RARE-EARTH SOIL HORIZON MARKERS TO DETERMINE THE SHORT-TERM ACCRETION IN LOUISIANA MARSHES

A Thesis

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in the

by

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ACKNOWLEDGEMENTS

LIST OF FIGURES

ABSTRACT

CHAPTER 1

INTRODUCTION

Figure 1.1. Major delta lobes that have constructed the Holocene Mississippi River deltaic plain. From Turner, 1987.

4. Transistional marsh environments:

MMS study sites

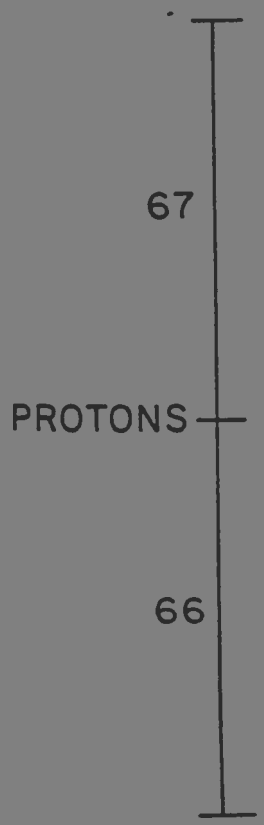
▲ Clay ● Stable Tracer

n unexpectedly low water levels were

Figure 3.7. Lafourche at Fourchon feasibility study area. Source: Gail's Bait Shop, Leeville, LA.

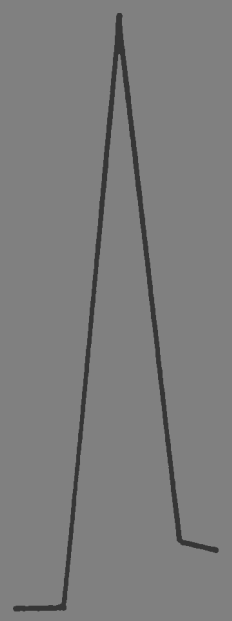
represent 6-month samples.

comparison to that found in saline and brackish marshes.


67
PROTONS
66

chapter.

TYPE I



DISCRETE

TYPE III

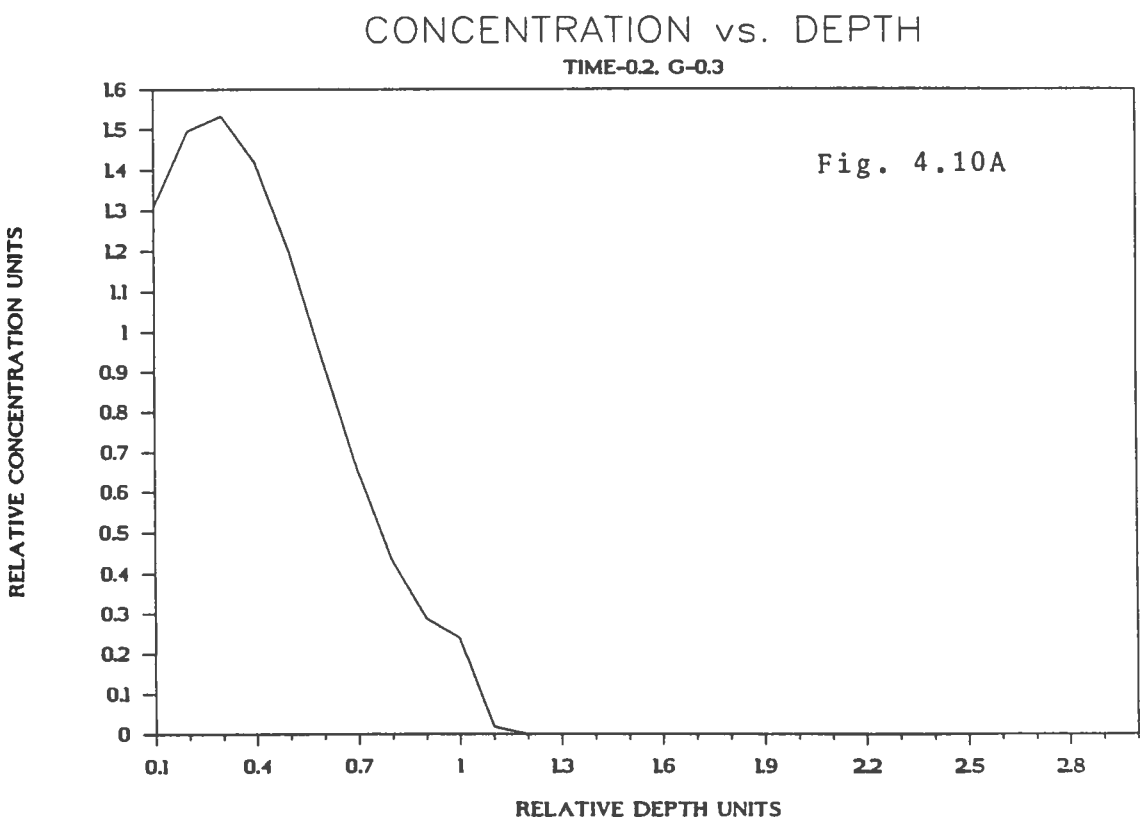
BIMODAL

TYPE IV -- TYPE V

CONFLUENT NONSENSE

$$c(x^*, t^*) = \exp\left(\frac{x^*}{2G} - \frac{t^*}{4G}\right)$$

$$\bullet \sum_{n=1}^{\infty} \left(\frac{1}{\beta_n} (\cos \alpha_n x^* + \frac{1}{2G\alpha_n} \sin \alpha_n x^*) \bullet \exp(-G\alpha_n^2 t^*)\right) \qquad \text{(Eq. 4.3)}$$


CONCENTRATION vs. DEPTH
TIME-0.2, G-0.3
Fig. 4.10A
RELATIVE CONCENTRATION UNITS
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.1
0.4
0.7
1
1.3
1.6
1.9
2.2
2.5
2.8
RELATIVE DEPTH UNITS

RELATIVE CONCENTRATION UNITS

RELATIVE CONCENTRATION UNITS

RELATIVE CONCENTRATION UNITS

CHAPTER 5

RESULTS

Dysprosium counts

Arbitrary chan. #	5-7	5-8	5-9
1	1164	1094	4100
2	1158	1099	4352
3	1170	1100	4912
4	1291	1206	5651
5	1451	1239	6394
6	1519	1337	7183
7	1869	1523	7394
8	2002	1616	7201
9	1963	1627	6533
10	1854	1471	5706
11	1589	1404	4942
12	1380	1376	4399
13	1286	1171	4016
14	1151	1133	3958
15	1146	1128	3872
16	1222	1158	3979

Table 5.1 continued

ERR

Dysprosium counts
Arbitrary chan. 1

PPM DY AND SM

						25.5
						13.5
						-
	6/24/87					
1-YR	TFN TRANS (O-M)	N/A	42.5	7.5	III	
		N/A	42.5	7.5	III	

Table 5.2 continued

Figure 5.3A-D. Marker distributions found at the Lafourche at Leeville natural transect distances into the marsh from the waterway of 0 m (Fig. 5.3A), 10 m (Fig. 5.3B), 30 m (Fig. 5.3C), and 50 m (Fig. 5.3D).

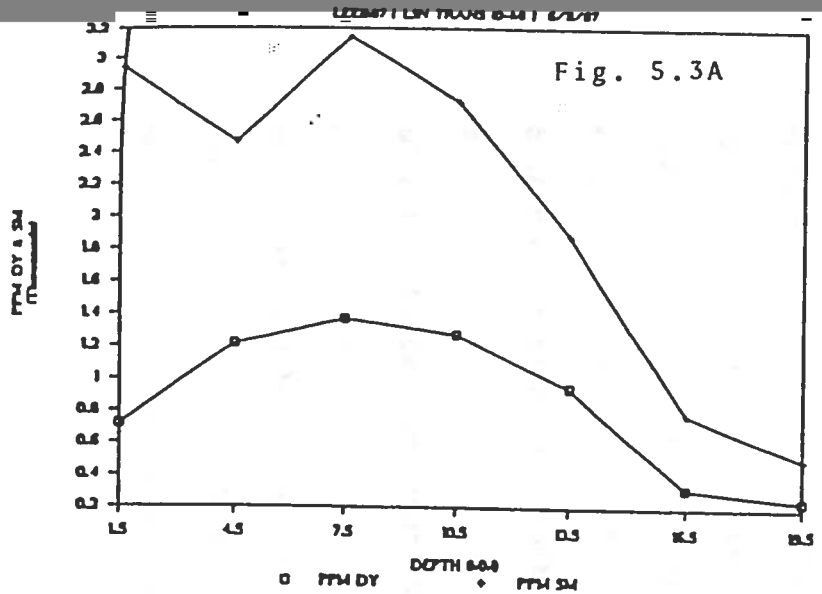


Fig. 5.3A
1.5
4.5
7.5
10.5
13.5
16.5
19.5
DEPTH
PPM DY
PPM SM

DEPTH MARKER (MM)

DEPTH MARKER (MM)

Figure 5.5A-B

DEPTH MARKER (MM)

DEPTH MARKER (MM)

range of 4.5 mm-16.5 mm. These means are probably representative of the entire Lafourhe study area.

DEPTH TO MARKER (MM)

DEPTH TO MARKER (MM)

DEPTH TO MARKER (MM)

Figure 5.14. A bimodal marker distribution from the Lac Des Allemands study area which seems to characteristic of that area.

	L (CM)	D (CM2/YR)
1.50	1.05	3.18
0.90	0.75	0.68
1.60		5.28
0.90		0.09
0.80		2.40
1.20		1.92
2.14		4.49
1.20		0.88
1.03		6.80
1.04		1.09
0.59		0.88
0.45		0.14
	2.00	2.04
	1.60	9.28
	1.05	0.03
	1.05	0.72
	2.25	5.60

RELATIVE CONCENTRATION UNITS

PPM DY AND SM

MODAL DEPTH (CM)

CLAY/INAA

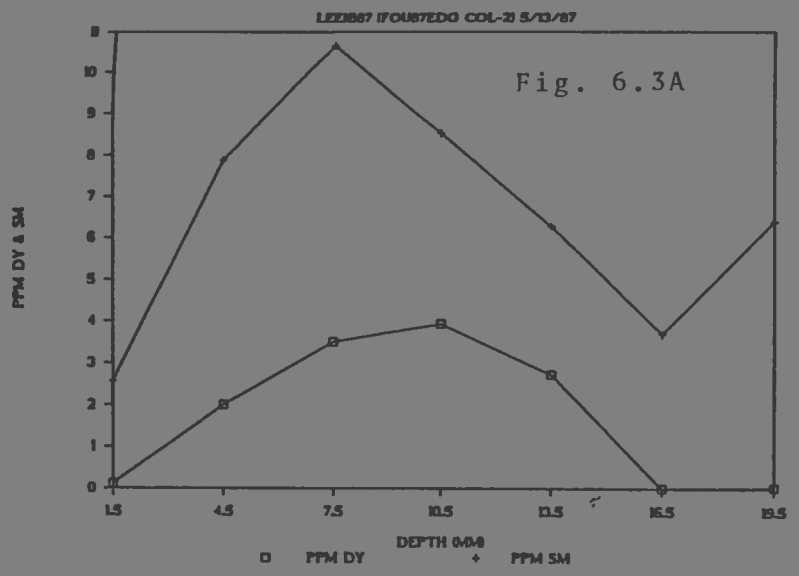
CHAPTER 6

DISCUSSION

(Eq. 6-1)


FPM DY AND SM

Figure 6.3A-D. This series of figures were selected from the available marker distributions graphs on the basis of familial similarities demonstrating the "process signature" concept.


LEE1687 17OU87EDO COL-20 5/13/87
Fig. 6.3A
PPM DY & SM
0
1
2
3
4
5
6
7
8
9
10
11
1.5
4.5
7.5
10.5
13.5
16.5
19.5
DEPTH 0/M0
PPM DY
PPM SM

19.5

be of considerable value in future marsh management and restoration schemes.

APPENDICES

PPM DY AND SM

PPM DY AND SM

PPM DY AND SM

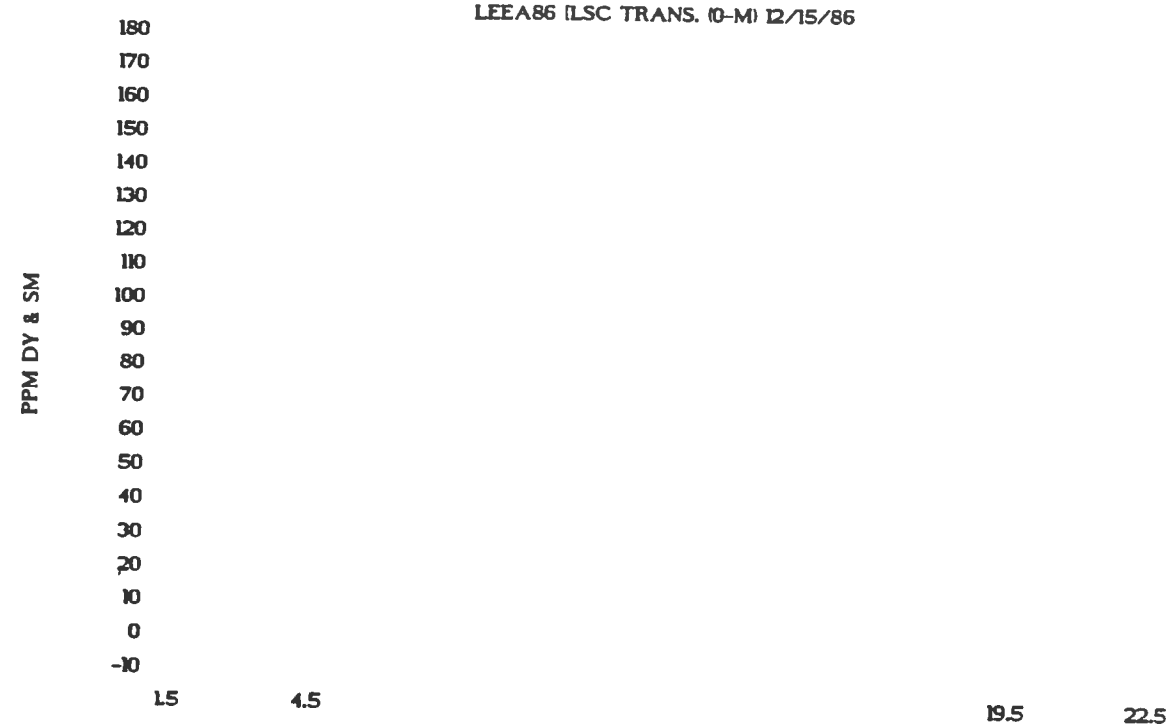
PPM DY AND SM

PPM DY AND SM

PPM DY AND SM

DISTRIBUTION OF DY & SM

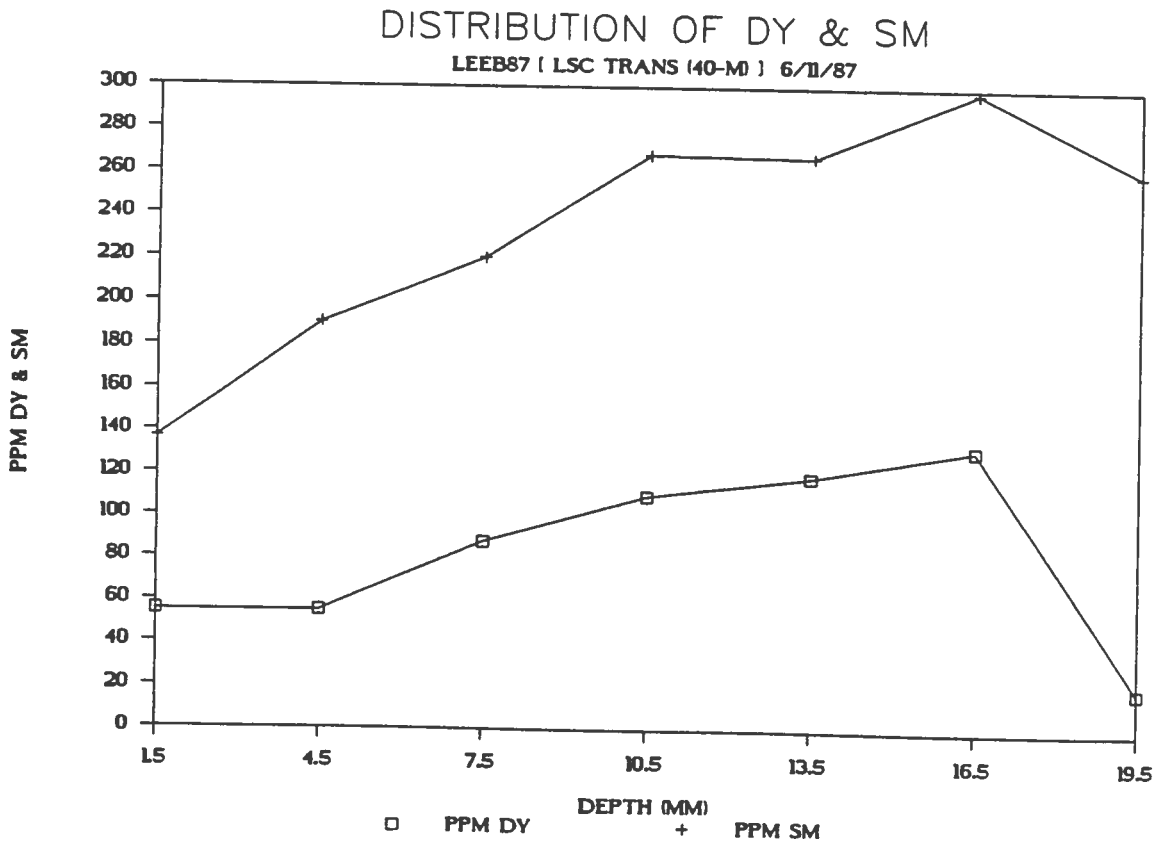
LEEA86 (LSC TRANS. (0-M) 12/15/86



PPM DY & SM

PPM DY & SM

PPM DY & SM


DISTRIBUTION OF DY & SM
LEEB87 [LSC TRANS (40-M)] 6/11/87
PPM DY & SM
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
1.5
4.5
7.5
10.5
13.5
16.5
19.5
DEPTH (MM)
PPM DY
PPM SM

PPM DY & SM

PPM DY AND SM

PPM DY AND SM

PPM DY AND SM

PPM DY AND SM

PPM DY AND SM

PPM DY AND SM

PPM DY AND SM

PPM DY AND SM

PPM DY AND SM

PPM DY AND SM

PPM DY AND SM

PPM DY AND SM

PPM DY & SM

PPM DY AND SM

PPM DY AND SM

PPM DY AND SM

PPM DY & SM

PPM DY & SM

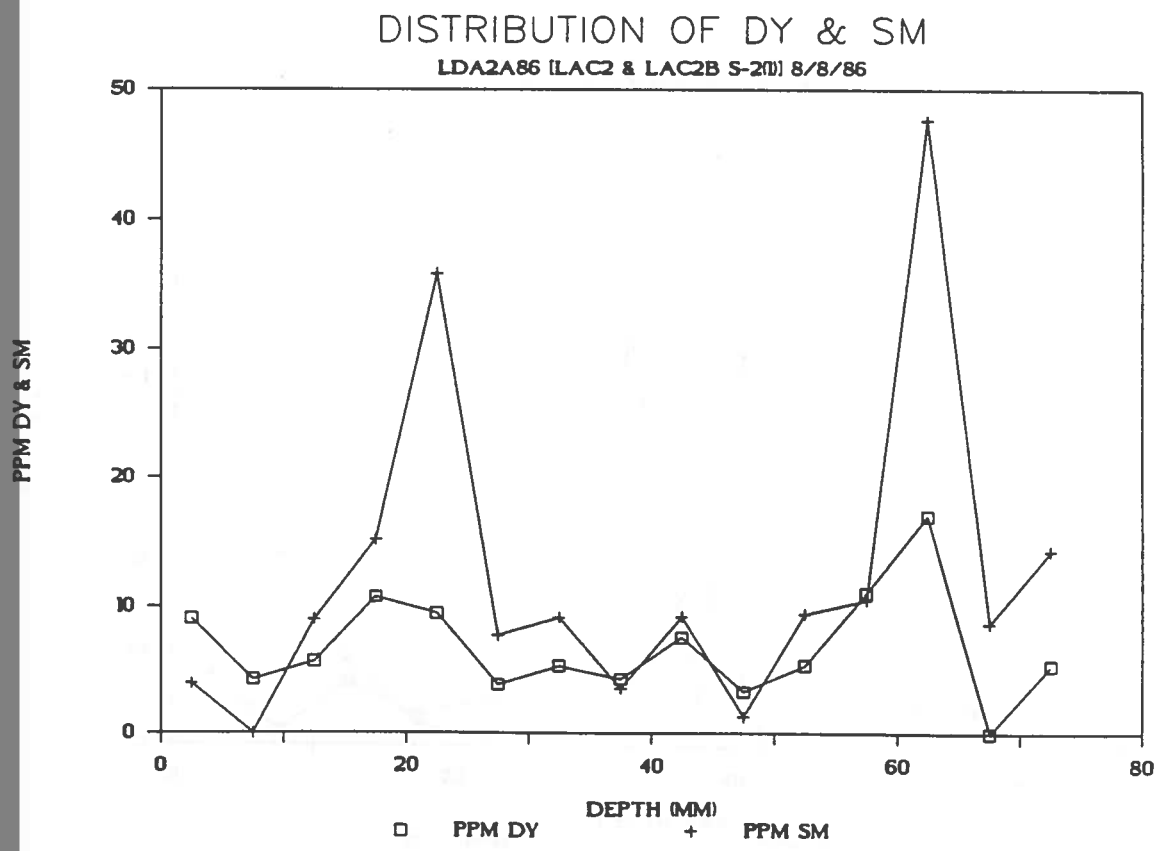
PPM DY & SM

PPM DY & SM

PPM DY & SM

PPM DY & SM

PPM DY & SM


DISTRIBUTION OF DY & SM
LDA2A86 [LAC2 & LAC2B S-2(1)] 8/8/86
PPM DY & SM
50
40
30
20
10
0
0
20
40
60
80
DEPTH (MM)
PPM DY
PPM SM

PPM DY & SM

PPM DY & SM

PPM DY & SM

PPM DY AND SM

APPENDIX B

COST ANALYSIS

VITA

MASTER'S EXAMINATION AND THESIS REPORT

Daniel L. Van Gent

Date of Examination:

April 12, 1988