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When constants become variables

Environmental change in geopolitics and geoeconomics

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JNU, 15 February 2012



Geography
makes history...



Edinburgh Castle, Scotland



Meherangarh Fort, India



Masada, Israel





Landslide, California, 1995



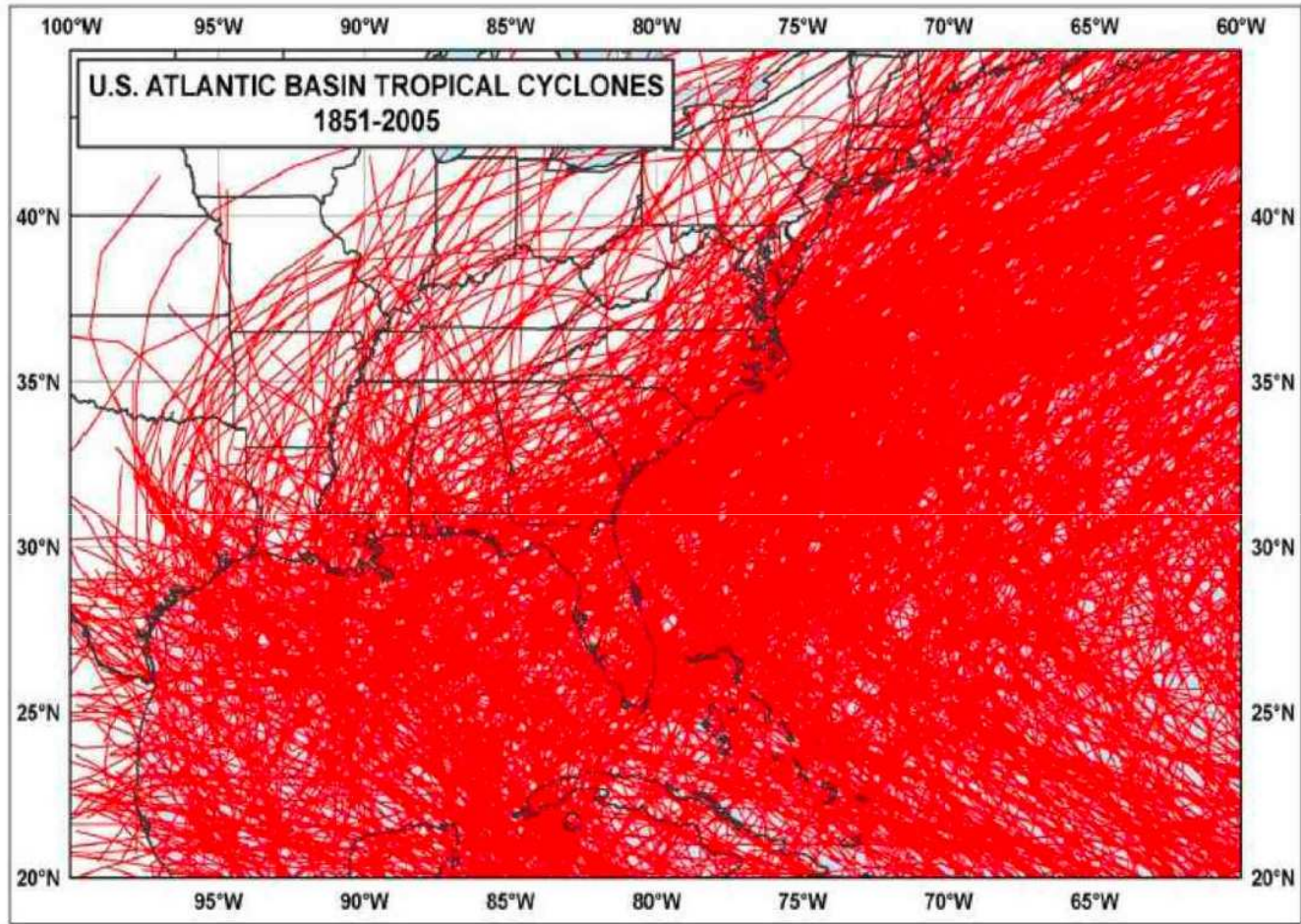
Flooding, UK, 2007



Erosion, France



Landslide, St Jude, Quebec, 2010



Physical Factors That Contributed to The Disaster in New Orleans in 2005

- **Faulty levee design and implementation**
 - **A lack of town planning**
 - **Large scale subsidence**
- Draining of wetlands
- Extraction of groundwater
- Inappropriately designed waterways



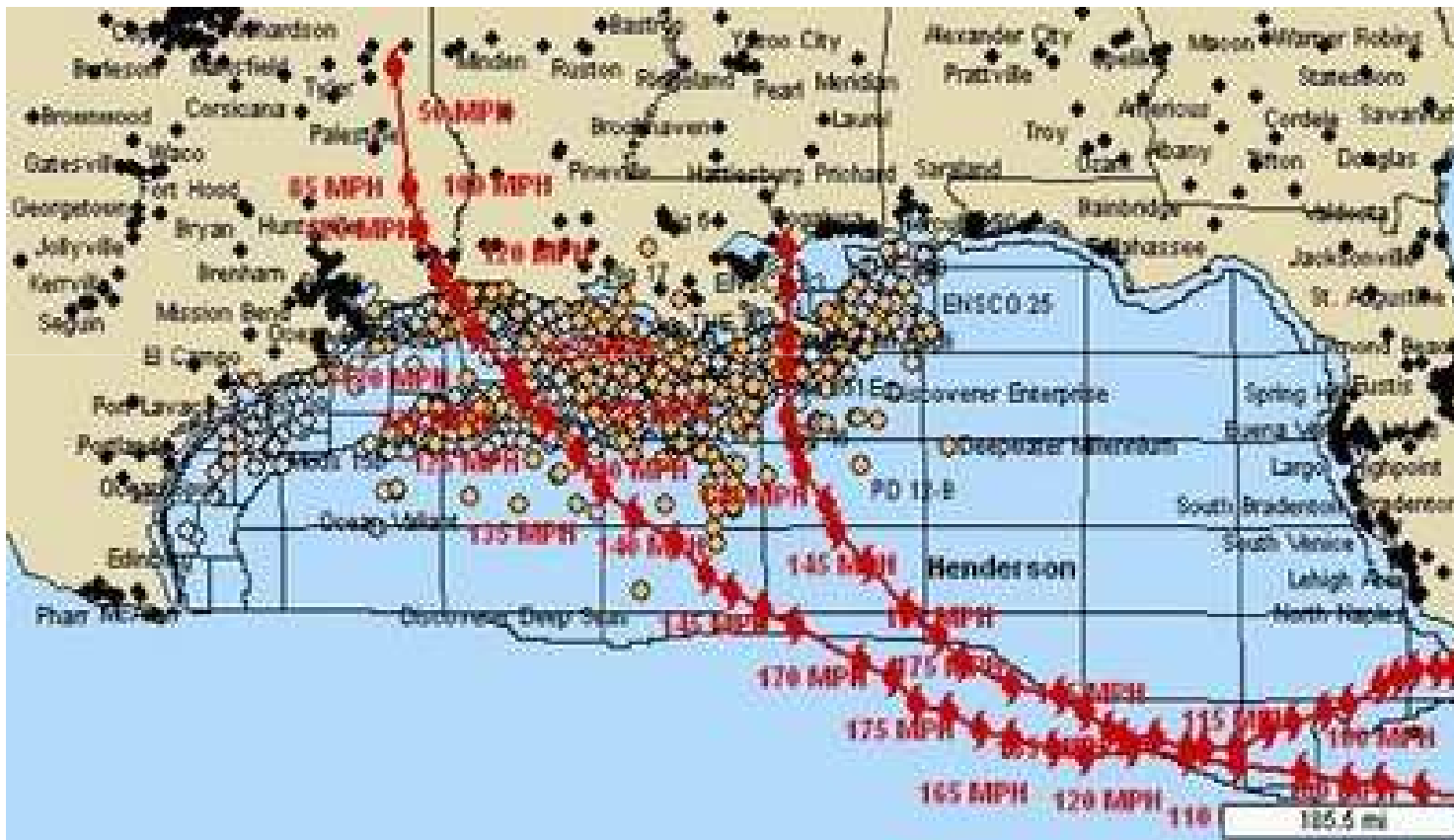
The causes of the disruptions include a variety of factors, including, but not limited to climate change.

The Arthashastra

Three interdependent elements to assess when planning a campaign:

- *Power* (including intellectual power of the leadership, military power, enthusiasm and morale). Military power and morale can both be blunted by extreme weather.
- *Place* (terrain). Terrain can be suddenly altered by unexpected environmental change.
- *Time* (season and length of battle). ‘Seasons’ not as predictable as they used to be. Length of the engagement can be undermined if supply lines are disrupted by extreme events.

Physical Infrastructure (first order impact) Case Study: Energy and Military



US Gulf Coast, 2005

Damage Caused by Katrina and Rita, 2005

- 457 damaged pipelines
- 113 Platforms destroyed
- Gulf Coast oil production dropped 57.37%, natural gas dropped to 40.35%
- Spike in global oil prices

- Summer of 2008, Hurricanes Gustav and Ike shut down much Gulf offshore production.



On shore coastal installations



Hydro

- **2008** India: hydro generation down 8.42%
- **2009** India: hydro generation down 12%



Nuclear

- **2003**

France: 17 reactors powered down or shut off. Cost Euros 300 million.

- **2006**

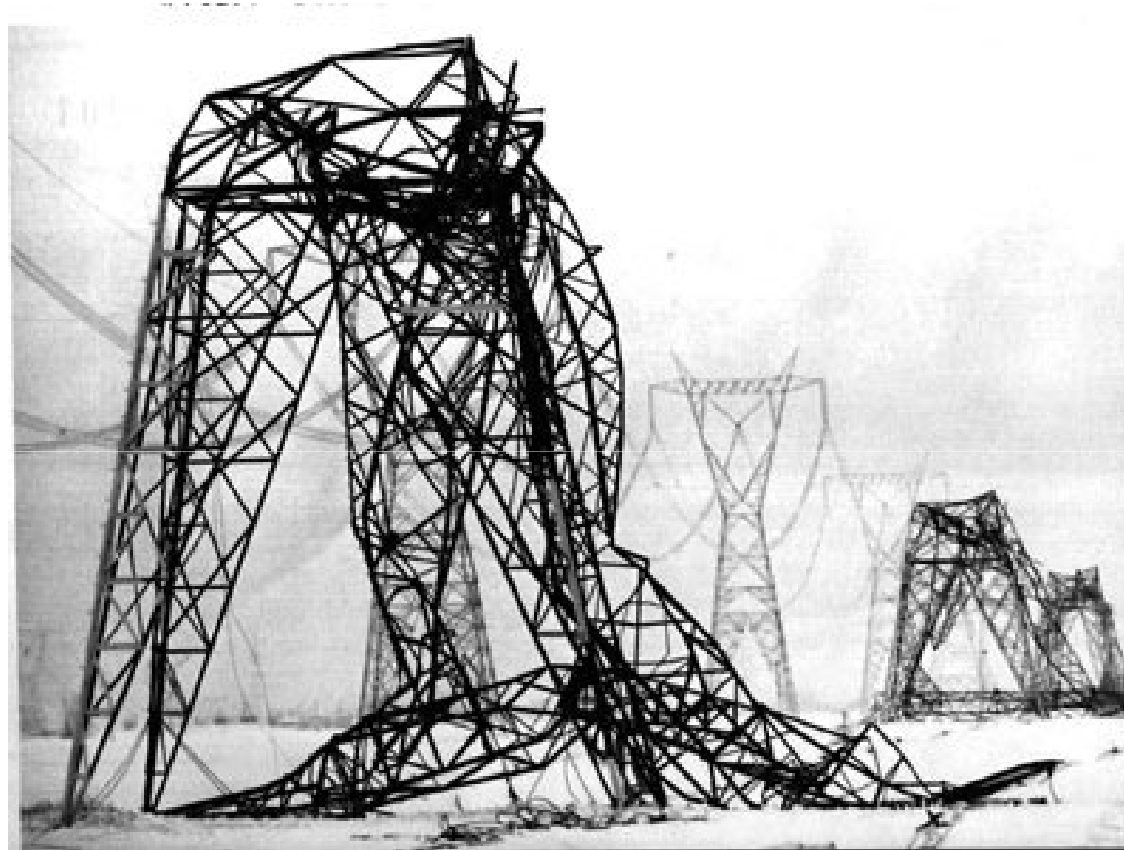
France, Spain and Germany had to power down.

- **2009**

France: 1/3 of nuclear stations powered down. Had to buy power from UK.



Distribution Systems



Renewables



Cedar Rapids, 2008

New Tech



Keesler AFB, 2005



Homested AFB, 1992



Pennsylvania, September, 2011



Mississippi, May, 2011



Bangkok, October 25, 2011



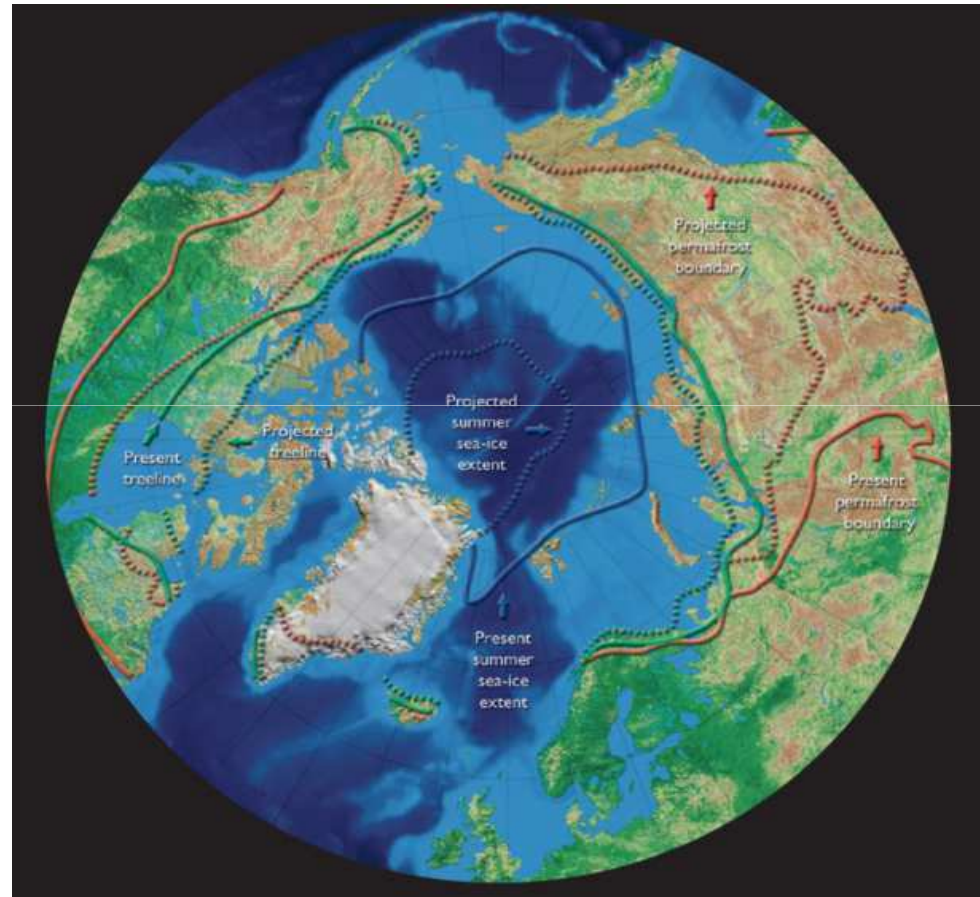
Queensland, January 2, 2012

The Risks of Risk Assessments

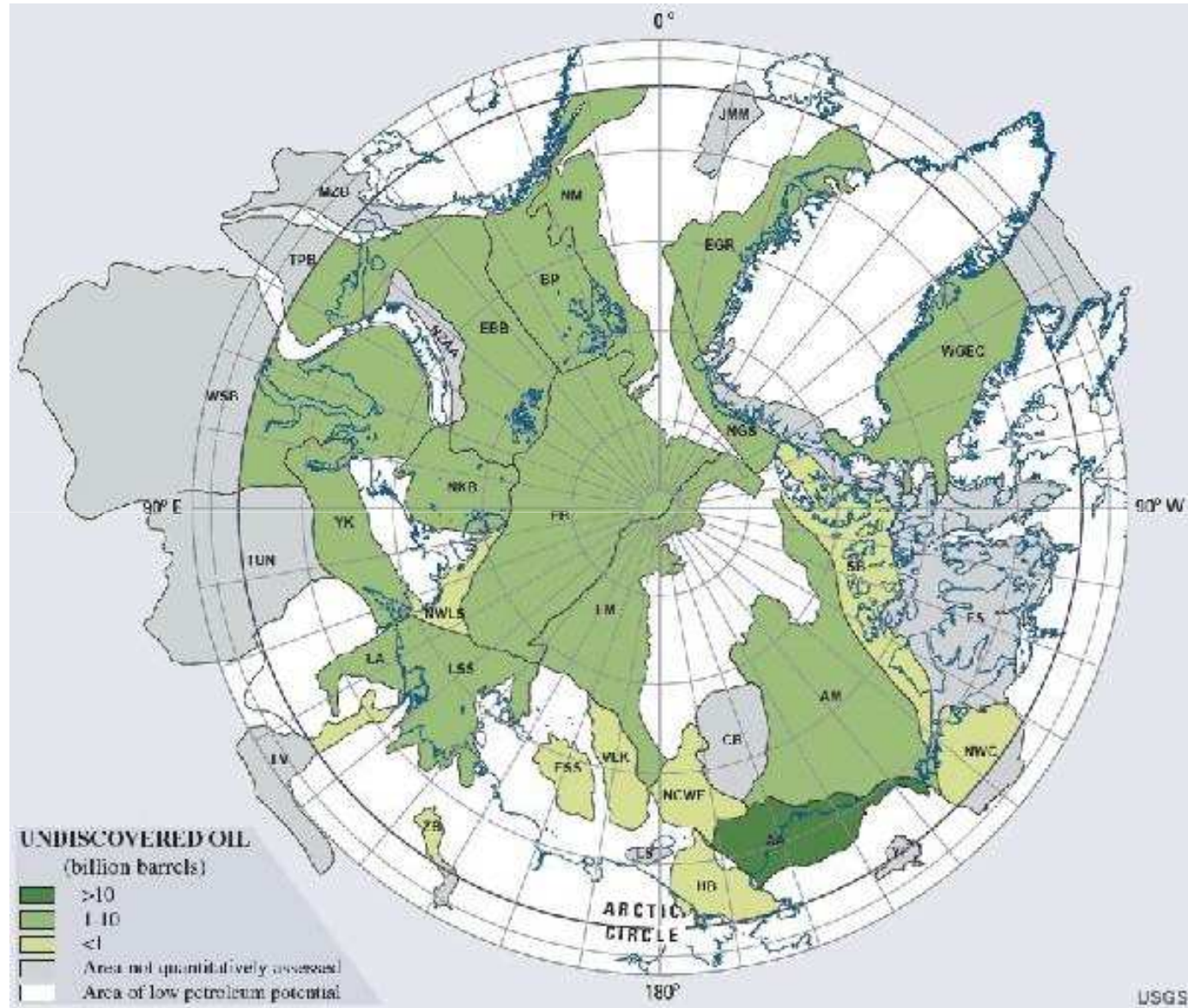
- Insurance
 - Government guarantees insurance
 - Caps on liability
 - Self-insure through ‘cut-and-run’ front companies
- Use of externalities in calculations, etc.



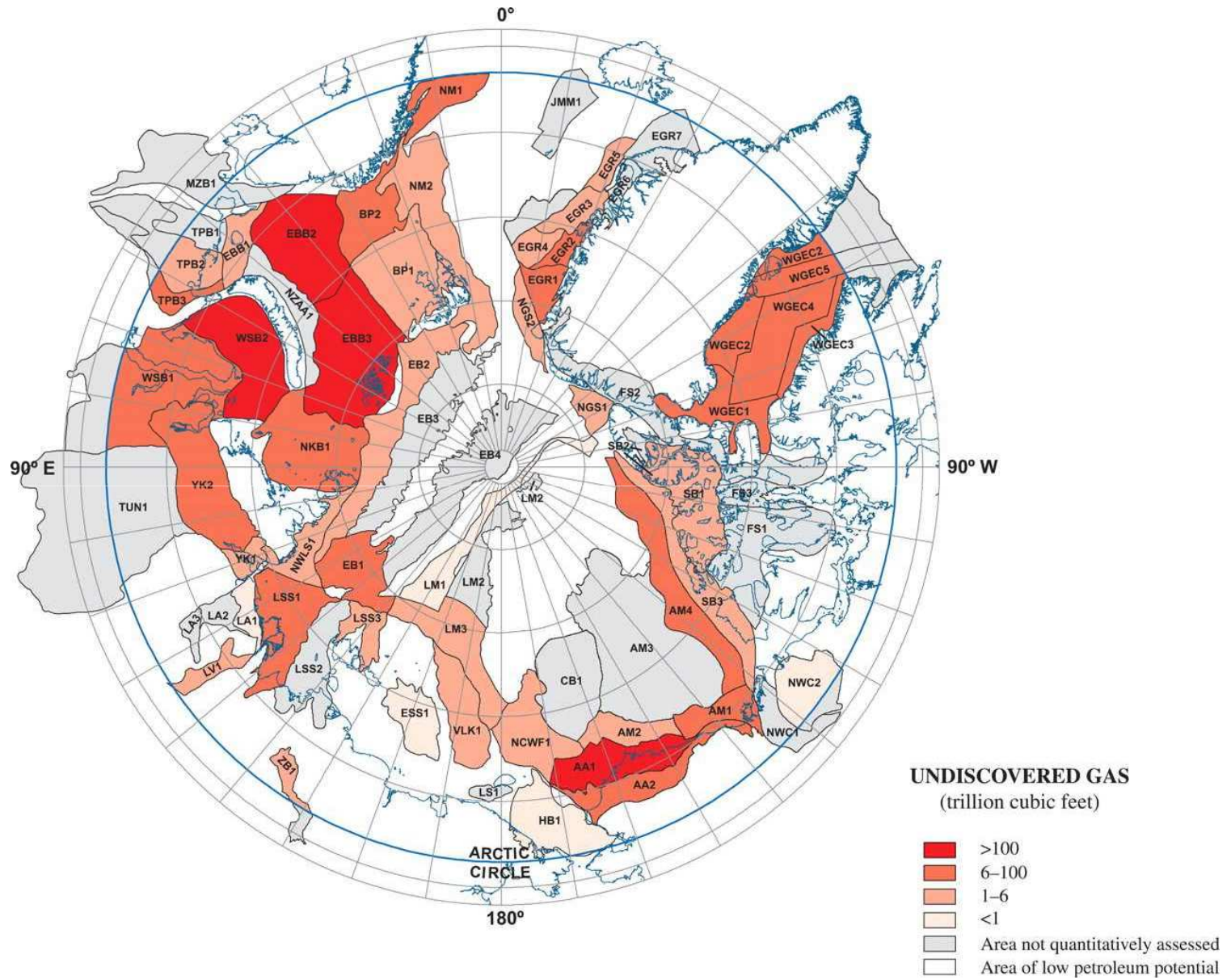
The Arctic



Undiscovered Arctic oil fields

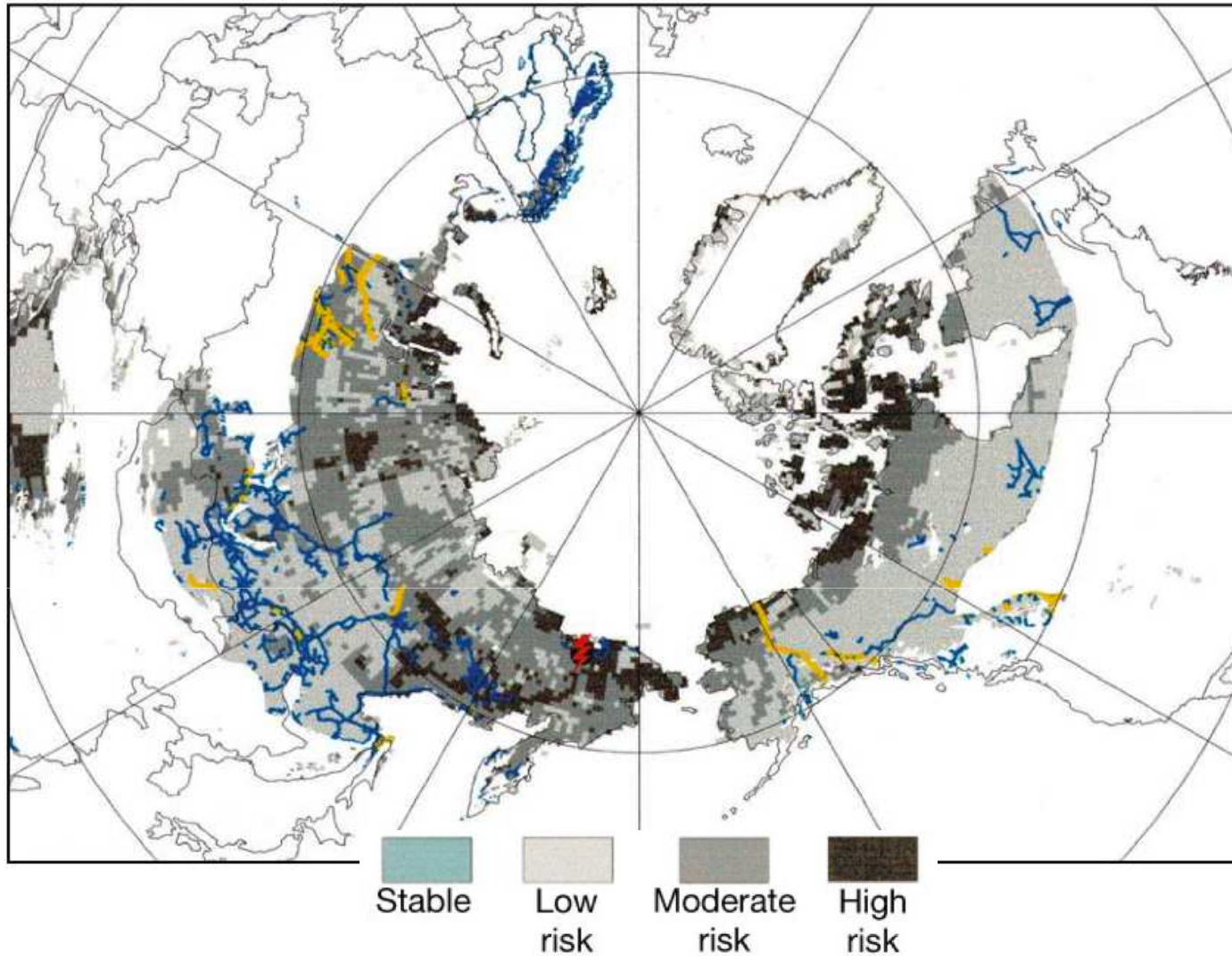


Undiscovered Arctic gas fields





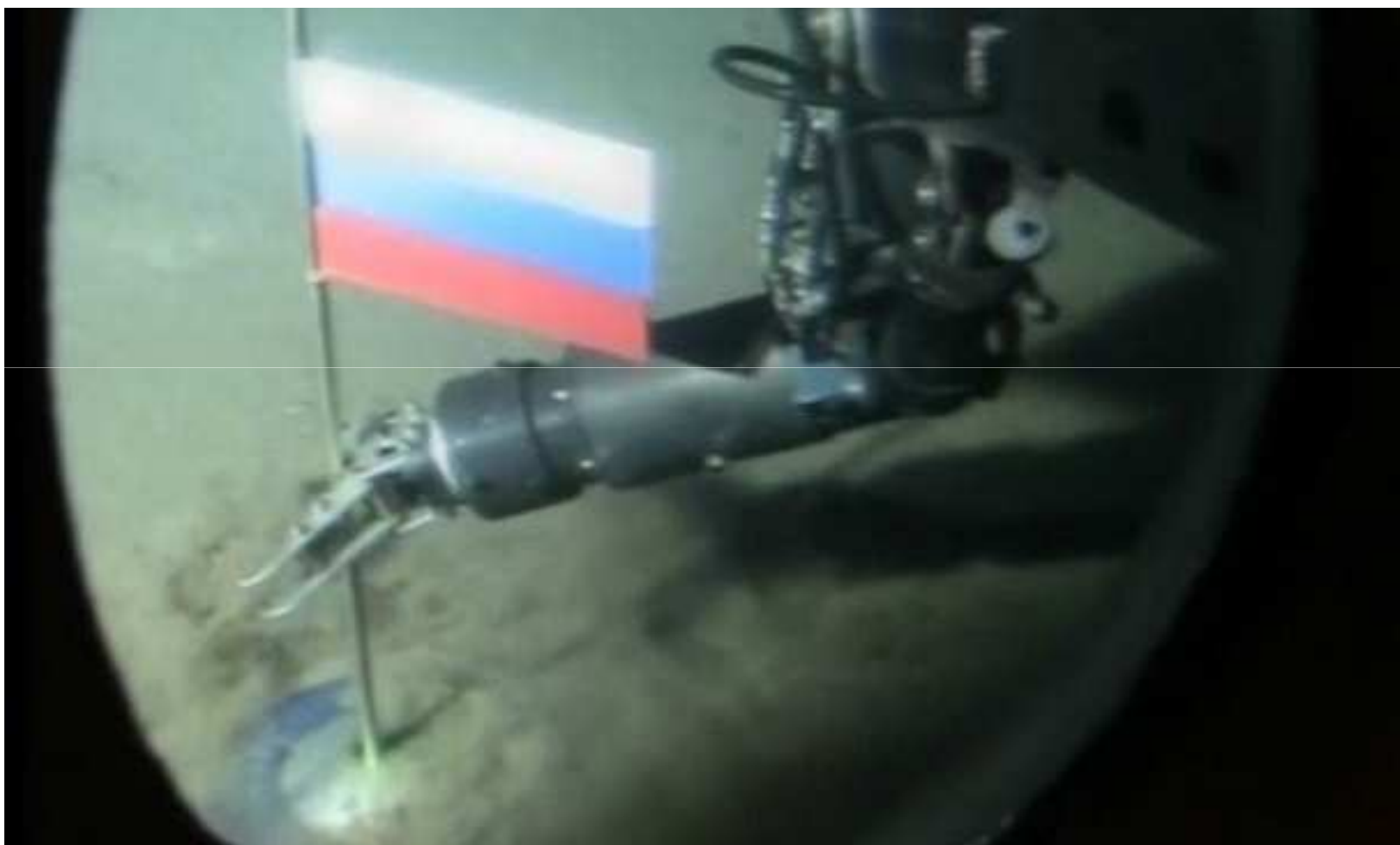




Blue: Electrical transmission lines
Yellow: Pipelines
Red: Bilibino nuclear power station



What are the geopolitical changes in the Arctic?



What are corporate priorities?

Meeting between U.S. Officials and Gazprom's Director of Foreign Relations, Ivan Zolotov Sept. 19. 2008

- Gazprom's Director of Foreign Relations, Ivan Zolotov
 - to fulfill the gas needs of domestic industrial and residential consumers
 - to fulfill its "social obligations," which include a variety of, in effect, charitable projects throughout the country.
- Americans
 - maximizing shareholder value?
- Gazprom's Zolotov:
 - to maximize control over global energy resources



Potential implications of permafrost thaw (one scenario)

Overland transmission becomes difficult/expensive as pipelines become unstable.

Build up of shipping fleet, particularly in Russia.

More flexible delivery system, potentially more subject to political factors

Geopolitical power through control of supply, and having infrastructure in place, may result in pursual of new supplies even more aggressively.

Arctic build-up (Russia dominates region with icebreakers, etc.). Increased ease of access for other states, such as China.

China

- Already has research bases in Antarctic and Arctic.
- Already has icebreaker.
- Large number of Chinese nationals working in Siberia.
- Actively courting Canadian Aboriginal leaders.



Fall of 2008, around 25 Canadian Aboriginal leaders invited to China. Some quotes:

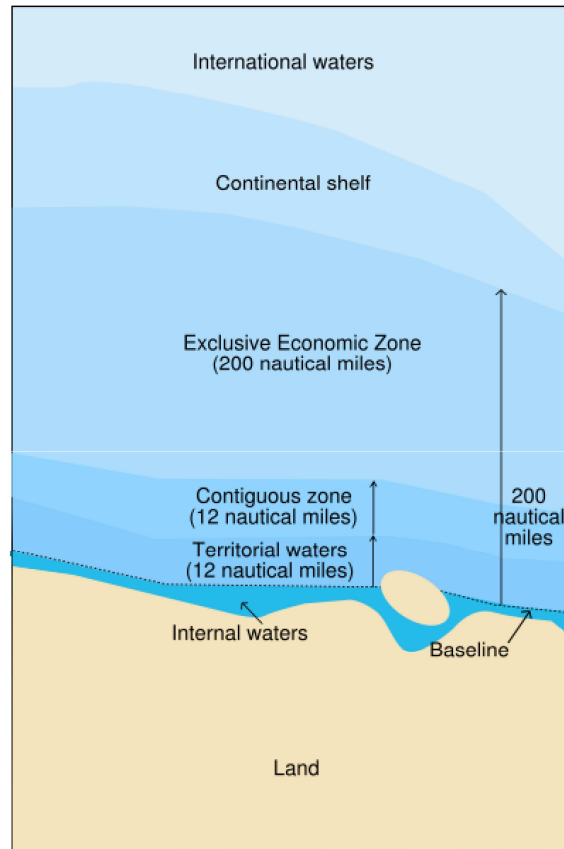
- Delegation head Chief Calvin Helin "Canadian aboriginals own or control about a third of the Canadian land mass." Went to Beijing to "tell China that Aboriginal Canada was open for business."
- Chief Glenn Hudson of Manitoba's Peguis Indian Band explained that the trip was "an important step for us in moving forward. Our future is not only in Canada, but partnering with other countries."

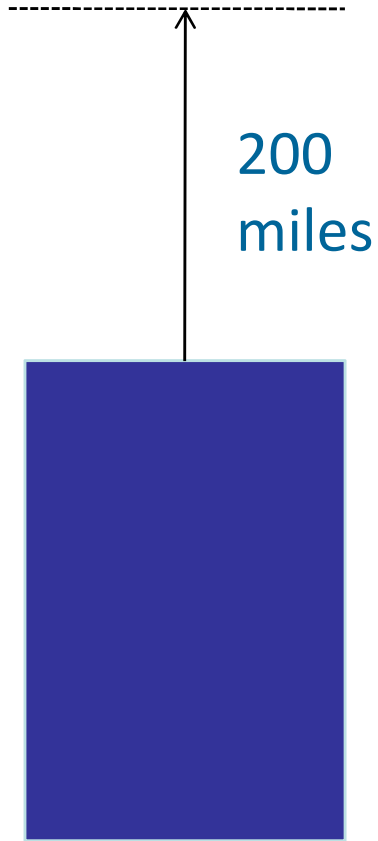


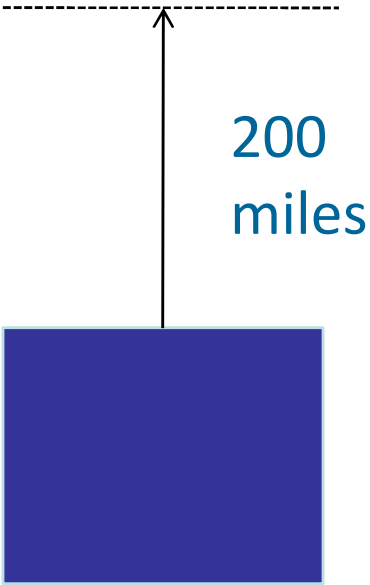
Legal Infrastructure (second order impact) Case Study: UNCLOS

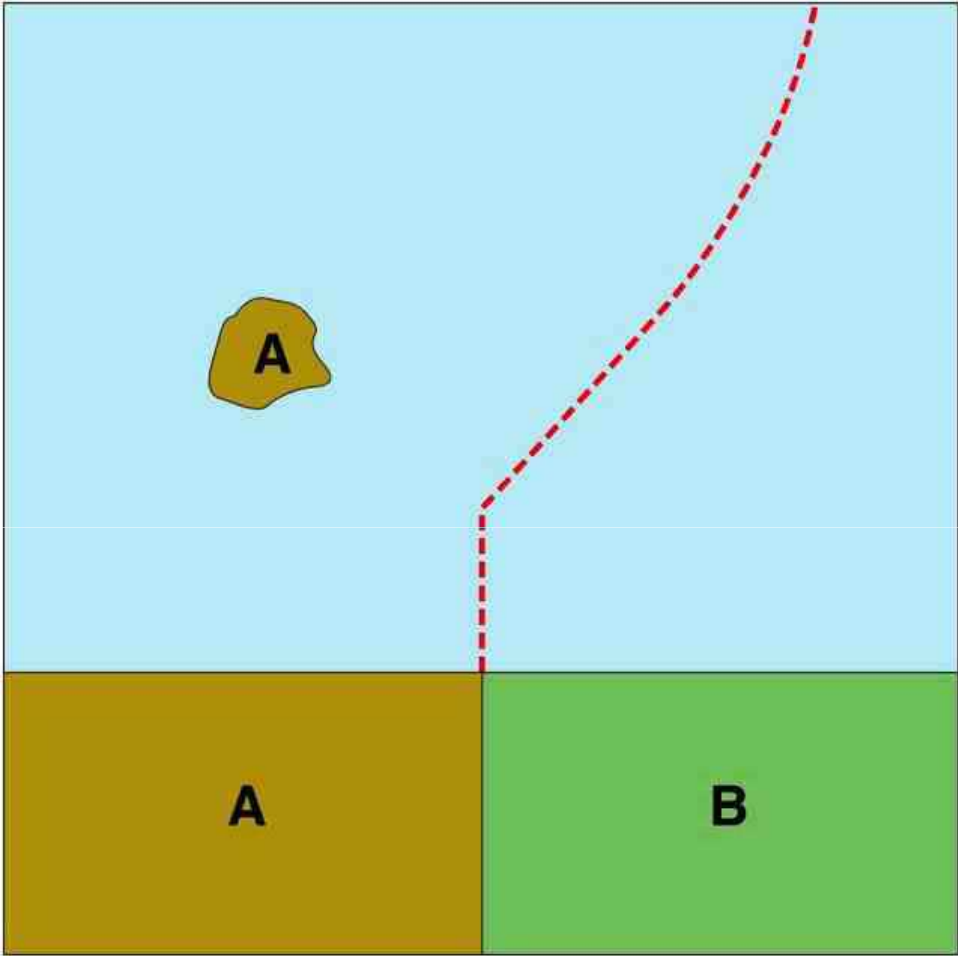


Law of the Sea









From The Sunday Times

September 6, 2009

Oil boom fuels mystery of the missing island in the Mexican Gulf



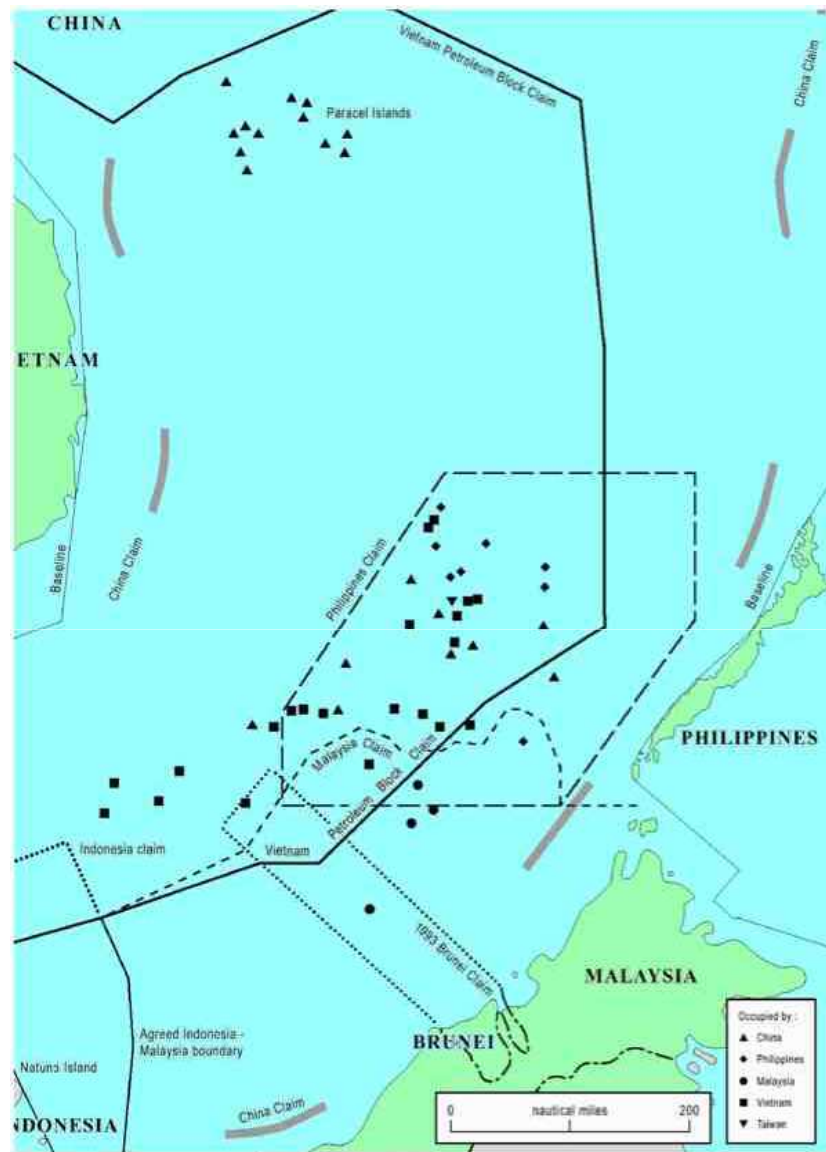
Bermeja island, which was the reference point by which to measure Mexico's maritime limits, has allegedly disappeared

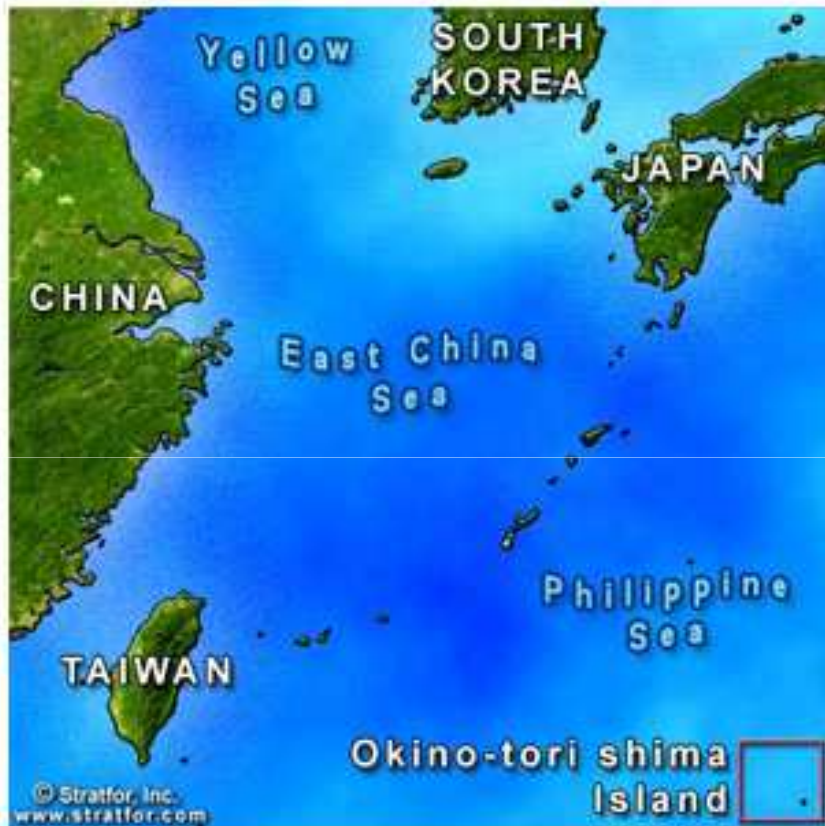
Matthew Campbell

8 COMMENTS | RECOMMEND? (9)

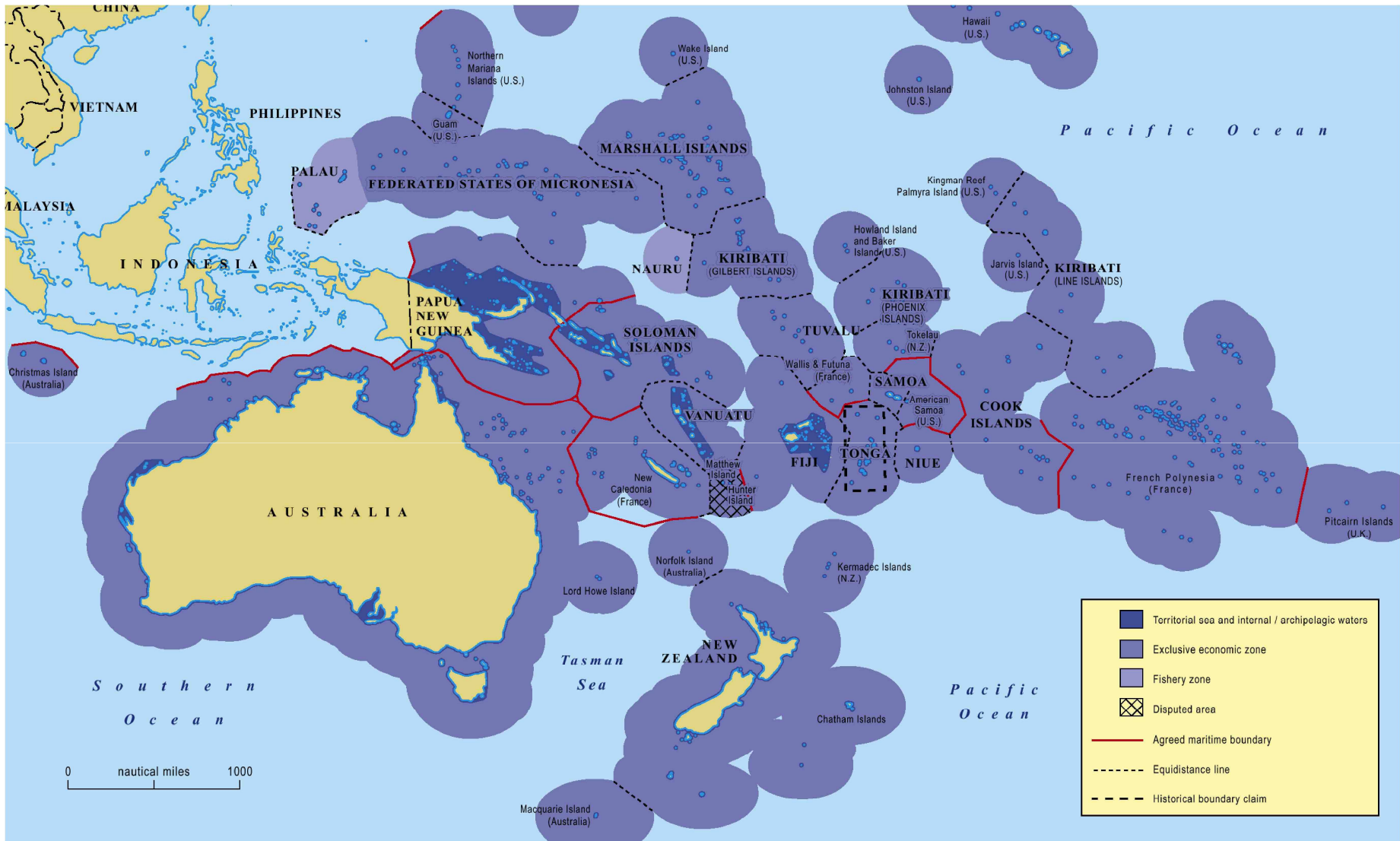
The mystery has come to haunt Mexico as unrelentingly as one of its beloved soap operas: where is Bermeja, an island off the Yucatan coast that appears to have vanished without trace?

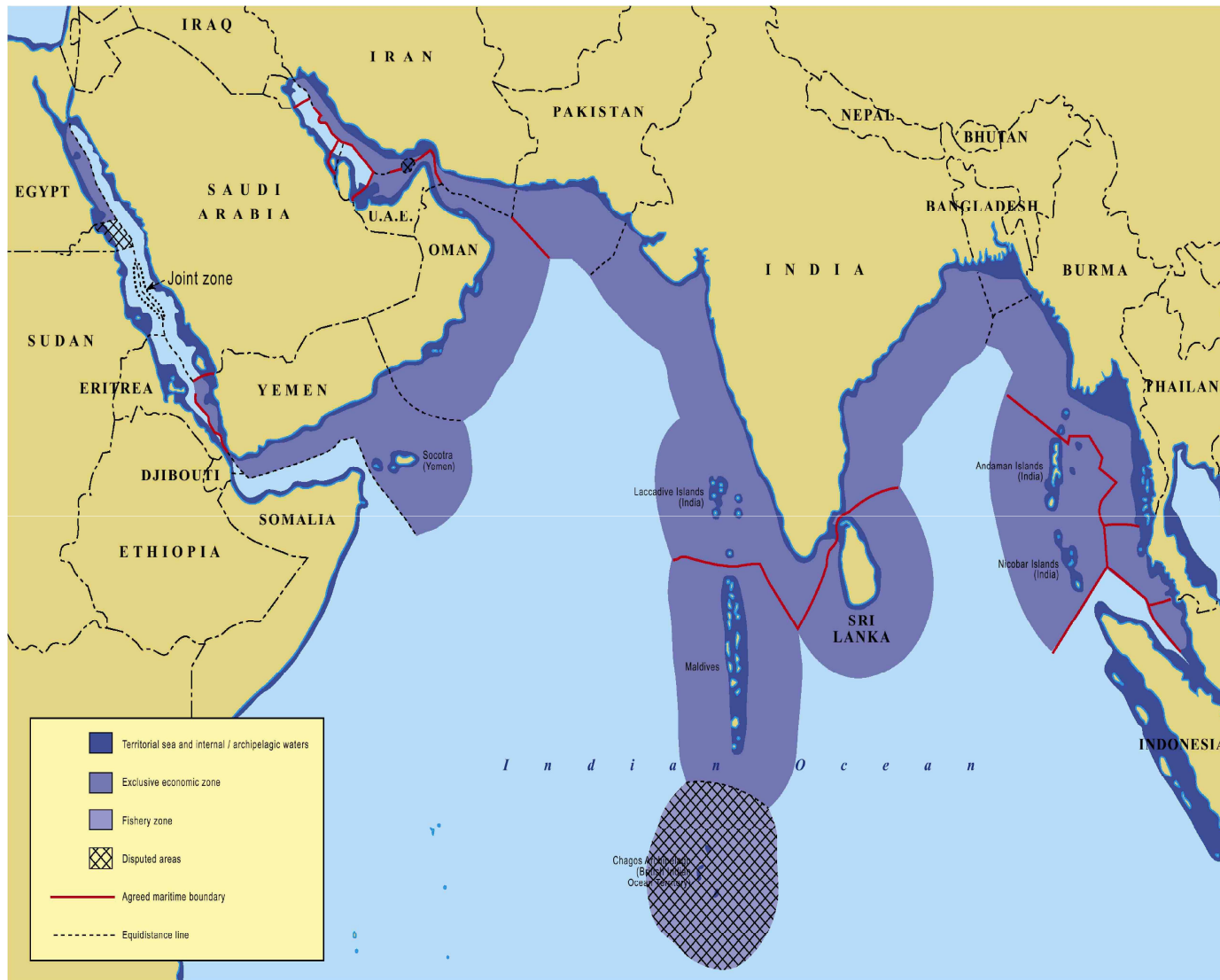
The disappearance of Bermeja is no laughing matter – it would allow Mexico to extend its maritime border some 55 miles further north, helping it to fight off what it sees as American encroachment on its claims to potentially vast oil reserves in the Mexican Gulf.











Sample of Time Horizon Driving Factors (or the development of national ‘personalities’)

‘Developed’	‘Developing’
<p>Political time horizon short term (in U.S. two year electoral cycle).</p>	<p>Political time horizon longer term (In China at governance level shifts generational; In India political parties can seem to belong to families)</p>
<p>Developed Country Complacency Syndrome (physical and legal infrastructure)</p> <ul style="list-style-type: none"> - Perceived to have created and ‘own’ global systems 	<p>Visible growth, change and development. Sense of national mission</p> <ul style="list-style-type: none"> - Question existing global systems (Copenhagen)
<p>Essentially, domestically, a time of peace</p>	<p>In many cases at least bordering an active conflict zone</p>
<p>Generational stagnation</p>	<p>Hope children to have a better future than parents (affects expectations of governance)</p>

Example of Time Perspective (or lack thereof) in Environmental Change Foresight

- China's one child policy



- U.S. National Flood Insurance Program



It is good to plan long term.

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But just because you have a long term plan, it doesn't mean the plan is any good.

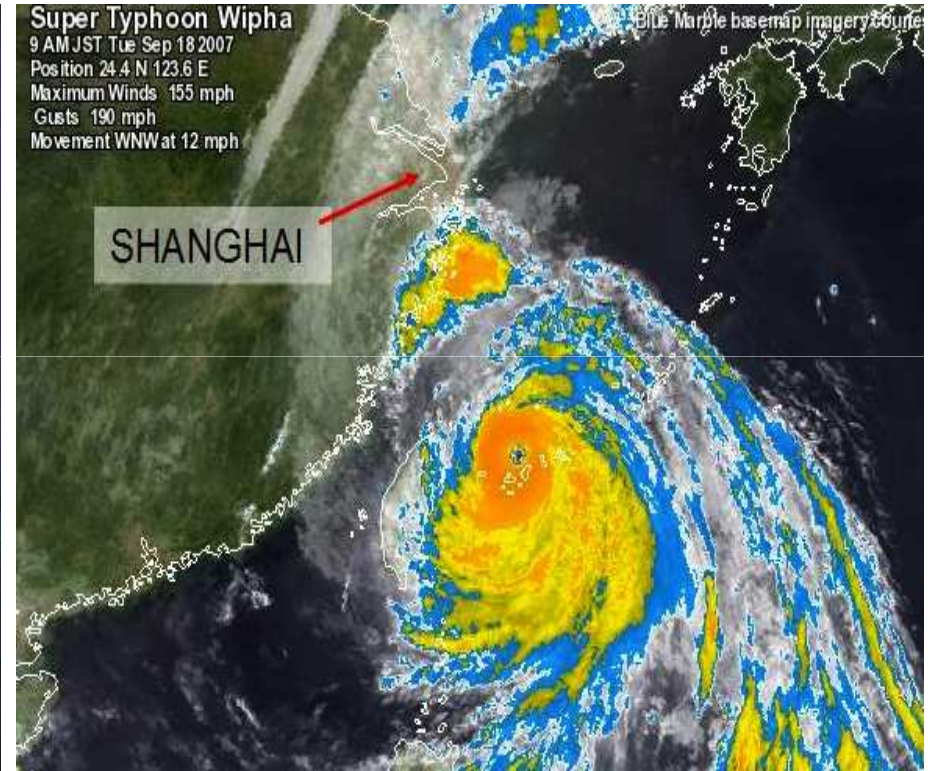


Dongtan: Eco-Atlantis



上海

ABOVE + SEA
= SHANGHAI



Diversity within Diversity

- “A weak people means a strong state and a strong state means a weak people. Therefore, a country which has the right way is concerned with weakening the people.”
 - Sun Tzu, *The Art of War*, China, circa 403 – 221 BC.
- “When a people are impoverished, they become greedy; when they are greedy, they become disaffected; when disaffected, they either go over to the enemy or kill their rulers themselves.”
 - Kautilya, *The Arthashastra*, India, circa 150 AD, possibly earlier.

Long Term Top Down vs Bottom Up (from governance/environment perspective can manifest as control versus management)

- “I don’t feel we are conquering nature. We think nature itself isn’t very fair. God isn’t fair. Why is that? He’s given Southern China so much water but given the North so little. It’s good land — nice flat land — up there. But it’s got so little water. So we say, as God isn’t fair, we are trying to balance out God’s unfairness.”
 - Professor Liu Zihui on the South-North Canal
- Tamil Nadu water harvesting. Microinsurance for farmers. Etc. *De facto* chaos theory approach. Unmanaged and unmanageable resilience.

Geography makes history...

**But environmental change is
remaking geography**



Thank you

Compulsory 'R' Slide

	Reinforce	Rescue	Recovery
Government	<ul style="list-style-type: none"> - Climate proofing infrastructure (including decentralizing power grid) - Adequate training and equipping of emergency services - Disasters plans in place and regularly updated - Strong alliances with other nations - Assessment of laws, regulations, subsidies, etc., to ensure they are making things better, not worse 	<ul style="list-style-type: none"> - Clear, viable command and control structure - Good communications between rescuers and those affected - Operationally flexible and easily implementable plans and measures 	<ul style="list-style-type: none"> - Economic incentives to help rebuild economies in environmentally stable areas - Clear communication about progress of recovery - Honest lessons learned assessment of future vulnerabilities
Society (NGOs, faith-based groups, etc.)	<ul style="list-style-type: none"> - Public awareness of disaster plan and citizen participation - Large, aware social networks - Adequate inter-citizen communications 	<ul style="list-style-type: none"> - Strong social cohesion in crises situations - Adaptability to swift changes in conditions and needs - Ability to not rely exclusively on government or other external assistance 	<ul style="list-style-type: none"> - Extensive non-governmental support networks to help rebuild socially and economically - (In partnership with government) effect a social services/NGO call-up to mitigate trauma of recovery and, if needed, resettlement
Private Sector	<ul style="list-style-type: none"> - Disaster plans in place that cover corporate as well as employee interests - Ensure investments are environmental/climate change-proofed, and generally plan for long-term - Lobby for regulations/policies that promote stability and sustainability in the market 	<ul style="list-style-type: none"> - Work with government and society to mitigate disruptions - Resist crisis profiteering that will hamper rescue effort and create lingering resentment 	<ul style="list-style-type: none"> - During rebuilding phase, focus on long-term stable growth rather than short-term gain that can contribute to future instability
Media	<ul style="list-style-type: none"> - Cover regional vulnerabilities and question plans that exacerbate them - Maintain up-to-date information on emergency procedures and contacts 	<ul style="list-style-type: none"> - Ensure dissemination of accurate information - Calm panic 	<ul style="list-style-type: none"> - Participate in lessons learned phase with a focus on how to move forward