

Hurricane IVAN – Lessons Learned Energy Loss Adjusters Perspective

Bryan C. Johnson

- **I. Lessons Learned - Adjustment Process**

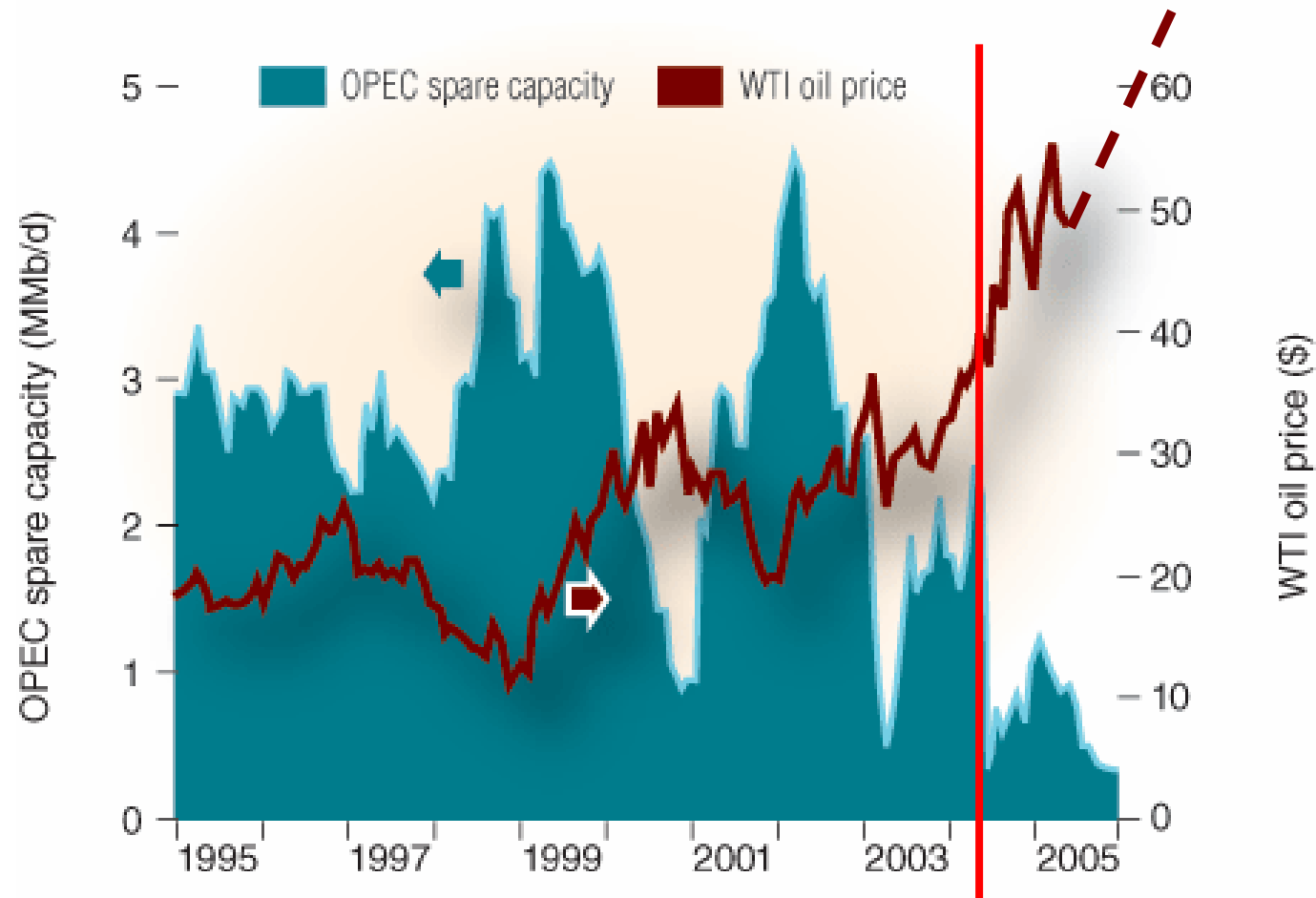
- **II. Lessons Learned - The Storm**



Lessons Learned - Adjustment Process

- **Issues Regarding Reserve Estimation**
 - **Supply and Demand Effects on Oil & Gas Prices**

Lessons Learned - Adjustment Process



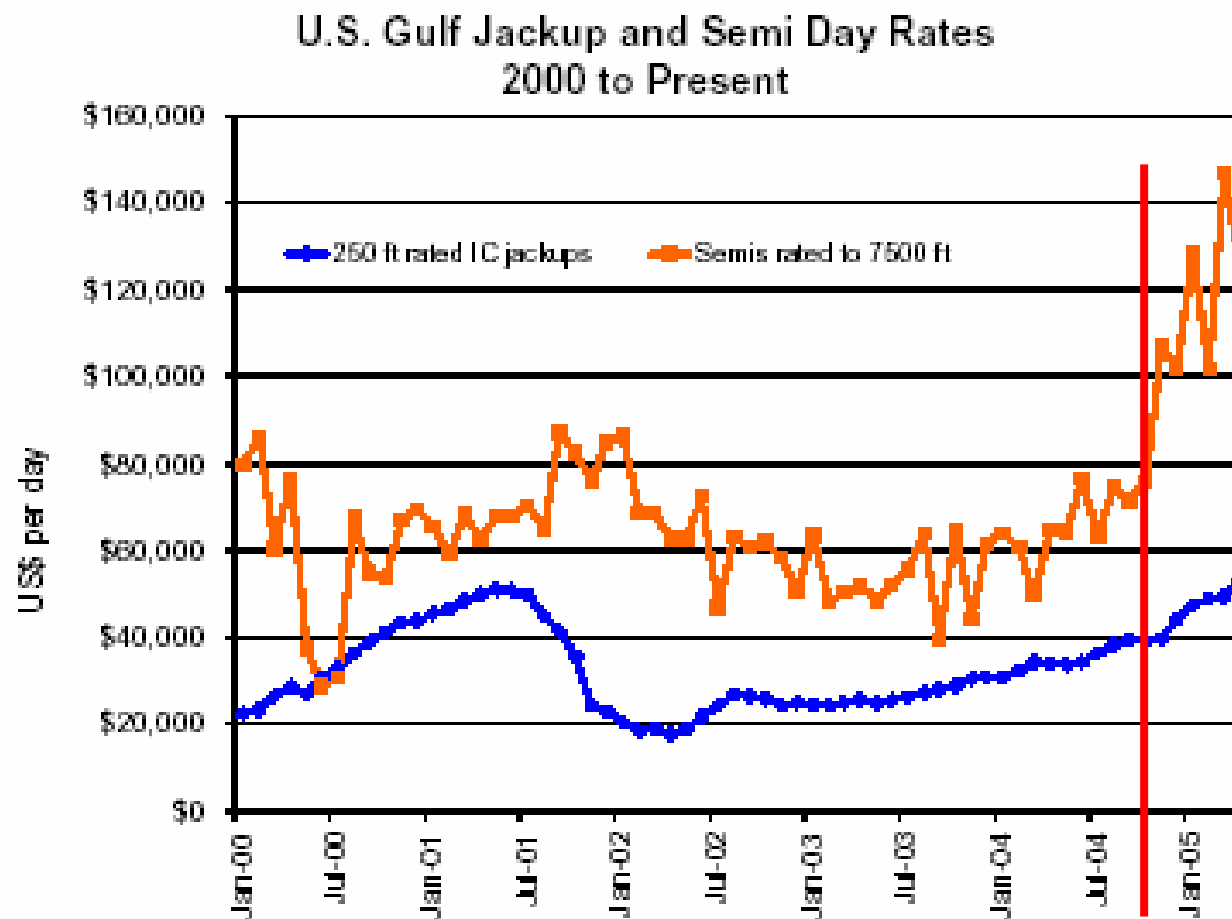
Source: PIRA, World Oil Market Forecast, May 2005

Ivan

Lessons Learned - Adjustment Process

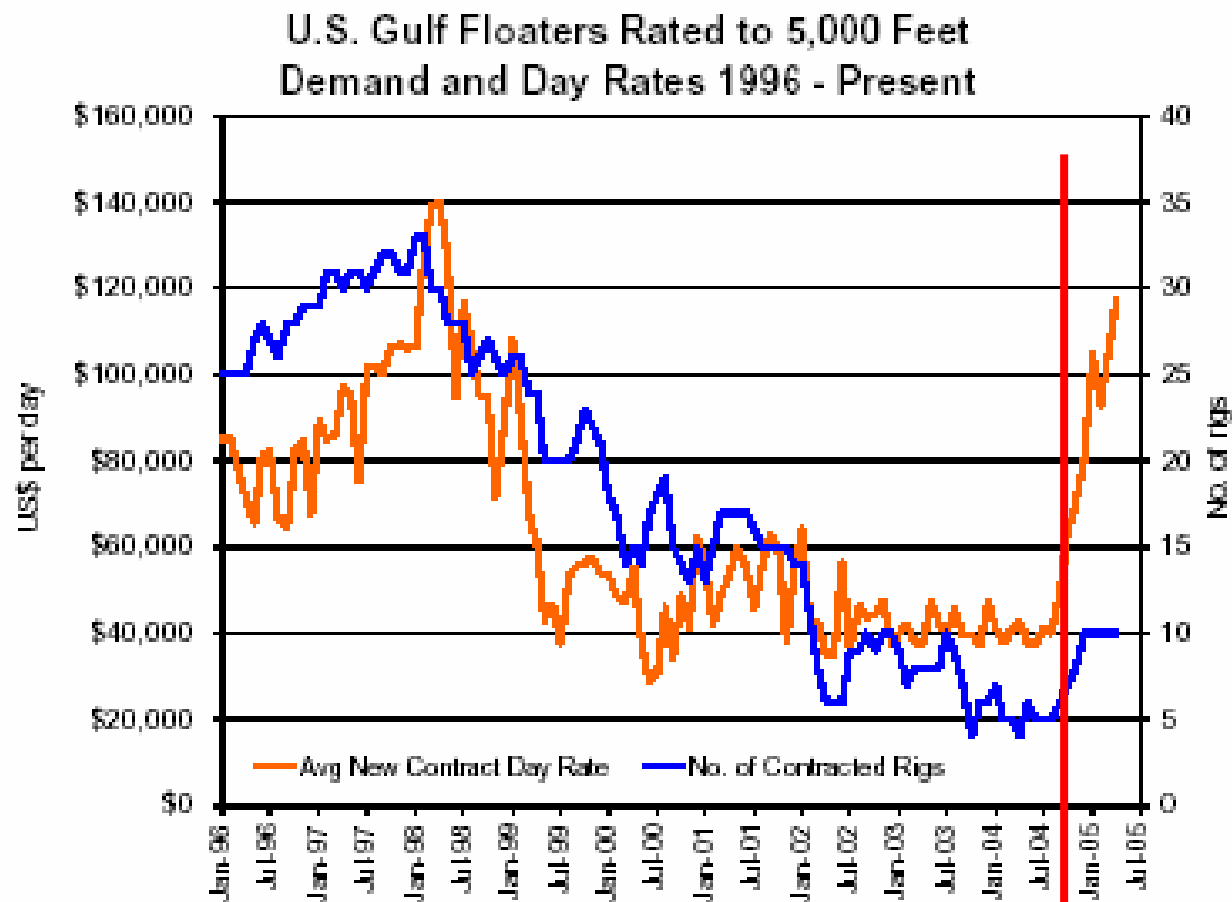
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 - **Service and Equipment Price Spikes (Inflation) Following Catastrophic Loss**

Lessons Learned - Adjustment Process



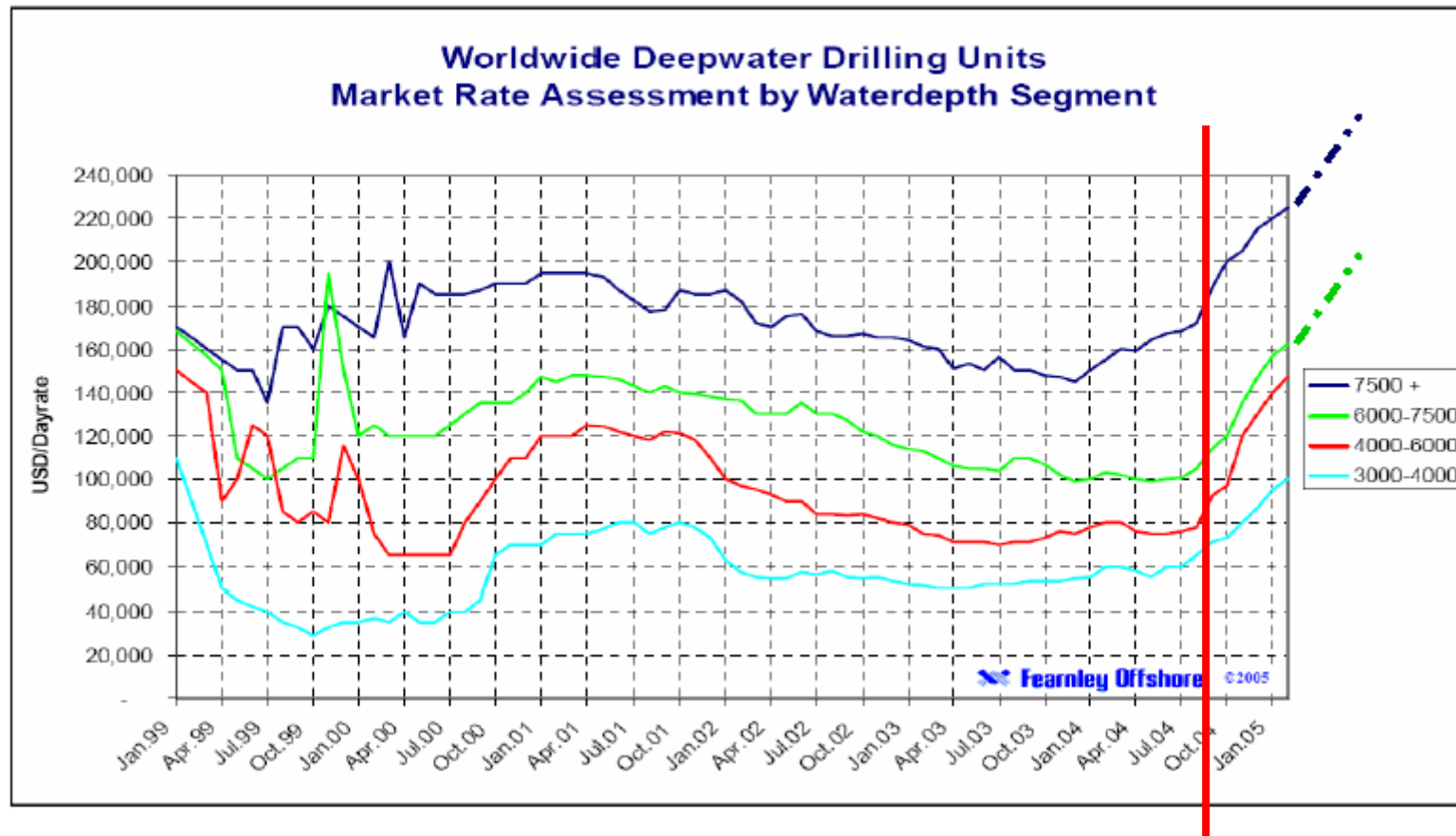
Ivan

Lessons Learned - Adjustment Process



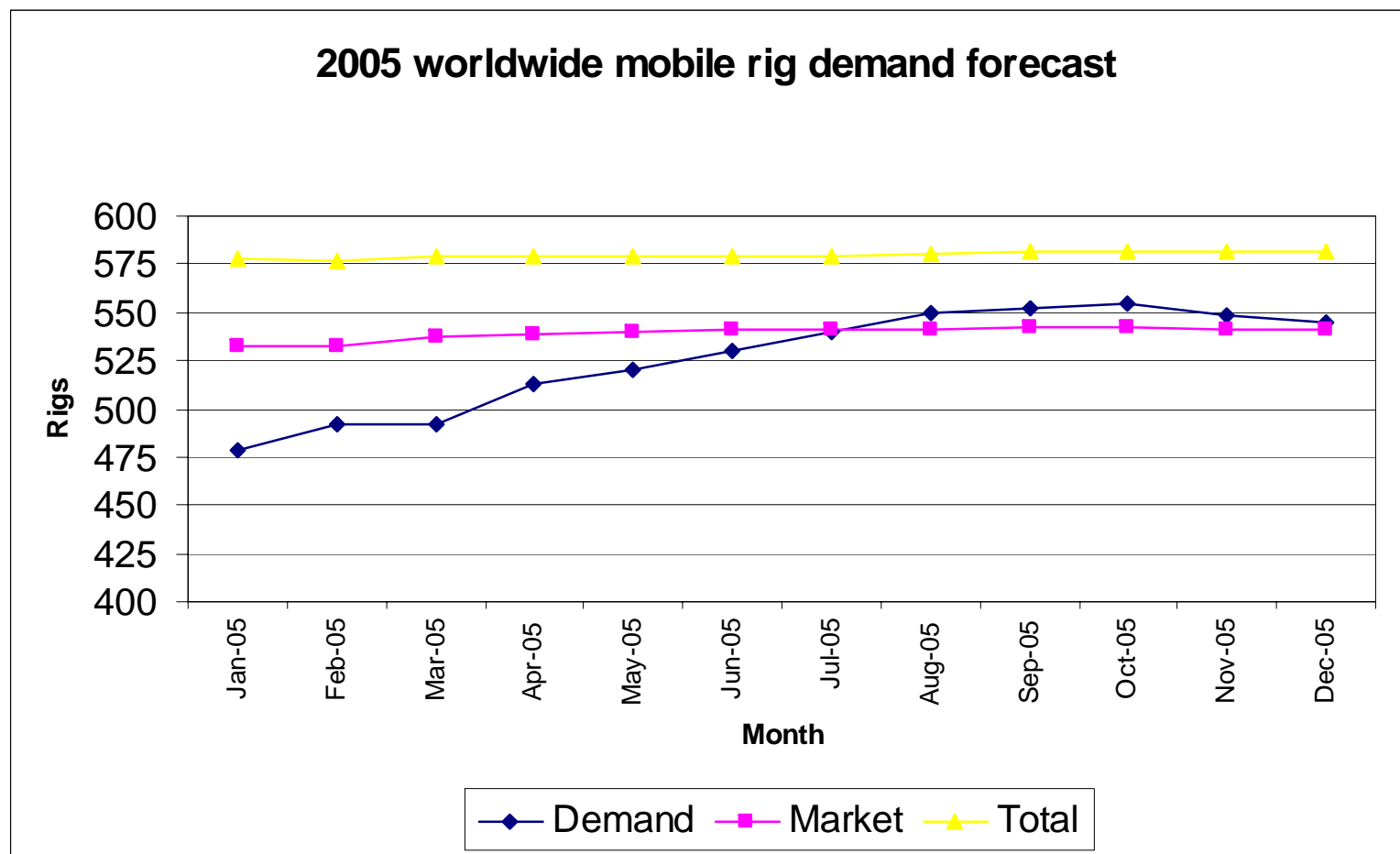
Ivan

Lessons Learned - Adjustment Process



Ivan

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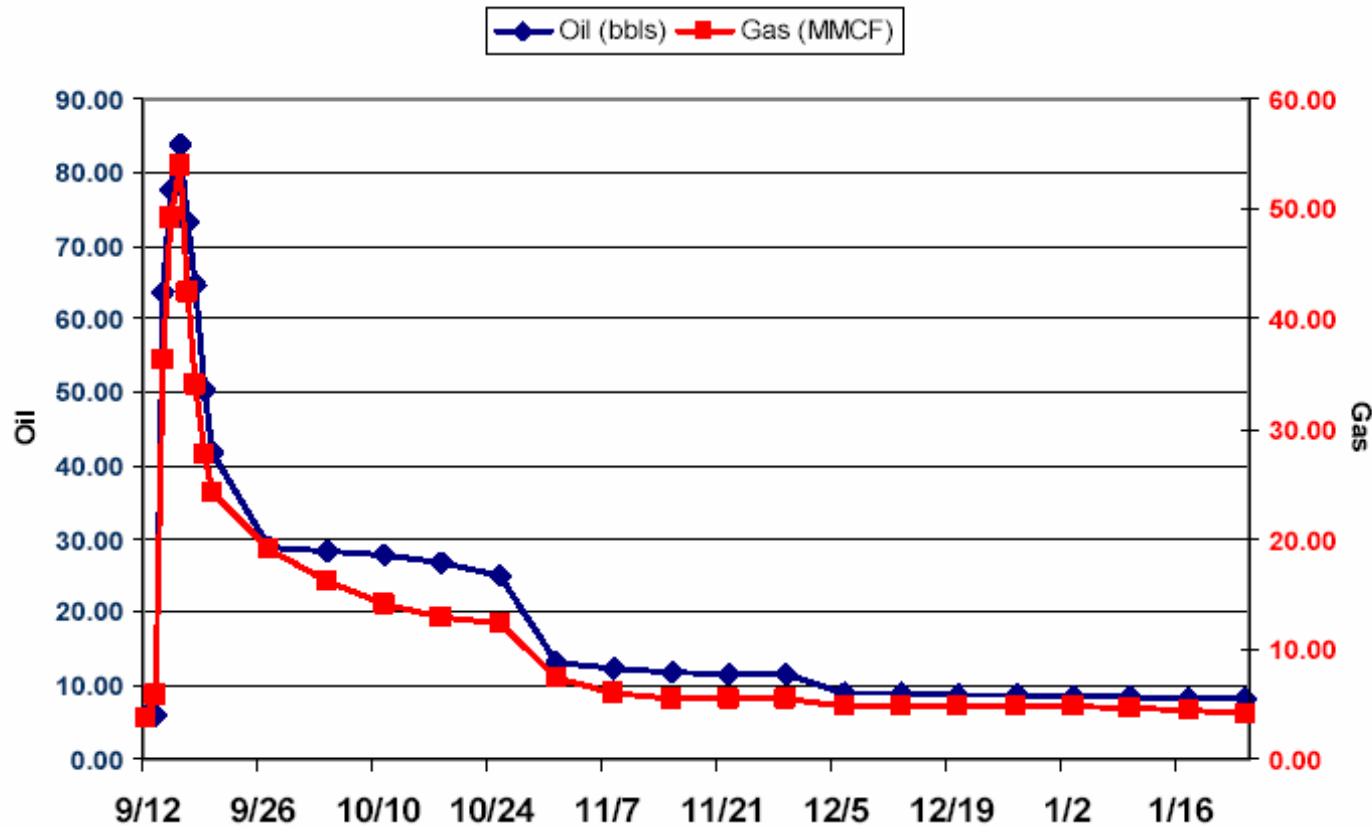


Lessons Learned - Adjustment Process

- **Issues Regarding Reserve Estimation**
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 - **Time Delays due to Unavailability of Contractors**

Lessons Learned - Adjustment Process

Percentage of GOM Daily Shut-in Production for Hurricane Ivan



Lessons Learned - Adjustment Process

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Lessons Learned - Adjustment Process

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 - **Supply and Demand Effects on Oil & Gas Prices**
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 - **Under-estimated Reserves if Using Established Prices**
 - **“Seat of the Pants” Engineering**



Lessons Learned - Adjustment Process

- **Range of Estimates**
 - **Underwriters might use worst case until clarity on extent of loss**

Lessons Learned - Adjustment Process

■ Range of Estimates

	Low	High	Probable
Leg/Spud Can Repair/Rebuild	\$20.0 MM	\$25.0 MM	\$23.0 MM
Jacking System Repairs	\$4.0 MM	\$7.0 MM	\$6.0 MM
Substructure/Drilling Floor/Derrick	\$3.0 MM	\$5.0 MM	\$4.0 MM
Main Crane	\$.75MM	\$1.5 MM	\$1.5 MM
Control Room/Lower Rooms/Water Damage	\$2.0 MM	\$5.0 MM	\$4.0 MM
Structural Damage	\$2.0 MM	\$4.0 MM	\$3.0 MM
Total Physical Damage Estimate Range	\$31.75MM	\$47.5 MM	\$41.5 MM
Sue & Labor Expense	\$12.0 MM	\$13.0 MM	\$12.0 MM
Total Estimated Costs of Recovery and Repair	\$43.75MM	\$60.5 MM	\$53.5 MM



Lessons Learned - Adjustment Process

- **Range of Estimates**
 - **Underwriters might use worst case until clarity on extent of loss**
 - **Salvage values can be surprisingly good to help loss situation**

Lessons Learned - Adjustment Process

- **Salvage Value – Damaged Drilling Unit**

- **Example:**

■ CTL	\$45.5 MM
■ IV	<u>\$19.5 MM</u>
■ Total	\$65.0 MM
■ Salvage Value	<u>(\$26.0 MM)</u>
■ Net	\$39.0 MM



Lessons Learned - Adjustment Process

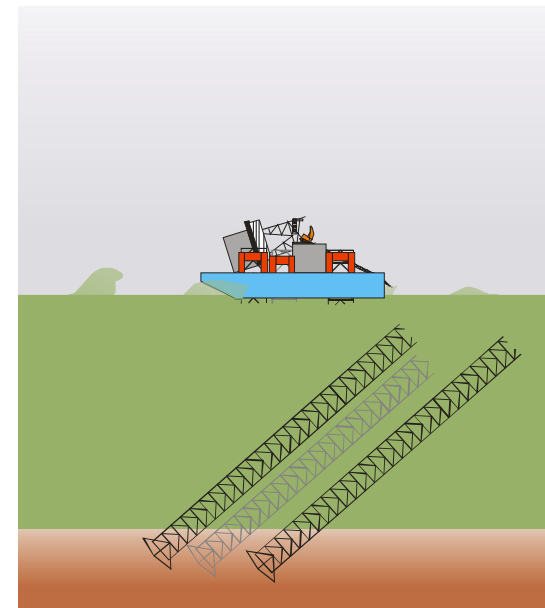
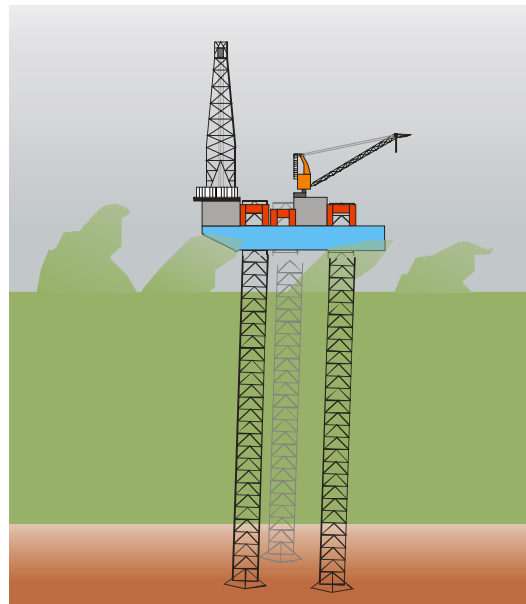
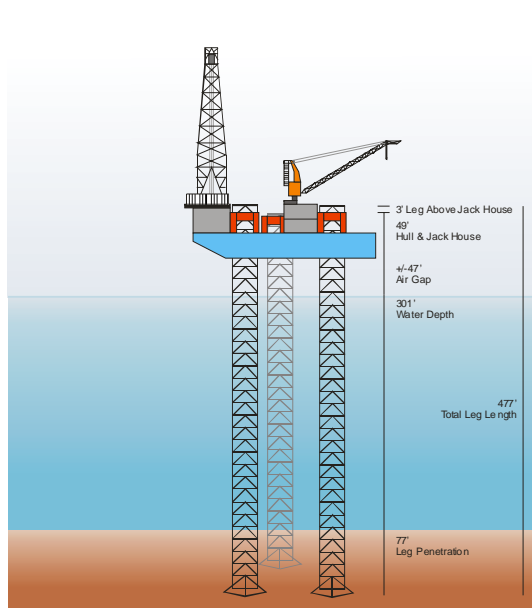
- **Information / Cooperation from Assured**
 - **SEC concerns**
 - **Catastrophes can affect stock price**

Lessons Learned - Adjustment Process

- **Expert Resources**
 - **Old vs. New Damage**
 - **Metallurgical Experts**
 - **Failure Analysis Experts**
 - **Reservoir Engineers (LOPI)**
 - **Salvage**

Lessons Learned - Adjustment Process

- Recoveries - Good Money After Bad?
 - Time & Material vs. No Cure – No Pay
 - Example: Jackup Legs – Rigs to Reef

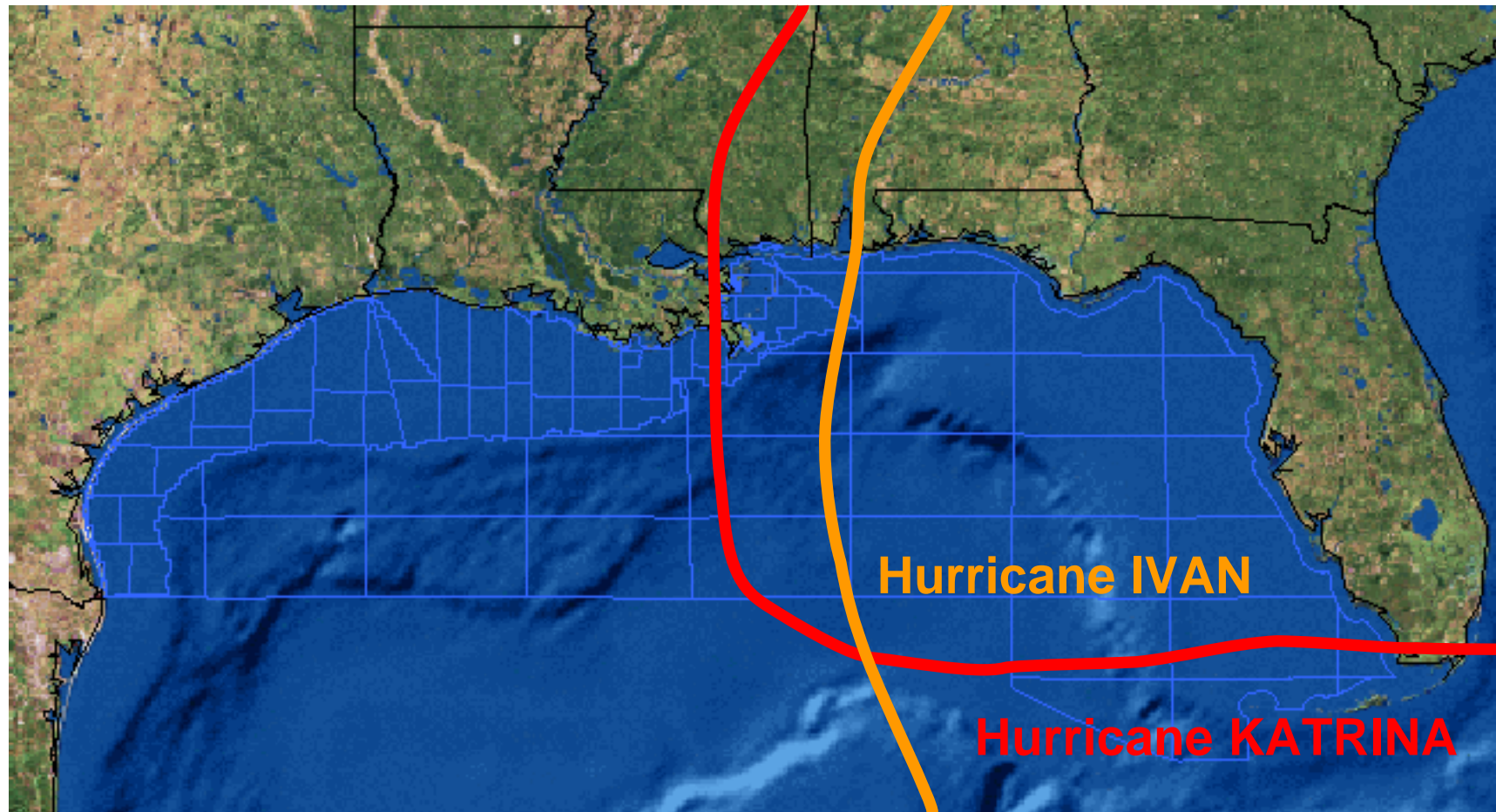


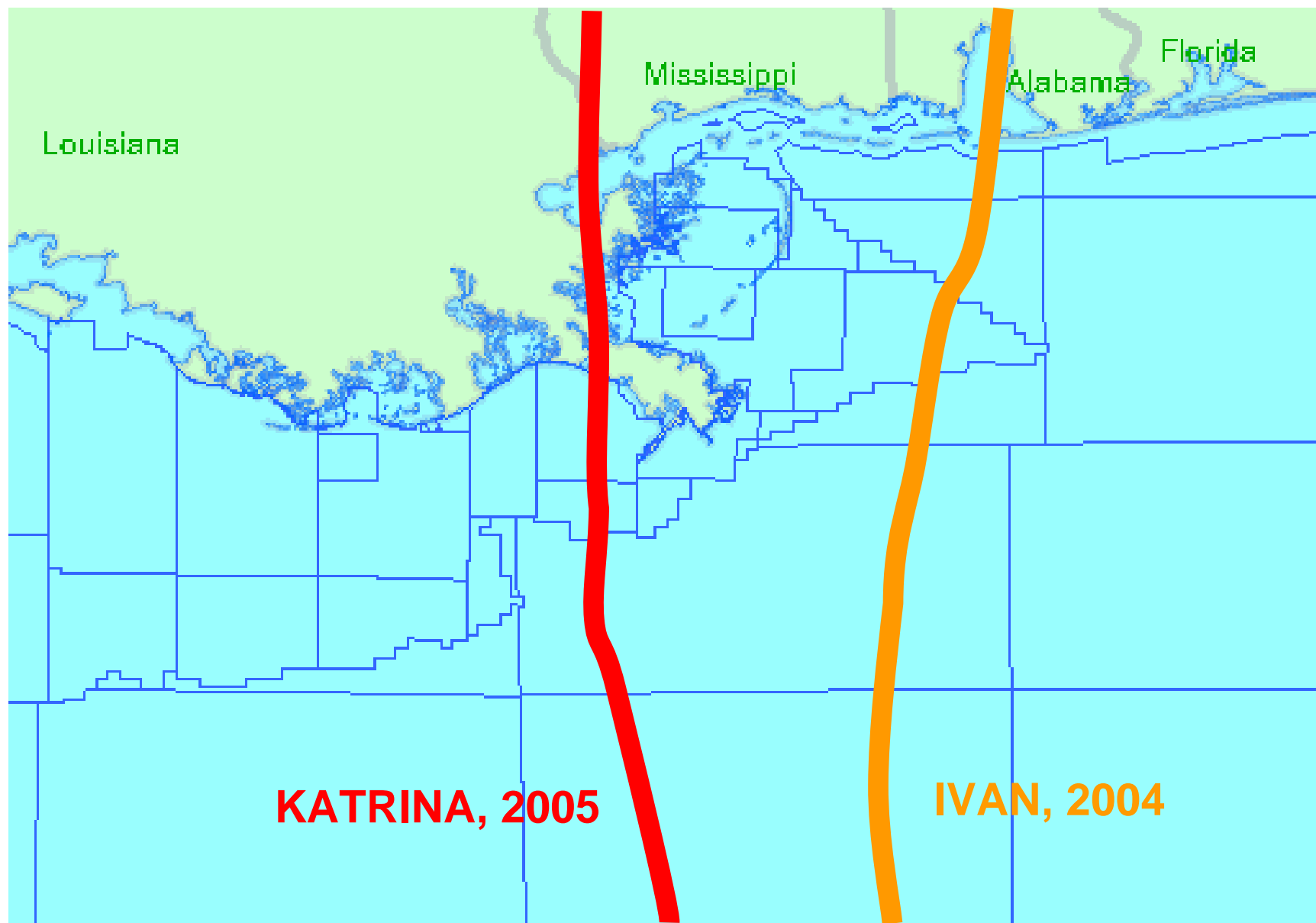


Lessons Learned - Adjustment Process

- **Business Relations / Economics of Assured**
 - **Priority Conflicts**
 - **Decisions can be based upon Assured's business or economic issues as opposed to minimizing claim:**
 - **Ex: drilling contractors/other contractors left on standby**
 - **Properties which have greater impact on bottom line may be priority - not necessarily insured properties**

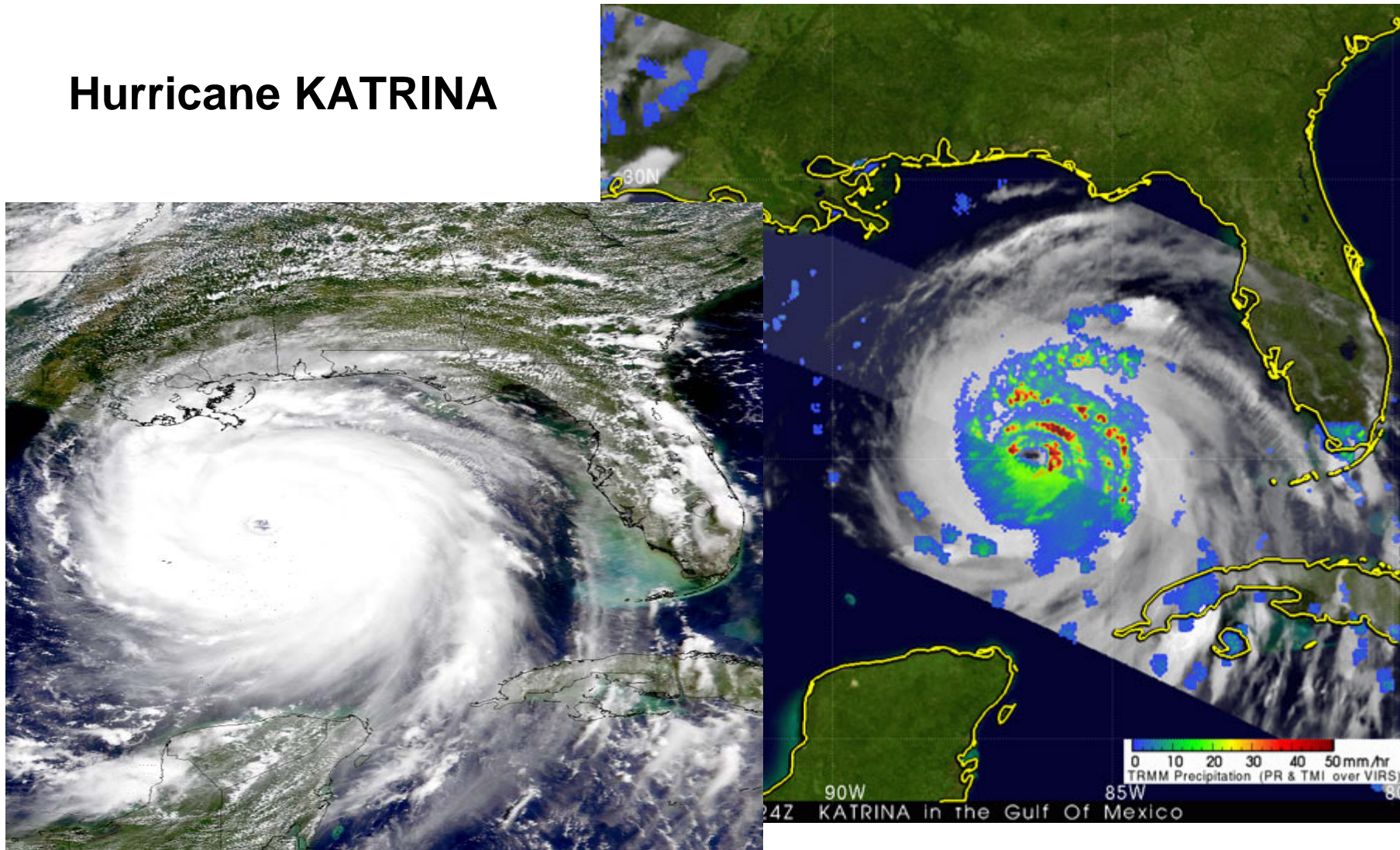
II. Lessons Learned – The Storm



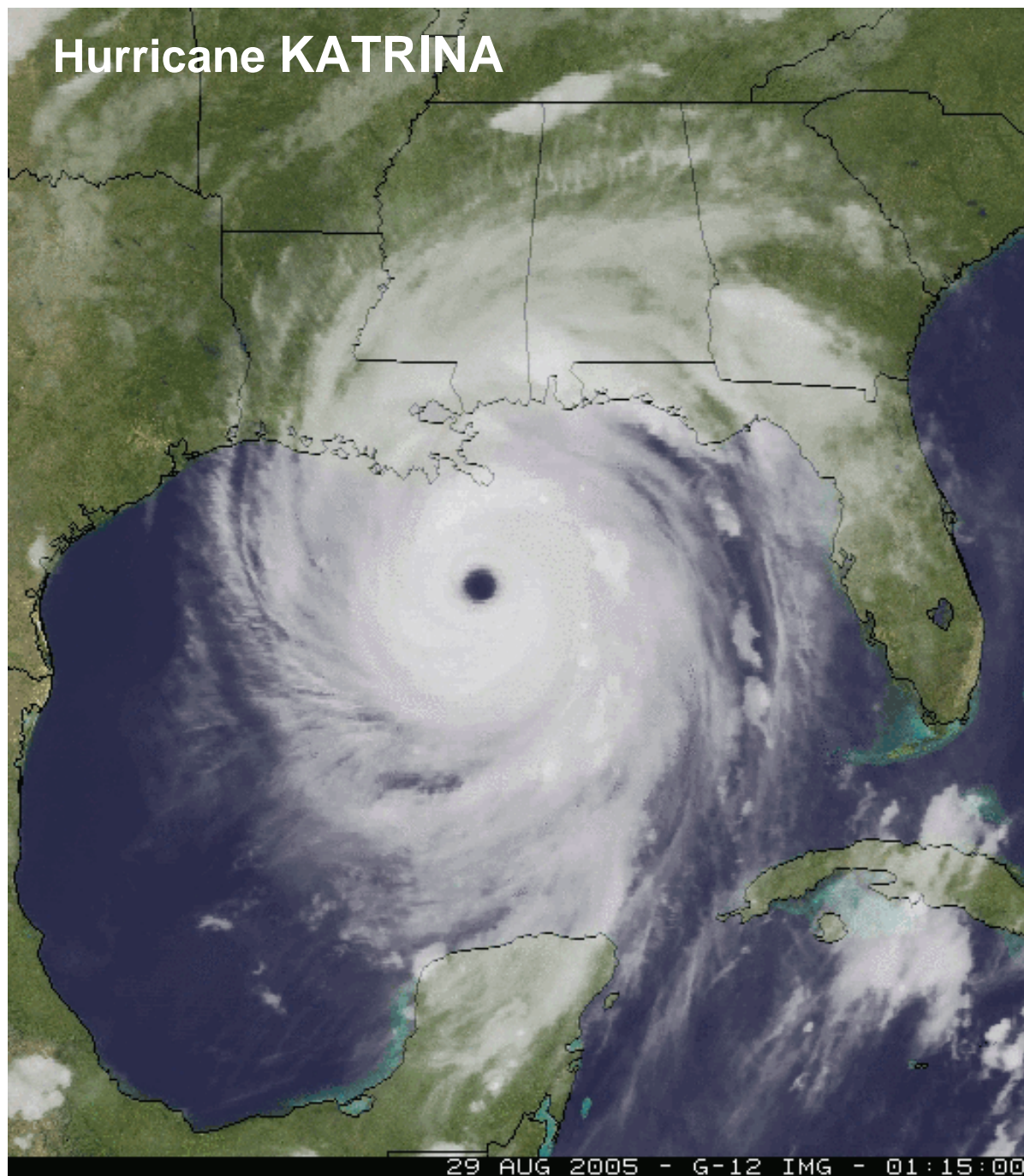


Lessons Learned – The Storm

Hurricane KATRINA



Hurricane KATRINA

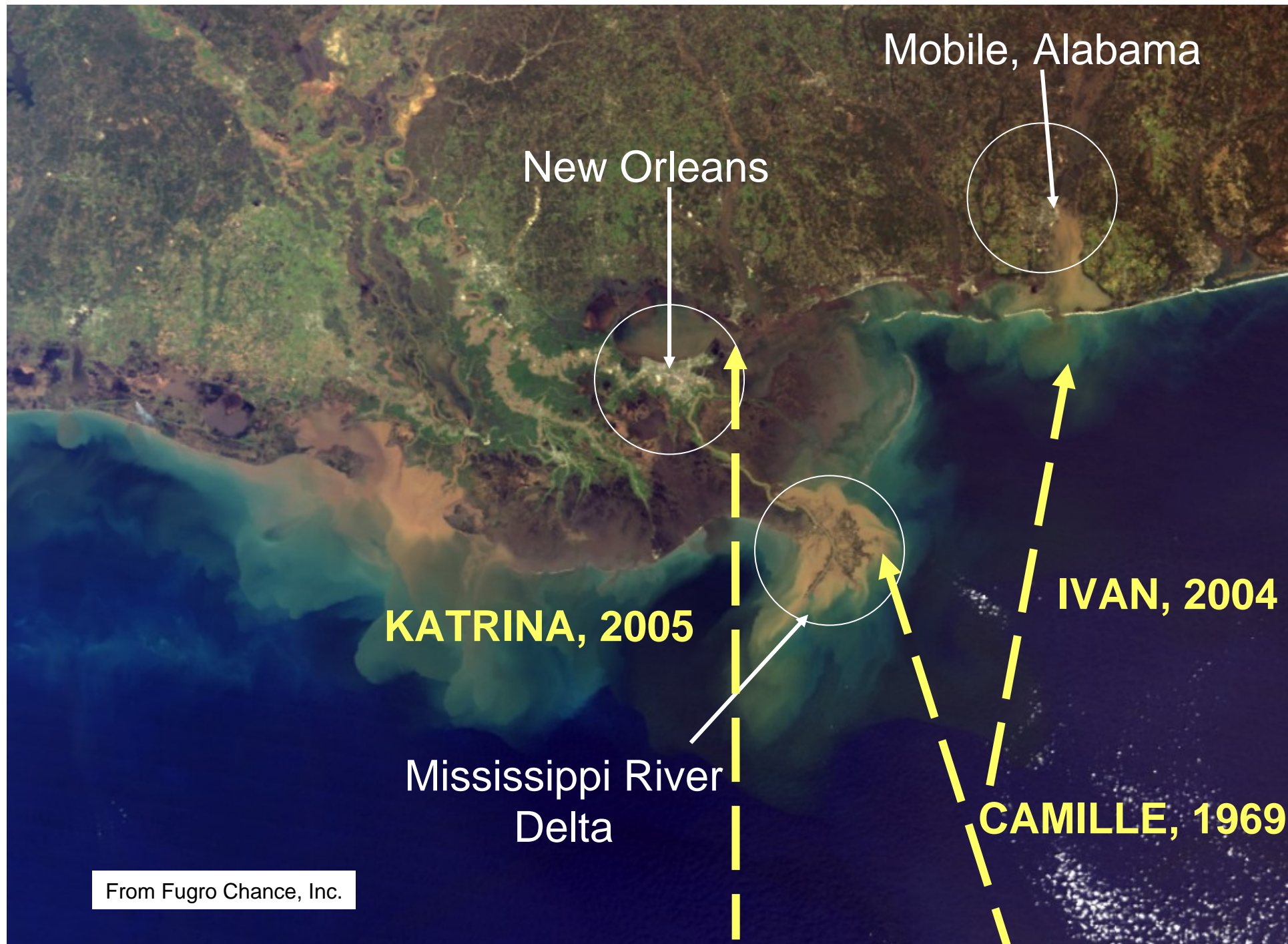




Lessons Learned – The Storm

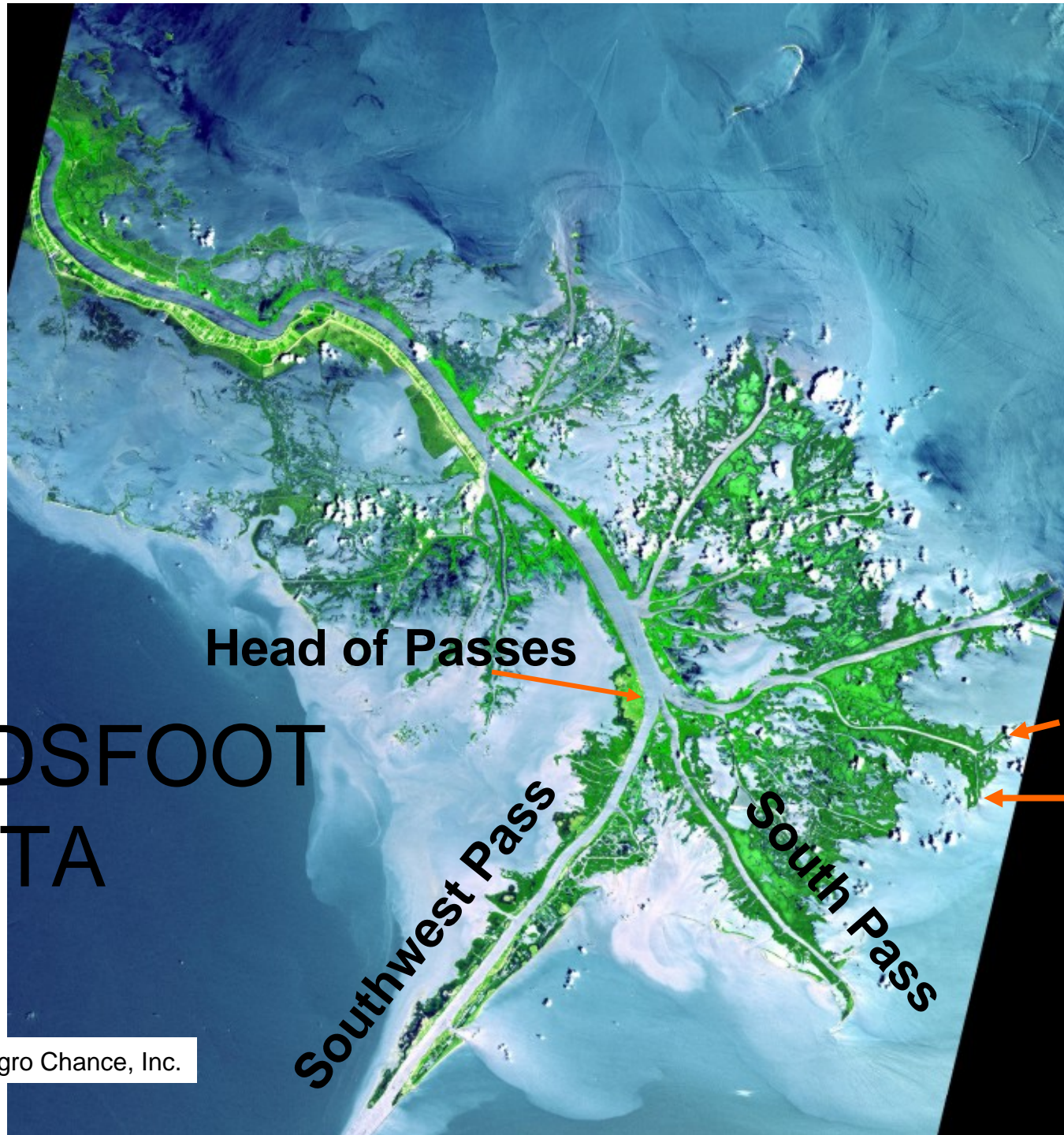
Lessons Learned from the Storm Itself

- **Mud Slides: Freak Occurrence or Expected Peril?**

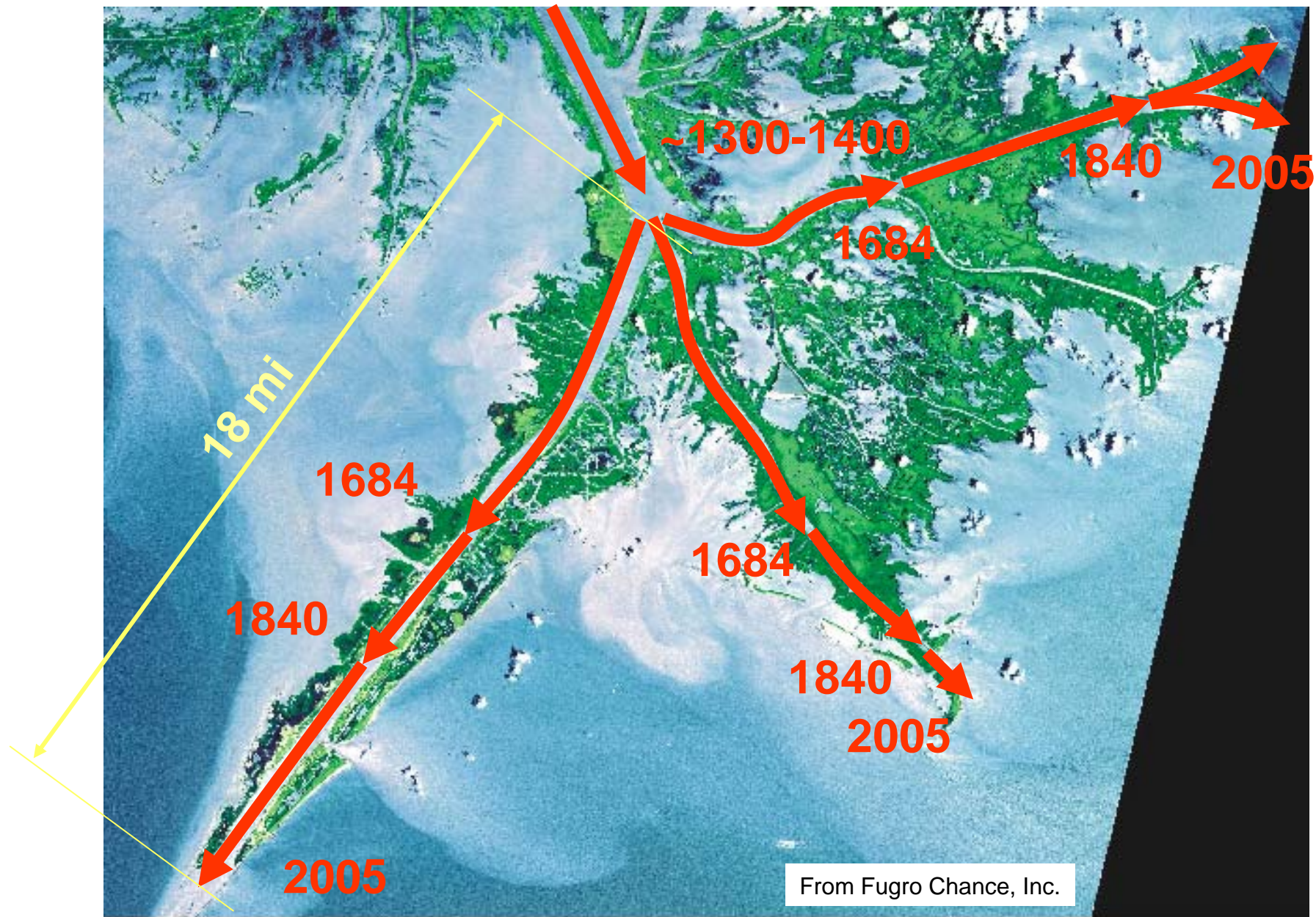


THE BIRDSFOOT DELTA

From Fugro Chance, Inc.



Pass
A'Loutre
NE Pass
SE Pass

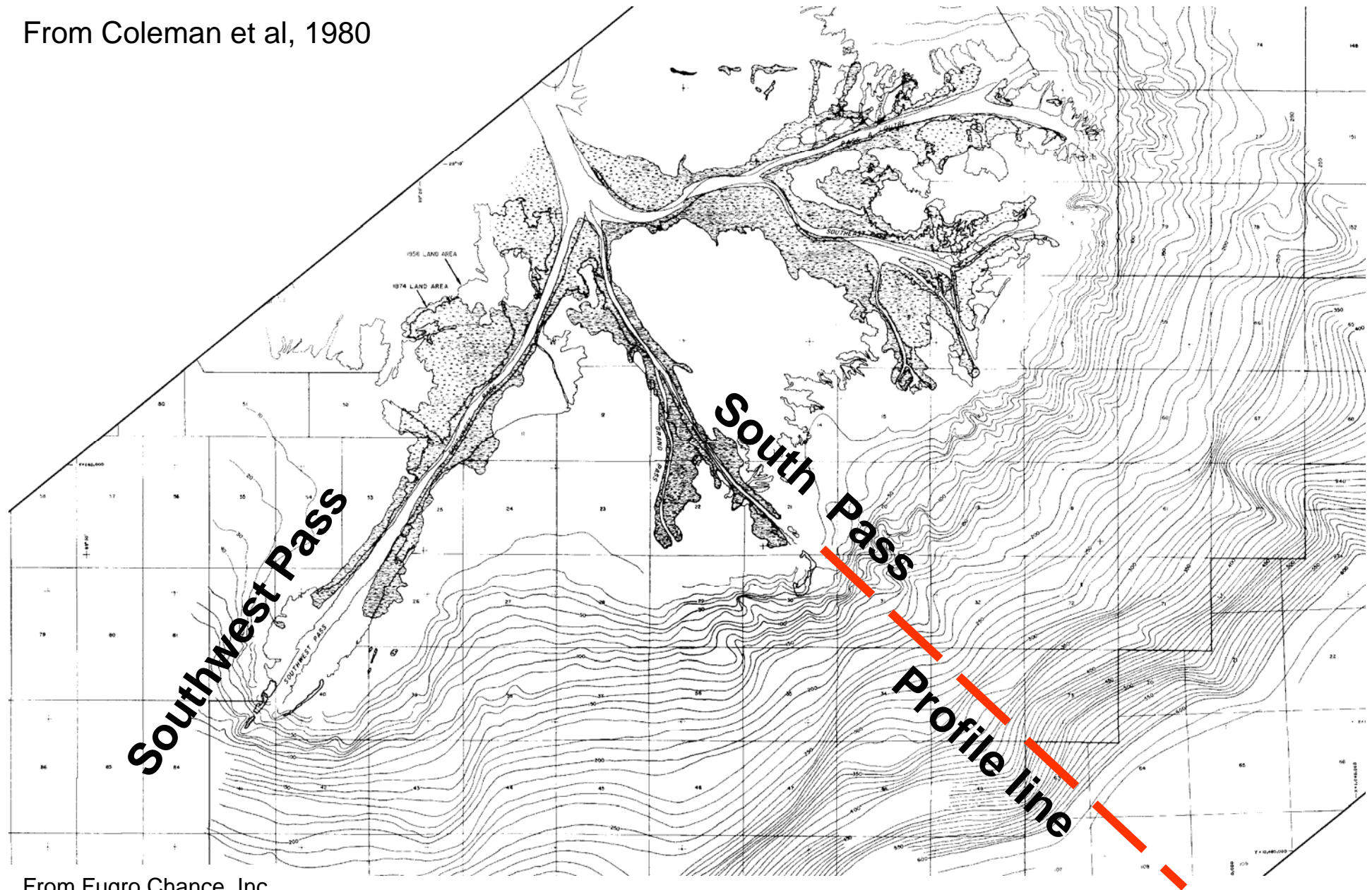


GROWTH OF THE DELTA



GROWTH OF THE DELTA FRONT

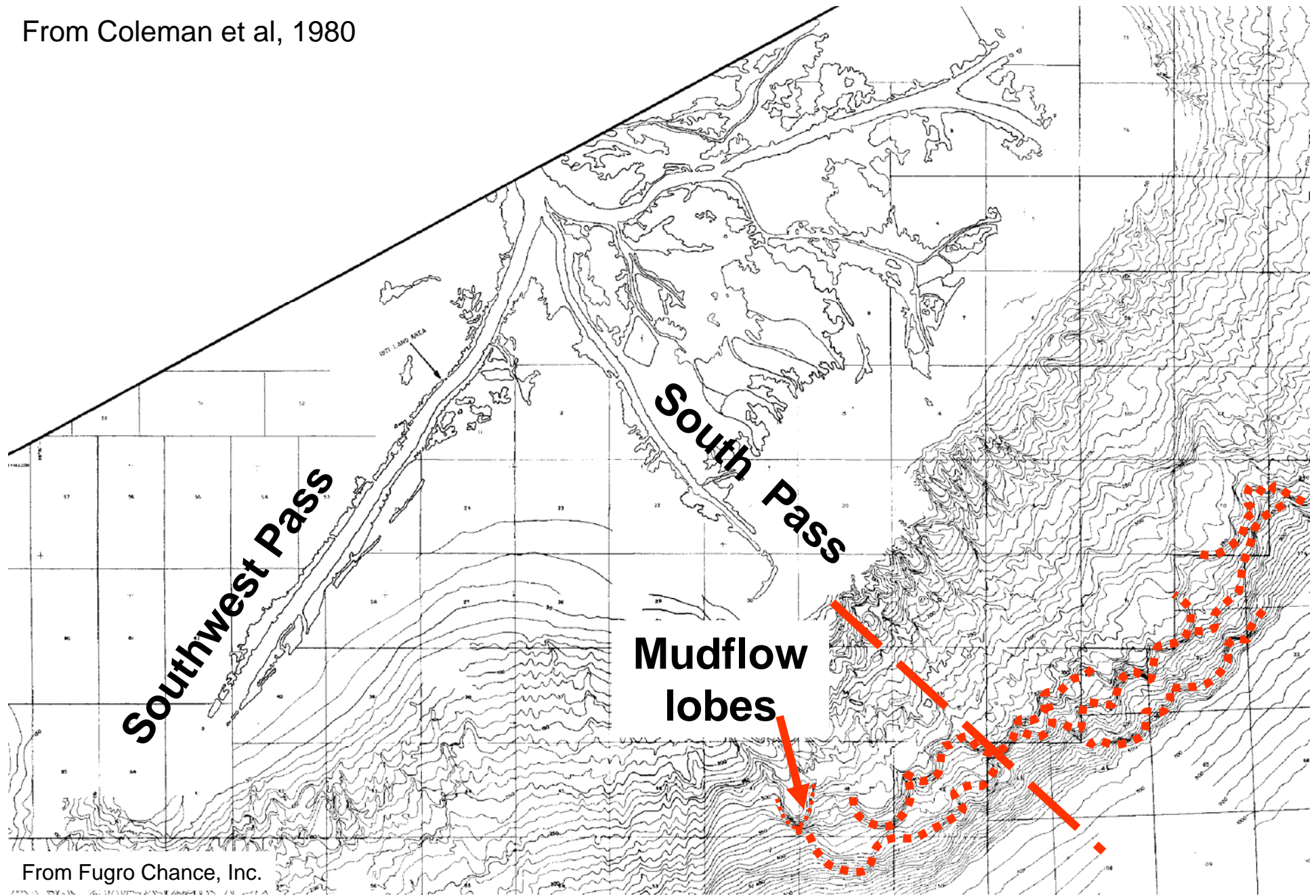
From Coleman et al, 1980



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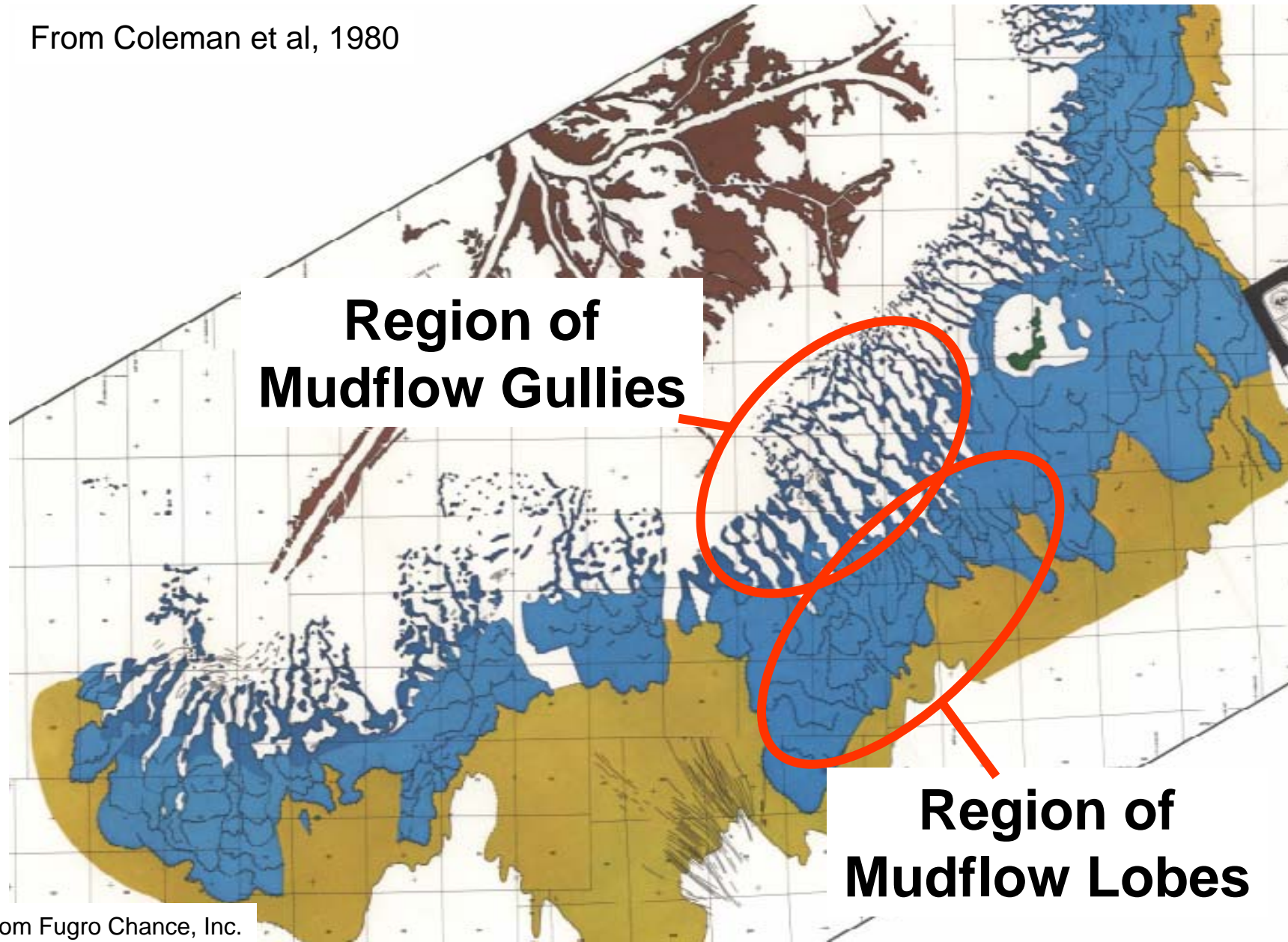
1979 BATHYMETRY MAP

From Coleman et al, 1980



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SEAFLOOR GEOMORPHOLOGY

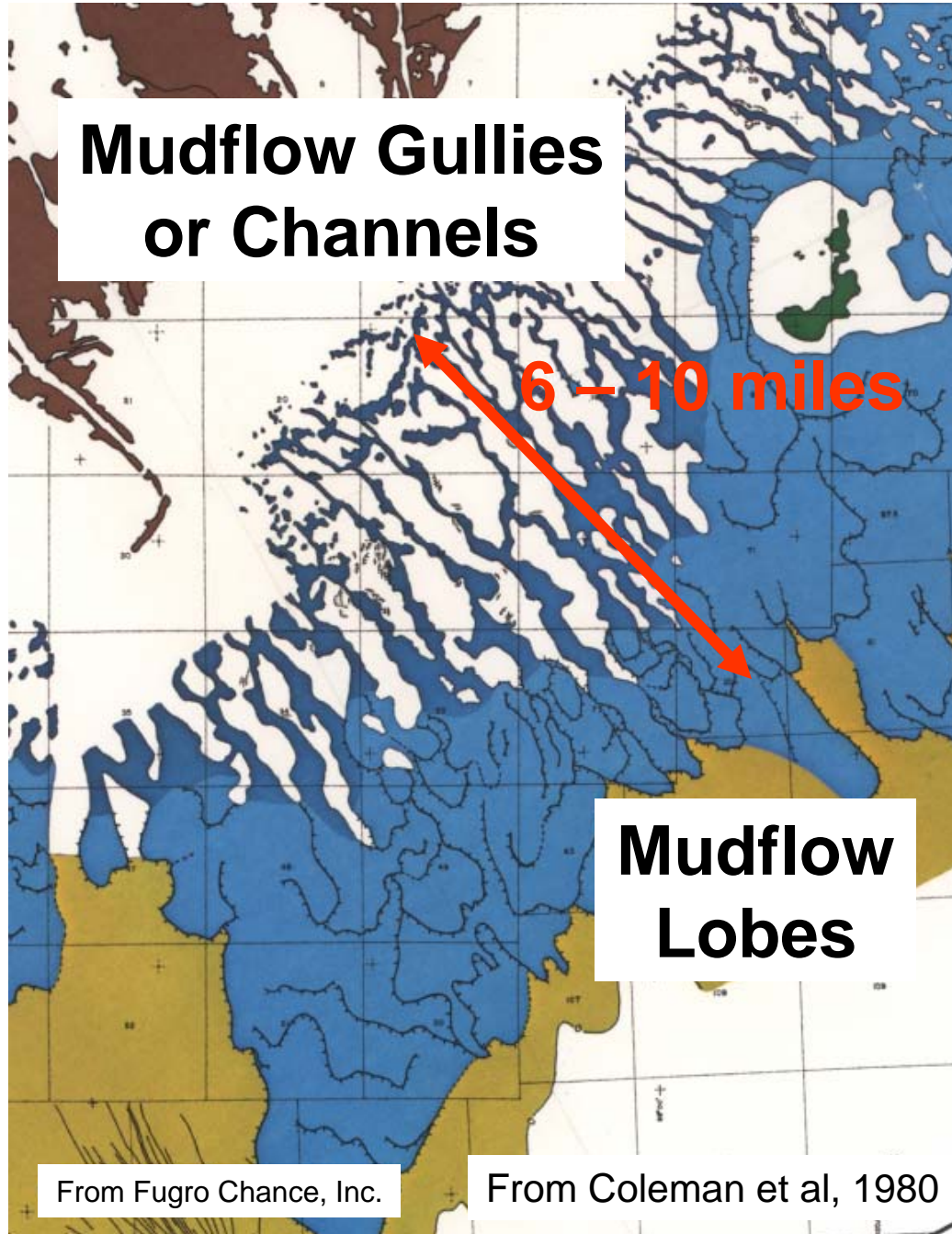
**Mudflow Gullies
or Channels**

6 – 10 miles

**Mudflow
Lobes**

From Fugro Chance, Inc.

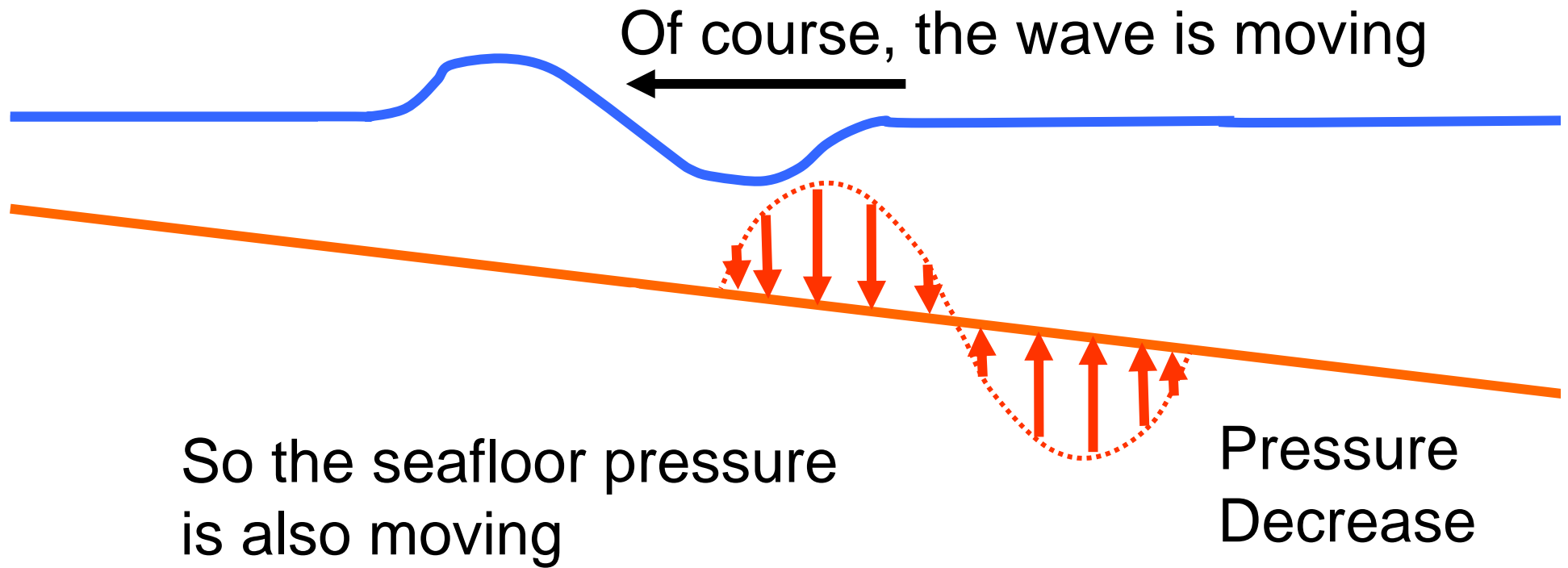
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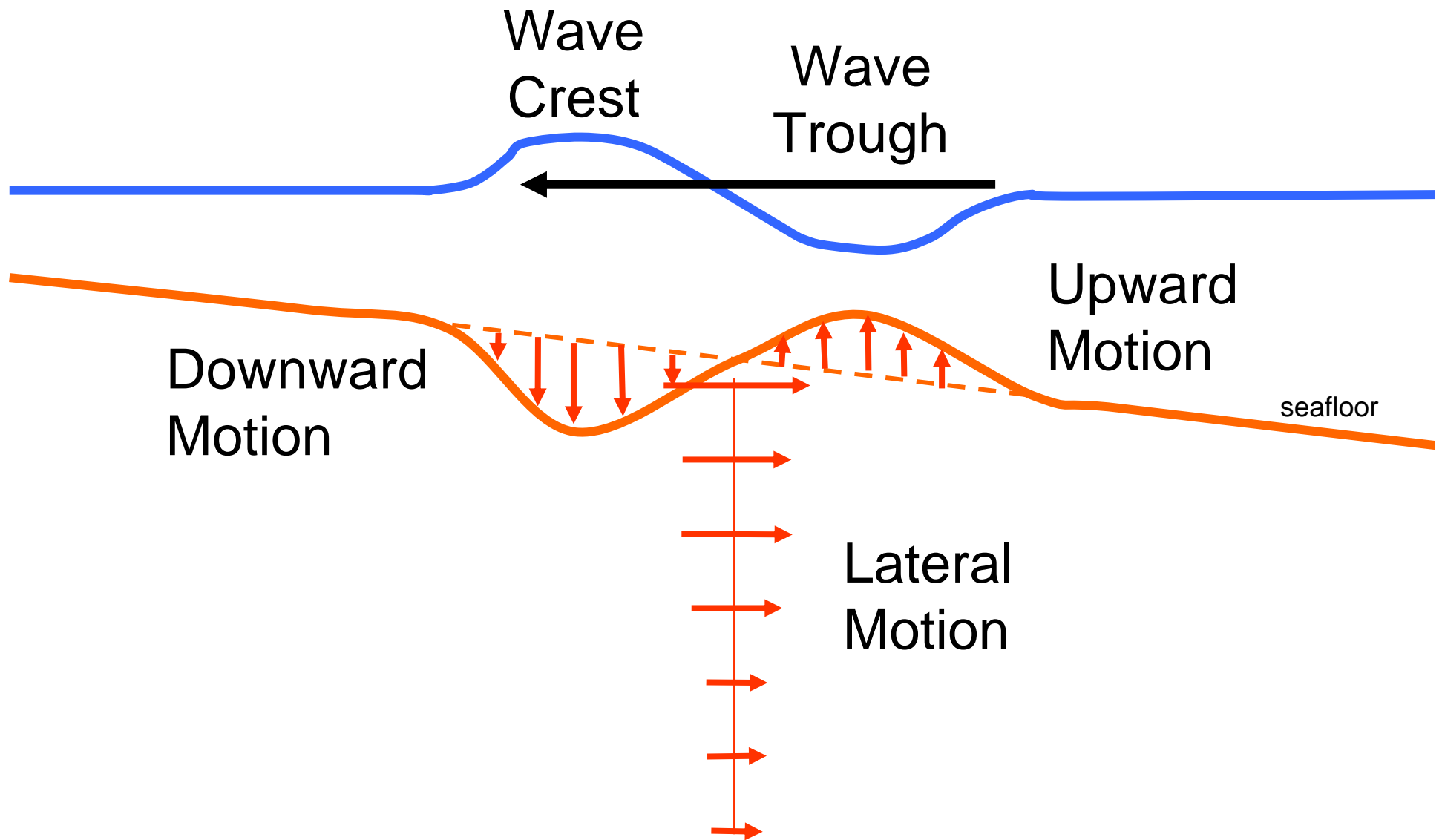
Lessons Learned – The Storm

Lessons Learned from the Storm Itself

- **Mud Slides: Freak Occurrence or Expected Peril?**
 - **Cause = Threefold**
 1. **Wave activity**



WAVE-INDUCED PRESSURE ON SEAFLOOR



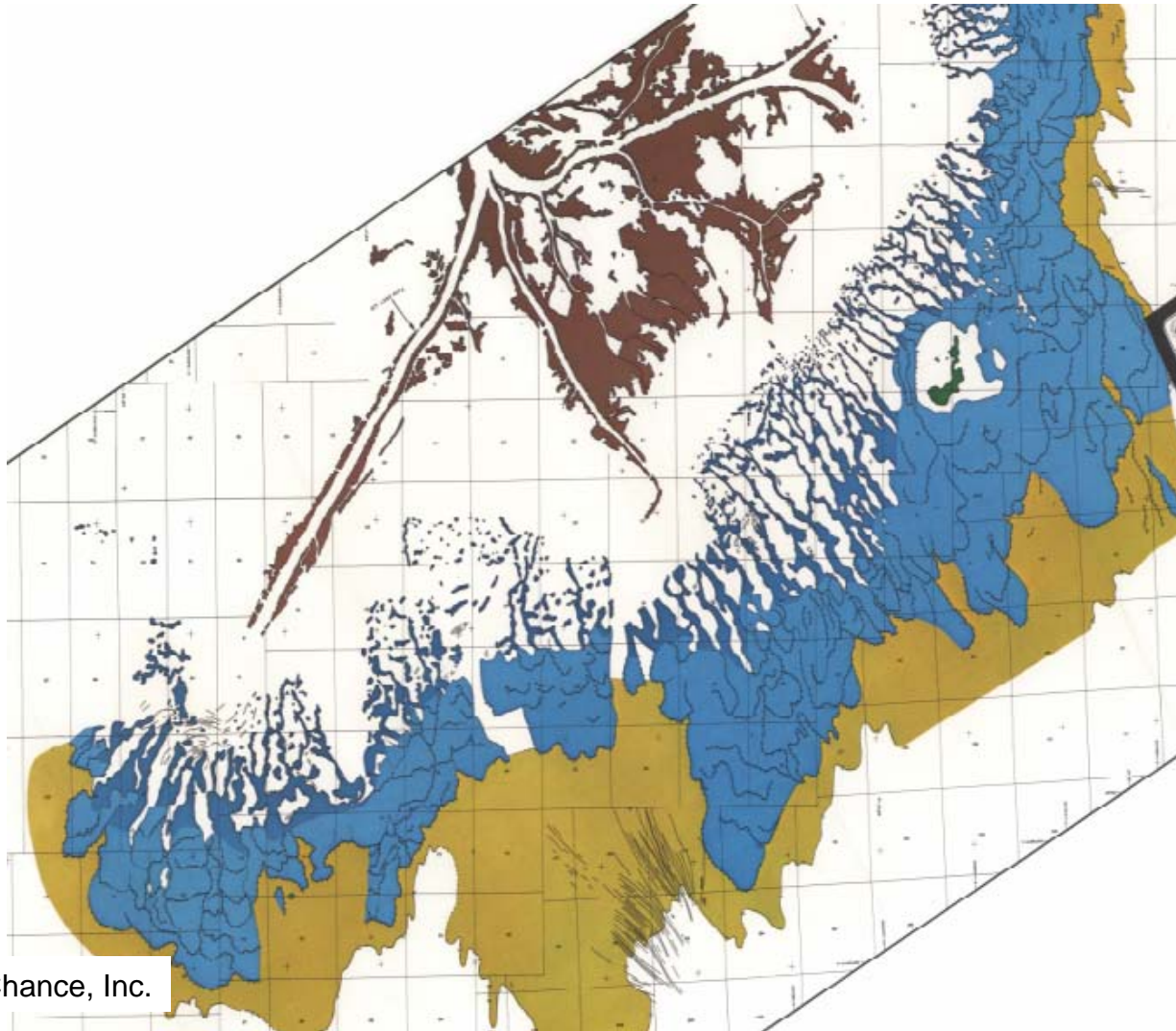
SEAFLOOR MOTION

Lessons Learned – The Storm

Lessons Learned from the Storm Itself

- **Mud Slides: Freak Occurrence or Expected Peril?**
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Lessons Learned – The Storm



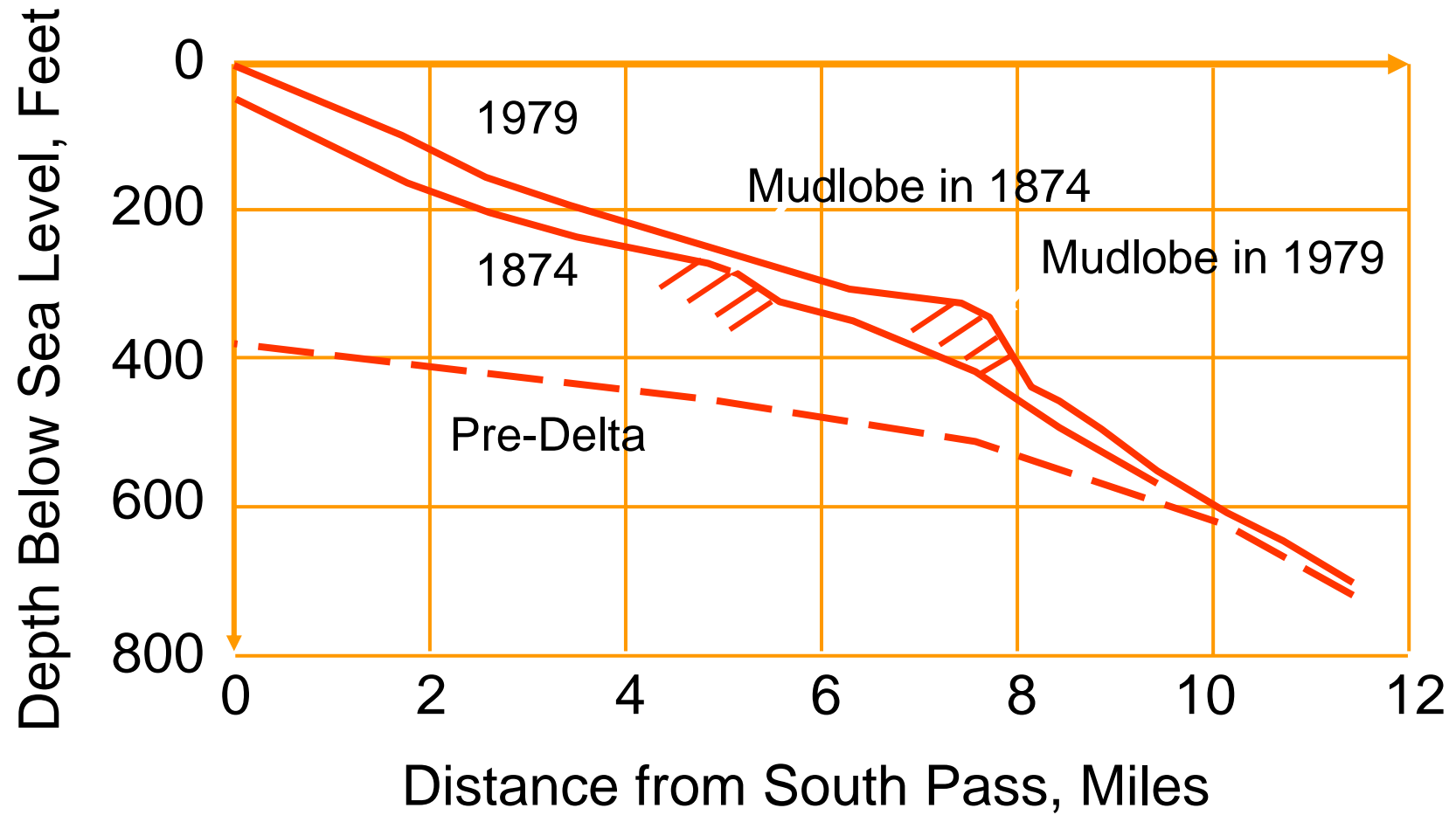
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Lessons Learned – The Storm

Lessons Learned from the Storm Itself

- **Mud Slides: Freak Occurrence or Expected Peril?**
 - **Cause = Threefold**
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 3. **Potential energy / build up**

Mudlobe Advance = 2.7 mi

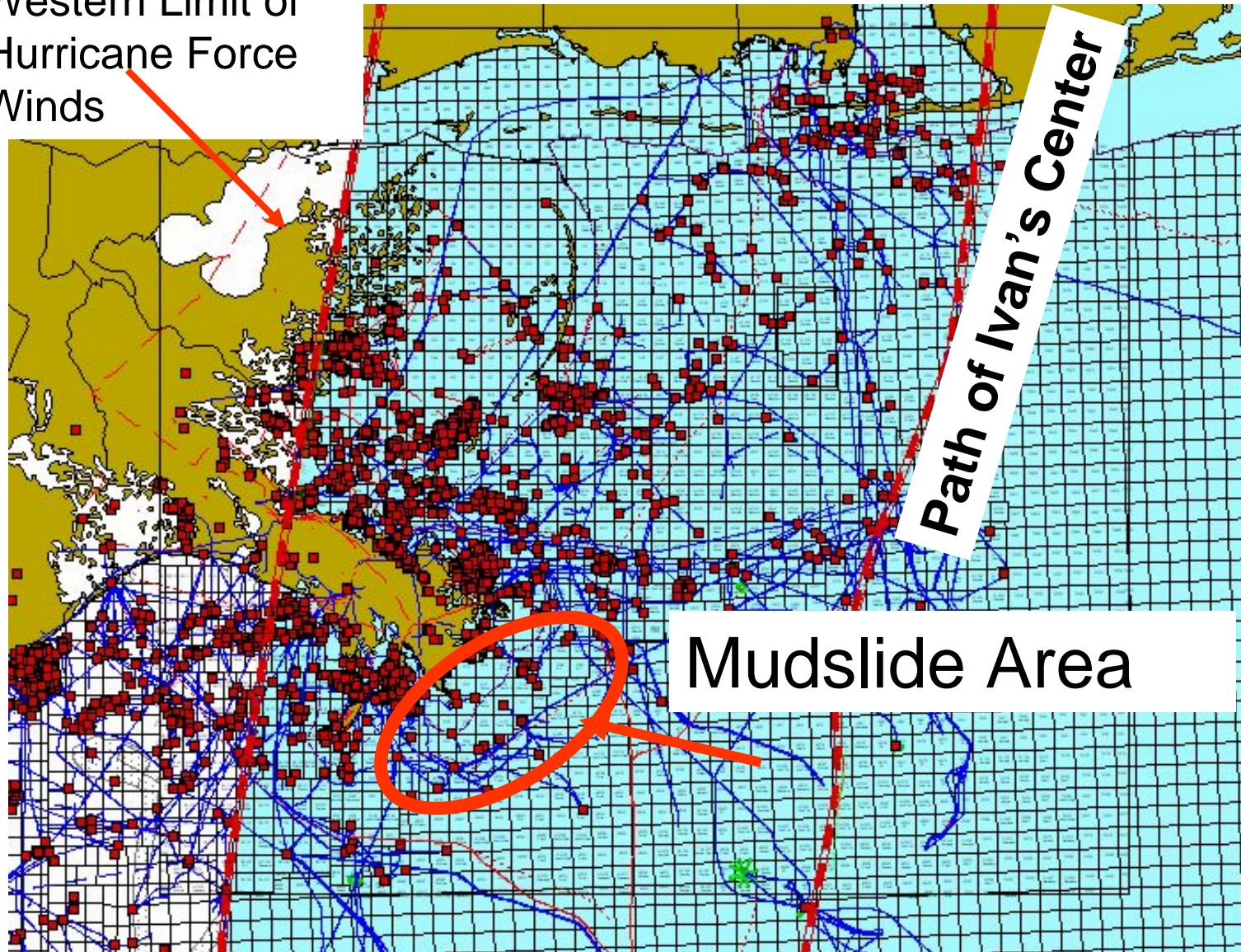


Lessons Learned – The Storm

Lessons Learned from the Storm Itself

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 - **Prevalence**

Western Limit of
Hurricane Force
Winds



Path of Ivan's Center

Mudslide Area

Lessons Learned – The Storm

Lessons Learned from the Storm Itself

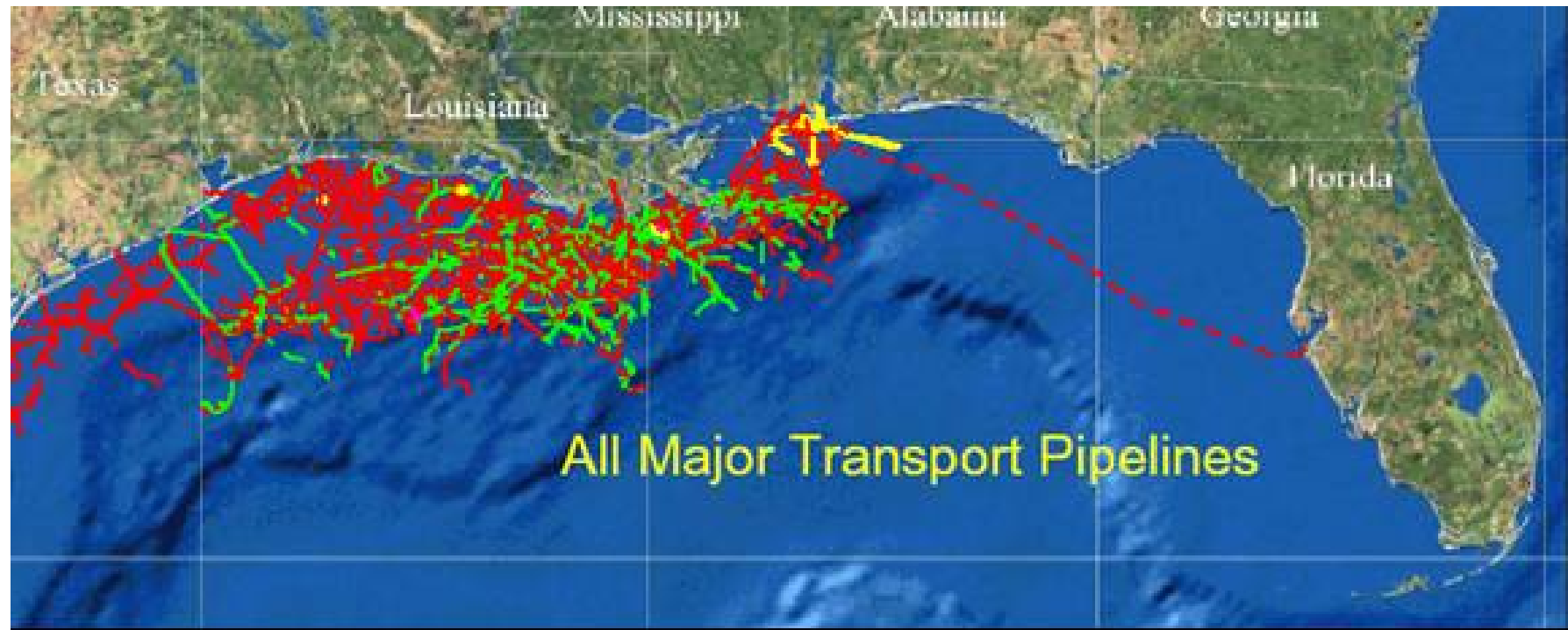
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 - **Cause = Threefold**
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 2. **Deposition on shallow areas**
 3. **Potential energy / build up**
 - **Prevalence**
 - **Predictability (i.e. 10 - 50 years)**



Lessons Learned – The Storm

- **Effect of Mudslides**
 - **Pipelines/Infrastructure/Inter-connecting**

Lessons Learned – The Storm



Lessons Learned – The Storm





Lessons Learned – The Storm

- **Effect of Mudslides**
 - **Pipelines/Infrastructure/Inter-connecting**
 - **Subsea wells**

Lessons Learned – The Storm

- **Effect of Mudslides**
 - **Pipelines/Infrastructure/Inter-connecting**
 - **Subsea wells**
 - **Platforms**

Lessons Learned – The Storm



Lessons Learned – The Storm

- **2. Water Depth Issues**
 - **Repair requirements with water depth:**

Lessons Learned – The Storm

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 - **Repair requirements with water depth:**
 - **Shallow (0' – 300')**

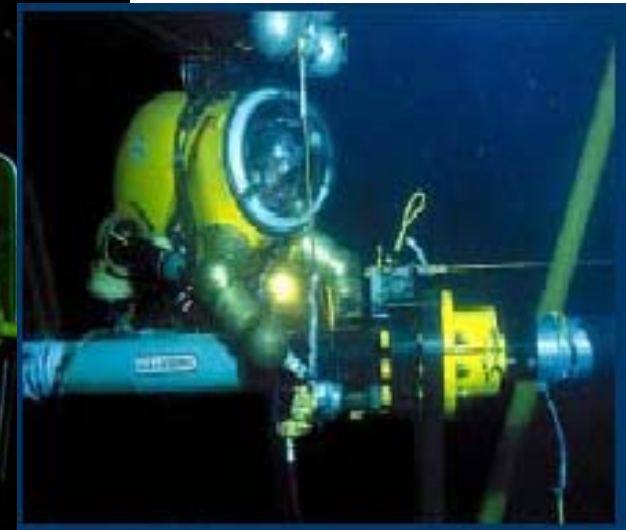
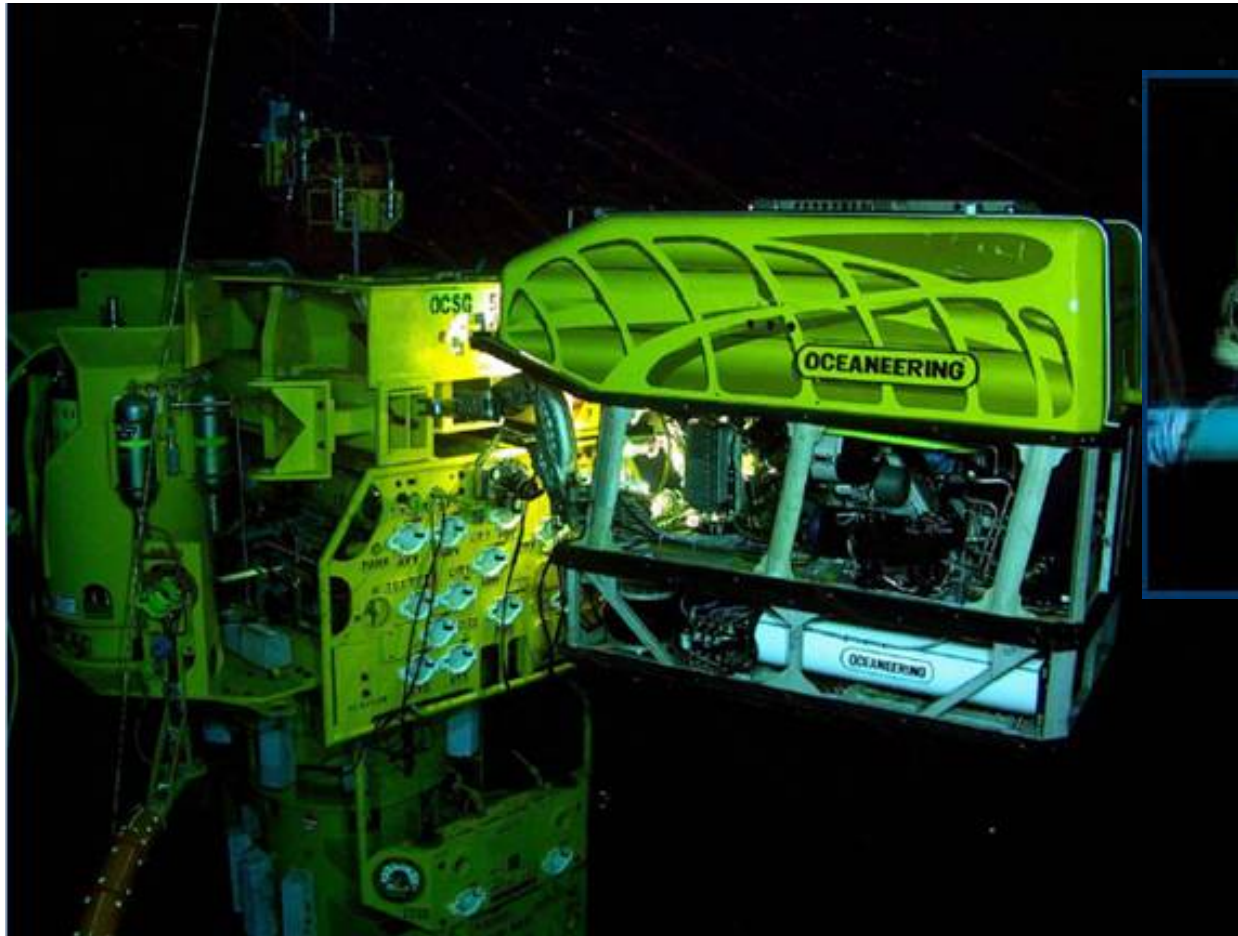
Lessons Learned – The Storm

- **2. Water Depth Issues**
 - **Repair requirements with water depth:**
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 - **Intermediate (300' – 1,000')**

Lessons Learned – The Storm

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 - **Deepwater (1,000'+)**

Lessons Learned – The Storm

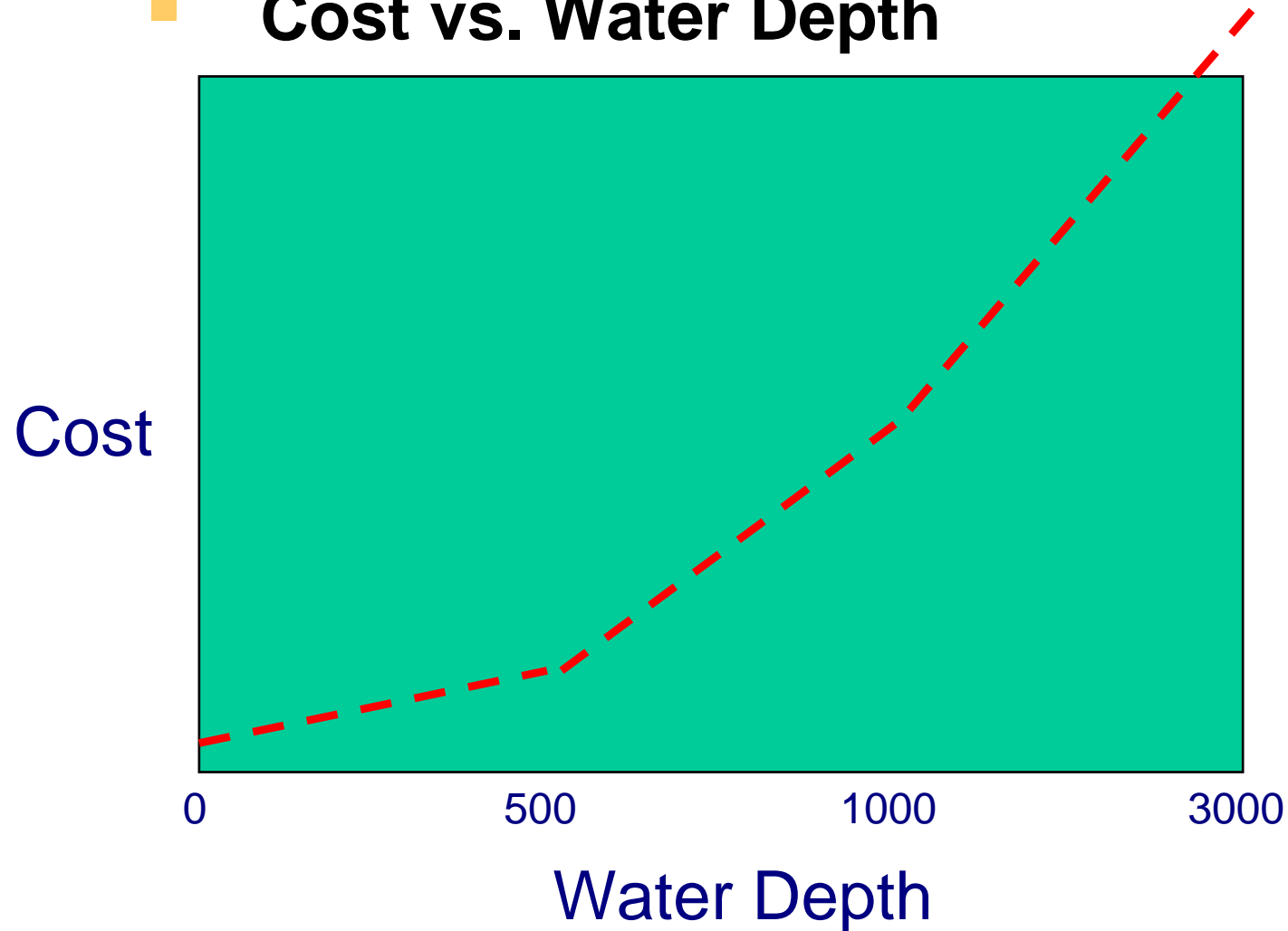


Lessons Learned – The Storm

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 - **Repair requirements with water depth:**
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 - **Deepwater (1,000'+)**
 - **Cost v. Water Depth**

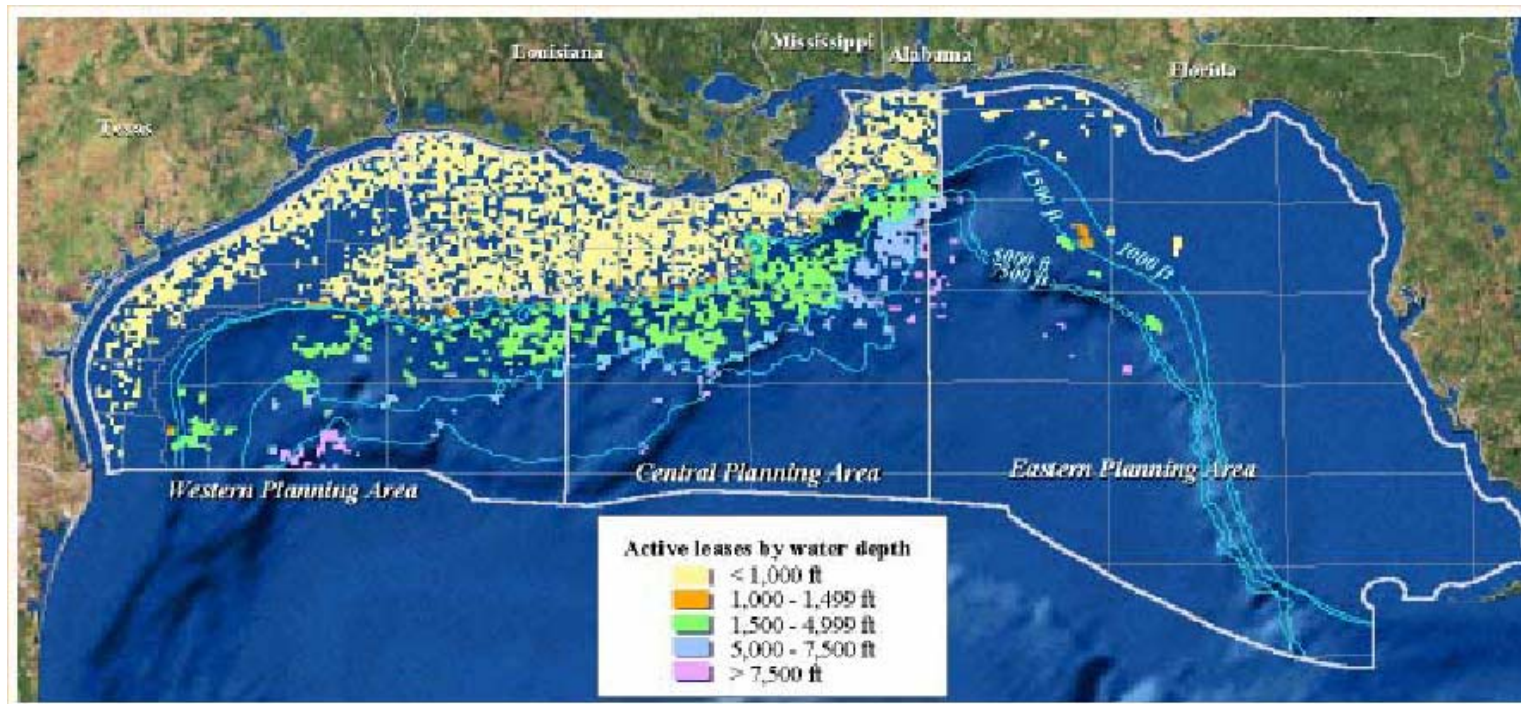
Lessons Learned – The Storm

■ Cost vs. Water Depth



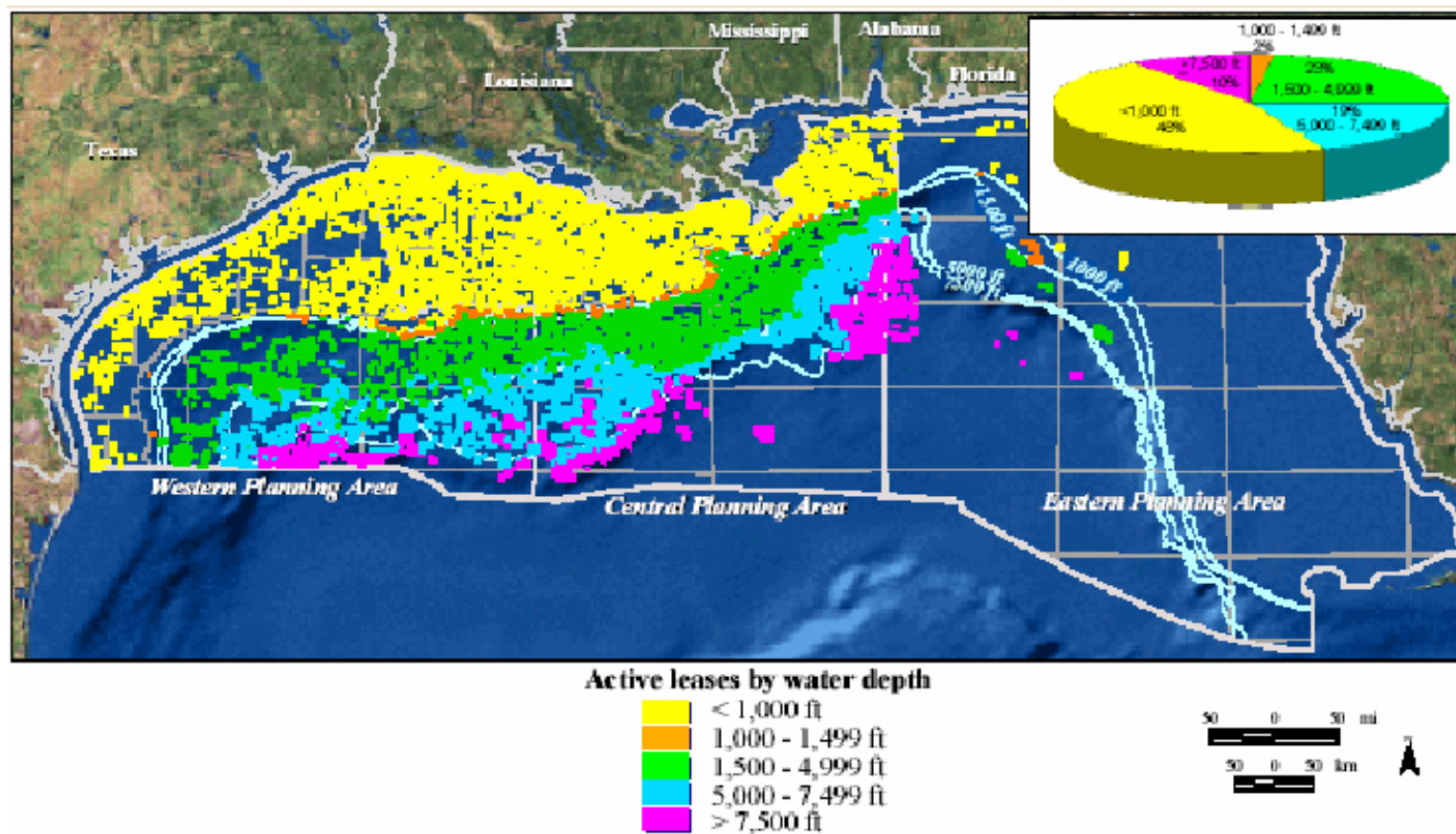
Lessons Learned – The Storm

Active GOM Leases - 1995



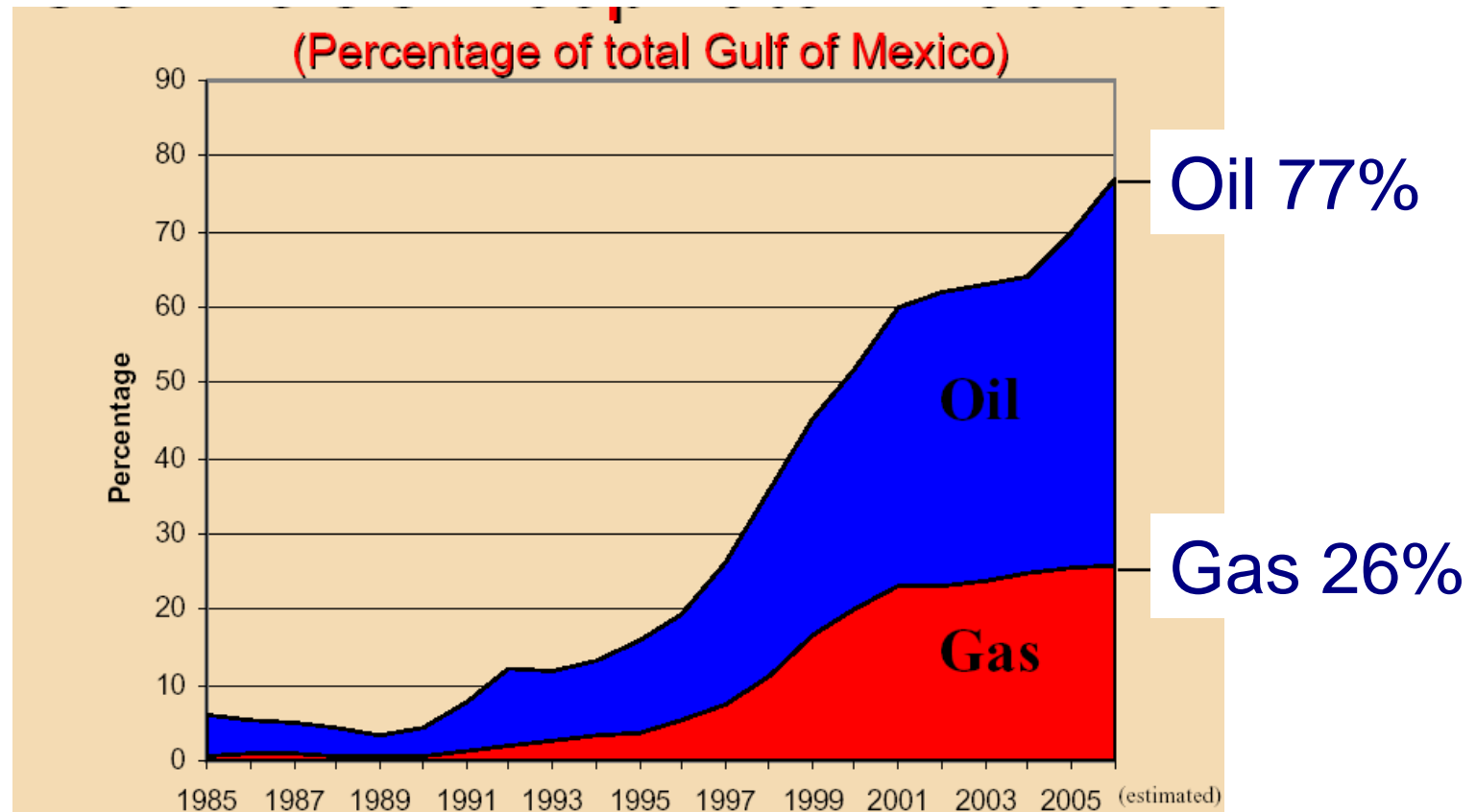
Lessons Learned – The Storm

Active GOM Leases - 2004



Lessons Learned – The Storm

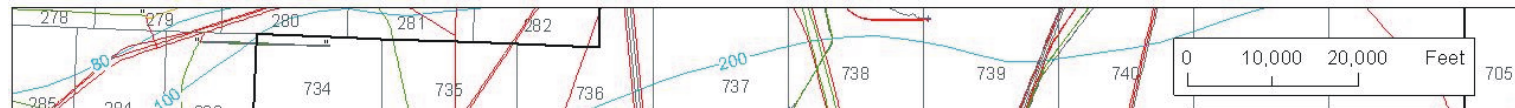
U.S. Gulf of Mexico Deepwater Production



Lessons Learned – The Storm

- **3. Rig Walkabouts**
 - **Abandon on location vs. tow to safe water**
 - **Is enough being done?**
 - **Damage to offshore rigs**
 - **Damage to offshore property caused by free-floating rigs**

Lessons Learned – The Storm



Semi path – Viosca Knoll Area



