Un-Natural Disaster ??
Katrina & New Orleans ??

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Un-Natural Disaster
Katrina & New Orleans

• Connecting the Dots to Environmental Change
  – Earth Warming
    • Ice melting sea level rising
    • Warm water = more frequent storms
    • Warm water = more violent storms
  – Gulf Coast Sinking
    • Sand compacting
    • No new mud from floods
    • Oil removal leads to subsidence

• This Catastrophe Was Predictable if Not Avoidable
Temperature rising

Warming trends
The concentration of carbon dioxide in the atmosphere helps determine Earth’s surface temperature. Both CO₂ and temperature have risen sharply since 1950.
Over the past 140 years, forest clearing and fossil-fuel burning have pushed up the atmosphere’s CO₂ level by nearly 100 parts per million. The average surface temperature of the Northern Hemisphere has mirrored the rise in CO₂. The 1990s was the warmest decade since the mid-1800s, and 1998 the warmest year.

One Degree of Change
Sea Level Up About 6 Inches Since 1900
Weather turning wild?

Projected weather and climate changes

- **Storm warnings**
  Higher global temperatures could fuel extreme weather. At right are computer-model projections of the chance that various weather events will be more frequent in a warmer world.

- **Likely**
  - Higher maximum temperatures and more hot days
  - Higher minimum temperatures and fewer cold days
  - Higher heat index (heat plus humidity)
  - Higher nighttime temperatures
  - More drought
  - More intense rainfall
  - More intense hurricanes

- **Very likely**

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Ice Caps Melting

- Shrinking sea ice: An image based on satellite data shows perennial ice coverage in 1979, when the ice extended over the Arctic Ocean from edge to edge. Since then, the area of coverage has decreased by 9 percent per decade.

- A similar image from 2003 shows dramatically reduced perennial ice cover. Large areas of open ocean have appeared near Russia, Alaska, and Canada. Some climate models project that the ice will be gone in summer by the end of this century.

Hot zone: The Arctic is warming several times faster than most of the planet; ice there is melting on land and at sea. The release of fresh water into the oceans could change the course of currents that play a vital role in climate. Runoff from glaciers on land is already contributing to a global rise in sea level.

Larsen Ice Shelf Falls In

- A Coastline Redrawn: The epic collapse of a 1,250-square-mile section of the Larsen Ice Shelf took just over a month in early 2002. Melt ponds—visible as dark striations on the floating ice shelf (right) presaged the impending breakup (below right). Scientists are monitoring what effect the further disintegration of Larsen—and of other Antarctic ice shelves—might have on the continent’s glaciers. Without ice shelves to act as dams, those glaciers might migrate faster toward the coast, ultimately contributing to rising sea level.
Guess What is Coming Ashore ???
New Orleans Says You Missed Me !!
Katrina & More Like Her are Brewing
Barrels of oil equivalent (BOE) in millions, includes natural gas

Active lease

Scale varies in this perspective. Distance from Houston to New Orleans is 316 miles (509 kilometers).

NATIONAL GEOGRAPHIC MAPS

Gulf of Mexico

1961
80 million BOE
415 active leases

North
1,450 Cubic Meters of Oil are Pumped Out Daily, Gulf Coast is Subsiding