

Land Area Change and Overview of Hurricane Impacts in Coastal Louisiana, 2004-08

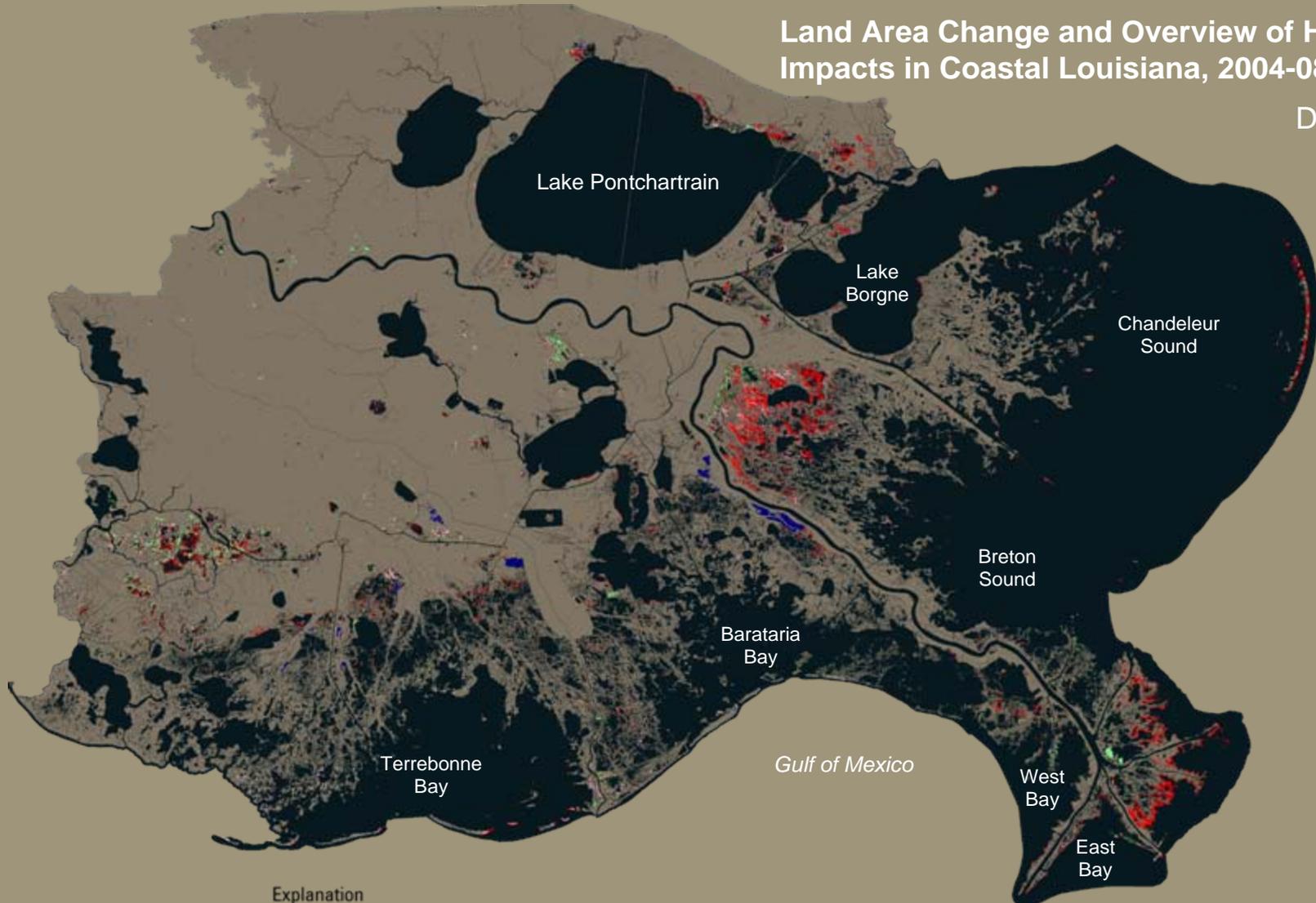
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See pamphlet for references cited.

Land Area Change and Overview of Hurricane Impacts in Coastal Louisiana, 2004-08

Deltaic Plain



Explanation

- 2008 land
- 2008 water
- 2004 to 2006 new water areas^{1,2}
- 2004 to 2006 new land areas^{1,2}
- 2006 to 2008 new water areas²
- 2006 to 2008 new land areas^{1,2}
- 2005 hurricane tracks
- 2008 hurricane tracks³
- 2008 flooded burned marsh areas—based on imagery review after Hurricane Ike’s landfall
- 2008 flooded agricultural and developed areas—based on imagery review of new water areas occurring within agricultural and pasture areas on Landsat Thematic Mapper imagery acquired after 2006 but prior to the landfalls of Hurricanes Gustav and Ike
- Fastlands—agricultural, developed, and upland areas that are generally considered nonwetlands (Barras, 2006) and that are excluded from calculations of net land area change

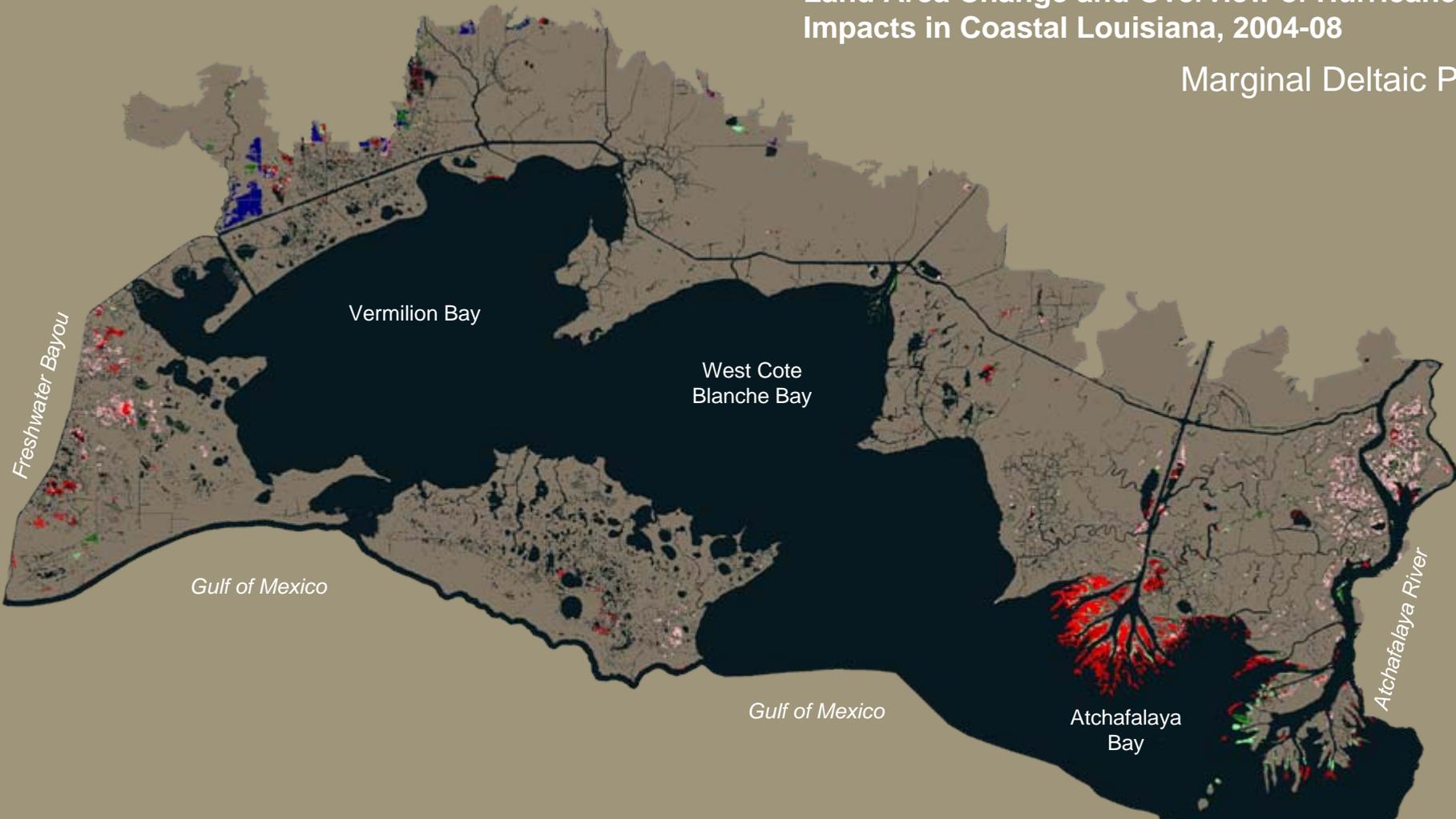
¹Data were filtered to depict areas of loss and gain greater than 1.4 ha in size to remove noise and increase the confidence of the depicted trends.

²Includes wrack, compressed marsh, and aquatic vegetation that is possibly misclassified. These areas are included in calculations of net land area change.

³The track for Hurricane Ike shown on this map is not plotted to its true location. Landfall occurred along the northern end of Galveston Island, Tex., 113 km to the northwest of the track shown here.

Land Area Change and Overview of Hurricane Impacts in Coastal Louisiana, 2004-08

Marginal Deltaic Plain



Explanation

- 2008 land
- 2008 water
- 2004 to 2006 new water areas^{1,2}
- 2004 to 2006 new land areas^{1,2}
- 2006 to 2008 new water areas²
- 2006 to 2008 new land areas^{1,2}
- 2005 hurricane tracks
- 2008 hurricane tracks³
- 2008 flooded burned marsh areas—based on imagery review after Hurricane Ike's landfall
- 2008 flooded agricultural and developed areas—based on imagery review of new water areas occurring within agricultural and pasture areas on Landsat Thematic Mapper imagery acquired after 2006 but prior to the landfalls of Hurricanes Gustav and Ike
- Fastlands—agricultural, developed, and upland areas that are generally considered nonwetlands (Barras, 2006) and that are excluded from calculations of net land area change

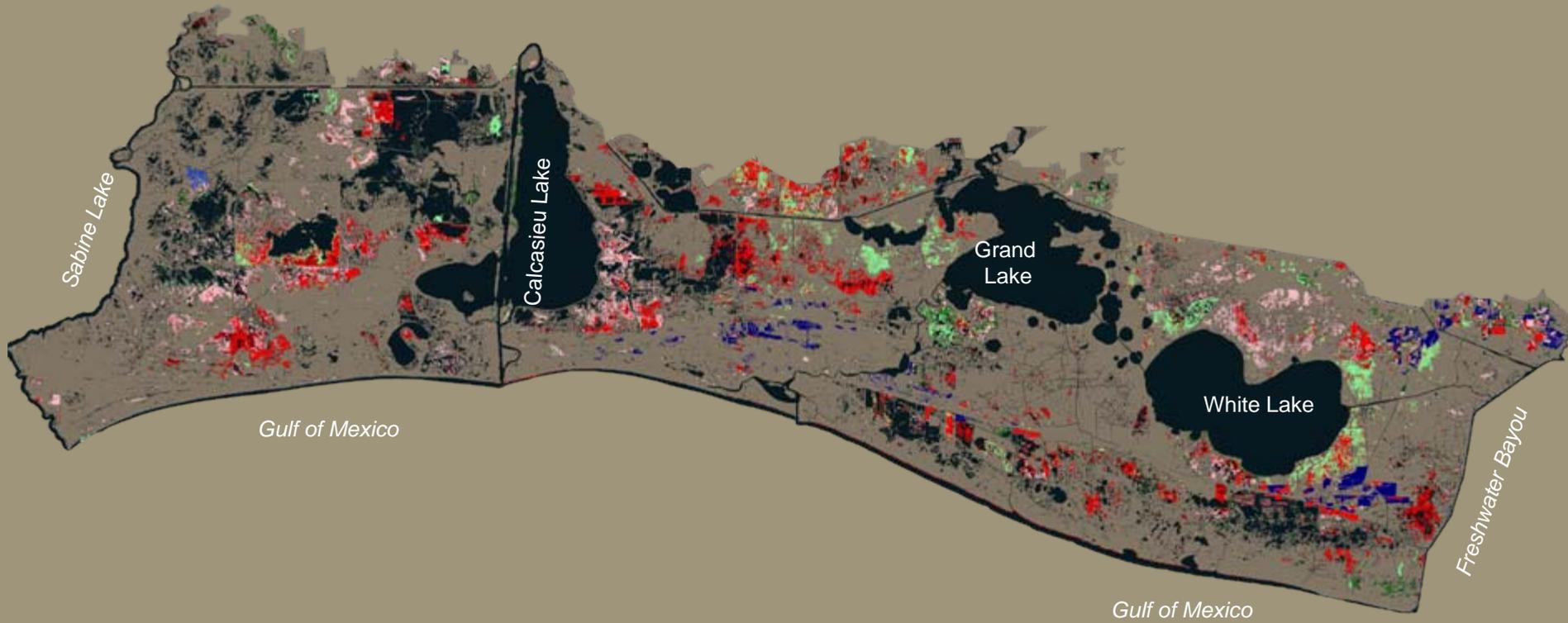
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Land Area Change and Overview of Hurricane Impacts in Coastal Louisiana, 2004-08

Chenier Plain



Explanation

- 2008 land
- 2008 water
- 2004 to 2006 new water areas^{1,2}
- 2004 to 2006 new land areas^{1,2}
- 2006 to 2008 new water areas²
- 2006 to 2008 new land areas^{1,2}
- 2005 hurricane tracks
- 2008 hurricane tracks³

- 2008 flooded burned marsh areas—based on imagery review after Hurricane Ike's landfall
- 2008 flooded agricultural and developed areas—based on imagery review of new water areas occurring within agricultural and pasture areas on Landsat Thematic Mapper imagery acquired after 2006 but prior to the landfalls of Hurricanes Gustav and Ike
- Fastlands—agricultural, developed, and upland areas that are generally considered nonwetlands (Barras, 2006) and that are excluded from calculations of net land area change

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³The track for Hurricane Ike shown on this map is not plotted to its true location. Landfall occurred along the northern end of Galveston Island, Tex., 113 km to the northwest of the track shown here.

Table 1. Land and water areas in coastal Louisiana by physiographic province, 2004–08.

[Area measurements provided in km²; TM, Landsat Thematic Mapper imagery classified by land and water]

Data set information			Deltaic Plain			Marginal Deltaic Plain			Chenier Plain			Coastal Louisiana		
Date	Julian date ¹	Data source	Land	Water	Total	Land	Water	Total	Land	Water	Total	Land	Water	Total
11/7/2004	2004.9	TM	9,686.6	14,592.1	24,278.7	1,833.7	1,958.0	3,791.7	3,820.3	1,567.0	5,387.3	15,340.6	18,117.1	33,457.7
10/28/2006	2006.8	TM	9,456.1	14,822.6	24,278.7	1,831.1	1,960.6	3,791.7	3,527.6	1,859.7	5,387.3	14,814.8	18,642.9	33,457.7
10/1/2008	2008.8	TM	9,331.8	14,946.9	24,278.7	1,771.6	2,020.1	3,791.7	3,387.7	1,999.6	5,387.3	14,491.1	18,966.6	33,457.7

¹Represents the acquisition date for Landsat Worldwide Reference System, Path 22 and Rows 39–40 only, and provides a general date of reference for other scenes making up each coastal land-water dataset.



Table 2. Changes in land area and rates of land loss in coastal Louisiana by period and physiographic province, 2004–08.

[Area change measurements provided in km² (negative measurements indicate land loss, while positive ones indicate land gain); percent area change equals area change per period divided by total area change from 2004 to 2008]

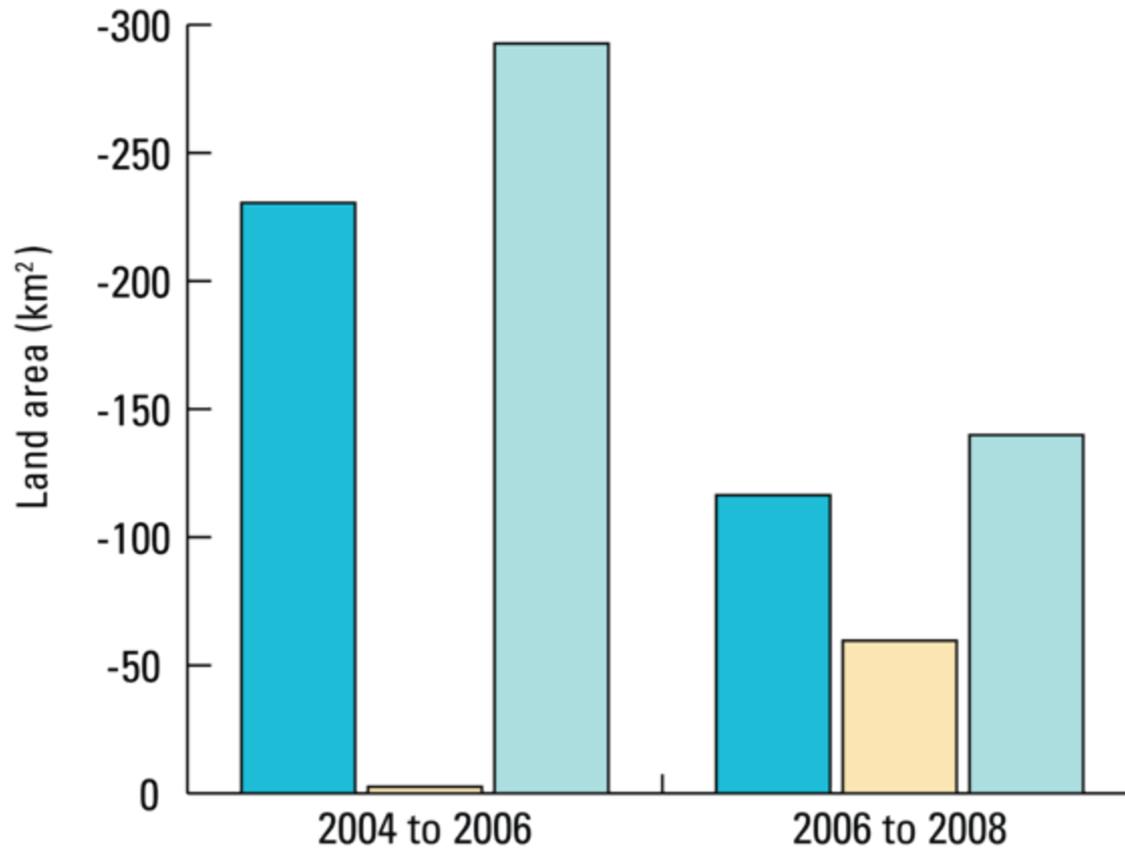
Period	Years	Deltaic Plain		Marginal Deltaic Plain		Chenier Plain		Coastal Louisiana	
		Area change	Percent area change	Area change	Percent area change	Area change	Percent area change	Area change	Percent area change
¹ 2004 to 2006	2	-230.5	-65	-2.6	-4.2	-292.7	-67.7	-525.8	-61.9
² 2006 to 2008	2	-124.3	-35	-59.5	-95.8	-139.9	-32.3	³ -323.7	-38.1
2004 to 2008	4	-354.8	100	-62.1	100	-432.6	100	³ -849.5	100

¹The changes in this period reflect an estimate of conditions 1 year after the 2005 hurricane season as compared to the analysis conducted by Barras (2006) immediately after Hurricanes Katrina (Aug. 29) and Rita (Sept. 24) in 2005.

²The changes in this period reflect conditions immediately after Hurricanes Gustav (Sept. 1) and Ike (Sept. 13) in 2008.

³Flooded burned marsh and flooded agricultural and pasture areas account for 23.1 km² of net water area changes.





Explanation

■ Deltaic Plain
 ■ Marginal Deltaic Plain
 ■ Chenier Plain



Figure 1. Net land area change by period and physiographic province in coastal Louisiana, 2004–08.

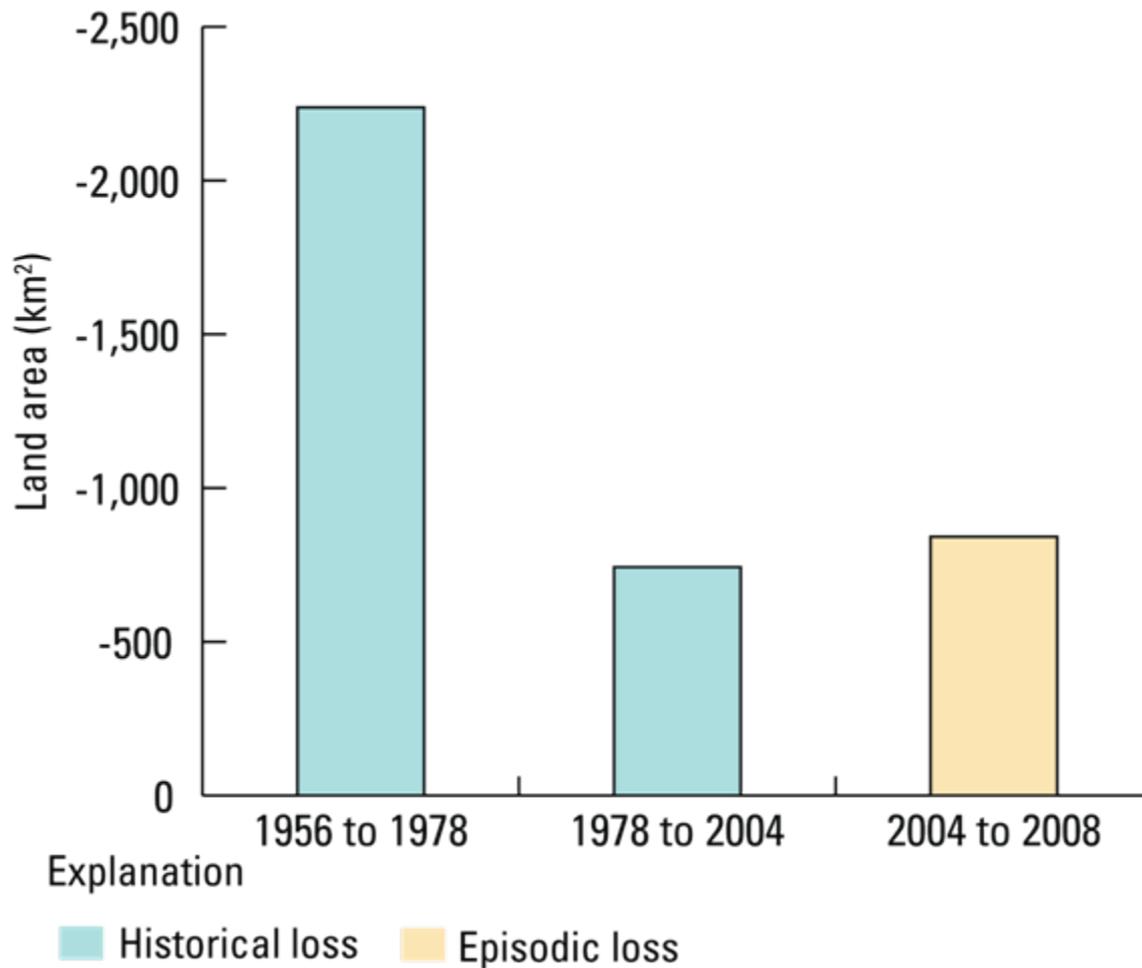


Figure 2. Net land area change in coastal Louisiana, 1956–2008. The net decrease in land area is estimated at 3,841 km². Estimates of land area change from 1956 to 1978 and 1978 to 2004 are from Barras (2008).



Conclusion

Although the net reduction in land from 2004 to 2008 (849.5 km²) exceeds that from 1978 to 2004 (743.3 km²) (Barras, 2008), it is likely that the 2004–08 estimate will decrease given time for the coast to recover from those hurricane seasons. Nevertheless, it is likely that the cumulative loss from these hurricane seasons will remain significant. Estimation of permanent losses cannot be made until several growing seasons have passed and the transitory impacts of the hurricanes are accounted for.

