



science for a changing world

Coastal & Marine Geology Program

Center for Coastal & Watershed Studies - St. Petersburg/Tampa, Florida

Subdelta depositional processes

High-resolution characterization of the Mississippi River Delta Plain

James Flocks

40+ years of near surface geologic data

Data coverage and technology continue to improve

Updating information into digital format and integrating distinct spatial and temporal datasets into a multi-dimensional perspective

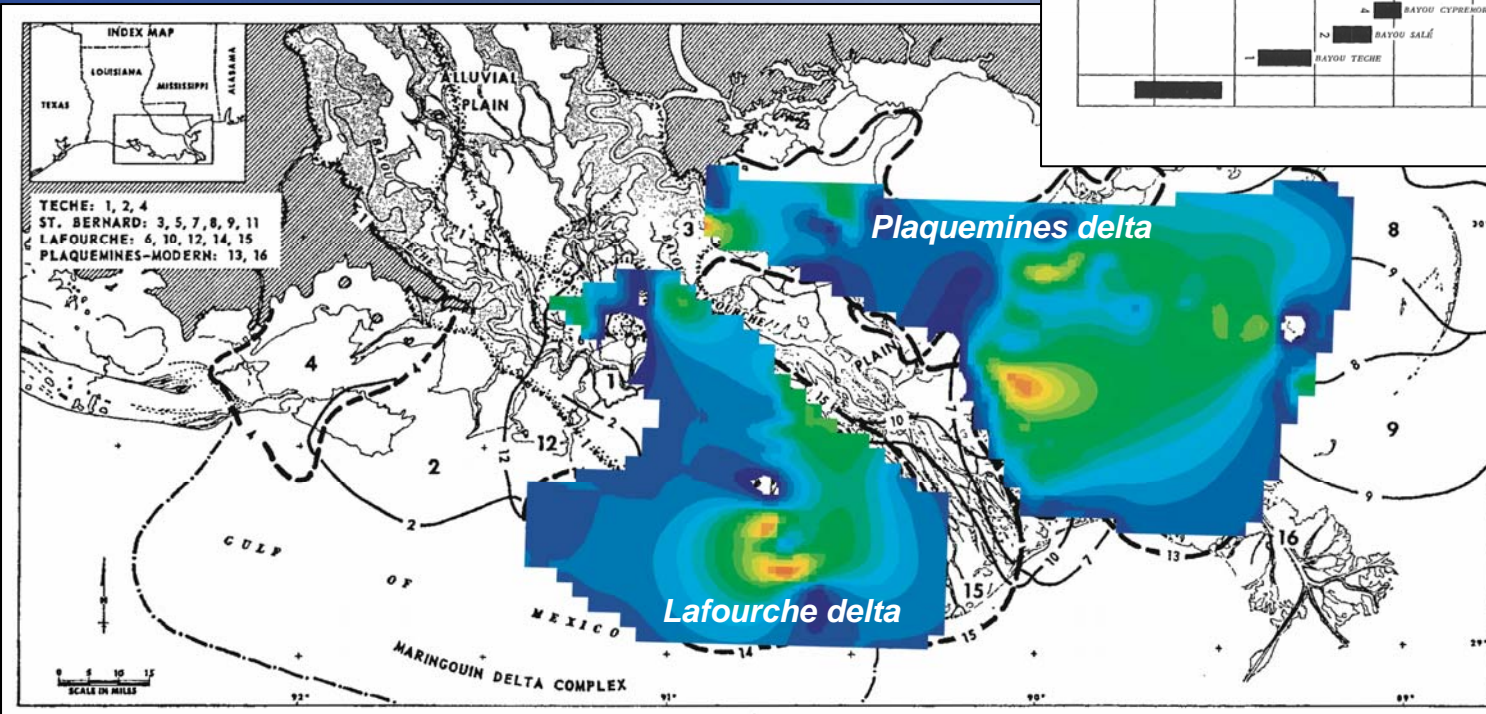
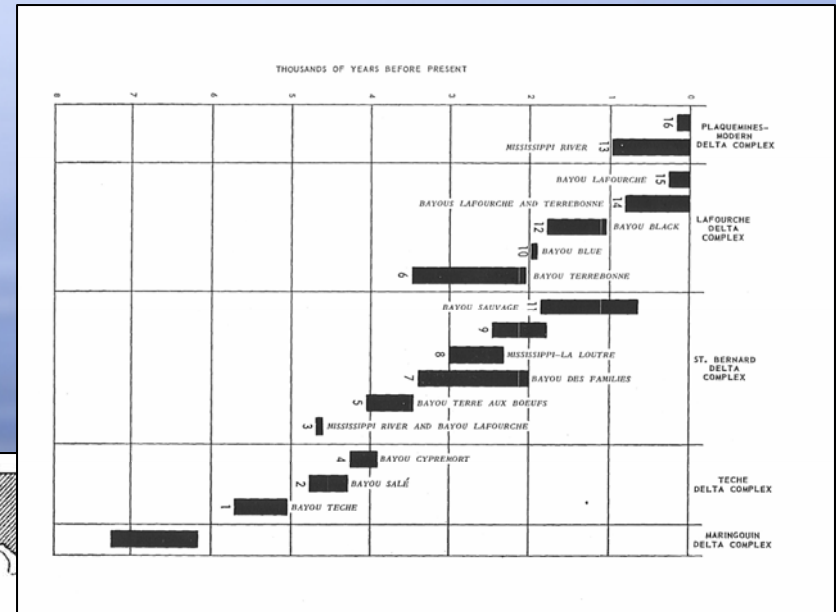
Applied modeling to address new needs

Emerging requirements in coastal management require scientific information at different time and spatial scales, and prioritize subsurface controls.

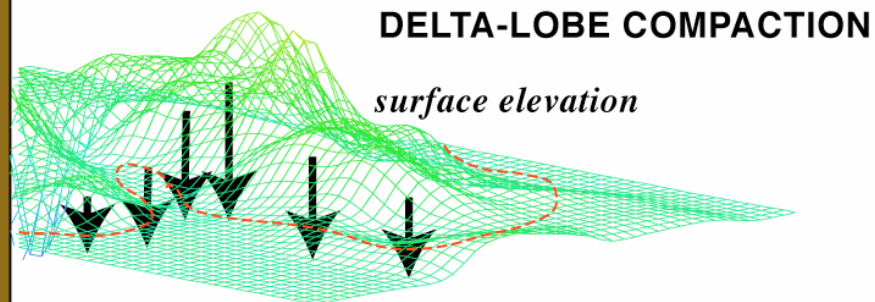


Spatial and temporal distribution of delta deposits

Frazier, D., 1967,
Recent deltaic deposits of the Mississippi River: their development and chronology: Gulf Coast Association of Geological Societies Transactions, v. 17, p. 287-315.



•Applying modeling techniques to enhance datasets



$$ht_{100} = tl - (tl/16 * 3 \text{ ft}/100 \text{ yr})$$

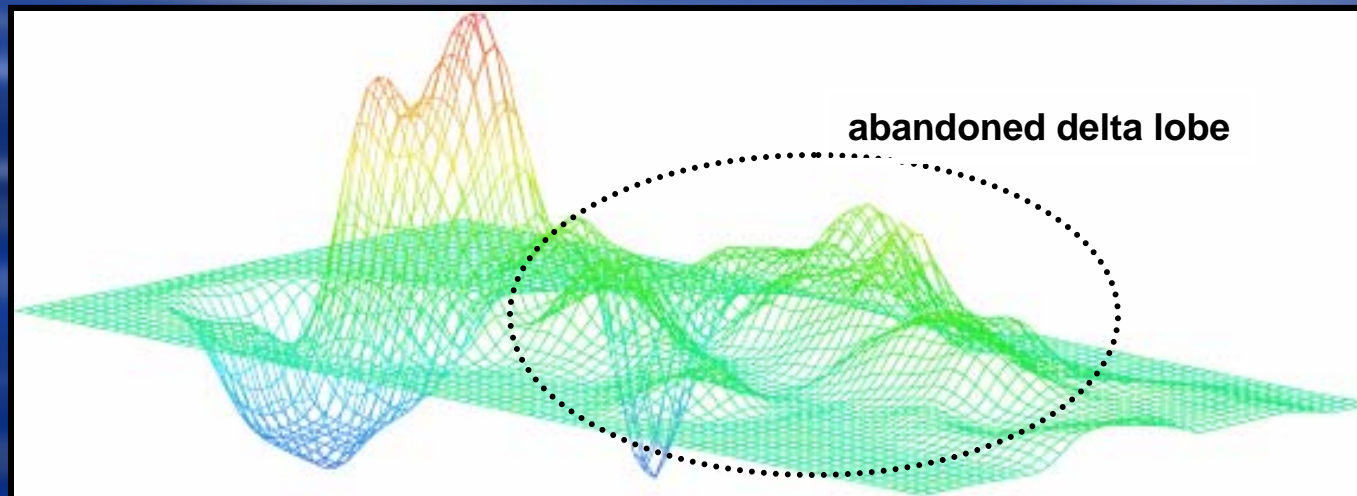
Where: ht_{100} = regional elevation in 100 yr. increments
 tl = thickness of individual subdelta lobe

Average compaction rates:

0.07 in/yr (Penland et al., 1988)

0.11 in/yr (Roberts et al., 1994)

0.12 in/yr (Kuecher, 1994)



•Applying modeling techniques to enhance datasets

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Geologic Data...

...does not expire

Updating information into digital format fills in the gaps, builds upon and adds to a comprehensive knowledgebase

...is more than a map

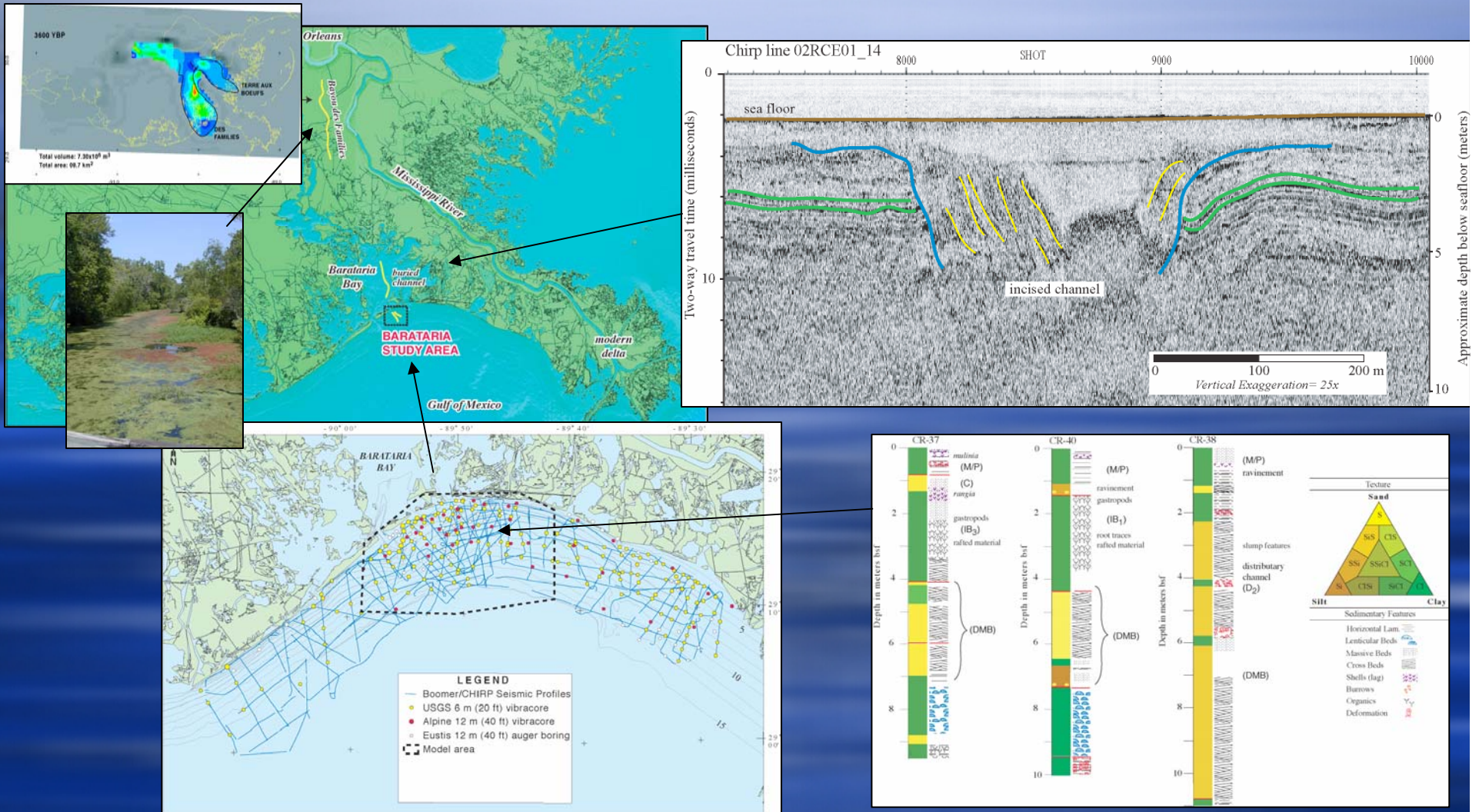
Integrating distinct spatial and temporal datasets into a four-dimensional perspective helps visualize morphologic processes over time

...tells more than one story

Applied modeling further enhances available datasets, conceptualizes regional scales and subsurface controls and demonstrates the potential that older (analog) datasets have to offer to modern GIS and geodatabase systems

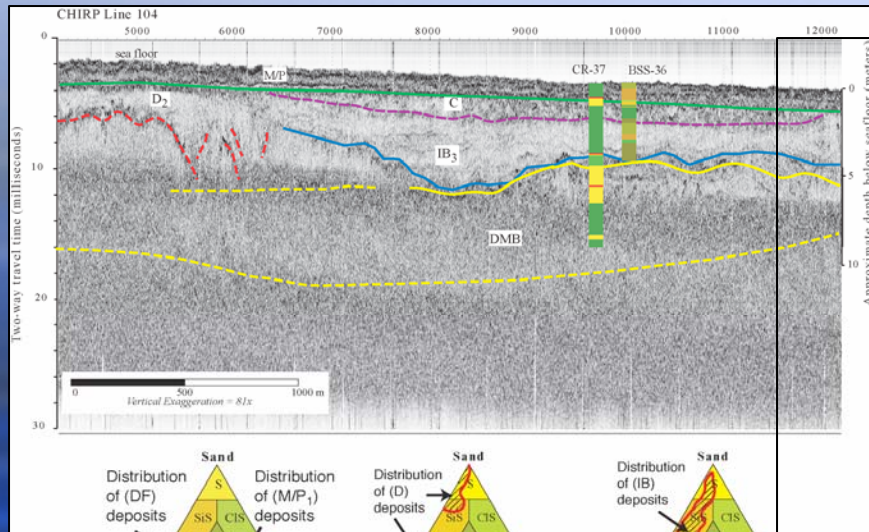
Increasing resolution to subdelta-lobe scale

Data coverage and technology continue to improve

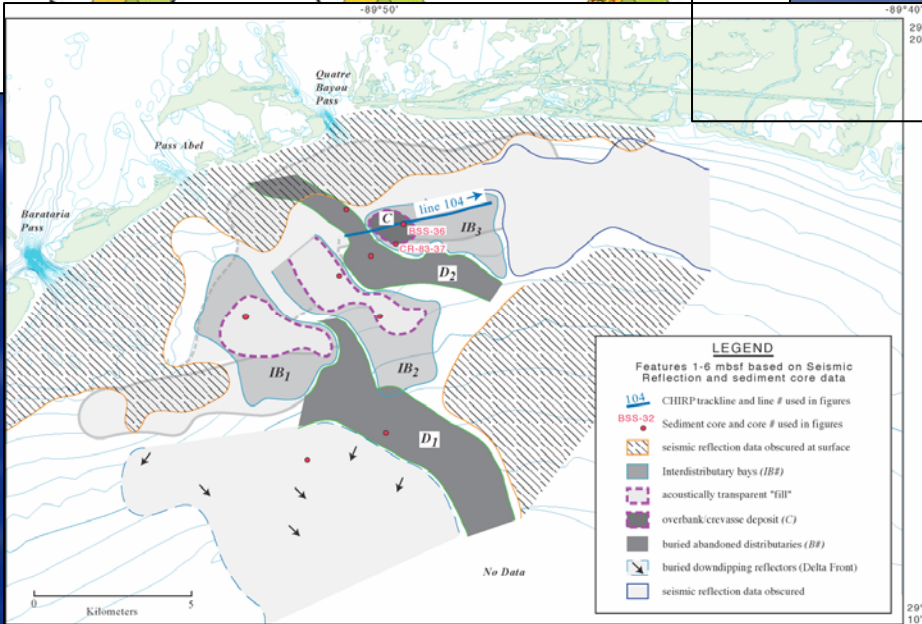


Increasing resolution to subdelta-lobe scale

Applied modeling to address new needs



QuickTime™ and a H.264 decompressor are needed to see this picture.



- Current uses of geologic information in the Mississippi River Delta:*
- *Geologic Framework*
 - *Shoreline stability studies*
 - *Identify resources for shoreline and wetland restoration*
 - *Predictive modeling of coastal response to climate change/sea level rise*