in Parts 1 and 3 of this Volume.

Shoreline Data

The shoreline data for 1869 and 1922 were derived from T-Sheets scanned into digital format at a scale of 1:20,000. Detailed information on shoreline data can be found in Martinez et al. (2009).



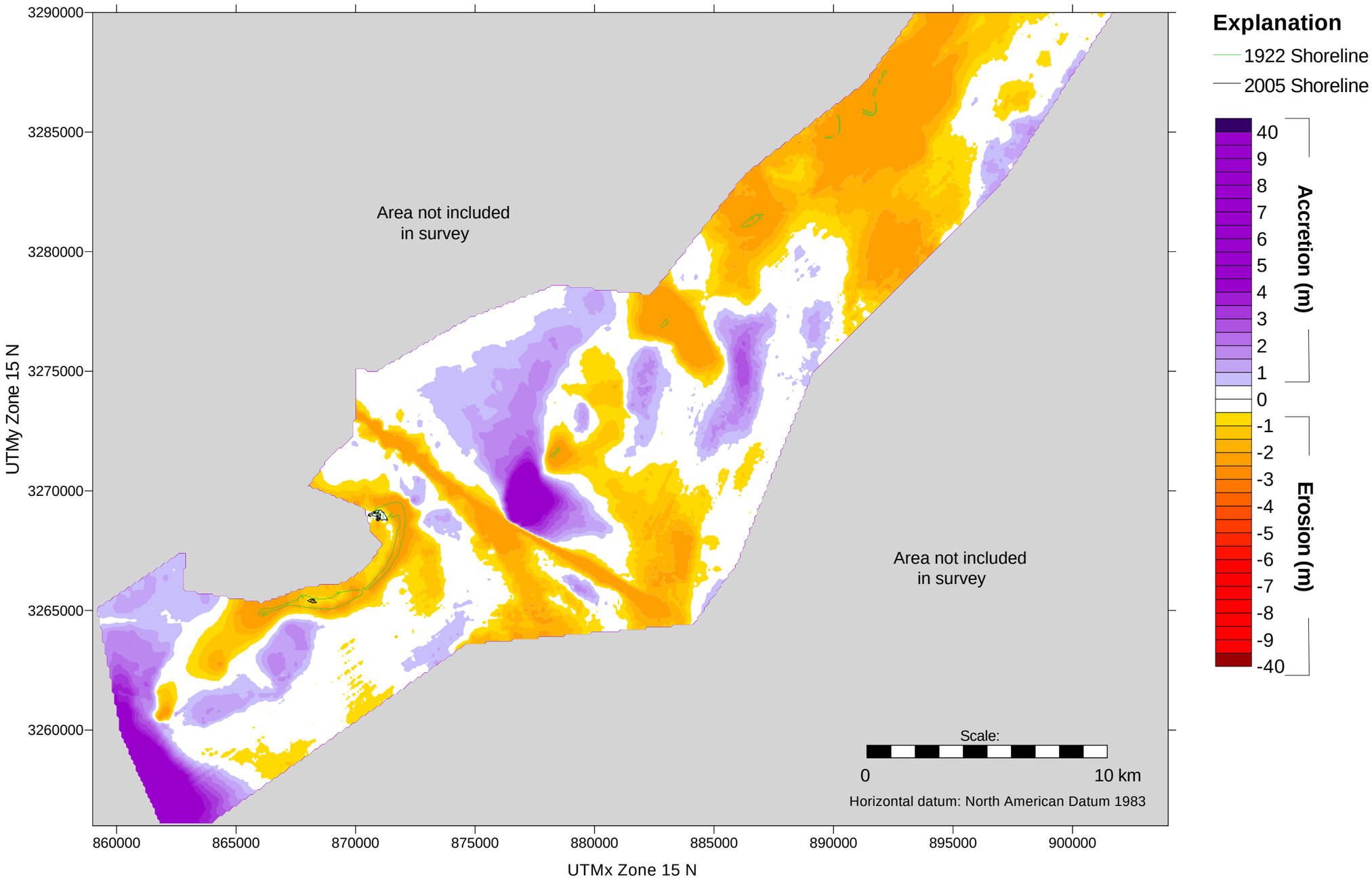
Southern Chandeleur Islands 1920's to 2007 Seafloor Change

Seafloor Change Analysis

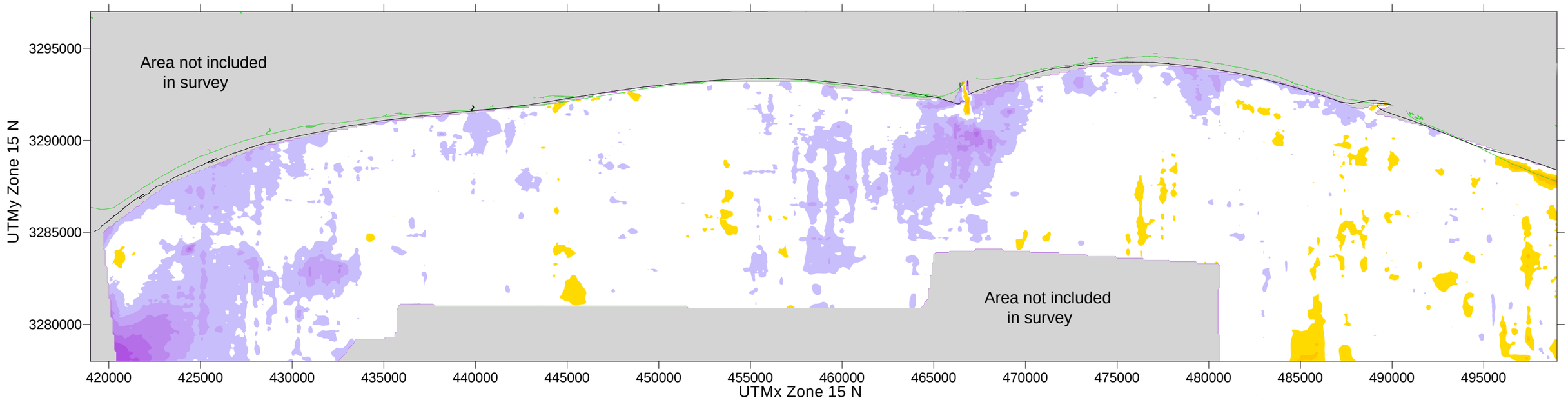
1920's bathymetry was provided by National Ocean Service, Office of Coast Survey in digital format. 2007 bathymetry was collected by UNO-PIES and USGS as part of the BICM effort. In order to account for relative sea level rise (RSLR) of ~5 mm/yr, a static shift of -0.42 m was applied to the original 1920's soundings data. Additional information on methods and uncertainty analysis can be found in Parts 1 and 3 of this Volume.

Shoreline Data

The shoreline data for 1922 were derived from T-Sheets scanned into digital format at a scale of 1:20,000. Shoreline data for 2005 were derived from a combination of Digital Ortho-Quarter Quads (DOQQs) and Digital Globe Quickbird satellite imagery. For details on shoreline data see Martinez et al. (2009).



Western Chenier Beaches 1880’s to 1920’s Seafloor Change



Scale:

0 10 km

Horizontal datum: North American Datum 1983

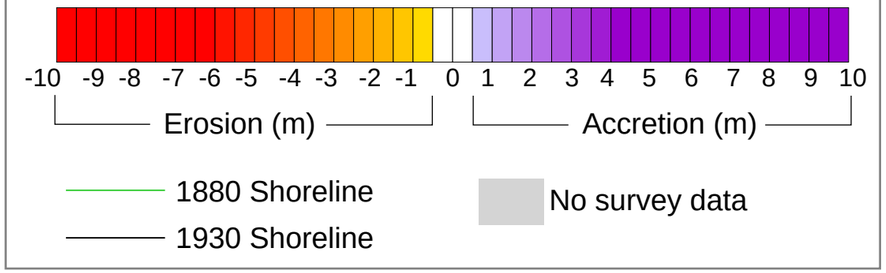
Seafloor Change Analysis

1880’s and 1920’s bathymetric data were digitized from USCGS H-Sheets.In order to account for relative sea level rise (RSLR) of 4.9 mm/yr, static shifts of -0.41 m fo the 1920’s and -0.60 m for the 1880’s were applied to the original soundings data. Additional information on methods and uncertainty analysis can be found in Parts 1 and 3 of this Volume.

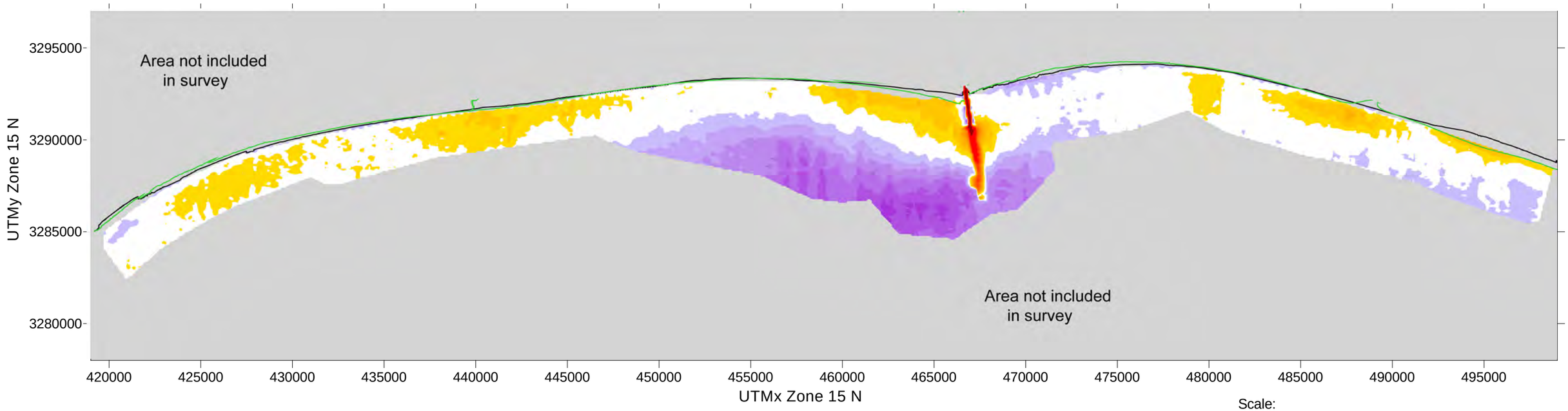
Shoreline Data

The shoreline data for 1869 and 1922 were derived from T-Sheets scanned into digital format at a scale of 1:20,000. Detailed information on shoreline data can be found in Martinez et al. (2009).

Explanation



Western Chenier Beaches 1920's to 2007 Seafloor Change



Scale:

0 10 km

Horizontal datum: North American Datum 1983

Seafloor Change Analysis

1920's bathymetric data were digitized from USCGS H-Sheets.2007 bathymetry was collected by UNO-PIES and USGS as part of the BICM effort. In order to account for relative sea level rise (RSLR) of 4.9 mm/yr, a static shift of -0.41 m was applied to the original 1920's soundings data. Additional information on methods and uncertainty analysis can be found in Parts 1 and 3 of this Volume.

Shoreline Data

The shoreline data for 1922 were derived from T-Sheets scanned into digital format at a scale of 1:20,000. Shoreline data for 2005 were derived from a combination of Digital Ortho-Quarter Quads (DOQQs) and Digital Globe Quickbird satellite imagery. For details on shoreline data see Martinez et al. (2009).

Explanation

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

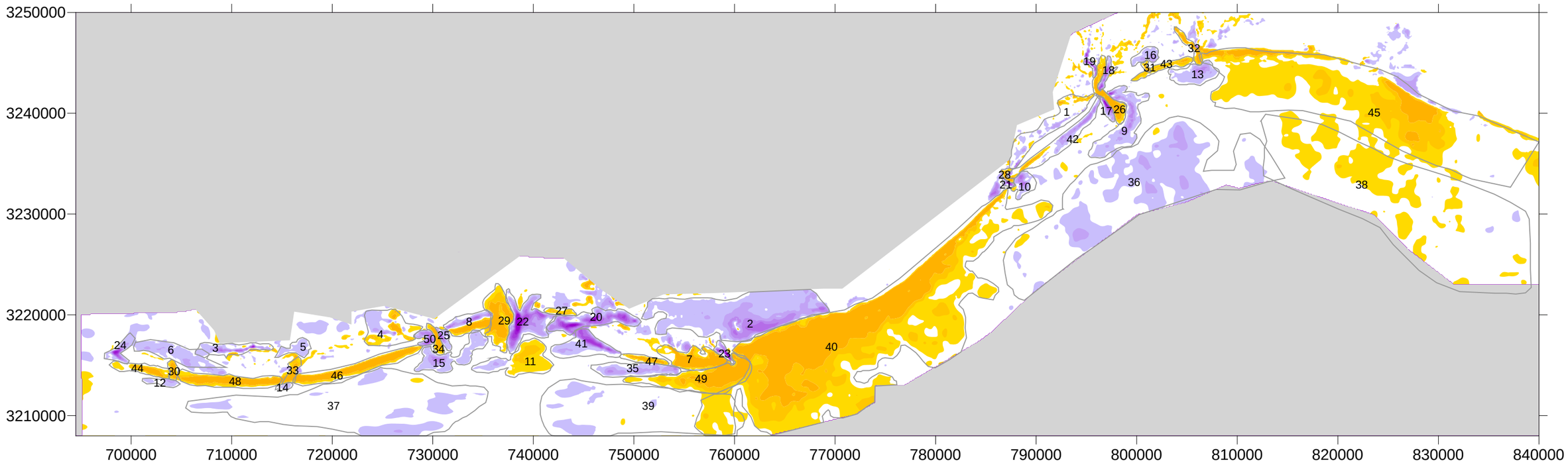
Erosion (m) Accretion (m)

1930 Shoreline

2005 Shoreline

No survey data

Central Coast Seafloor Change Volumes 1890’s to 1930’s



*see table on following page for volume calculaton results associated with each numbered polygon on this map

0 10 km

Horizontal datum: North American Datum 1983

Explanation

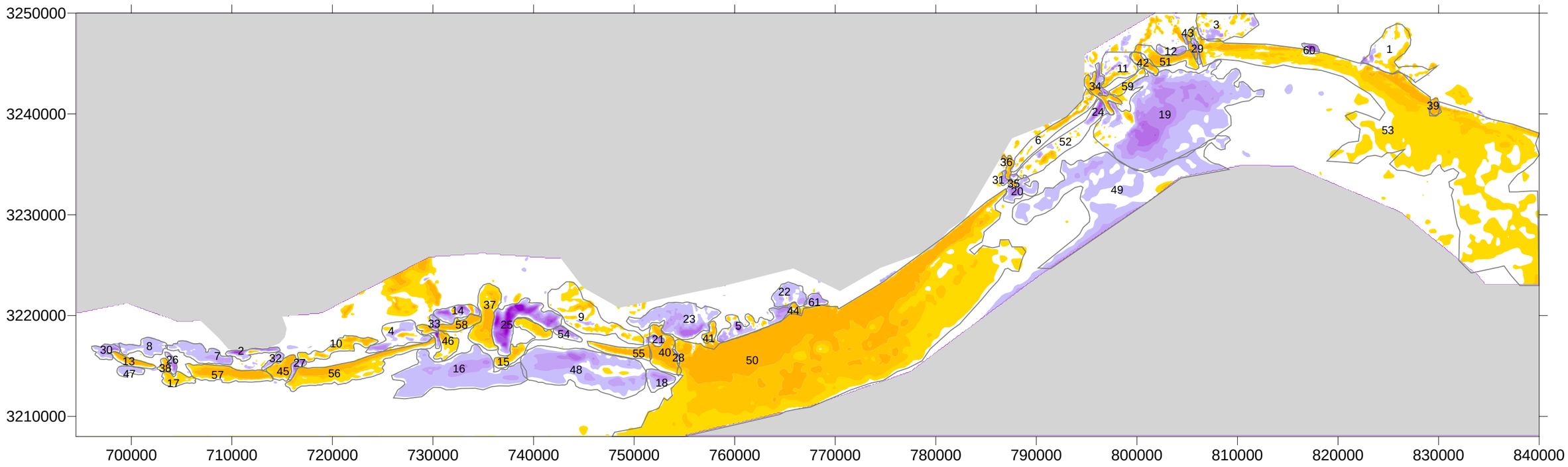
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

Erosion (m) Accretion (m)

Sediment Volume Calculations for Central Louisiana Coast Seafloor Geomorphic Zones: 1890-1930

Zone	Accretion (m^3)	Erosion (m^3)	net volume change (m^3)	total area (m^2)	Uncertainty (+/- m^3)
1. Backbarrier_Grand Isle	4,787,604.22	2,590,492.48	2,197,111.74	13,920,000.00	6,960,000.00
2. Backbarrier-E. Timbalier Island	54,042,836.13	94,225.36	53,948,610.77	57,255,000.00	28,627,500.00
3. Backbarrier_Caillou Boca	4,885,734.29	534,232.92	4,351,501.37	6,185,000.00	3,092,500.00
4. Backbarrier_East Island	4,192,448.53	6,088,680.27	-1,896,231.75	14,165,000.00	7,082,500.00
5. Backbarrier/Flood Tidal Delta_Whiskey Pass	2,059,365.03	1,106.26	2,058,258.76	3,030,000.00	1,515,000.00
6. Backbarrier_Last Isle	7,916,558.71	24,411.36	7,892,147.35	10,860,000.00	5,430,000.00
7. Barrier Erosin (updrift)_Timbalier Island	156,316.09	17,471,438.64	-17,315,122.55	10,045,000.00	5,022,500.00
8. Barrier Retreat_Wine Island	3,637,708.03	6,312,037.92	-2,674,329.88	7,190,000.00	3,595,000.00
9. Ebb Tidal Delta_Barataria Pass	11,735,791.17	61,882.00	11,673,909.17	15,025,000.00	7,512,500.00
10. Ebb Tidal Delta_Caminada Pass	3,109,692.32	196,606.17	2,913,086.15	3,770,000.00	1,885,000.00
11. Ebb Tidal Detla_Cat Island Pass	2,052,765.65	8,533,211.40	-6,480,445.75	14,280,000.00	7,140,000.00
12. Ebb Tidal Delta_Coupe Colin	1,240,442.70	0.00	1,240,442.70	1,740,000.00	870,000.00
13. Ebb Tidal Delta_Quatre Bayou Pass	5,801,057.09	4,414.16	5,796,642.93	7,300,000.00	3,650,000.00
14. Ebb Tidal Delta_Whiskey Pass	448,594.64	0.00	448,594.64	600,000.00	300,000.00
15. Ebb Tidal Delta_Wine Island Pass	8029228.36	21.21823423	8029207.151	10,150,000.00	5,075,000.00
16. Flood Tidal Delta_Pass Abel	2,306,927.66	5,545.78	2,301,381.87	2,725,000.00	1,362,500.00
17. Inlet Fill_Barataria Pass 1	2,506,622.32	7,296.44	2,499,325.88	1,450,000.00	725,000.00
18. Inlet Fill_Barataria Pass 2	2,417,615.59	18,193.39	2,399,422.20	1,505,000.00	752,500.00
19. Inlet Fill_Barataria Pass 3	1,372,231.88	17,036.47	1,355,195.41	760,000.00	380,000.00
20. Inlet Fill_Caillou Pass	19,657,185.57	44,602.35	19,612,583.22	11,570,000.00	5,785,000.00
21. Inlet Fill_Caminada Pass	979,176.93	2,145.40	977,031.54	510,000.00	255,000.00
22. Inlet FIll_Cat Island Pass	22,649,493.71	24,019.34	22,625,474.37	13,250,000.00	6,625,000.00
23. Inlet Fill_Little Pass TImbalier	2,322,448.53	59,090.19	2,263,358.34	1,520,000.00	760,000.00
24. Inlet Fill_Raccoon Point	3,963,010.20	6,633.88	3,956,376.32	3,205,000.00	1,602,500.00
25. Inlet FIll_Wine Island Pass	1,683,311.14	6,279.71	1,677,031.43	1,530,000.00	765,000.00
26. Inlet Scour_Barataria Pass	33,432.66	12,371,822.10	-12,338,389.44	5,210,000.00	2,605,000.00
27. Inlet Scour_Caillou Pass	63,612.20	1,291,707.13	-1,228,094.93	1,440,000.00	720,000.00
28. Inlet Scour_Caminada Pass	79,377.59	1,166,163.44	-1,086,785.85	665,000.00	332,500.00
29. Inlet Scour_Cat Is. Pass	108,860.45	18,023,468.73	-17,914,608.28	10,925,000.00	5,462,500.00
30. Inlet Scour_Coupe Colin	3,432.24	2,098,664.93	-2,095,232.69	1,310,000.00	655,000.00
31. Inlet Scour_Pass Abel	7,709.00	623,495.62	-615,786.62	375,000.00	187,500.00
32. Inlet Scour_Quatre Bayou Pass	74,113.12	4,408,758.67	-4,334,645.55	2,225,000.00	1,112,500.00
33. Inlet Scour_Whiskey Pass	3,501.76	3,711,770.42	-3,708,268.66	1,910,000.00	955,000.00
34. Inlet Scour_Wine Island Pass	10,115.22	3,800,513.50	-3,790,398.29	1,790,000.00	895,000.00
35. Lower Shoreface_Timbalier Lobe	7,346,015.39	25,545.06	7,320,470.33	8,935,000.00	4,467,500.00
36. Offshore_Barataria Bight	74,031,218.93	3,712,085.99	70,319,132.94	168,145,000.00	84,072,500.00
37. Offshore_Isle Dernieres	34,869,639.1	2,762,798.3	32,106,840.81	111,760,000.00	55,880,000.00
38. Offshore_Plaquemine	7,192,061.67	63,589,911.41	-56,397,849.74	209,605,000.00	104,802,500.00
39. Offshore_Timbalier	16,883,914.59	11,933,927.33	4,949,987.266	87,350,000.00	43,675,000.00
40. Shoreface_Caminada Headland	1,496,249.96	352,020,915.1	-350,524,665.2	262,345,000.00	131,172,500.00
41. Shoreface_Downdrift Timbalier Island	11,787,405.93	50,426.89	11,736,979.05	10,205,000.00	5,102,500.00
42. Shoreface_Grand Isle	5,826,999.91	2,177,490.176	3,649,509.742	9,855,000.00	4,927,500.00
43. Shoreface_Grand Terre	7,238.27	3,256,525.648	-3,249,287.376	2,835,000.00	1,417,500.00
44. Shoreface_Last Isle	85,001.56	4,989,768.815	-4,904,767.254	4,675,000.00	2,337,500.00
45. Shoreface_Plaquemines	6,471,409.03	118,639,169	-112,167,760	185,630,000.00	92,815,000.00
46. Shoreface_Trininty Island	252,892.87	23,578,757.03	-23,325,864.15	13,235,000.00	6,617,500.00
47. Shoreface_Updrift Timbalier Island	75,704.03	3,317,956.93	-3,242,252.90	2,375,000.00	1,187,500.00
48. Shoreface_Whiskey Island	41,436.57	17,897,063.19	-17,855,626.61	10,545,000.00	5,272,500.00
49. Shoreface/Ebb Tidal Delta Timbalier	23,000.87	32,278,601.7	-32,255,600.83	20,565,000.00	10,282,500.00
50. Spit/Inlet Fill_East Island	2,897,780.78	11.60	2,897,769.182	1,810,000.00	905,000.00
TOTALS	**343,626,290.27**	**729,830,921.83**	**-386,204,631.57**		

Central Coast Seafloor Change Volumes 1930's to 1980's



*see table on following page for volume calculaton results associated with each numbered polygon on this map

0 10 km

Horizontal datum: North American Datum 1983

Explanation

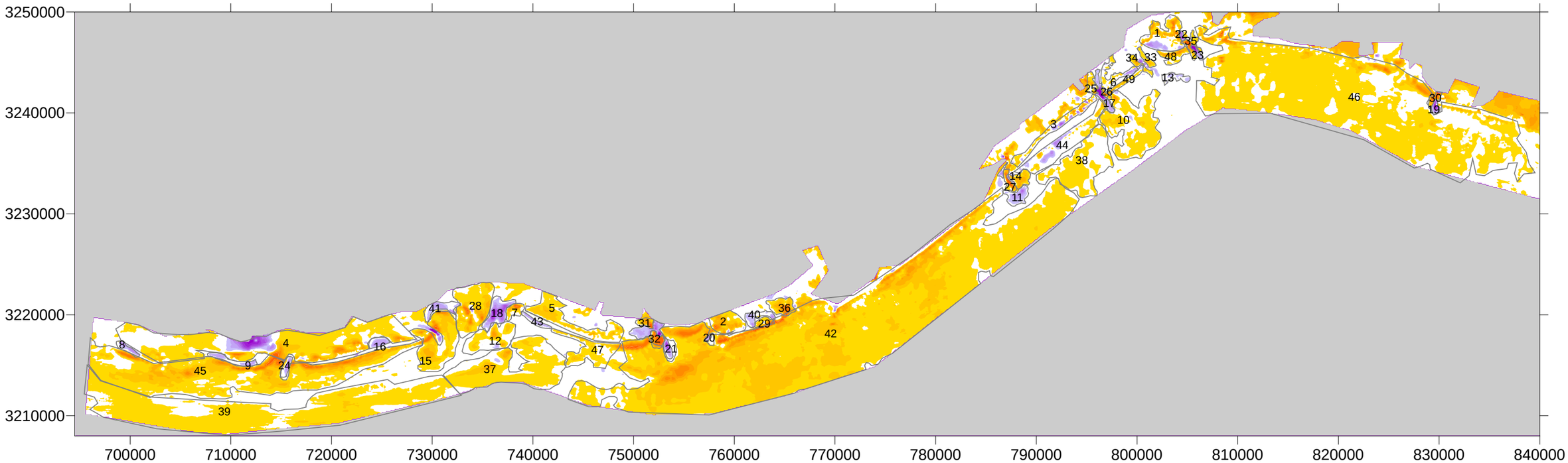
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

Erosion (m) Accretion (m)

Sediment Volume Calculations for Central Louisiana Coast Seafloor Geomorphic Zones: 1930-1980

Zone	Accretion (m^3)	Erosion (m^3)	net volume change (m^3)	total area (m^2)	Uncertainty (+/- m^3)
1. Backbarrier_Bastain Bay	1,454,472.90	6,832,442.18	-5,377,969.28	15,400,000.00	7,700,000.00
2. Backbarrier_Caillou Boca	3,120,984.53	260,277.39	2,860,707.14	2,635,000.00	1,317,500.00
3. Backbarrier_Cheniere Ronquille	3,348,688.03	3,019,319.00	329,369.03	12,925,000.00	6,462,500.00
4. Backbarrier_East Island	4,693,111.60	1,101,894.97	3,591,216.63	8,975,000.00	4,487,500.00
5. Backbarrier_East Timbalier Island	5,782,922.65	1,287,089.85	4,495,832.80	8,200,000.00	4,100,000.00
6. Backbarrier_Grand Isle	1,067,560.90	5,764,972.55	-4,697,411.66	8,820,000.00	4,410,000.00
7. Backbarrier_Whiskey Island west	5,360,079.70	936.99	5,359,142.71	6,985,000.00	3,492,500.00
8. Backbarrier_Raccoon Island	3,151,124.49	0.00	3,151,124.49	4,835,000.00	2,417,500.00
9. Backbarrier_Timbalier Island	878,110.78	9,240,691.98	-8,362,581.20	20,600,000.00	10,300,000.00
10. Backbarrier_Trinity Island	63,431.91	6,155,114.91	-6,091,683.00	6,150,000.00	3,075,000.00
11. Backbarrier_West Grand Terre	1,885,764.52	2,175,848.71	-290,084.20	7,975,000.00	3,987,500.00
12. Backbarrier_East Grand Terre	1,302,974.17	80,061.20	1,222,912.97	1,725,000.00	862,500.00
13. Barrier Retreat_Raccoon Is.	401.14	4,253,650.83	-4,253,249.69	2,355,000.00	1,177,500.00
14. Barrier Retreat_Wine Is.	4,625,892.86	871,462.37	3,754,430.49	4,555,000.00	2,277,500.00
15. Ebb Tidal Delta_Cat Island Pass-erosion	11,803.85	6,454,242.31	-6,442,438.46	7,125,000.00	3,562,500.00
16. Ebb Tidal Delta_Cat Island Pass/Wine Island Pass	29,005,586.30	4,567.40	29,001,018.90	36,045,000.00	18,022,500.00
17. Ebb Tidal Delta_Coupe Colin-erosion	474.17	2,458,446.50	-2,457,972.33	2,865,000.00	1,432,500.00
18. Ebb Tidal Delta_Little Pass Timbalier	3,848,655.33	0.00	3,848,655.33	3,848,655.33	1,924,327.67
19. Ebb Tidal Delta_Barataria Bight	96,057,558.12	2,419,194.72	93,638,363.40	96,725,000.00	48,362,500.00
20. Ebb Tidal Delta_Caminada Pass	3,876,013.89	2,982.43	3,873,031.46	4,190,000.00	2,095,000.00
21. Flood Tidal Delta_Little Pass Timbalier West	1,446,277.73	5,524.65	1,440,753.09	920,000.00	460,000.00
22. Flood Tidal Delta_Raccoon Pass	3,898,747.18	65,364.39	3,833,382.79	5,635,000.00	2,817,500.00
23. Flood Tidal Delta_Little Pass Timbalier/Timbalier Shoal	16,076,456.42	3,332.09	16,073,124.32	18,305,000.00	9,152,500.00
24. Inlet Fill_Barataria Pass	1,715,820.21	6,506.30	1,709,313.91	1,110,000.00	555,000.00
25. Inlet Fill_Cat Island Pass	32,504,908.31	35,032.05	32,469,876.26	15,485,000.00	7,742,500.00
26. Inlet Fill_Coupe Colin	1,398,319.79	0.00	1,398,319.79	1,020,000.00	510,000.00
27. Inlet Fil_Coupe Nouvelle	1,176,559.74	2,634.87	1,173,924.87	1,020,000.00	510,000.00
28. Inlet Fill_Little Pass Timbalier West	371,737.18	3,939.08	367,798.10	180,000.00	90,000.00
29. Inlet Fill_Quatre Bayou Pass	1,045,274.86	30,820.30	1,014,454.56	740,000.00	370,000.00
30. Inlet Fill_Raccoon Point	2,490,210.45	6,359.44	2,483,851.01	2,400,000.00	1,200,000.00
31. Inlet Fill/Spit_Caminada pass	1,165,522.83	21,433.34	1,144,089.50	880,000.00	440,000.00
32. Inlet Fill_Whiskey Pass	1,534,417.03	138.04	1,534,278.99	945,000.00	472,500.00
33. Inlet Fill_Wine Island Pass	2,538,737.76	4,973.96	2,533,763.80	1,545,000.00	772,500.00
34. Inlet Scour_Barataria Pass	36,997.92	7,617,281.57	-7,580,283.65	3,495,000.00	1,747,500.00
35. Inlet Scour_Caminada Pass (landward)	15,750.34	2,299,831.31	-2,284,080.97	1,045,000.00	522,500.00
36. Inlet Scour_Caminada Pass (seaward)	2,251.88	581,574.04	-579,322.17	280,000.00	140,000.00
37. Inlet Scour_Cat Island Pass	1,047.45	15,796,648.94	-15,795,601.50	11,090,000.00	5,545,000.00
38. Inlet Scour_Coupe Colin	910.93	1,198,930.55	-1,198,019.62	815,000.00	407,500.00
39. Inlet Scour_Fontanelle Pass	4,205.85	3,456,258.04	-3,452,052.18	970,000.00	485,000.00
40. Inlet Scour_Little Pass Timbalier west	1,455,824.74	18,944,248.42	-17,488,423.68	9,760,000.00	4,880,000.00
41. Inlet Scour_Little Pass Timbalier east	39,307.24	1,884,724.03	-1,845,416.79	1,410,000.00	705,000.00
42. Inlet Scour_Pass Abel	71,333.93	3,553,182.81	-3,481,848.88	2,200,000.00	1,100,000.00
43. Inlet Scour_Quatre bayou Pass	6,142.97	3,475,909.78	-3,469,766.81	1,005,000.00	502,500.00
44. Inlet Scour_Raccoon Pass	1,068.22	751,101.92	-750,033.69	600,000.00	300,000.00
45. Inlet Scour_Whiskey Pass	2,656.73	7,626,104.30	-7,623,447.56	3,795,000.00	1,897,500.00
46. Inlet Scour_Wine Island Pass	1,264.05	4,639,056.88	-4,637,792.83	4,415,000.00	2,207,500.00
47. Lower Shoreface_Raccoon Island/Coupe Colin	1,175,671.75	0.00	1,175,671.75	1,675,000.00	837,500.00
48. Lower Shoreface_Timbalier Lobe	32,794,043.31	918,917.98	31,875,125.32	42,370,000.00	21,185,000.00
49. Offshore_Barataria Bight	43,257,923.39	1,166,609.54	42,091,313.85	73,760,000.00	36,880,000.00
50. Shoreface_Caminada Headland/Little Pass Timbalier	274,834.68	464,775,501.00	-464,500,666.32	306,525,000.00	153,262,500.00
51. Shoreface_East Grand Terre	116,649.95	8,340,190.82	-8,223,540.87	6,240,000.00	3,120,000.00
52. Shoreface_Grand Isle	4,626,764.60	3,584,824.19	1,041,940.41	13,510,000.00	6,755,000.00
53. Shoreface/Offshore_Plaquemines	1,730,368.93	152,125,645.78	-150,395,276.85	222,765,000.00	111,382,500.00
54. Shoreface_Timbalier Island downdrift	2,358,529.57	132.76	2,358,396.81	1,900,000.00	950,000.00
55. Shoreface_Timbalier Island updrift	150,228.95	8,716,544.61	-8,566,315.66	5,095,000.00	2,547,500.00
56. Shoreface_Trinity/East Islands	38,384.03	25,588,471.93	-25,550,087.89	18,890,000.00	9,445,000.00
57. Shoreface_Whiskey Island	3,896.72	16,057,262.18	-16,053,365.45	9,600,000.00	4,800,000.00
58. Shoreface_Wine Island	5,274.80	6,440,709.28	-6,435,434.48	3,250,000.00	1,625,000.00
59. Shoreface_West Grand Terre	109,320.27	1,683,153.06	-1,573,832.79	2,345,000.00	1,172,500.00
60. Spit_Chaland Pass	1,835,243.99	3,529.16	1,831,714.83	1,065,000.00	532,500.00
61. Spit_Raccoon Spit	2,118,799.18	1,323.89	2,117,475.30	1,730,000.00	865,000.00
TOTALS	**329,133,297.74**	**813,796,923.58**	**-484,663,625.83**		

Central Coast Seafloor Change Volumes 1980's to 2006



*see table on following page for volume calculaton results associated with each numbered polygon on this map

0 10 km

Horizontal datum: North American Datum 1983

Explanation

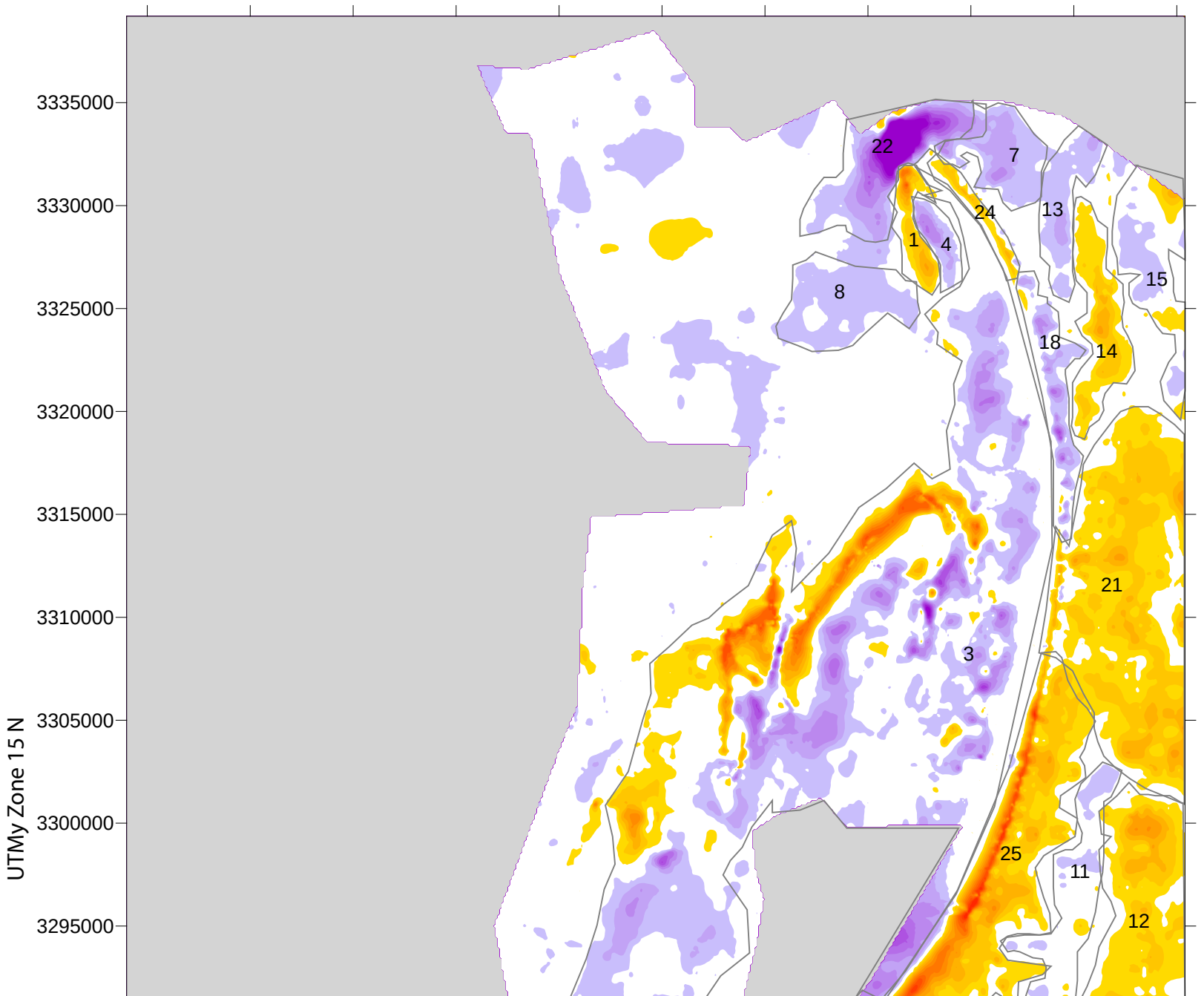
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

Erosion (m) Accretion (m)

Sediment Volume Calculations for Central Louisiana Coast Seafloor Geomorphic Zones: 1980-2006

Zone	Accretion (m^3)	Erosion (m^3)	net volume change (m^3)	total area (m^2)	Uncertainty (+/- m^3)
1. Backbarrier_East Grand Terre	1,879,274.79	6,961,324.63	-5,082,049.84	9,205,000.00	4,602,500.00
2. Backbarrier_East Timbalier Island	114,920.32	6,635,263.42	-6,520,343.10	5,555,000.00	2,777,500.00
3. Backbarrier_Grand Isle	1,564,708.78	3,187,494.21	-1,622,785.44	5,305,000.00	2,652,500.00
4. Backbarrier_Isles Derniere	11,098,742.88	45,471,246.55	-34,372,503.67	66,015,000.00	33,007,500.00
5. Backbarrier_Timbalier Island	47,451.60	9,319,116.97	-9,271,665.37	12,970,000.00	6,485,000.00
6. Backbarrier_West Grand Terre Is.	686,805.71	1,145,653.40	-458,847.69	2,705,000.00	1,352,500.00
7. Backbarrier/Spit_Timbalier Island (erosion)	39,017.52	1,969,325.41	-1,930,307.89	1,710,000.00	855,000.00
8. Barrier Retreat_Raccoon Point	1,140,992.44	65,425.67	1,075,566.76	1,100,000.00	550,000.00
9. Barrier Retreat_Whiskey Island	1,328,165.78	39,500.06	1,288,665.72	1,640,000.00	820,000.00
10. Ebb Tidal Delta_Barataria Pass	319,923.94	15,051,125.41	-14,731,201.47	25,590,000.00	12,795,000.00
11. Ebb Tidal Delta_Caminada Pass	2,184,951.82	7,679.69	2,177,272.13	2,545,000.00	1,272,500.00
12. Ebb Tidal Delta_Cat Island Pass (erosion)	474,198.46	5,907,229.12	-5,433,030.65	9,700,000.00	4,850,000.00
13. Ebb Tidal Delta_Pass Abel	733,083.86	11,802.26	721,281.60	1,325,000.00	662,500.00
14. Ebb Tidal Delta/Spit_Caminada Pass (erosion)	10,330.05	2,600,015.66	-2,589,685.61	2,005,000.00	1,002,500.00
15. Ebb Tidal Delta_Wine Island Pass (erosion)	11,664.30	17,951,048.10	-17,939,383.80	16,430,000.00	8,215,000.00
16. Flood Tidal Delta_New Cut	1,320,430.25	4,687.38	1,315,742.87	1,305,000.00	652,500.00
17. Inlet Fill_Barataria Pass	4,770,117.23	25,651.08	4,744,466.14	1,525,000.00	762,500.00
18. Inlet Fill_Cat Island Pass	7,019,947.54	70,706.72	6,949,240.83	4,610,000.00	2,305,000.00
19. Inlet Fill/Ebb Delta_Fontanelle Pass	1,304,681.80	2,499.35	1,302,182.45	670,000.00	335,000.00
20. Inlet Fill_Little Pass Timbalier east	224,404.31	6,750.14	217,654.17	160,000.00	80,000.00
21. Inlet Fill_Little Pass Timbalier west	4,718,078.72	50,637.37	4,667,441.35	3,480,000.00	1,740,000.00
22. Inlet Fill_Quatre Bayou Pass (landward)	528,421.33	2,954.78	525,466.55	220,000.00	110,000.00
23. Inlet Fill_Quatre Bayou Pass (seaward)	1,311,826.51	0.00	1,311,826.51	485,000.00	242,500.00
24. Inlet Fill_Whiskey Pass	842,512.25	254,747.43	587,764.83	1,055,000.00	527,500.00
25. Inlet Scour_Barataria Pass 2	27,185.10	1,239,072.75	-1,211,887.64	1,270,000.00	635,000.00
26. Inlet Scour_Barataria Pass	786.73	702,505.84	-701,719.11	305,000.00	152,500.00
27. Inlet Scour_Caminada Pass	1,790.37	2,786,075.12	-2,784,284.74	1,025,000.00	512,500.00
28. Inlet Scour_Cat Island Pass	187,007.52	14,193,992.54	-14,006,985.02	14,565,000.00	7,282,500.00
29. Inlet Scour_East Timbalier Island Breach	229.13	1,488,973.79	-1,488,744.66	925,000.00	462,500.00
30. Inlet Scour_Fontanelle Pass	1,183.02	2,175,248.75	-2,174,065.73	660,000.00	330,000.00
31. Inlet Scour_Little Pass Timbalier west-landward	16,244.15	2,038,619.78	-2,022,375.63	1,055,000.00	527,500.00
32. Inlet Scour_Little Pass Timbalier west-seaward	19,459.57	4,705,952.36	-4,686,492.79	1,410,000.00	705,000.00
33. Inlet Scour_Pass Abel 1	6,115.74	1,029,694.14	-1,023,578.40	920,000.00	460,000.00
34. Inlet Scour_Pass Abel 2	0.00	908,313.23	-908,313.23	915,000.00	457,500.00
35. Inlet Scour_Quatre Bayou Pass	9,107.95	3,015,154.39	-3,006,046.44	1,325,000.00	662,500.00
36. Inlet Scour_Raccoon Pass	1,348.48	5,342,944.70	-5,341,596.21	3,255,000.00	1,627,500.00
37. Offshore_Cat Is. Pass	272,469.03	24,391,665.45	-24,119,196.42	37,335,000.00	18,667,500.00
38. Offshore_Grand Isle	880	12,666,106.53	-12,665,226.54	23,635,000.00	11,817,500.00
39. Offshore_Isles Derniere	18,791.55	64,336,967.13	-64,318,175.58	102,865,000.00	51,432,500.00
40. Recurve Spit/Flood Tidal Delta_East Timbalier Breach	1,165,486.48	63,390.08	1,102,096.4	1,670,000.00	835,000.00
41. Shoal Retreat_Wine Island	1,840,824.99	138,421.41	1,702,403.58	2,370,000.00	1,185,000.00
42. Shoreface_Caminada Headland	630,016.93	317,972,529.6	-317,342,512.6	320,460,000.00	160,230,000.00
43. Shoreface_downdrift Timbalier Is.	899,791.09	2,302.66	897,488.43	995,000.00	497,500.00
44. Shoreface_Grand Isle	3,127,283.12	3,702,839.48	-575,556.37	12,990,000.00	6,495,000.00
45. Shoreface_Isles Derniere	155,245.33	89,863,112.3	-89,707,866.98	86,135,000.00	43,067,500.00
46. Shoreface_Plaquemines	491,076.90	141,448,466.2	-140,957,389.3	222,920,000.00	111,460,000.00
47. Shoreface_updrift Timbalier Is.	75,372.19	659,5878.418	-6,520,506.23	9,230,000.00	4,615,000.00
48. Shoreface_East Grand Terre	116,154.39	1,207,615.70	-1,091,461.31	1,135,000.00	567,500.00
49. Shoreface_West Grand Terre	12,185.63	2,847,970.61	-2,835,785.0	2,540,000.00	1,270,000.00
TOTALS	**52,750,687.57**	**821,605,697.77**	**-768,855,010.20**		

Chandeleur Islands Seafloor Change Volumes 1870’s to 1920’s



*see table on following page for volume calculaton results associated with each numbered polygon on this map

0 10 km

Horizontal datum: North American Datum 1983

Explanation

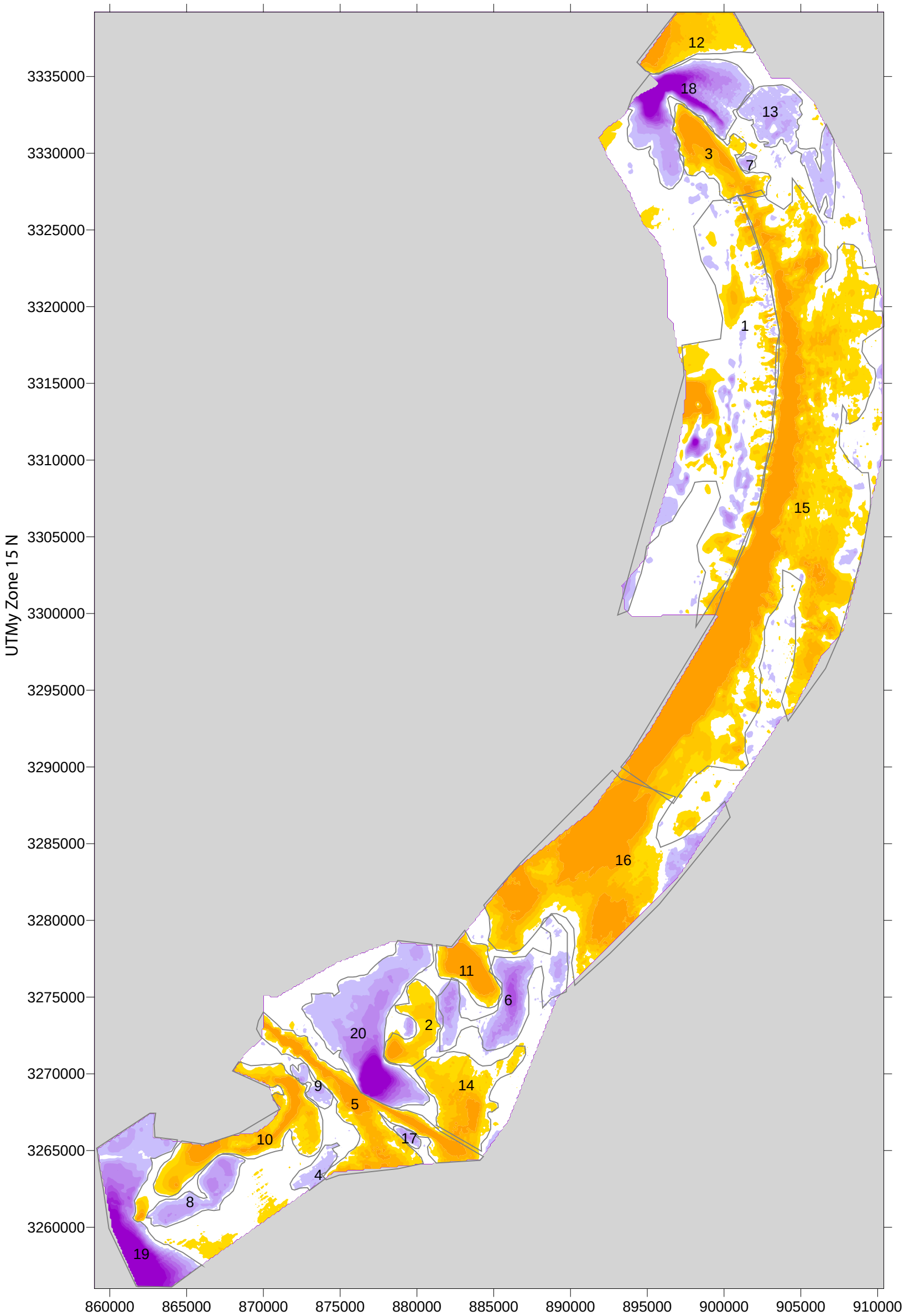
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

Erosion (m) Accretion (m)

Sediment Volume Calculations for Chandeleur Islands Seafloor Geomorphic Zones: 1870-1920

Zone	Accretion (m^3)	Erosion (m^3)	net volume change (m^3)	total area (m^2)
1. Backbarrier Tidal Channel Scour_Hewes Point	185,173.37	7,783,344.82	-7,598,171.45	3,685,000.00
2. Backbarrier_Grand Gosier/Curlew Islands	54,898,676.08	6,443,427.17	48,455,248.91	33,930,000.00
3. Backbarrier_N. Chandeleur Islands	173,770,235.60	96,757,048.34	77,013,187.26	185,342,500.00
4. Backbarrier Tidal Channel Fill_Hewes Point	4,882,691.00	9,595.38	4,873,095.61	2,627,500.00
5. Ebb Tidal Delta_Breton Island Pass	40,565,538.23	3,014,877.22	37,550,661.01	20,550,000.00
6. Ebb Tidal Delta/Shoreface_Breton Island Pass	455,032.02	58,517,433.15	-58,062,401.12	33,392,500.00
7. Ebb Tidal Delta/Shoreface_Hewes Point	13,656,415.38	34,823.98	13,621,591.40	7,307,500.00
8. Flood Tidal Delta_Hewes Point	12,831,798.05	2,887.14	12,828,910.91	10,532,500.00
9. Inlet Fill_Breton Island Pass	36,899,429.55	452,018.71	36,447,410.84	18,397,500.00
10. Inlet Scour_Breton Island Pass	312,057.04	40,538,537.66	-40,226,480.62	20,095,000.00
11. Lower Shoreface_Monkey Bayou (accretion)	6,398,394.18	1,483,955.76	4,914,438.42	10,460,000.00
12. Lower Shoreface_Monkey Bayou (erosion)	2,619,836.29	100,951,531.08	-98,331,694.79	52,592,500.00
13. Lower Shoreface Oblique Bar_Hewes Point	8,437,267.29	3,572.77	8,433,694.52	6,222,500.00
14. Lower Shoreface Oblique Bar_Hewes Point (scour)	42,122.24	14,544,797.65	-14,502,675.41	9,245,000.00
15. Offshore_Hewes Pt. to Schooner Harbor	7,090,946.12	3,661,079.06	3,429,867.06	10,867,500.00
16. Offshore_S. Chandeleur Islands	95,704,720.92	477,199,185.16	-381,494,464.24	207,560,000.00
17. Shoreface_Breton Island	7,847,036.44	572,941.54	7,274,094.90	4,607,500.00
18. Shoreface/Ebb Tidal Deltas_Schooner	10,159,992.84	581,013.45	9,578,979.39	7,607,500.00
19. Shoreface_Errol Island	327,691.78	102,731,487.10	-102,403,795.32	45,217,500.00
20. Shoreface_Grand Gosier/Curlew Islands	31,116,376.63	30,780,942.87	335,433.76	33,207,500.00
21. Shoreface_Redfish Point	383,707.08	83,534,442.43	-83,150,735.35	46,402,500.00
22. Spit Accretion/Inlet Fill_Hewes Point	58,011,549.92	430,982.25	57,580,567.66	13,405,000.00
23. Terminal Spit/Inlet Fill_Breton Island	114,572,360.79	6,757,541.35	107,814,819.44	47,707,500.00
24. Upper Shoreface_Hewes Point	169,711.46	3,378,744.25	-3,209,032.78	2,710,000.00
25. Upper Shoreface_Monkey Bayou	2,144,665.59	92,405,538.49	-90,260,872.90	34,257,500.00
TOTALS	**683,483,425.89**	**1,132,571,748.78**	**-449,088,322.88**	

Chandeleur Islands Seafloor Change Volumes 1920's to 2006/2007



*see table on following page for volume calculaton results associated with each numbered polygon on this map

0 10 km

Horizontal datum: North American Datum 1983

Explanation

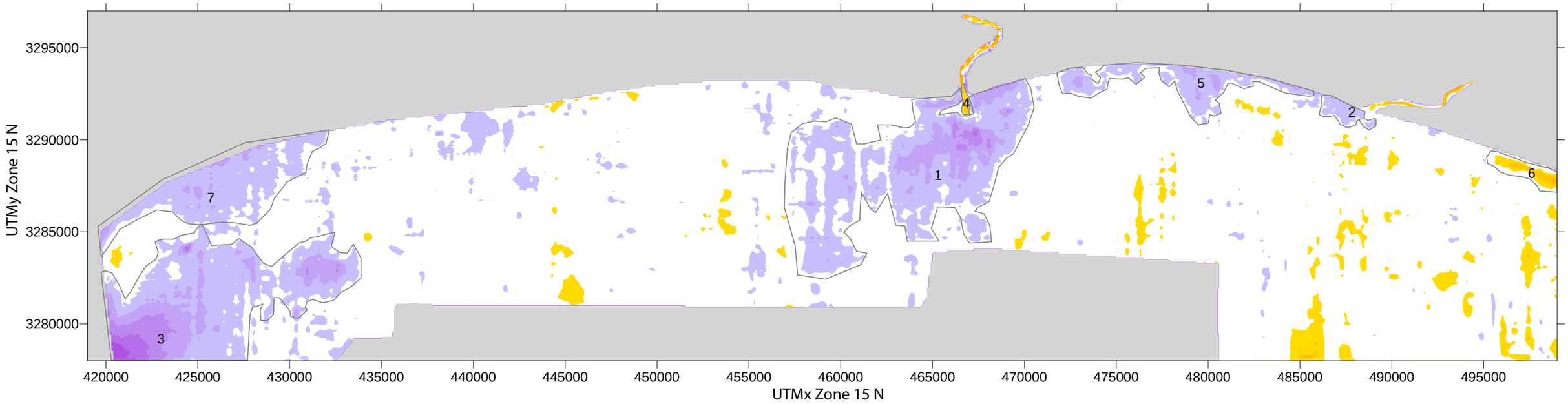
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

Erosion (m) Accretion (m)

Sediment Volume Calculations for Chandeleur Islands Seafloor Geomorphic Zones: 1920-2007

Zone	Accretion (m^3)	Erosion (m^3)	net volume change (m^3)	total area (m^2)	Uncertainty (+/- m^3)
1. Backbarrier_N. Chandeleur Islands	23,176,466.12	48,801,291.38	-25,624,825.25	109,360,000.00	54,680,000.00
2. Barrier Erosion/Shoreface_Grand Gosier Is.	3,150.16	11,530,225.83	-11,527,075.67	10,290,000.00	5,145,000.00
3. Barrier Erosion_Hewes Point	62,534.78	27,394,398.32	-27,331,863.54	17,280,000.00	8,640,000.00
4. Ebb Tidal Delta_Breton Island pass	2,421,766.37	3.44	2,421,762.92	3,525,000.00	1,762,500.00
5. Dredge/Inlet Scour_MRGO	84,860.64	58,460,945.12	-58,376,084.48	32,495,000.00	16,247,500.00
6. Ebb Tidal Delta_Grand Gosier Pass	25,372,844.57	55,920.00	25,316,924.57	25,185,000.00	12,592,500.00
7. Shoreface/Ebb Tidal Deltas_Hewes Pt. South	729,422.50	514.06	728,908.44	870,000.00	435,000.00
8. Ebb Tidal Delta_South of Breton Island	11,808,961.65	5,910.32	11,803,051.34	11,070,000.00	5,535,000.00
9. Inlet Fill_Breton Is. Pass	2,010,914.32	8,221.63	2,002,692.69	2,715,000.00	1,357,500.00
10. Inlet Scour/Barrier Erosion_Breton Is.	11,943.55	38,889,877.25	-38,877,933.70	27,200,000.00	13,600,000.00
11. Inlet Scour_Grand Gosier Pass	43,291.17	31,941,805.61	-31,898,514.44	11,060,000.00	5,530,000.00
12. Inlet Scour_Hewes Point	49.09	21,414,493.23	-21,414,444.14	16,660,000.00	8,330,000.00
13. Lower Shoreface_Hewes Point (accretion)	13,214,696.60	4,507.14	13,210,189.46	18,030,000.00	9,015,000.00
14. Shoreface/Ebb Delta_MRGO/Breton Is. Pass	8,106.05	25,055,186.96	-25,047,080.91	22,330,000.00	11,165,000.00
15. Shoreface_N. Chandeleur Islands	2,703,330.96	408,534,715.21	-405,831,384.26	238,745,000.00	119,372,500.00
16. Shoreface_S. Chandeleur Islands	5,091,487.65	158,895,379.39	-153,803,891.74	86,025,000.00	43,012,500.00
17. Spoil_MRGO	1,066,240.58	11,783.69	1,054,456.88	1,025,000.00	512,500.00
18. Terminal Spit/Inlet Fill/Shoreface_Hewes Pt.	65,001,926.02	9,977.84	64,991,948.18	31,980,000.00	15,990,000.00
19. Terminal Spit/Inlet Fill_South of Breton Island	79,757,868.84	21,741.26	79,736,127.58	30,620,000.00	15,310,000.00
20. Updrift MRGO/Backbarrier_Grand Gosier Is.	64,180,459.01	15,021.17	64,165,437.83	40,590,000.00	20,295,000.00
TOTALS	**296,750,320.61**	**831,051,918.86**	**-534,301,598.25**		

Western Chenier Beaches Seafloor Change Volumes 1880's to 1920's



*see table on following page for volume calculaton results associated with each numbered polygon on this map

0 10 km

Horizontal datum: North American Datum 1983

Explanation

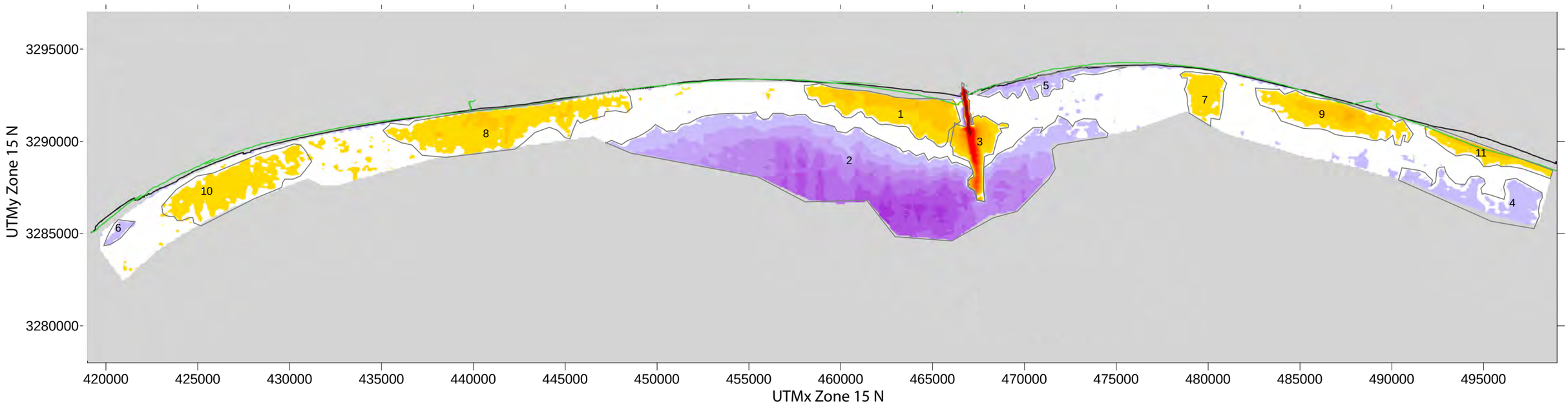
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

Erosion (m) Accretion (m)

Sediment Volume Calculations for Western Chenier Plain Seafloor Geomorphic Zones: 1880-1920

Zone	Accretion (m^3)	Erosion (m^3)	net volume change (m^3)	total area (m^2)	Uncertainty (+/- m^3)
1. Ebb Tidal Delta_Calcasieu Pass	55,525,502.63	91,467.05	55,434,035.58	77,685,000.00	38,842,500.00
2. Ebb Tidal Delta_Mermentau	1,780,512.69	0.00	1,780,512.69	2,455,000.00	1,227,500.00
3. Ebb Tidal Delta_Sabine Pass	56,827,055.67	7,560.57	56,819,495.10	60,255,000.00	30,127,500.00
4. Inlet Scour_Calcasieu Pass	0.00	463,217.70	-463,217.70	305,000.00	152,500.00
5. Nearshore_east Cameron to Mermentau	9,976,821.23	0.00	9,976,821.23	12,960,000.00	6,480,000.00
6. Nearshore_Mud Lake	40,823.58	2,301,925.23	-2,261,101.65	3,350,000.00	1,675,000.00
7. Nearshore_Sabine Pass	19,320,359.61	563.08	19,319,796.53	26,405,000.00	13,202,500.00
TOTALS	**143,471,075.41**	**2,864,733.63**	**140,606,341.78**		

Western Chenier Beaches Seafloor Change Volumes 1920's to 2007



*see table on following page for volume calculaton results associated with each numbered polygon on this map

0 10 km

Horizontal datum: North American Datum 1983

Explanation

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

Erosion (m) Accretion (m)

Sediment Volume Calculations for Western Chenier Plain Seafloor Geomorphic Zones: 1920-2007

Zone	Accretion (m^3)	Erosion (m^3)	net volume change (m^3)	total area (m^2)	Uncertainty (+/- m^3)
1. Inlet Downdrift_west of Calcasieu Pass Jetty	3,212.42	11,823,157.16	-11,819,944.74	11,915,000.00	5,957,500.00
2. Ebb Tidal Delta/Shoreface_Calcasieu Pass	130,838,538.40	3,693.40	130,834,845.00	77,820,000.00	38,910,000.00
3. Inlet Scour/Dredge_Calcasieu Pass	5,749.67	6,080.17	-330.50	0.00	0.00
4. Lower Shoreface_Mud Lake	6,335,407.15	198.85	6,335,208.30	9,485,000.00	4,742,500.00
5. Nearshore_Cameron	3,093,993.76	0.00	3,093,993.76	3,205,000.00	1,602,500.00
6. Nearshore_updrift Sabine Pass Jetty	616,874.38	0.00	616,874.38	765,000.00	382,500.00
7. Shoreface_East Cameron	0.00	3,092,954.75	-3,092,954.75	4,475,000.00	2,237,500.00
8. Shoreface_Johnson's Bayou	82,656.38	15,327,191.19	-15,244,534.82	20,830,000.00	10,415,000.00
9. Shoreface_Oak Grove	4,586.86	9,449,646.42	-9,445,059.56	11,390,000.00	5,695,000.00
10. Shoreface_updrift Sabine Pass Jetty	0.00	9,287,339.70	-9,287,339.70	15,165,000.00	7,582,500.00
11. Upper Shoreface_Mud Lake	0.00	4,068,245.64	-4,068,245.64	4,190,000.00	2,095,000.00
TOTALS	**140,981,019.03**	**53,058,507.29**	**87,922,511.73**		

REFERENCES

Jaffe, B., List, J., Sallenger, A., Jr., and Holland, T., 1991, Louisiana Barrier Island Erosion Study: Correction for the Effect of Relative Sea Level Change on Historical Bathymetric Survey Comparisons, Isles Derniere Area, Louisiana: Reston, Virginia, U.S. Geological Survey, Open-file report 91-276, 33 p.

List, J. H., Jaffe, B. E., Sallenger, A. H., Jr.,Williams, S. J.,McBride, R. A., and Penland, S., 1994, Louisiana Barrier Island Erosion Study: Atlas of Seafloor Changes from 1878 to 1989: Reston, Virginia, U.S. Geological Survey and Louisiana State University, Miscellaneous Investigations Series I-2150-A, 81p.

Louisiana Coastal Area, 2004, Louisiana Coastal Area, Louisiana Ecosystem Restoration Study, Final Report, 4 volumes with appendices, http://www.lca.gov/final_report.aspx, accessed June 2008.

Martinez, L., Penland, S., Fernley, S., O'Brien, S., Bethel, M., and Guarisco, P., 2009, Louisiana Barrier Island Comprehensive Monitoring Program (BICM), Volume 2: Shoreline Changes and Barrier Island Land Loss 1800's-2005: Pontchartrain Institute for Environmental Sciences, University of New Orleans, New Orleans, Louisiana, Report Submitted to Louisiana Department of Natural Resources, 5 parts and appendices.

Penland, S. and Ramsey, K. E., 1990, Relative Sea Level Rise in Louisiana and the Gulf of Mexico; 1908-1988: Journal of Coastal Research, v. 6, 323 -342.

Williams, S. J., Penland, S., and Sallenger, A. H., Jr., 1992, Louisiana Barrier Island Erosion Study, Atlas of Shoreline Changes in Louisiana from 1853 to 1989: Reston, Virginia, U.S. Geological Survey and Louisiana State University, Miscellaneous Investigations Series I-2150-A, 103 p.