Continental Breakup and Formation of Rifted Margins: The Gulf of Mexico as a Natural Laboratory

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Community planning meetings

2008 Geological Society of London Meeting (Houston)
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PART I

Why the Gulf?

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PART III
Opportunities & Challenges

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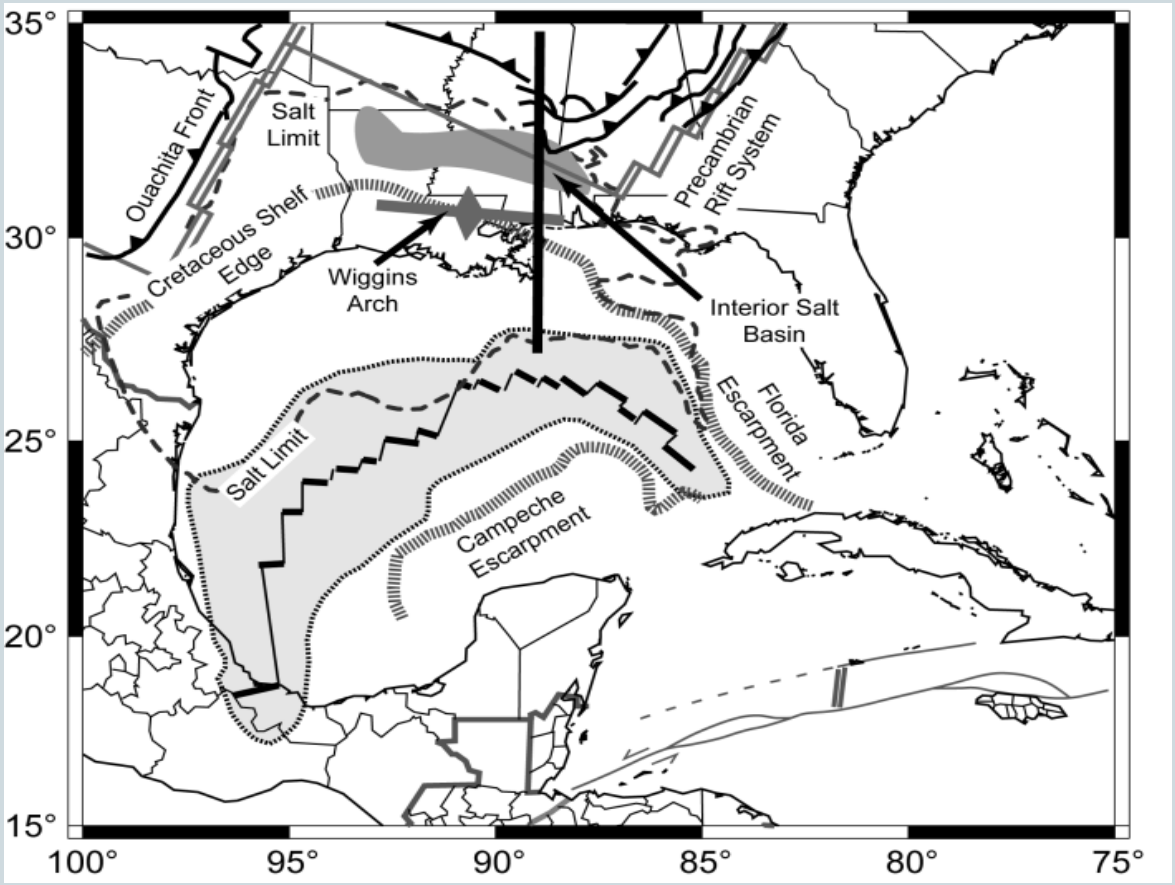
- Science Beyond RIE – a Mesozoic gateway between the Atlantic and Pacific Oceans

Tectonic Evolution

- Rift initiation ~ 215 Ma (Eagle Mills and La Boca Fms.)
- Seafloor spreading began ~ 165 Ma (inferred – no direct evidence)
- Opening ceased ~138 Ma (inferred)
- Followed Ouachita orogenic trend (sort of)
- The widest known rifted margin



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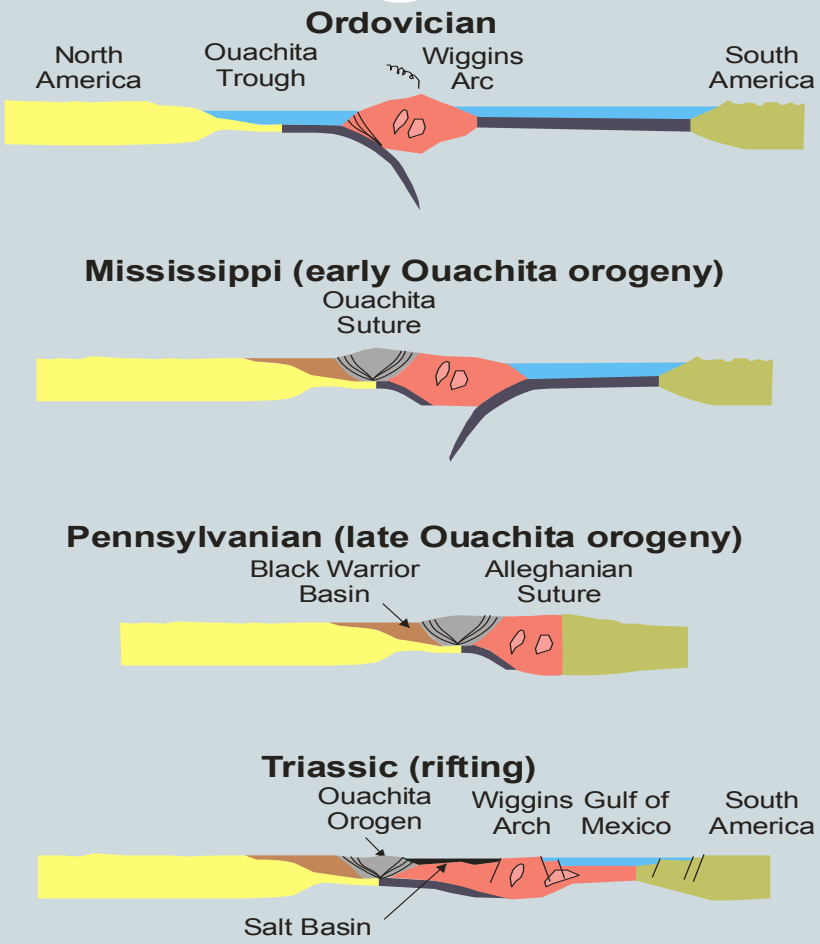
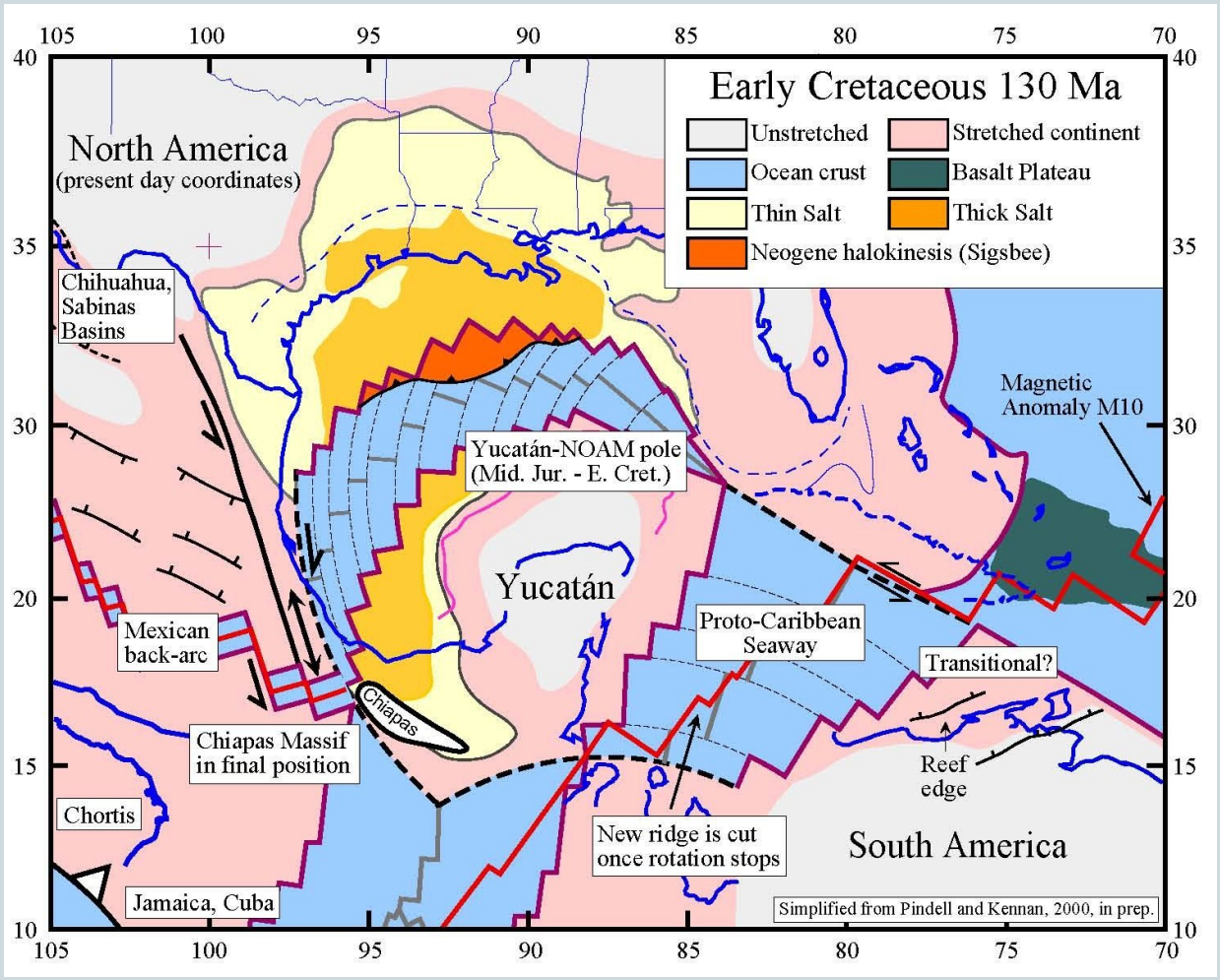


Tectonic Evolution

- Counterclockwise rotation of Yucatan away from North America
- Transform motion between Yucatan and eastern central Mexico
- Extreme stretching on central North American margin, obluque to trend of Precambrian transform margin and Paleozoic Ouachita orogen



Pindell et al., 2000

Opportunities

- **Tectonic Inheritance** –The Gulf of Mexico provides an opportunity to compare rifting of a “soft” collision orogen in the central and eastern Gulf and a “hard” collision in the western Gulf: thin-skinned vs. thick-skinned.

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- **Fluid Evolution and Migration**. The GOM is a factory for generating a wide variety of fluids: CO_2, brines, and hydrocarbons. The GOM provides an opportunity for understanding how these fluids form, migrate, and interact.

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- Imaging through salt & separating Salt Tectonics from Rift Tectonics

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