

# **Future Oil & Gas Development in the Offshore Gulf of Mexico**

*Clint Moore*

*Oil & Gas Representative*

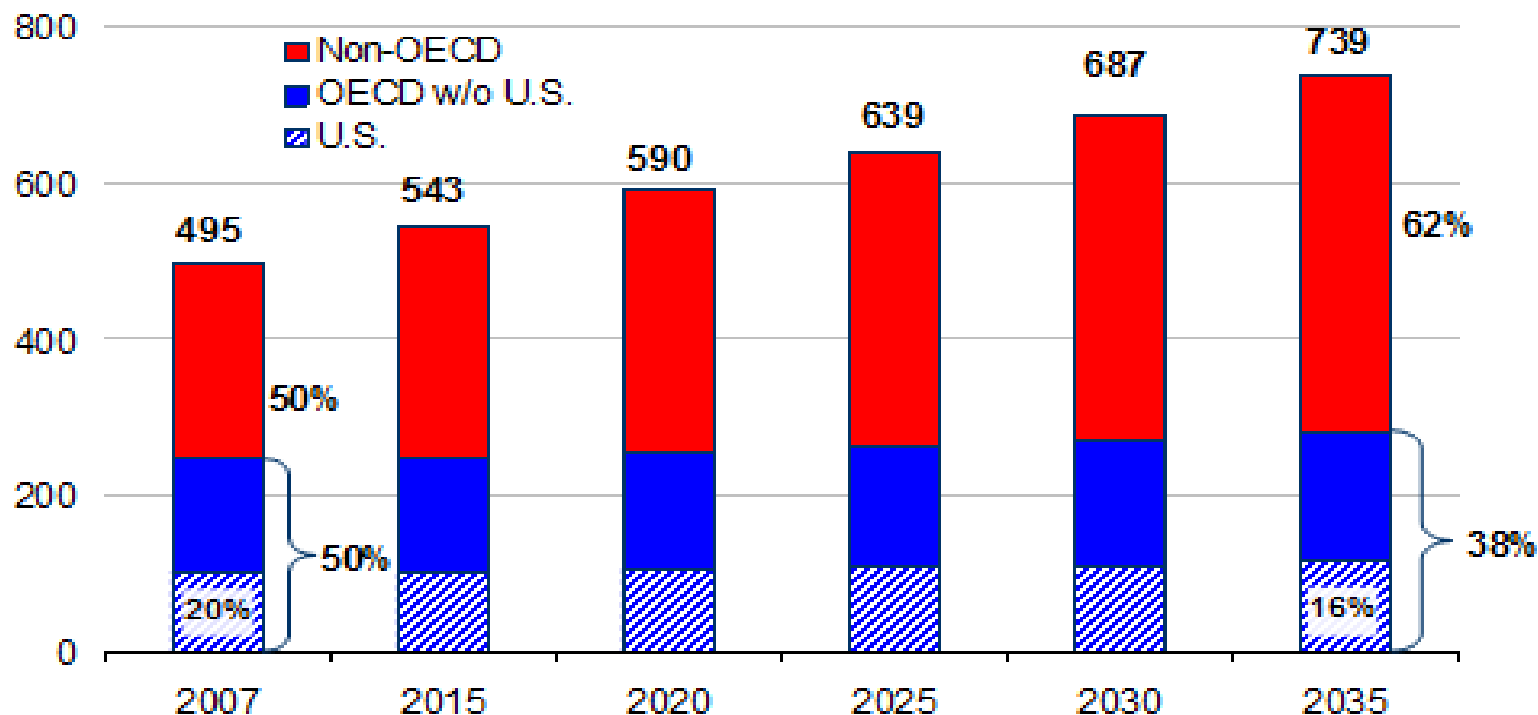
*Flower Garden Banks National Marine Sanctuary Advisory Council*

Presentation to  
PLANO Executive Night Seminar  
New Orleans, Louisiana  
February 16, 2012

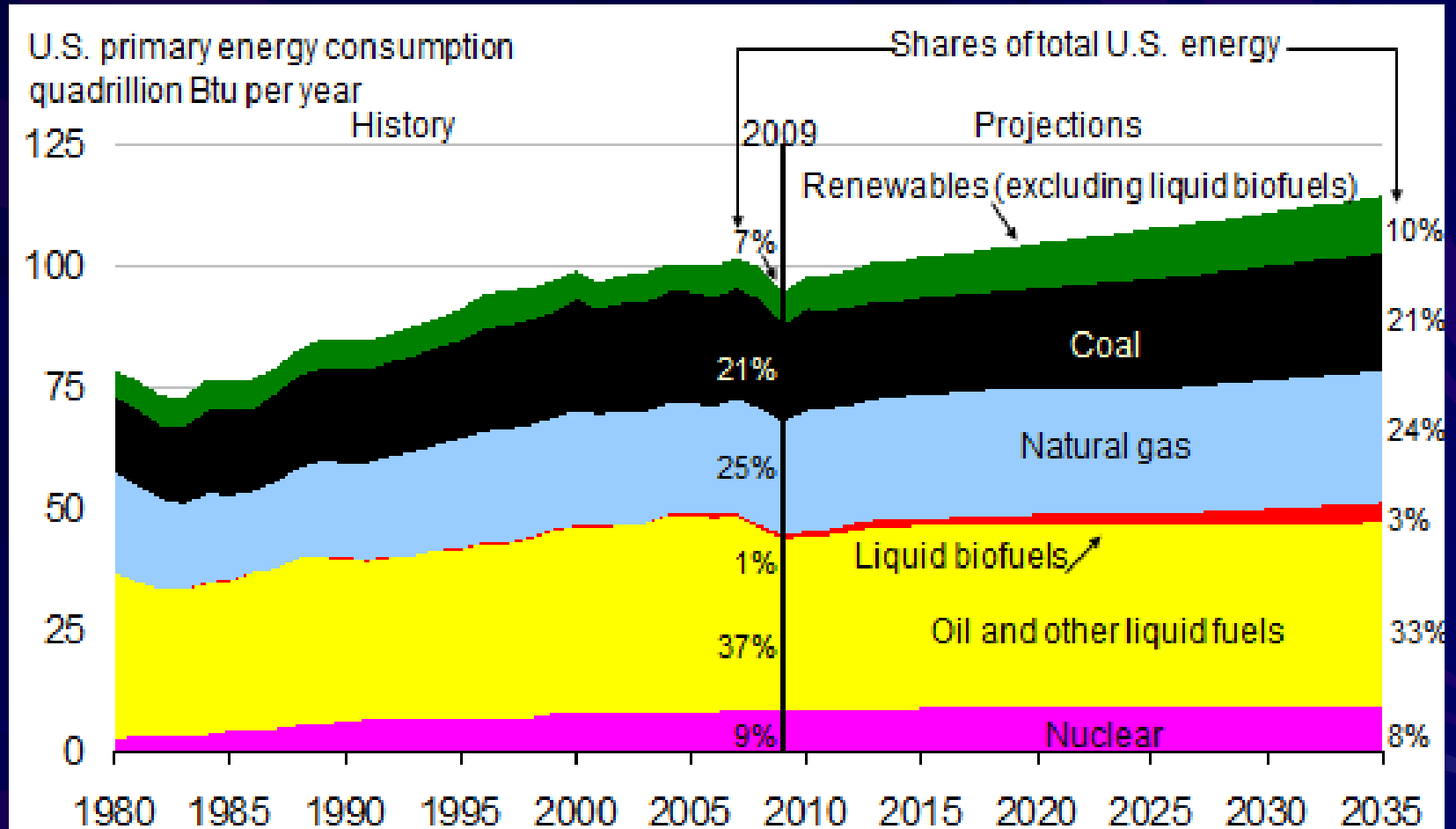
# World Energy Demand Growing!

**Non-OECD countries account for vast majority of the nearly 50% projected increase in global energy use by 2035**

energy consumption  
quadrillion Btu



# US Supply 2035 - still 78% Fossil Fuels

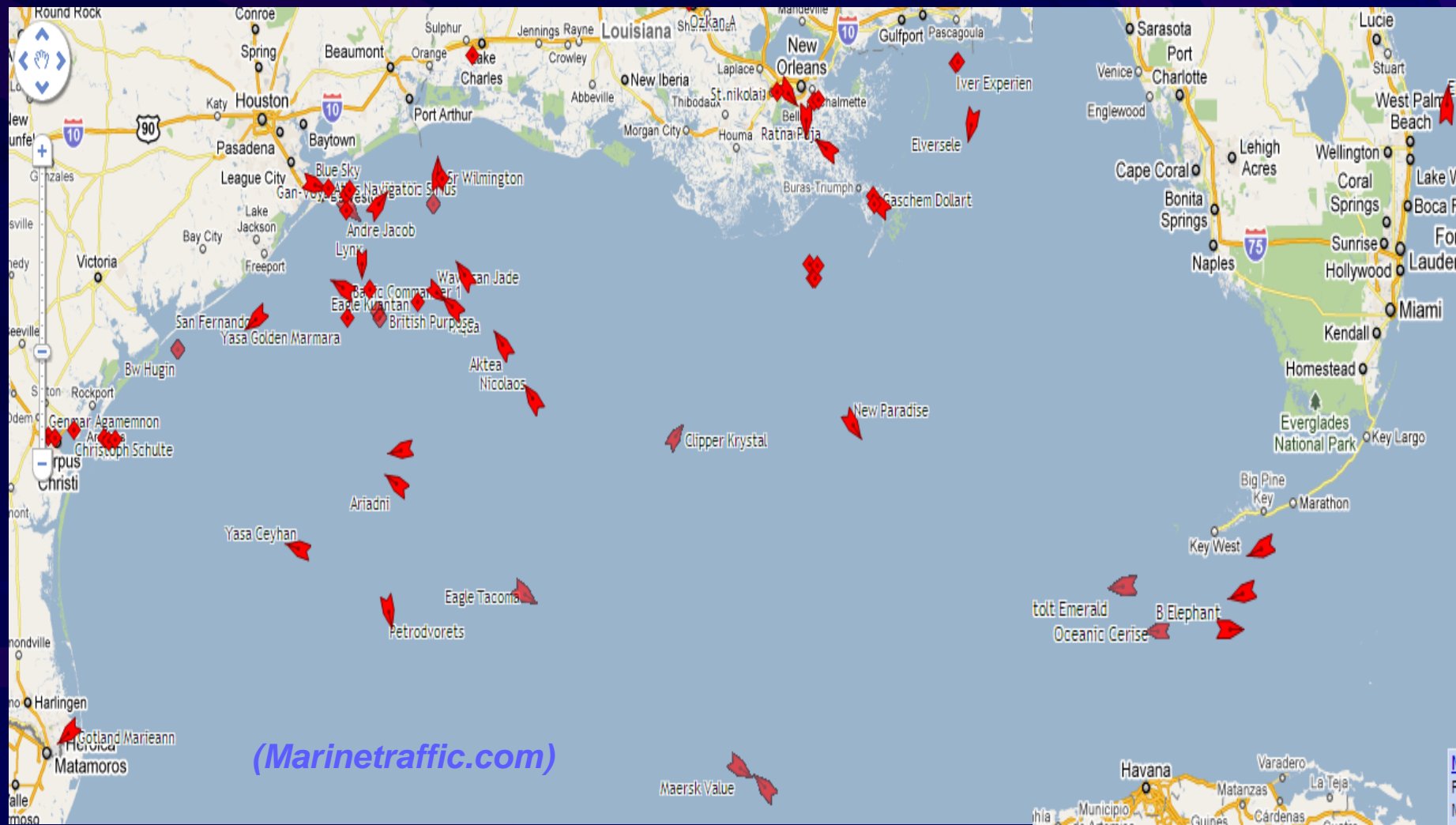


# U.S. Oil Consumption & Supply

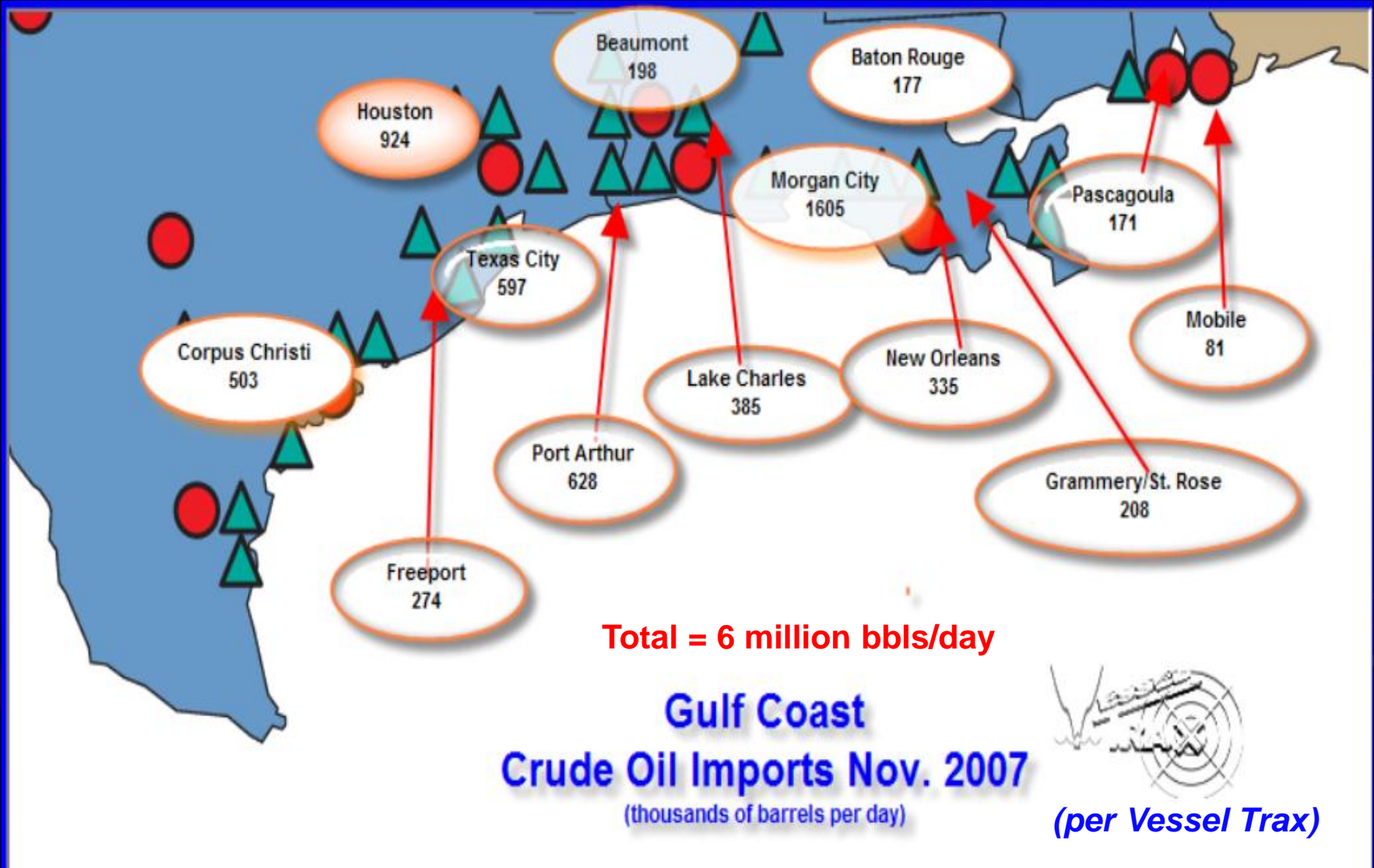
U.S. OIL DEMAND	Million Barrels/Day	Trillion Gallons/Year
U.S. Gasoline	9.5	146
U.S. Distillate & Fuel Oil	4	61
U.S. Jet Fuel & Kerosine	1.4	21
U.S. Residual & Bunker	0.6	9
U.S. Others - Chem, Lubes, etc.	4.5	69
<b>Total U.S. Oil Demand</b>	<b>20</b>	<b>307</b>
		0
<b>Total World Oil Demand</b>	<b>86</b>	<b>1,318</b>
<b>Total World Oil Supply</b>	<b>86</b>	<b>1,318</b>
U.S. OIL SUPPLY	Million Barrels/Day	Trillion Gallons/Year
<b>U.S. Gulf Offshore Oil Production</b>	<b>1.5</b>	<b>23</b>
U.S. Non-Gulf Oil & NGL Prod.	6	92
Gulf Coast Tanker Crude Imports	5	77
East Coast Tanker Crude Imports	1	15
West Coast Tanker Crude Imports	1	15
Refined Tanker & Pipeline Imports	2.3	35
N.A. Imports	1.5	23
Other supply	1.7	26
<b>Total U.S. Oil Supply</b>	<b>20</b>	<b>307</b>

Source: EIA website

**offloading 250 million gallons every single day**

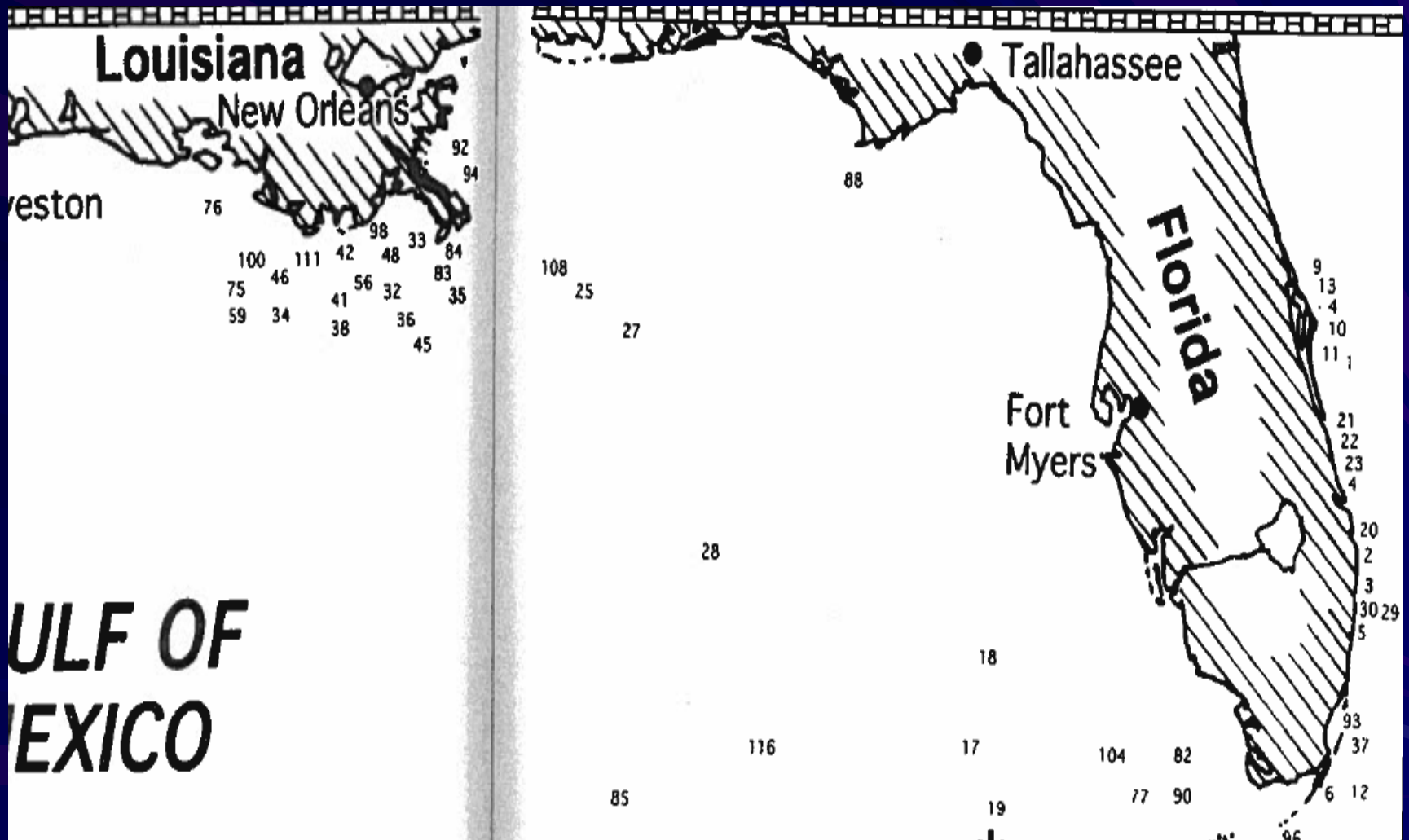


# Gulf Coast Daily Tanker Oil Imports to Refineries



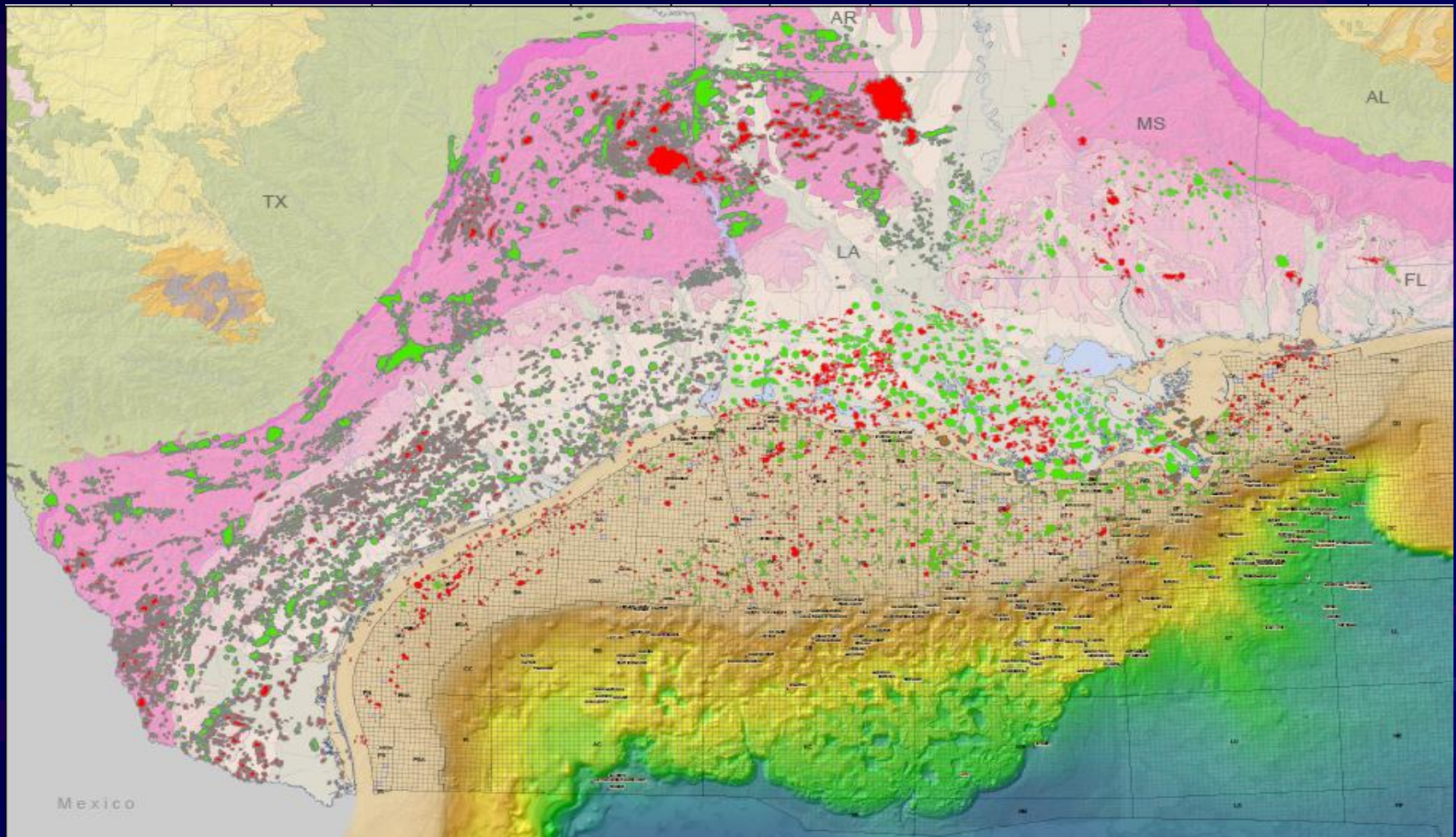


**25+ WW II Tankers Sunk by U-Boats**  
**1.5+ Million Barrels spilled in Summer (90+ days) of 1942**



*(from "Torpedoes in the Gulf", 1995)*

# Gulf of Mexico Oil & Gas Fields





# **Offshore Gulf of Mexico Oil & Gas**

## **Historical Production**

***14+ Billion Bbls Oil and 150+ Trillion cu-ft Natural Gas  
(1.7 Trillion gallons of oil equivalent)***

## **Productive Fields' Remaining Producible Reserves**

***14+ Billion Bbls Oil and 60+ Trillion cu-ft Natural Gas  
(1 Trillion gallons of oil equivalent)***

## **Undiscovered Oil & Gas (BOEMRE Mean Estimate)**

***45+ Billion Bbls Oil AND 230+ Trillion cu-ft Natural Gas  
(3.5 trillion gallons of oil equivalent)***

\*\*\*\*\*

***25% of US Daily Oil Production – 14% of US Daily Gas Production***

# **Oil & Gas Activity in GOM**

**100+ Offshore Operators – 500+ Offshore Companies**

**50,000+ Direct Offshore Workers**

**1 million+ impacted by offshore**

**60+ Years of Drilling & Production**

**55,000+ wells drilled to date**

**4,000+ deepwater (500'+ water depth) wells**

**400+ ultra-deepwater (5,000'+ water depth) wells**

# Only 50 Movable Offshore Drilling Units (MODU) working in the GOM in 2012





# Platforms & Caissons



HI-A-389 – in FGBNMS

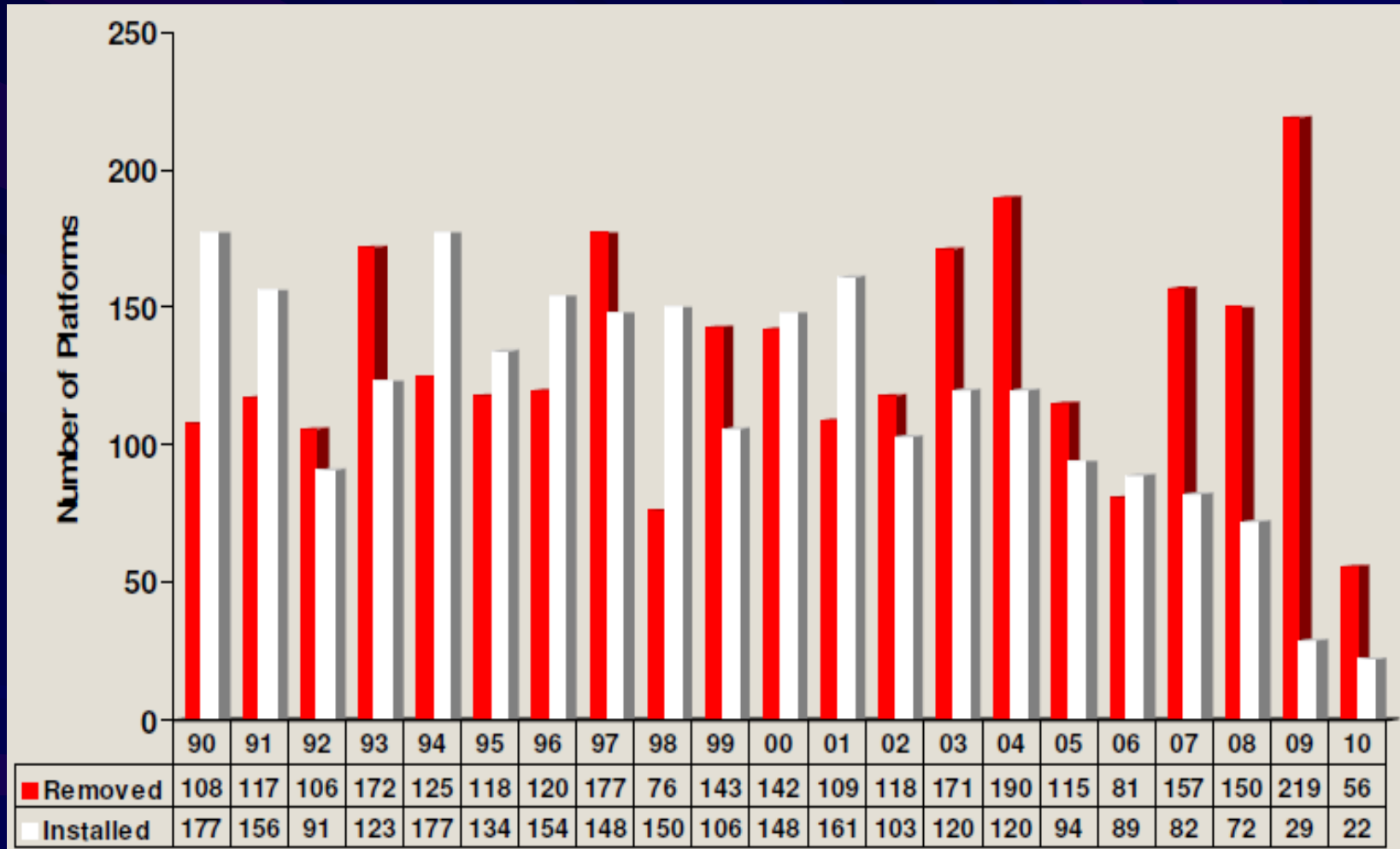


**2,500+ Fixed Leg Platforms – 1,000+ Single Well Caissons**



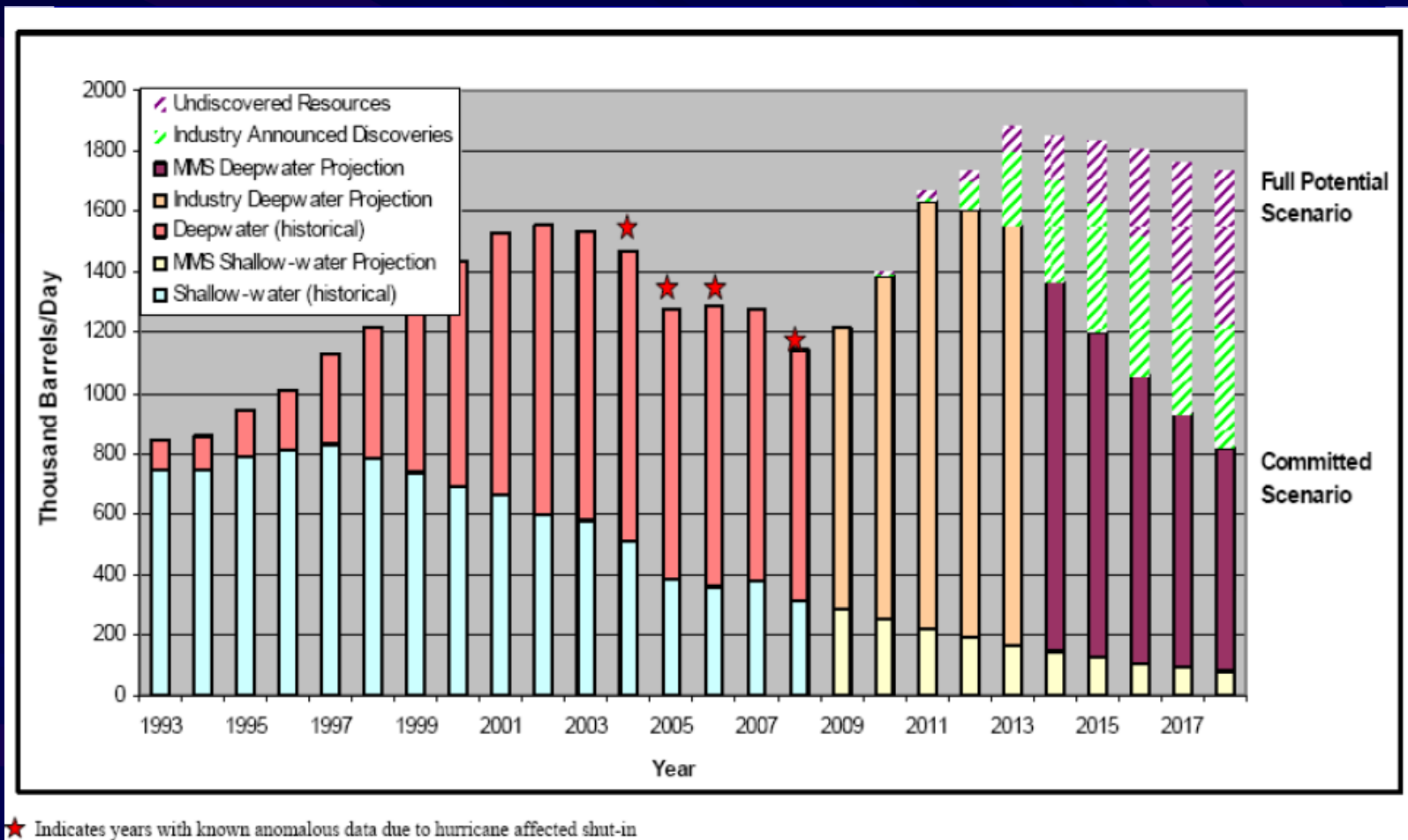
# Platform Installation & Removals by Year

## “Idle Iron Platforms” or Useful Long-term Reefs?

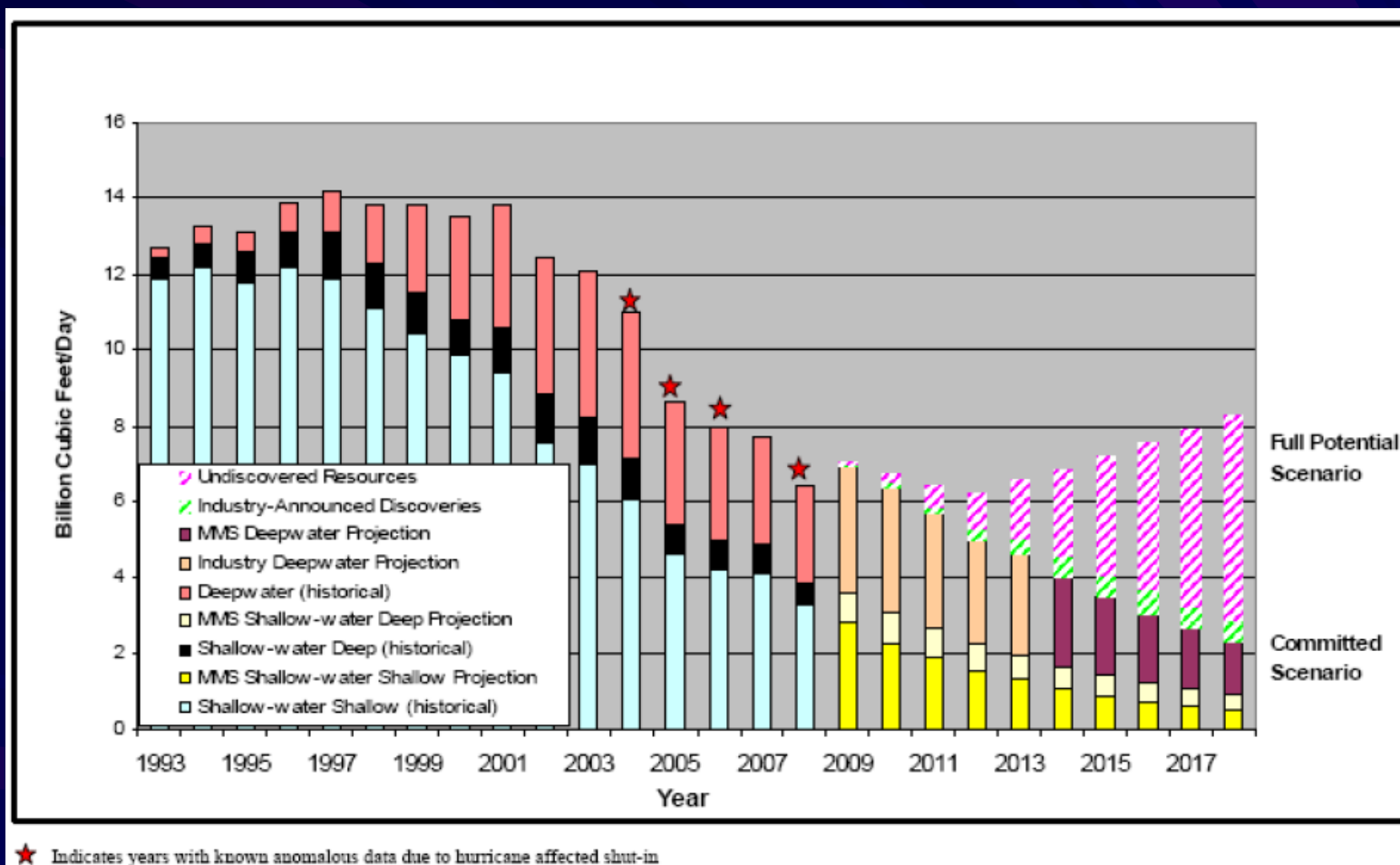


(BOEMRE - M.S. Falk – OOC RTR Conf - Nov. 2010)

# Oil Production 1993 - 2018

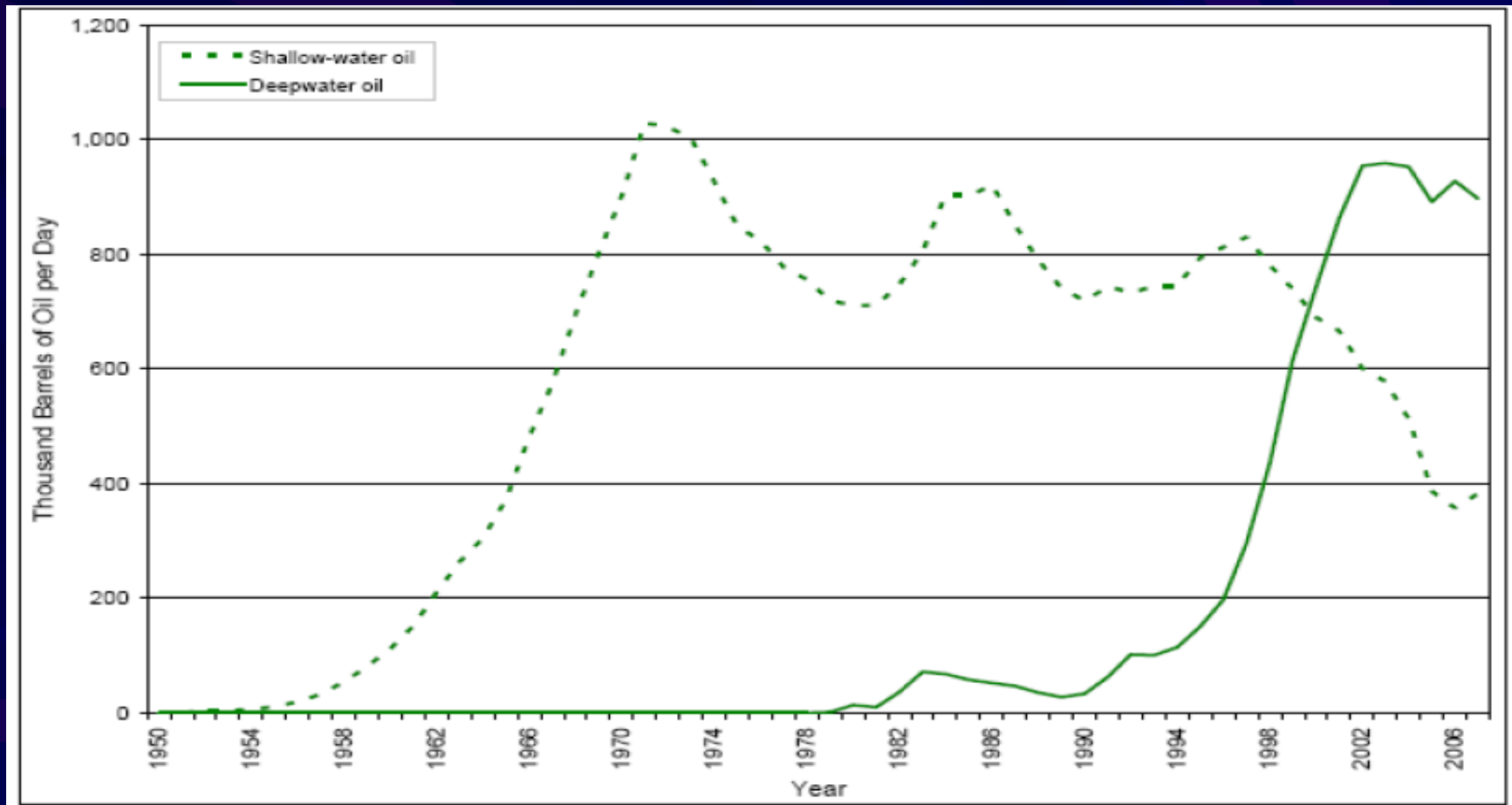


# Gas Production 1993 - 2018



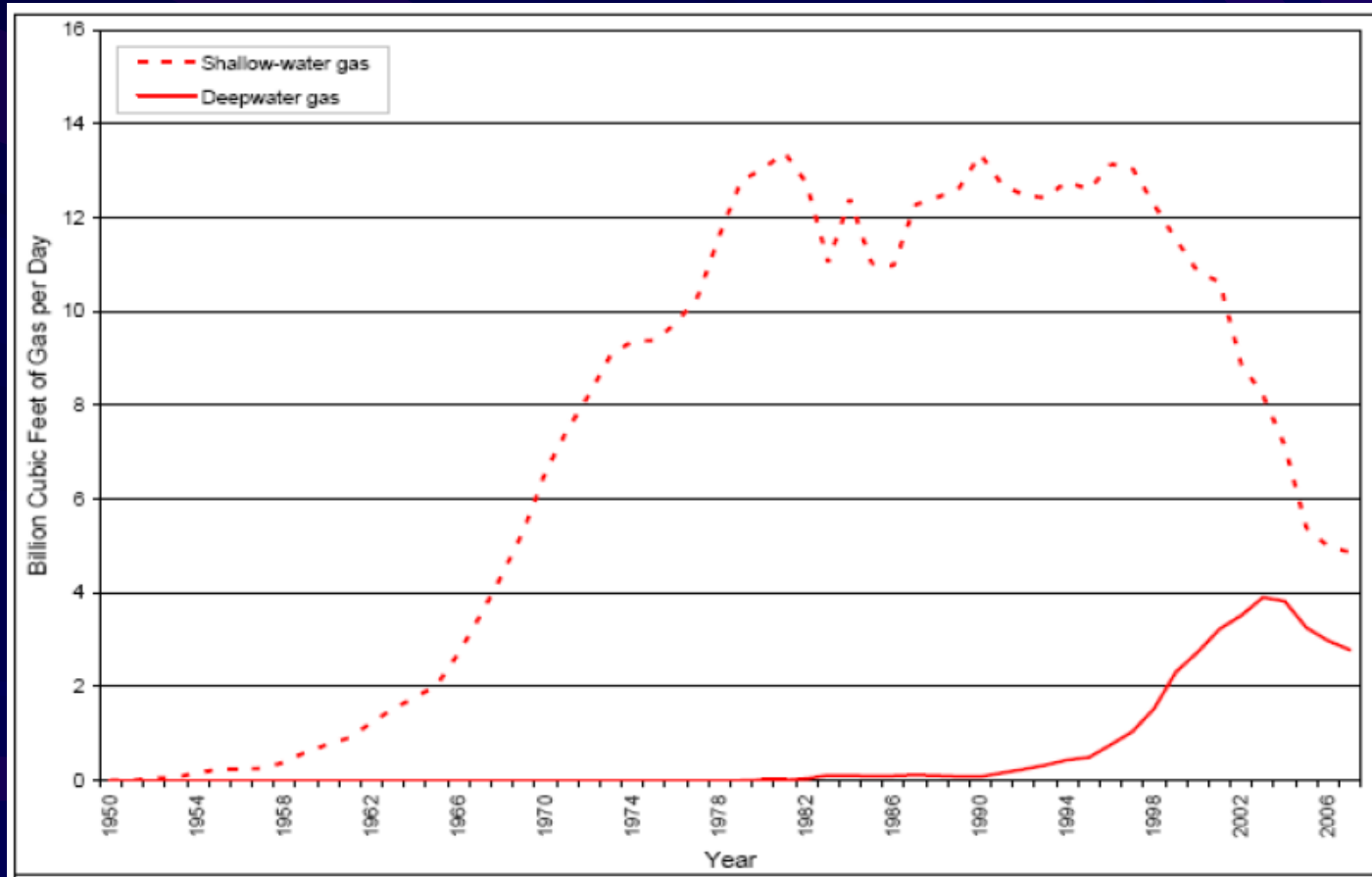
★ Indicates years with known anomalous data due to hurricane affected shut-in

# Oil Production – Shelf vs. Deepwater

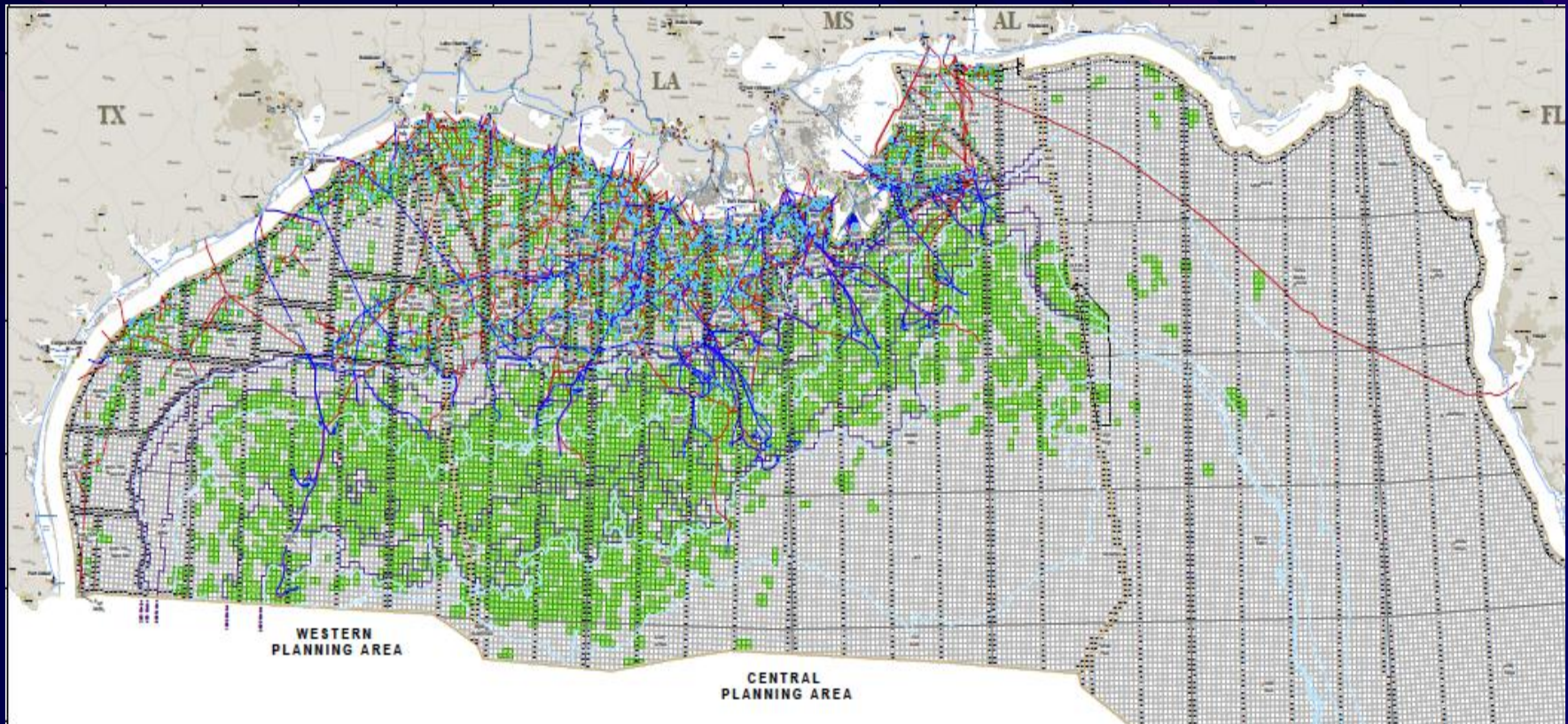




# Gas Production – Shelf vs. Deepwater



# To Explore – Must have Leases



**6,269 Active Federal Leases – 33.6 million acres leased**

*(per BOEMRE website Nov 2011)*



# Active Leases by Water Depth

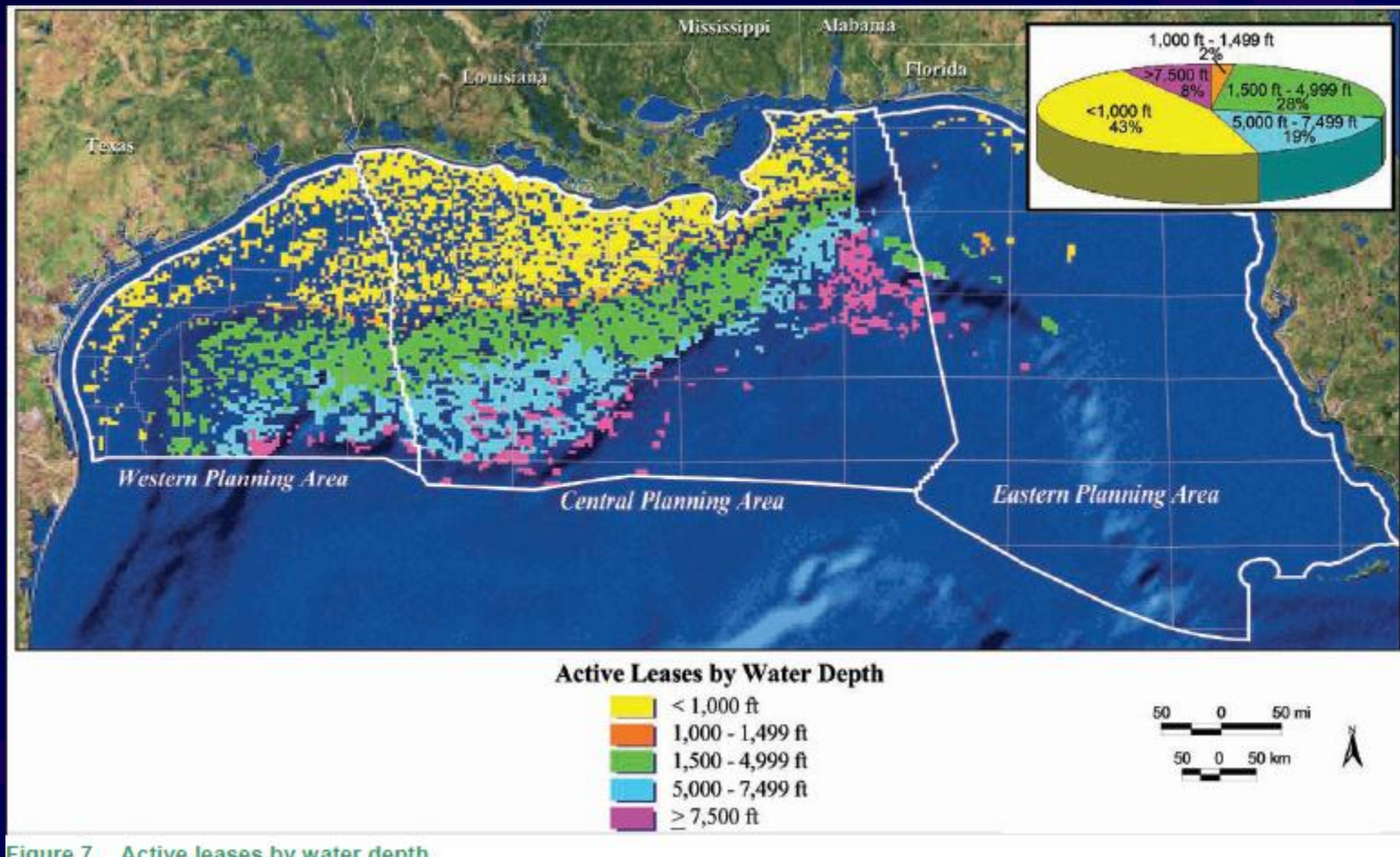
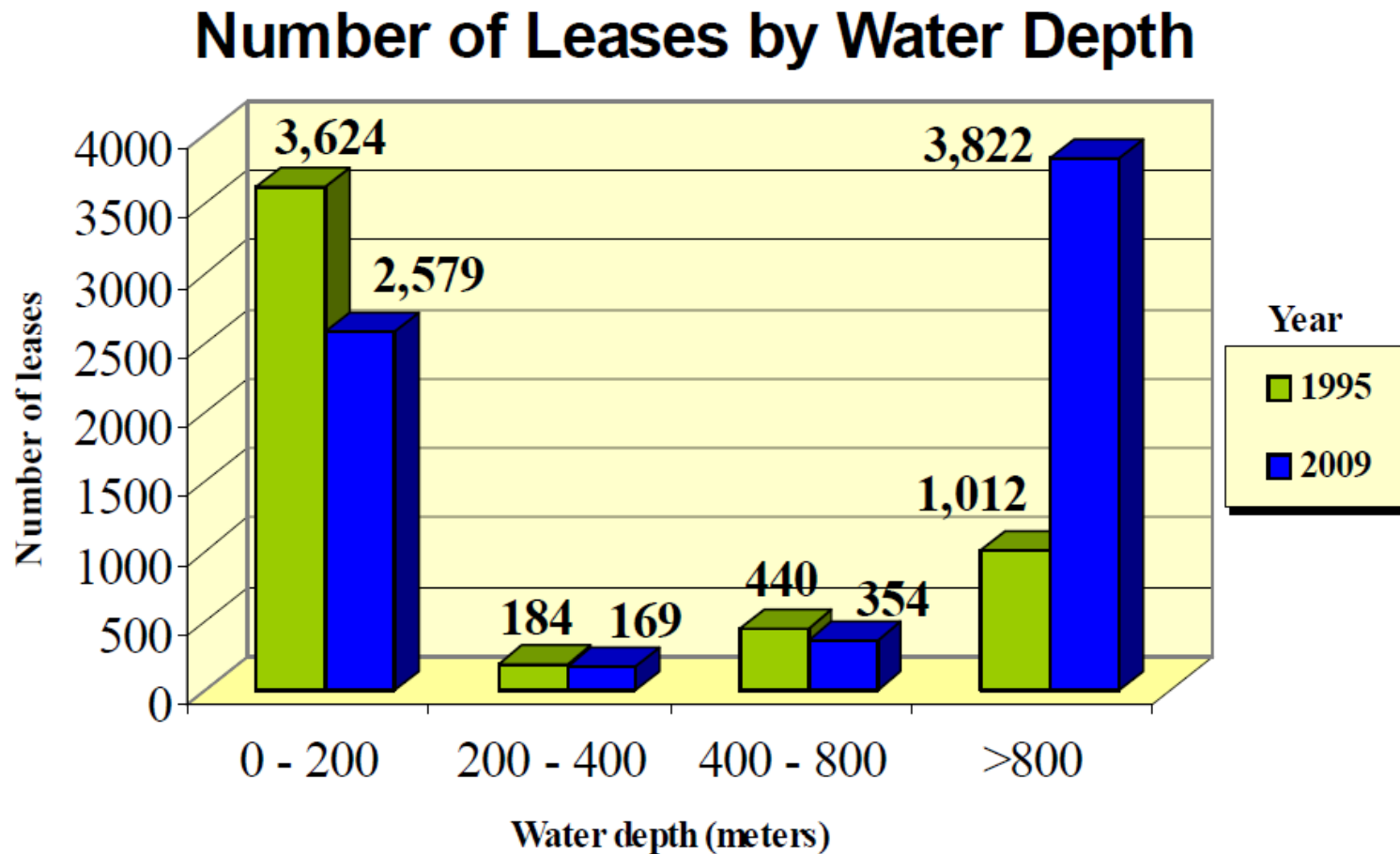


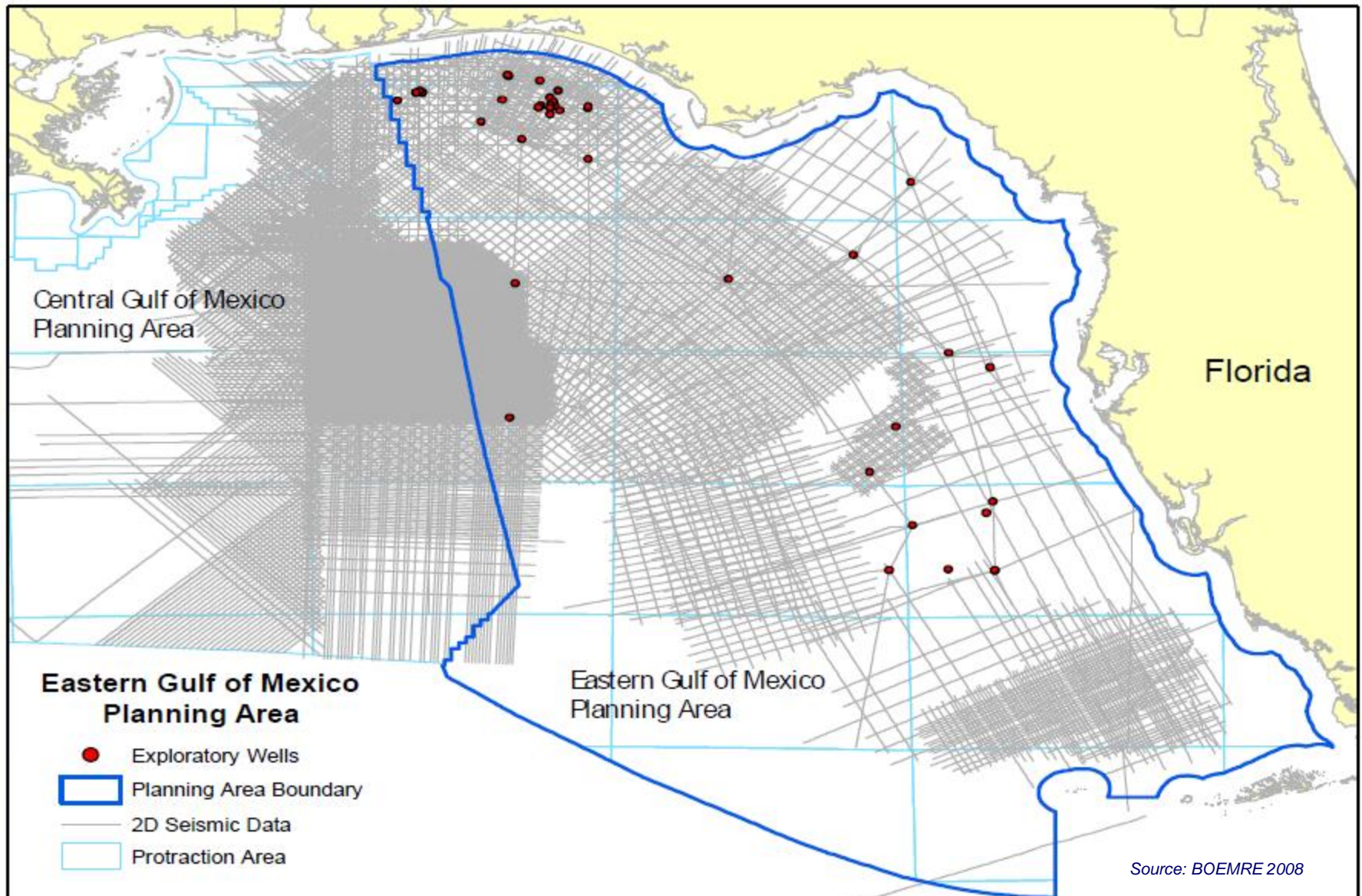
Figure 7. Active leases by water depth.

# Leases by Water Depth - 1995 vs. 2009



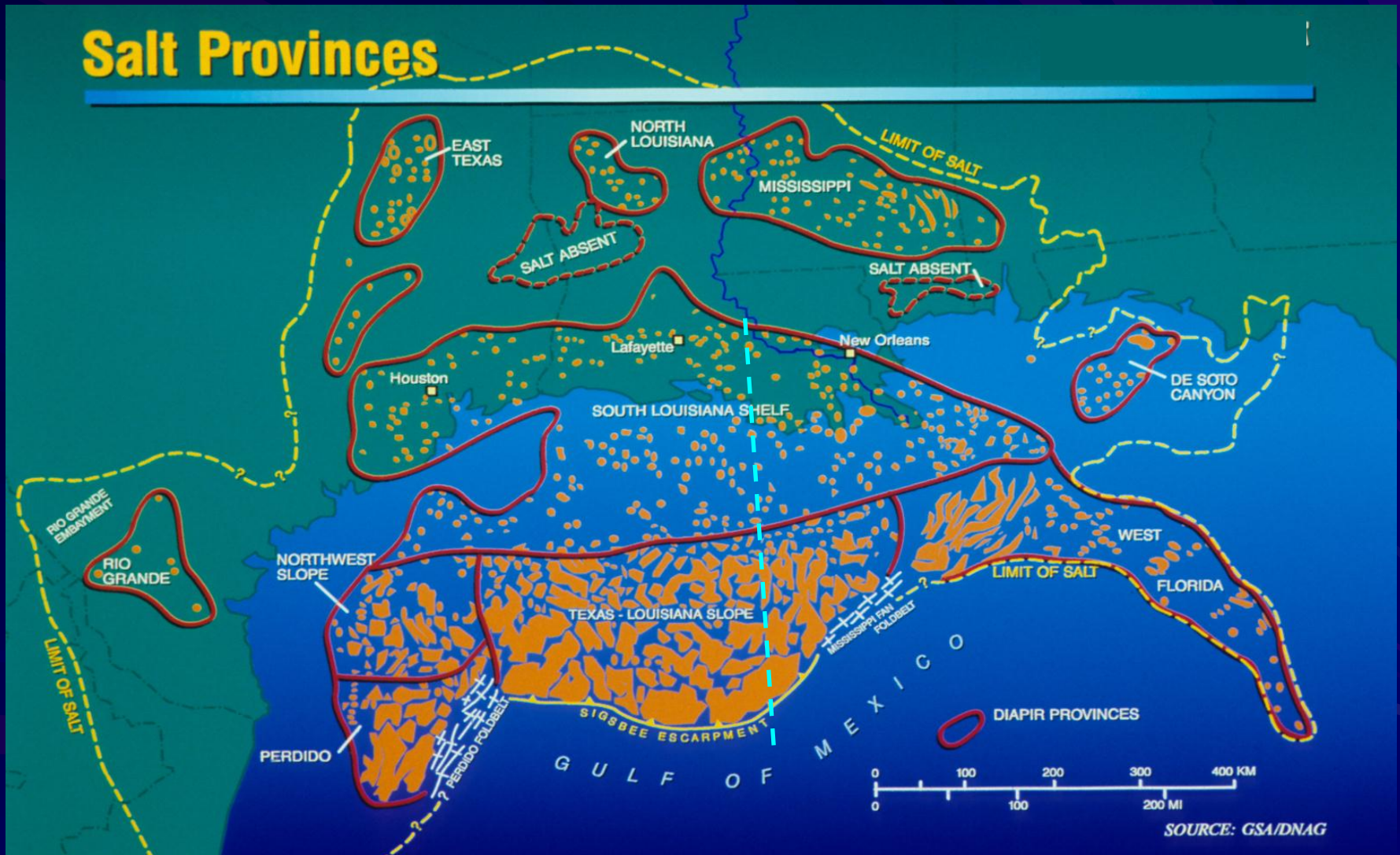


# Eastern Gulf of Mexico Exploratory Wells and Seismic Data

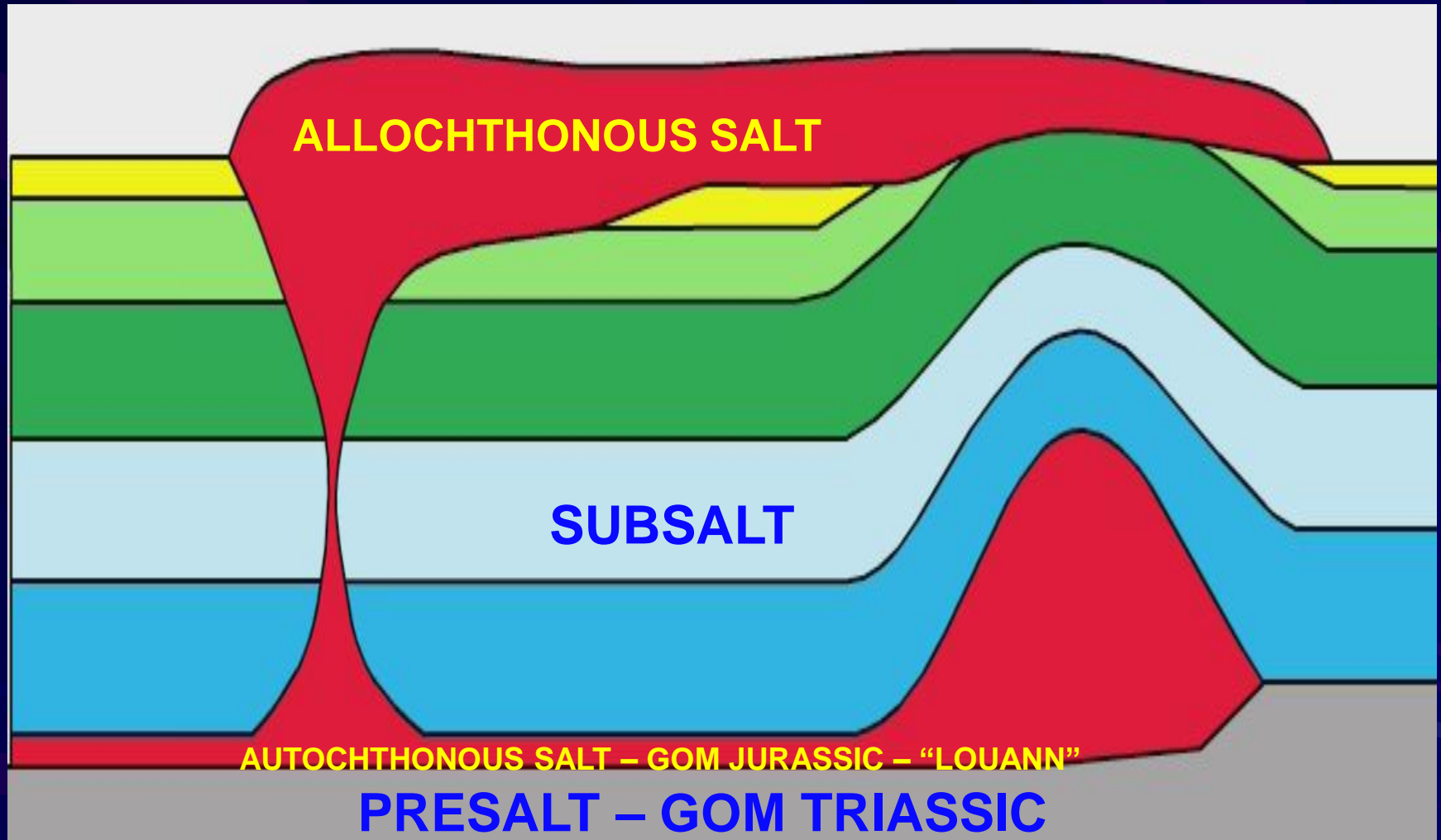




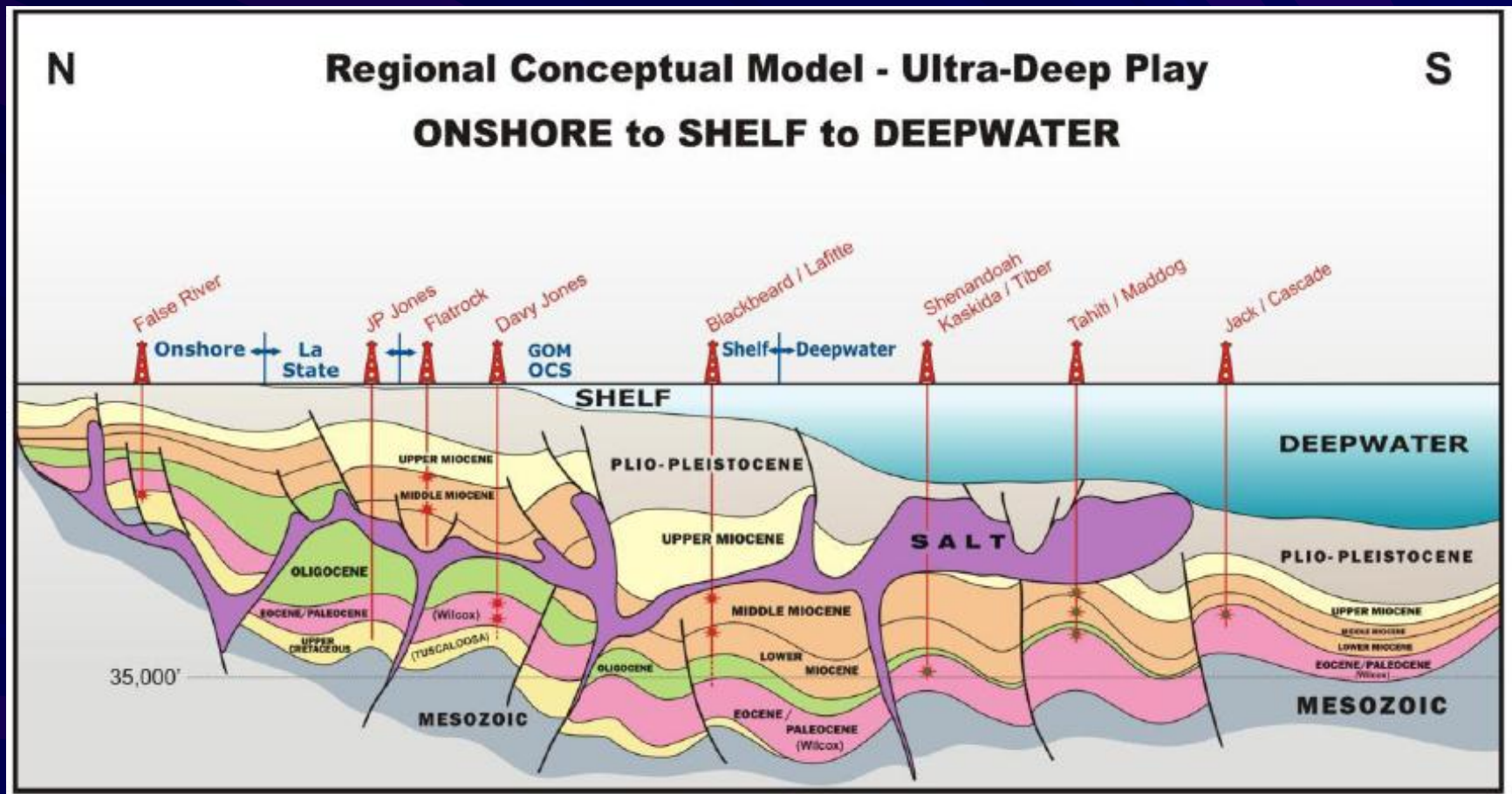
# Salt Provinces in Northern Gulf of Mexico



# Subsalt vs. Presalt

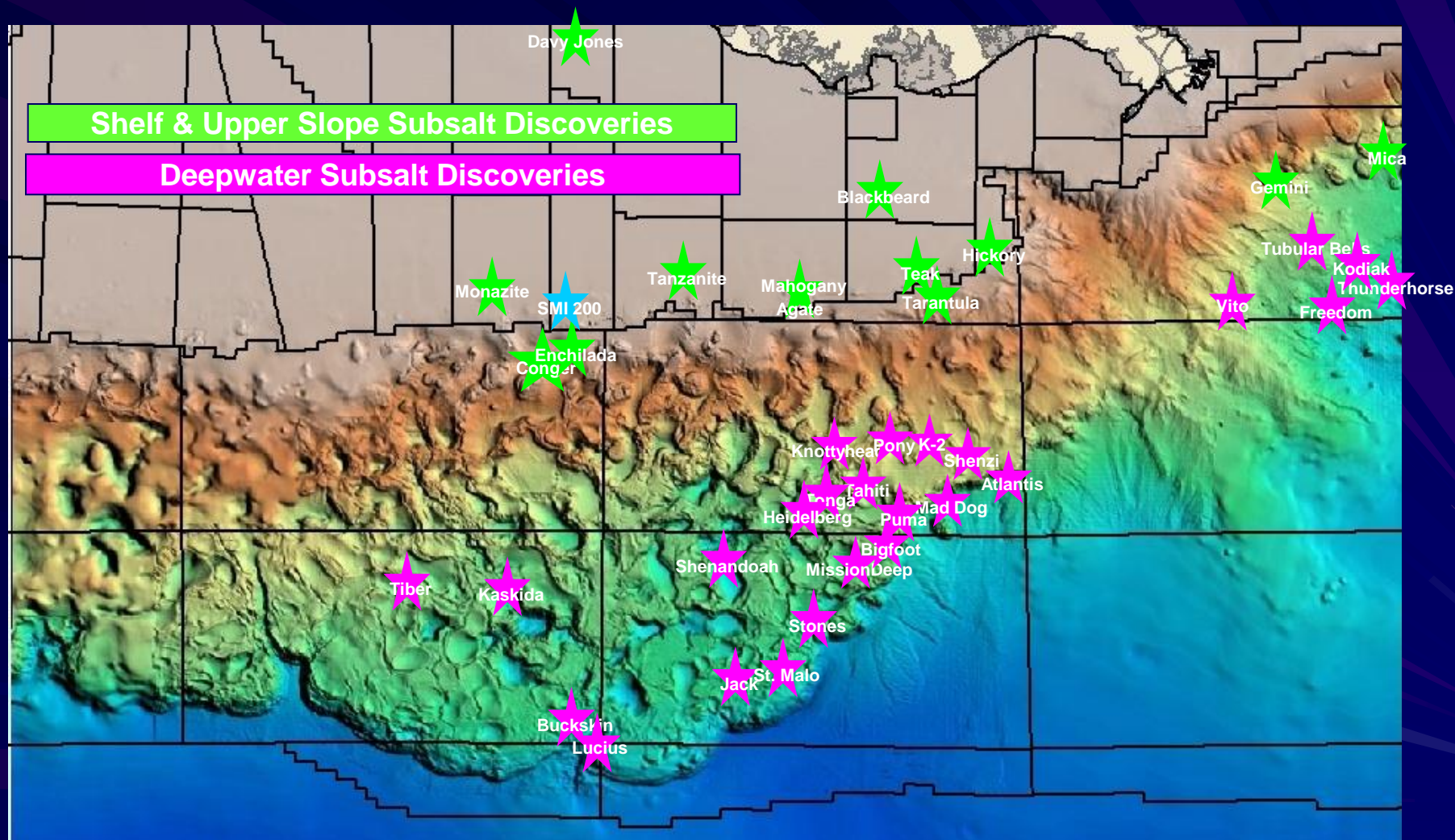


# Subsalt Deep Drilling Grows in GOM

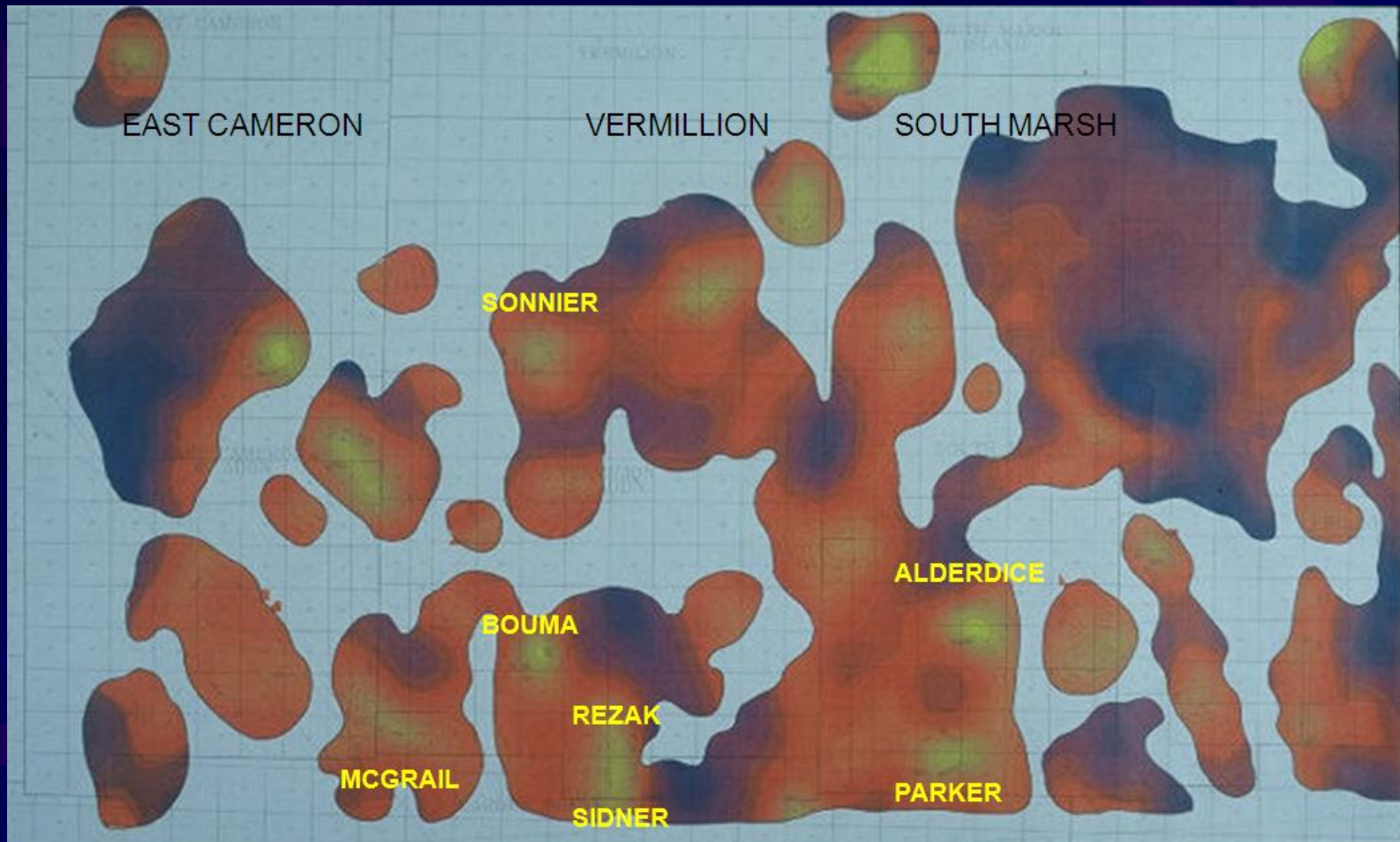




# U.S. Gulf of Mexico Subsalt Discoveries



# Bank Salt Domes connected to Big Salt Sheets



(adapted from Moore & Brooks, 1995)



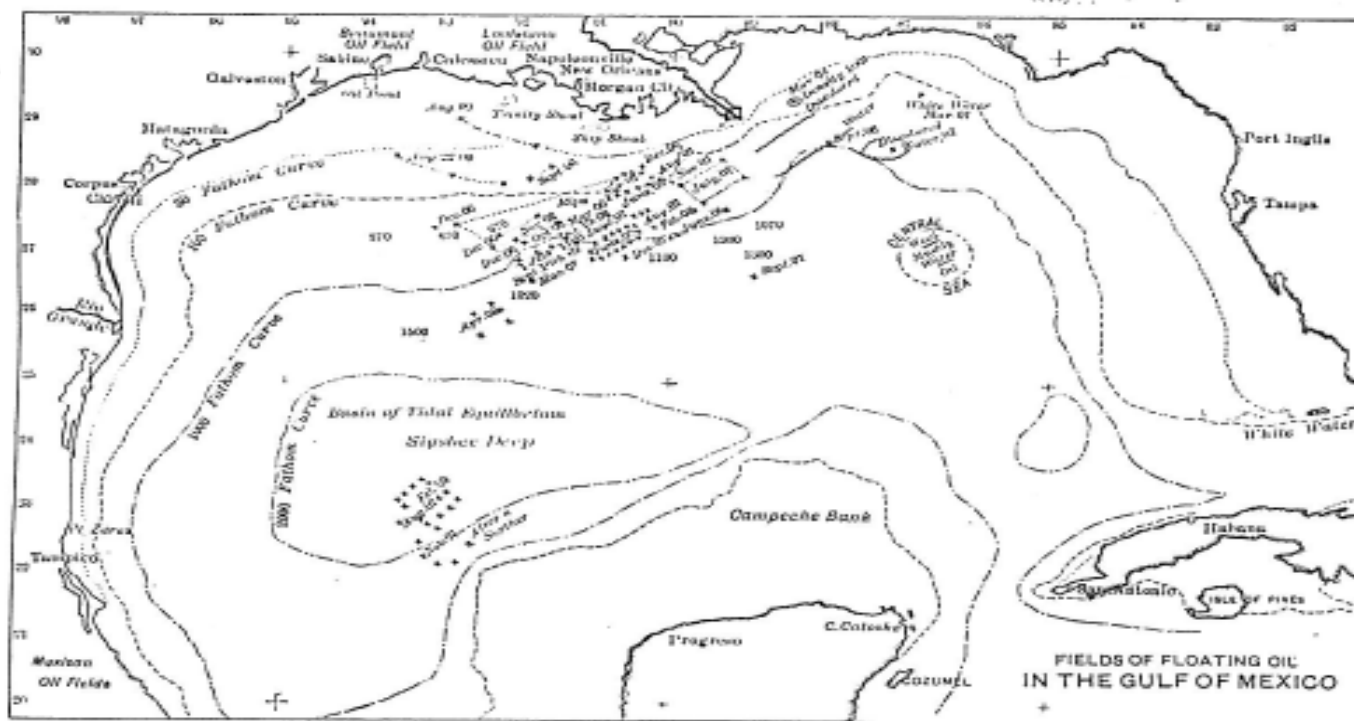
# Large GOM Natural Oil Seeps – 1910 Article 38 Years before 1<sup>st</sup> offshore GOM well

APRIL 9, 1910.

SCIENTIFIC AMERICAN SUPPLEMENT No. 1788.

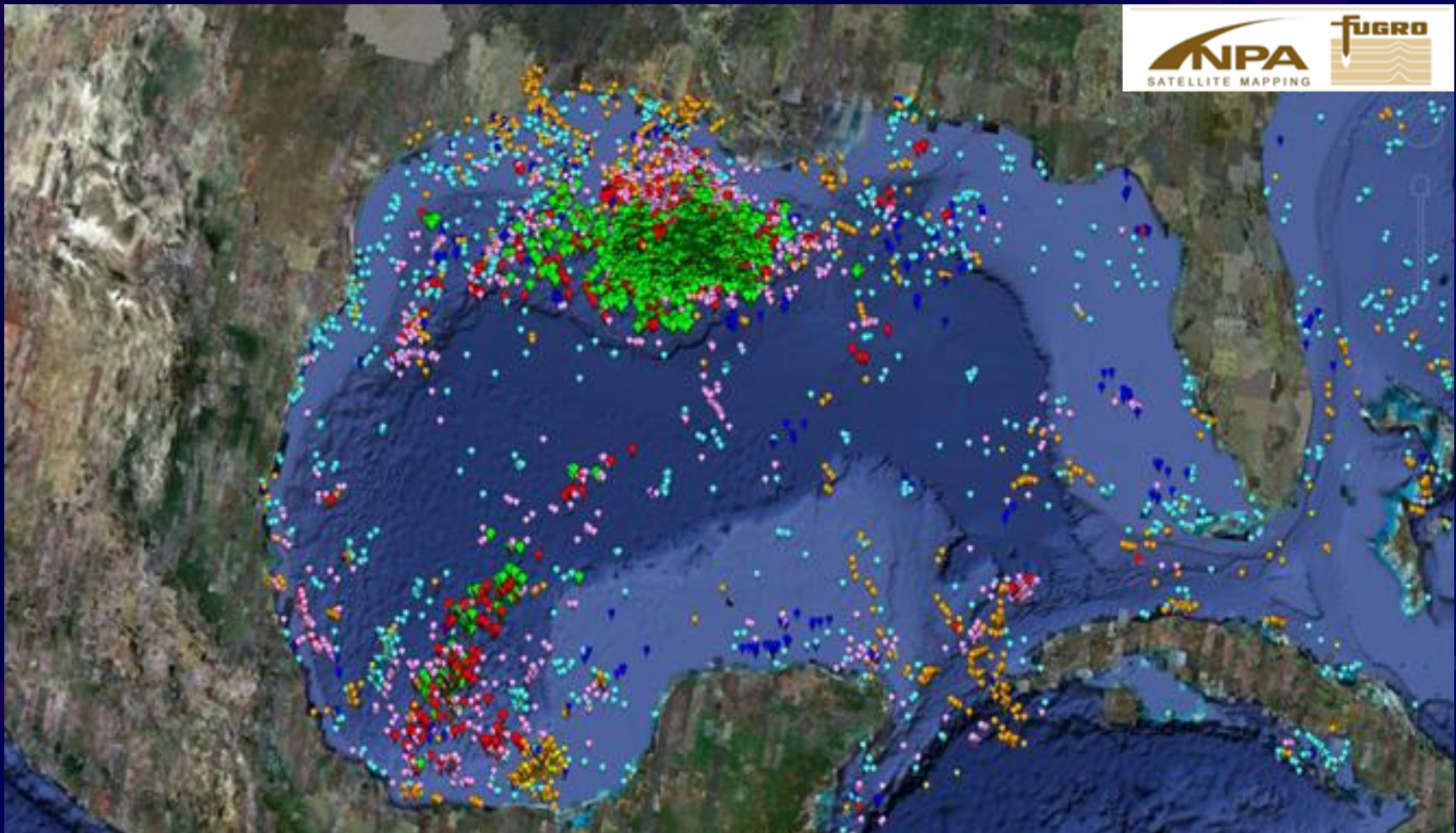
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## THE OIL FIELDS OF THE GULF OF MEXICO. THEIR GEOLOGICAL PLACE. BY LIEUT. JOHN C. SOLEY, U. S. N.



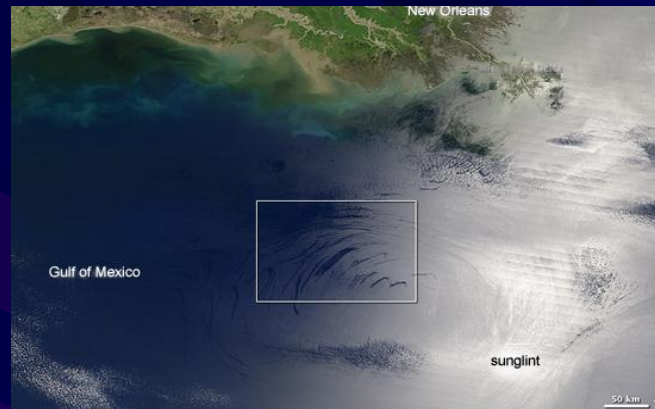
FIELDS OF FLOATING OIL IN THE GULF OF MEXICO.

**Natural Oil Seeps (Green) from Satellite Data  
are estimated from 2,000 – 10,000+ BOPD**





# Large GOM Natural Oil Seeps - Photo



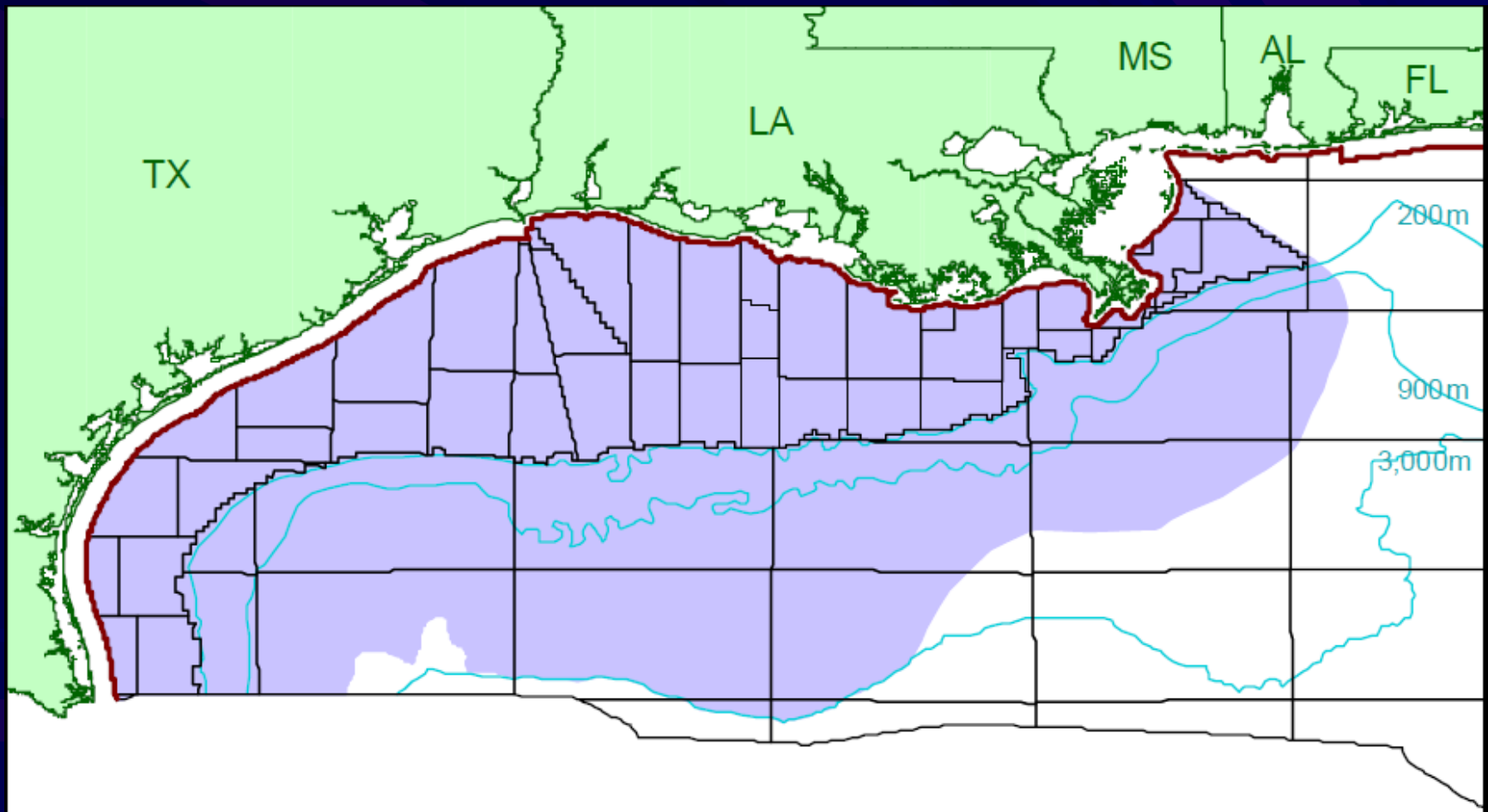
Satellite image of natural oil seeps in the Gulf of Mexico by Jesse Allen, NASA. See zoomed-in below.



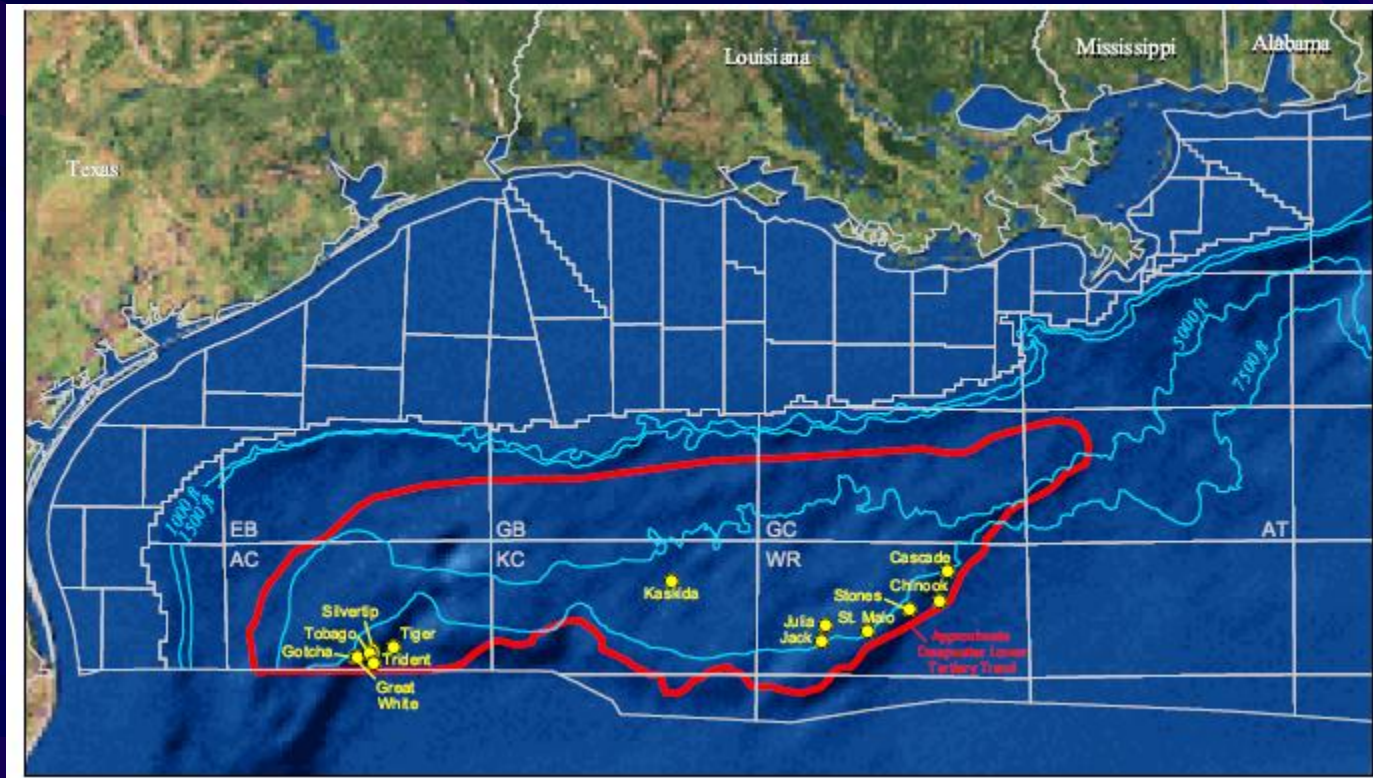
Satellite image of natural oil seeps in the Gulf of Mexico. Jesse Allen, NASA. See above for reference.

(from NASA Earth Observatory news release from February 3, 2009 per Geology.com)

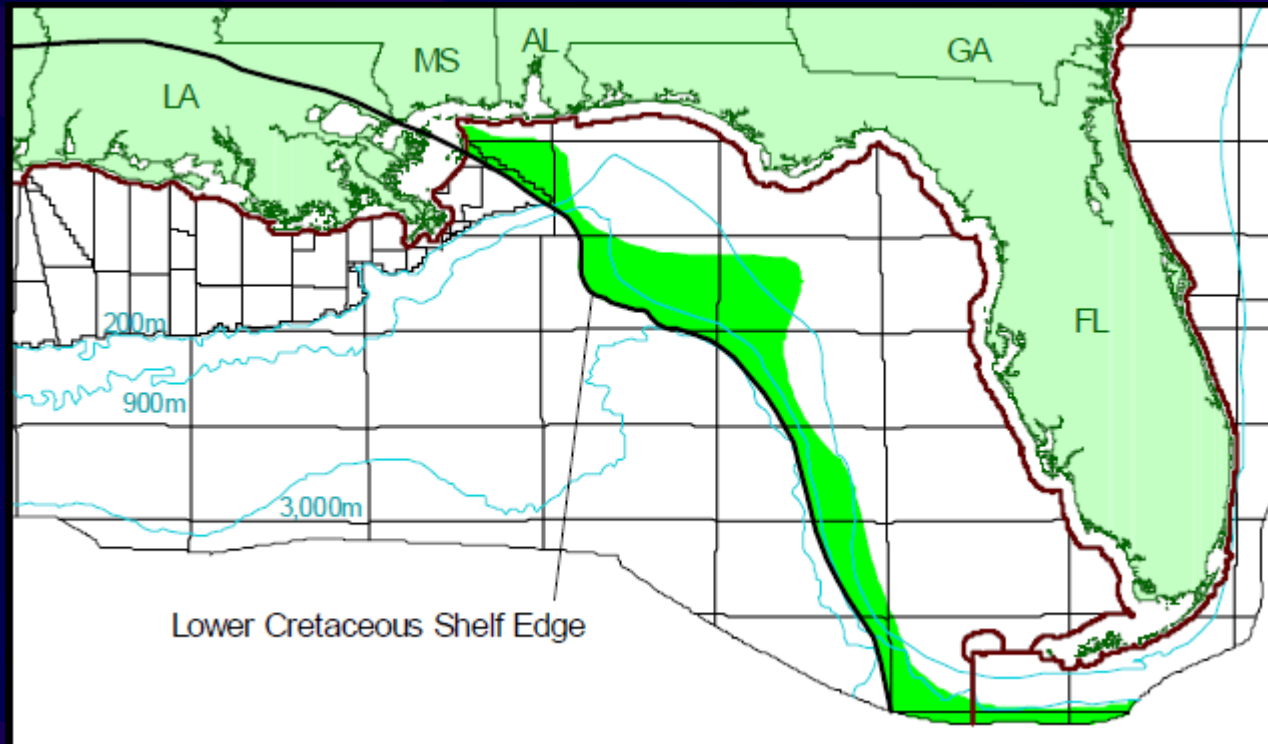
# Deep Miocene Play



# Deep Lower Tertiary Play

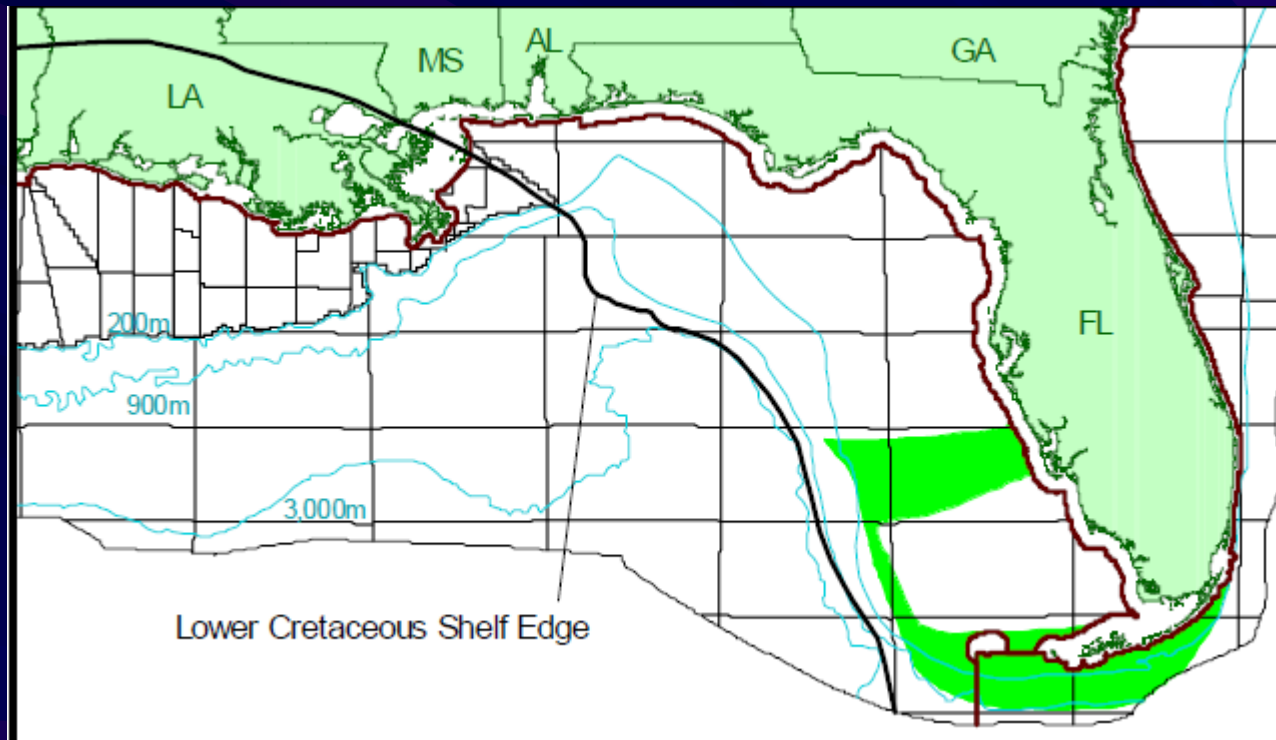


# Lower Cretaceous Carbonate Shelf Margin Play

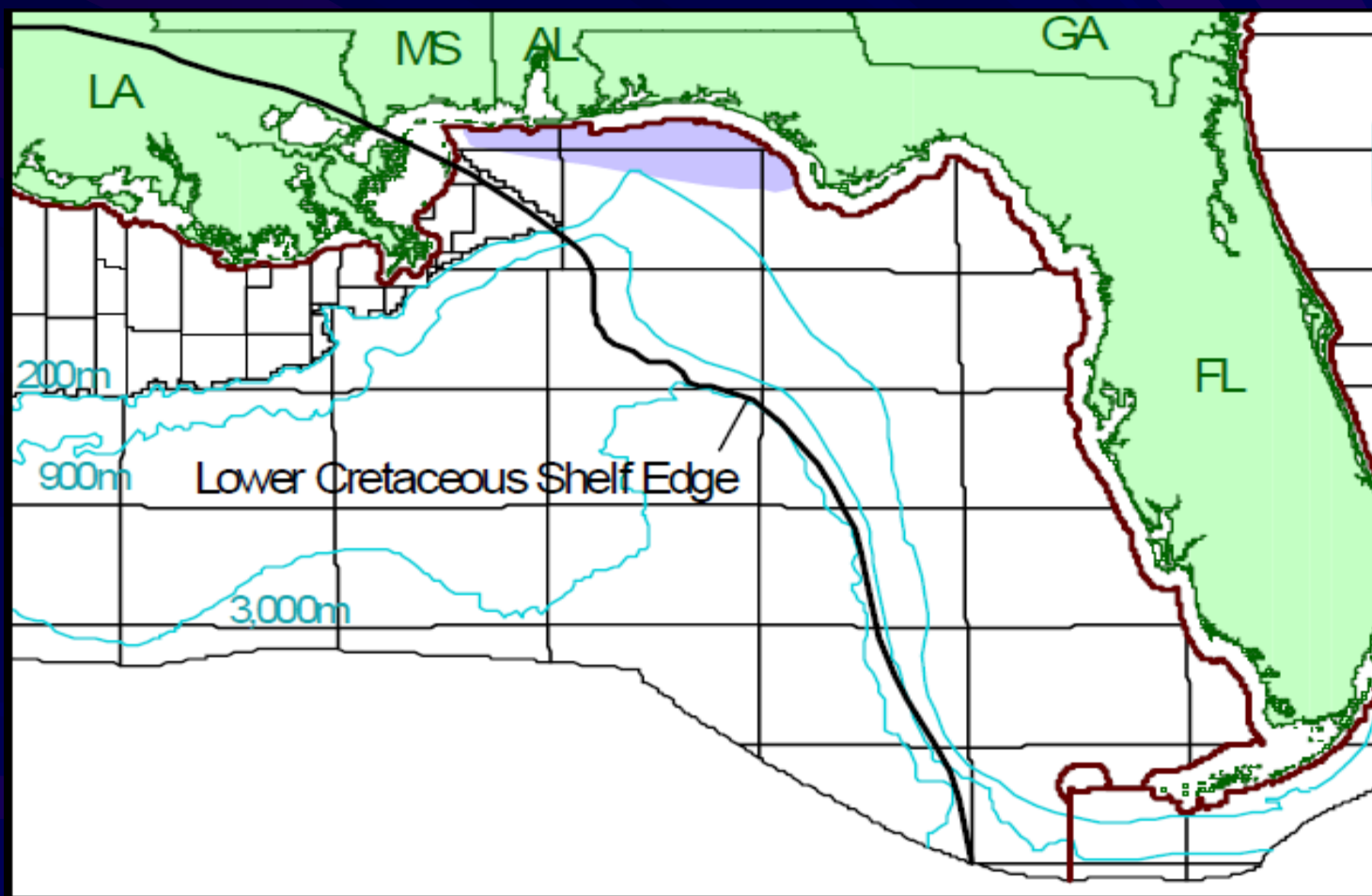




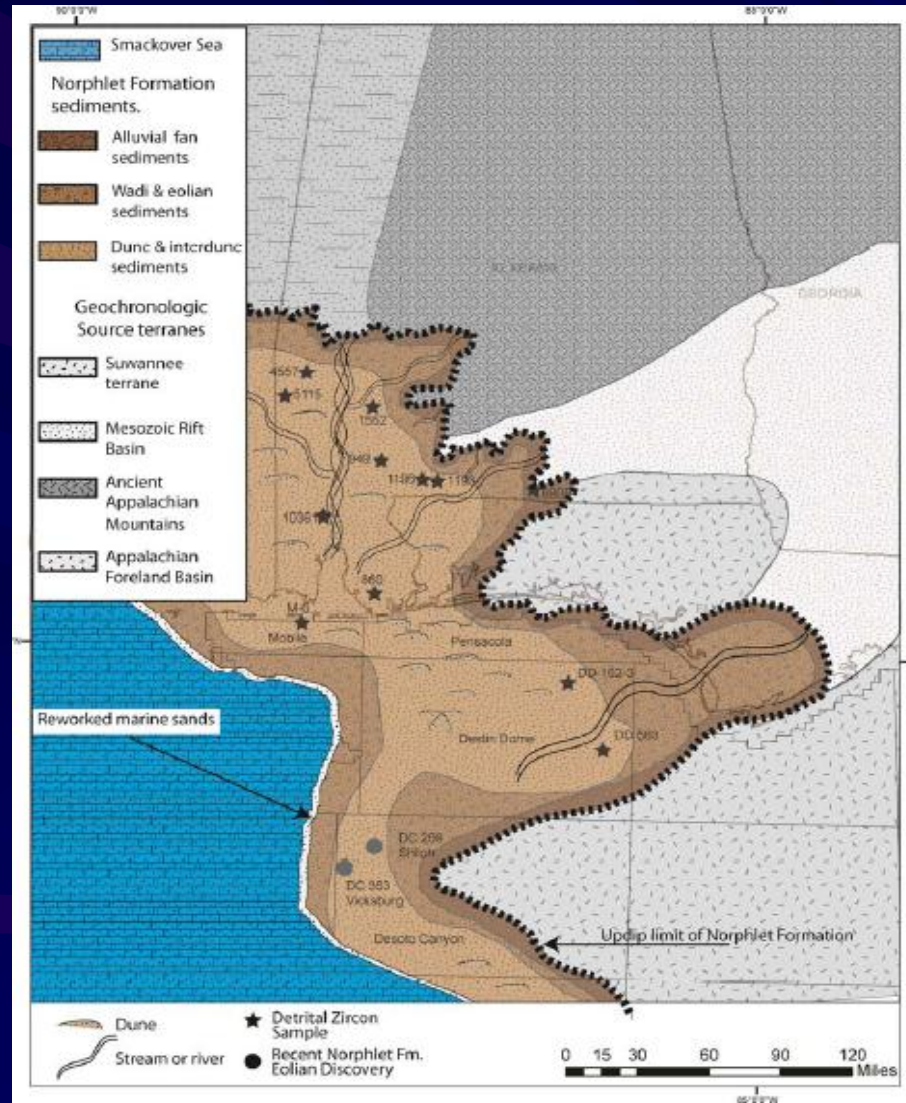
# Lower Cretaceous Sunniland Carbonate Oil Play



# Upper Jurassic Norphlet Gas Sand Play



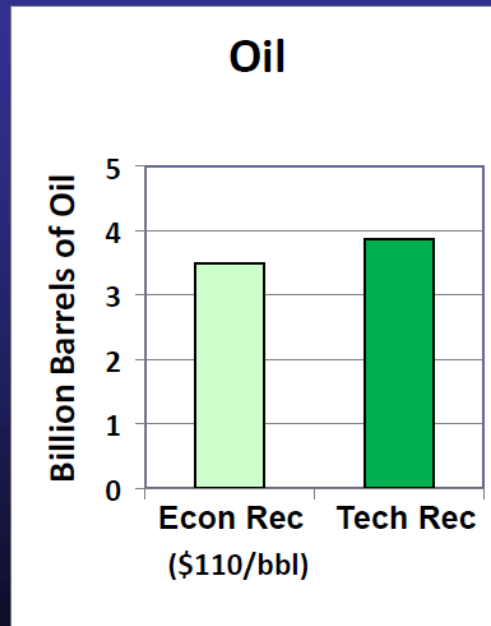
# Upper Jurassic Norphlet Gas Sand Play



Source: Thomas Lovell - 2010 GCAGS

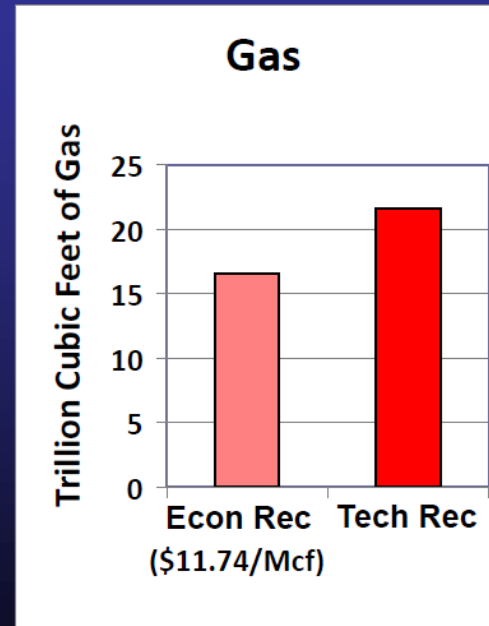
# Florida's Future Main Gas Supply Now is from Jurassic-Norphlet off Alabama Will need same JN Gas off Florida Panhandle

## Eastern Gulf of Mexico OCS Area Undiscovered Oil and Gas Resources



**Oil Resources:**

**2.8 – 5.5 billion barrels**



**Gas Resources:**

**18 – 26 Trillion Cubic Feet**



# **Florida Oil & Gas** **Consumption & Supply**

## **3<sup>rd</sup> Biggest Oil Consuming State**

**900,000 barrels per day**  
**1.3 billion gallons per year**

## **6<sup>th</sup> Biggest Natural Gas Consuming State**

**2.5 BCF per day**  
**942 BCF per year**

**Gulfstream 36" Pipeline – Mobile-Tampa – 1.26 BCF per day**

**Florida produces less than 1% of its daily consumption**

## **U.S. Total Gas Demand**

**63 BCF per day**  
**23,000 BCF per year**

# America's Future Offshore Oil & Gas?

## Gulf of Mexico is #1

## Alaska is #2

### Undiscovered Technically Recoverable Oil and Gas Resources 2006 National Assessment Results

