



From Risk to Opportunity: Insurer Responses to Climate Change

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U.S. Department of Energy
Lawrence Berkeley National Laboratory



**Casualty Actuarial Society Annual Meeting
Quebec City
June 16, 2008**



Our atmosphere is as thin -- in proportion to the Earth's diameter -- as a film of condensation on a steel ball.



Roadmap

- **Why insurance & climate change?**
- **State of knowledge on climate**
 - fingerprints
 - forecasts
- **Relevance for the insurance community**
 - changing business environment
 - expectations from stakeholders
 - emerging risks
- **Opportunities**

For Insurers, Climate Change is an Emerging Risk to be Managed...

Insurers are....

- messengers
- integrators
- risk assessors
- risk managers

but...

- vulnerable
- flying partly blind
- selective

and....

- part of the solution



Climate Change is Integral to Mainstream Insurance Issues

- Customer retention
- Corporate governance, investor relations, & disclosure
- Balance sheet strength & solvency
- Competitiveness
- Emerging markets
- Reputation & trust
- Modeling weaknesses: Past vs future
- Regulation
- *Insurability*: availability & affordability

The Scientific Consensus

Nobel Peace Prize: 2007

Intergovernmental Panel
on Climate Change

~1500 Authors;

1000 Reviewers

Unanimously adopted by 100
+ nations (including U.S.)

IPCC Fourth Assessment Report Co-Recipient of the 2007 NOBEL PEACE PRIZE

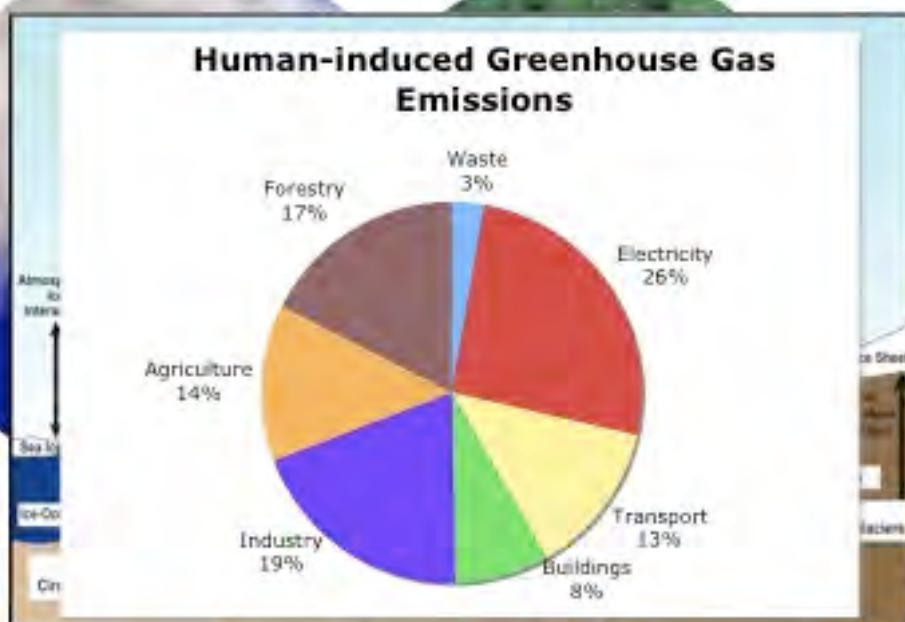
<http://www.ipcc.ch>

“Warming of the climate system is unequivocal.”

- Change is accelerating
- Nearing danger zone
- Solutions possible (and affordable)
- Must adapt *and* reduce emissions

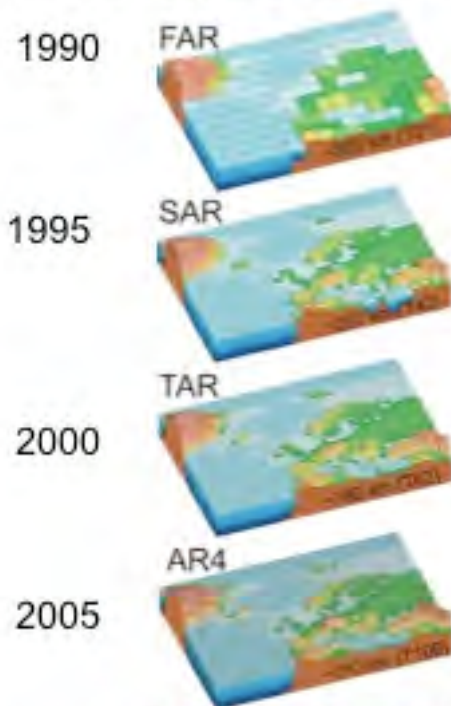
Our Confidence in climate change is about like that of human evolution or health effects of smoking

The Climate System



Source: Intergovernmental Panel on Climate Change, Fourth Assessment Report, WG1 (2007)

Climate Modeling Has Become Far More Precise



25x improved resolution!

Source: Intergovernmental Panel on Climate Change, Fourth Assessment Report, WGI (2007)

The World in Global Climate Models



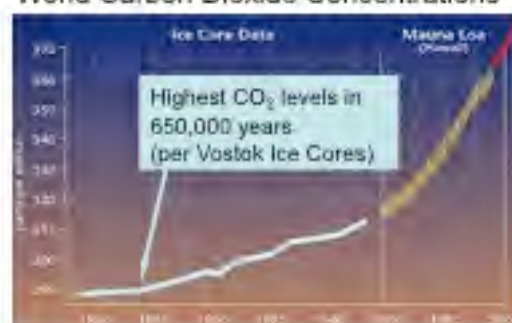
The most important human influence is fossil fuel combustion ...



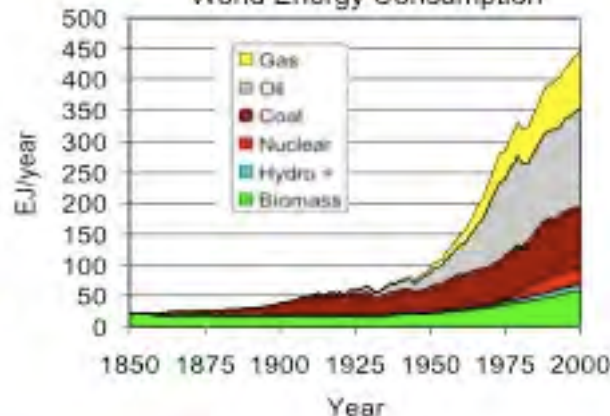
... but there are others

Other GHG's already above highest levels in 650,000 years

World Carbon Dioxide Concentrations



World Energy Consumption



... The second most important human influence is deforestation



Deforestation for soy growing in the state of Mato Grosso, Brazil

Source: Moutinho and Schwartzman, 2005

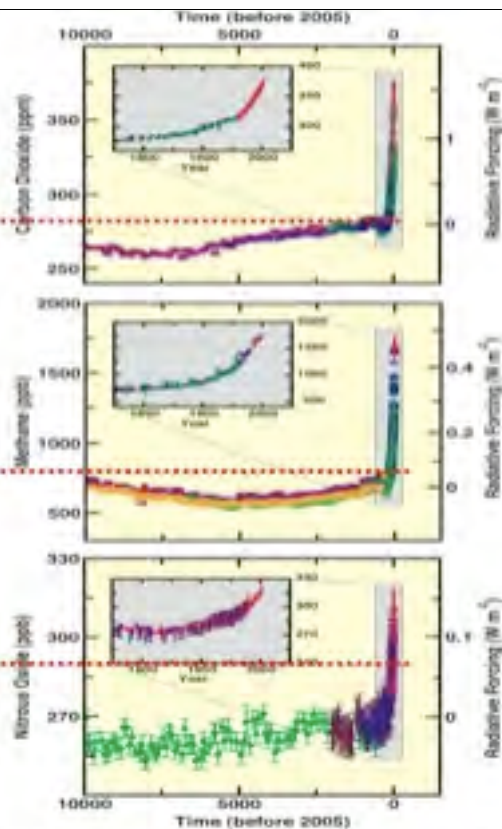
Key Gases

Carbon Dioxide

Peak natural variability over the previous 650,000 years

Methane

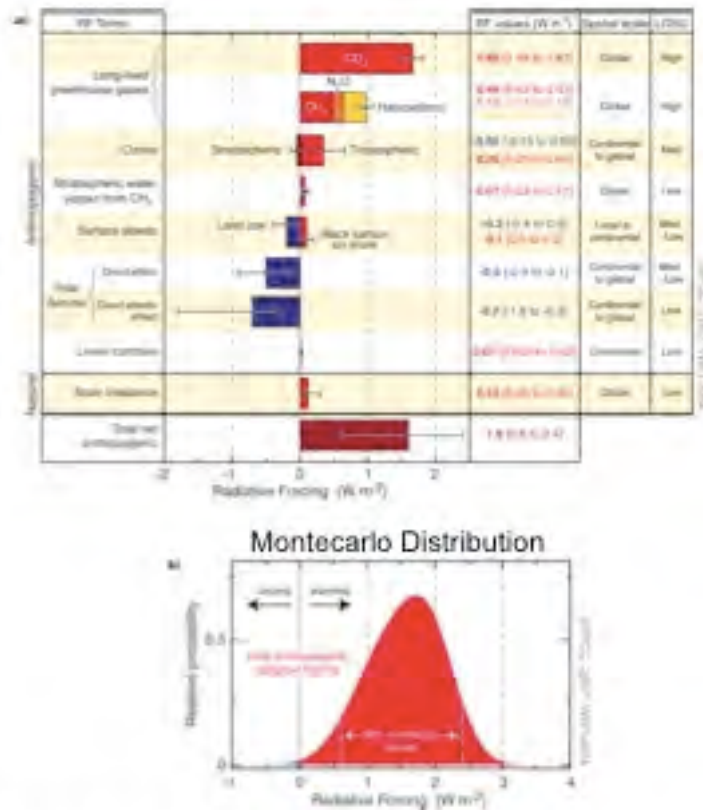
Nitrous Oxide



Source: Intergovernmental Panel on Climate Change, Fourth Assessment Report, WG I (2007)

**Net effect
of cooling
+ warming
influences..**

**...is
warming**



Source: Intergovernmental Panel on Climate Change, Fourth Assessment Report, WGI (2007)

FINGERPRINTS... Recent Indicators of Climate Change



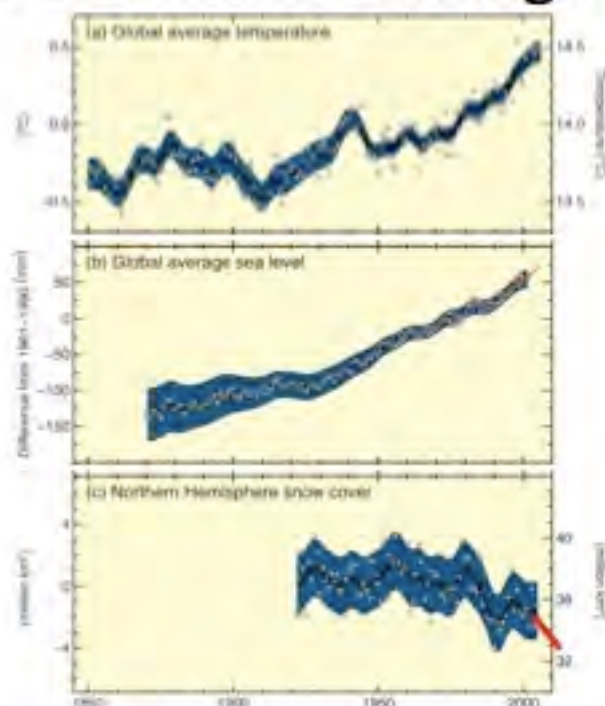
Global average temperature
(*accelerating*)



Global average sea level



Northern hemisphere
snow cover
(*accelerating*)

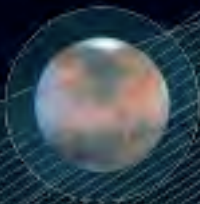


Source: IPCC 4th Assessment (2007)

Planets and atmospheres

Mars

Thin atmosphere
(All CO_2 in ground)
Average temperature : -50°C



Earth

0.03% of CO_2 in the atmosphere
Average temperature : $+14^\circ\text{C}$



Venus

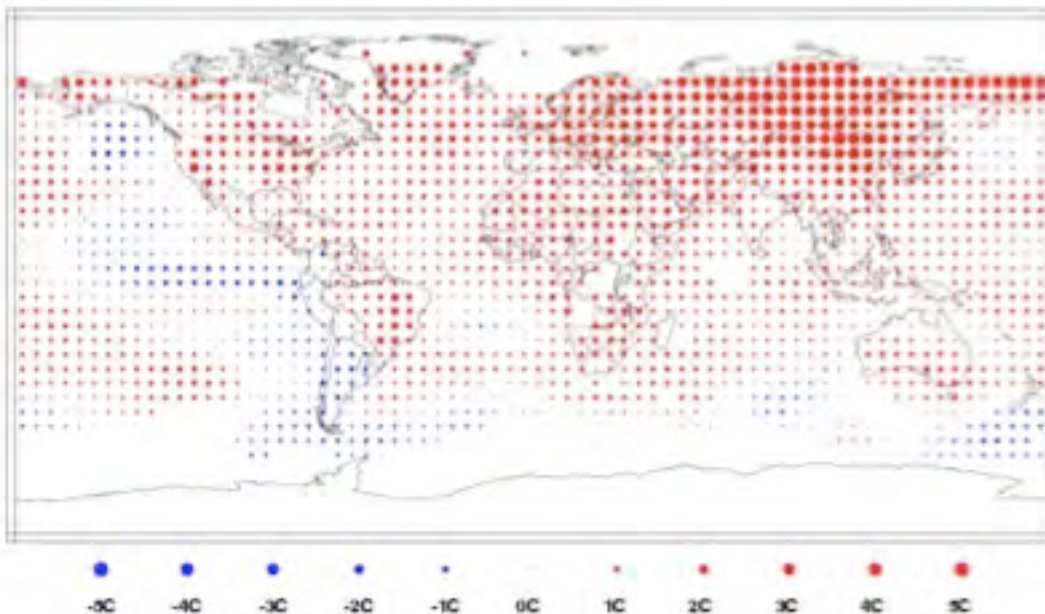
Thick atmosphere
containing 96% of CO_2
Average temperature : $+420^\circ\text{C}$



CC-BY
ArcticNet

Source: Calvin J. Hamilton, Views of the solar system, www.planetscapes.com; Bill Anet, The nine planets, a multimedia tour of the solar system, www.seds.org/bill/nineplanets.html

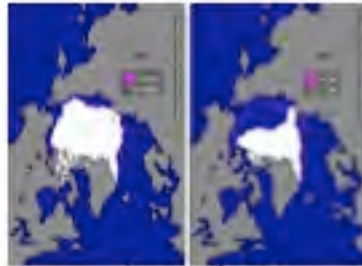
Warming during the Industrial Era



Positive Feedbacks



temperature > beetles



ice > albedo



windstorm-downed trees > carbon



wildfire > carbon



erosion > carbon



permafrost thaw > carbon



**Net effect is
accelerated warming**

FINGERPRINTS ... Floods

Photos: Cedar Rapids "500-year" flood (June 2008)



Major floods events per decade, 1950-2000



Source: Millennium Ecosystem Assessment

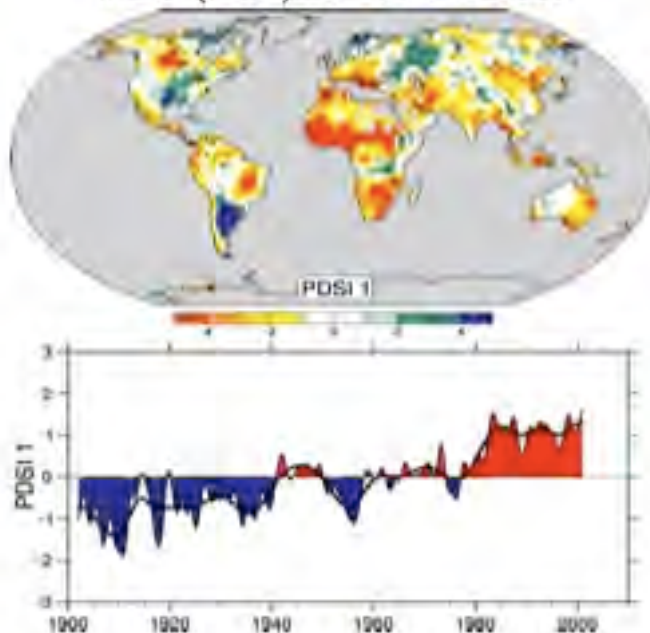
There's a consistent 50-year upward trend in every region except Oceania.

FINGERPRINTS ... Drought

Change in Palmer Drought Severity Index (PDSI) for 1900 to 2002

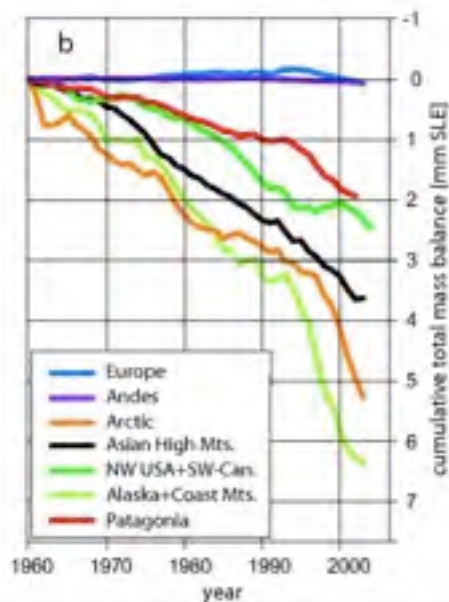
Proportion of land area in extreme drought predicted to increase from 1-3% to 30% by 2090s.

Drought duration expected to increase 6-fold.



Source: IPCC 4th Assessment (2007)

FINGERPRINTS ... Glaciers

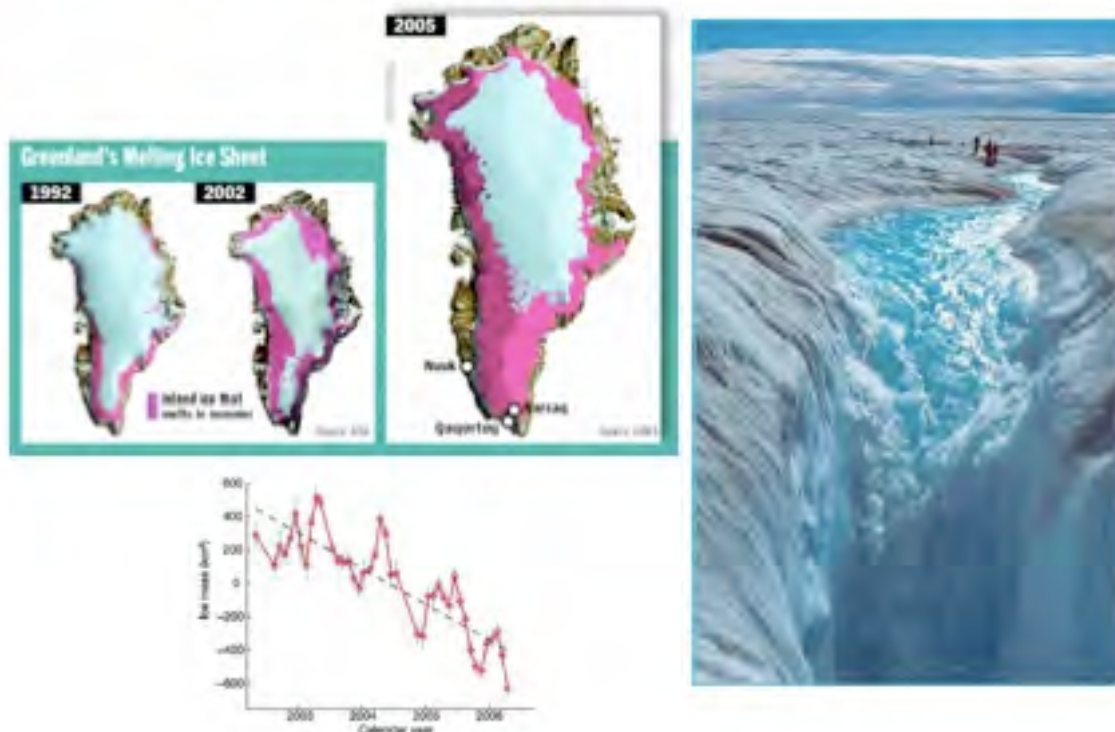


Loss Accelerating since early 1990s



Source: IPCC 4th Assessment (2007)

FINGERPRINTS... Greenland



Sea-level Rise = 10 feet = half of Greenland melting



(Source:
Harvard University)

Sea-level Rise = 10 feet = half of Greenland melting



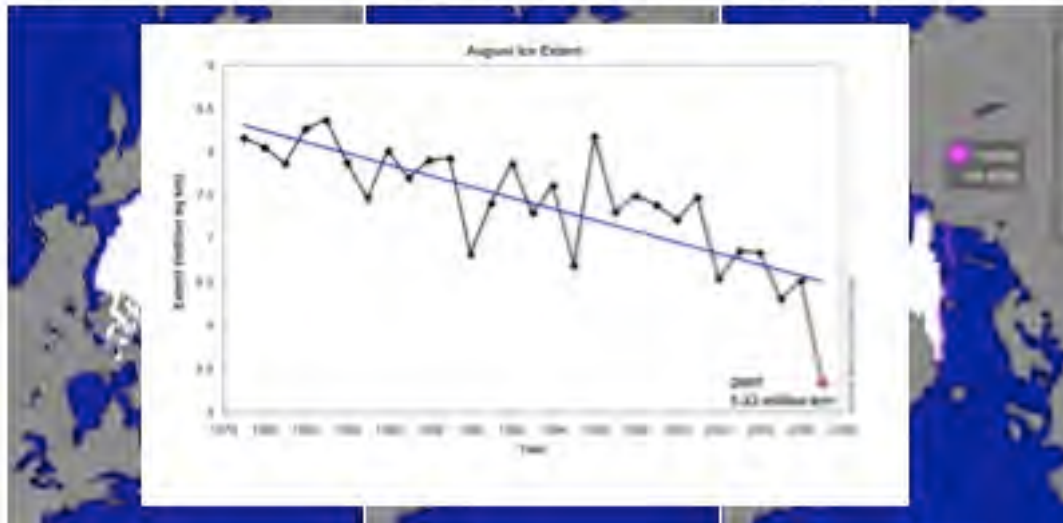
(Source:
Harvard University)

FINGERPRINTS ... Polar ice

Median 1979-2000

September 21, 2005

September 16, 2007



6.74 M square km

5.32 M square km

4.13 M square km

The difference between median minimum arctic ice coverage and the extent on Sept. 16, 2007 is equal to the area of Alaska and Texas combined (2.61 M sq. km or 1 M sq. miles). http://nsidc.org/news/press/2007_seaiceminimum/20070810_index.html

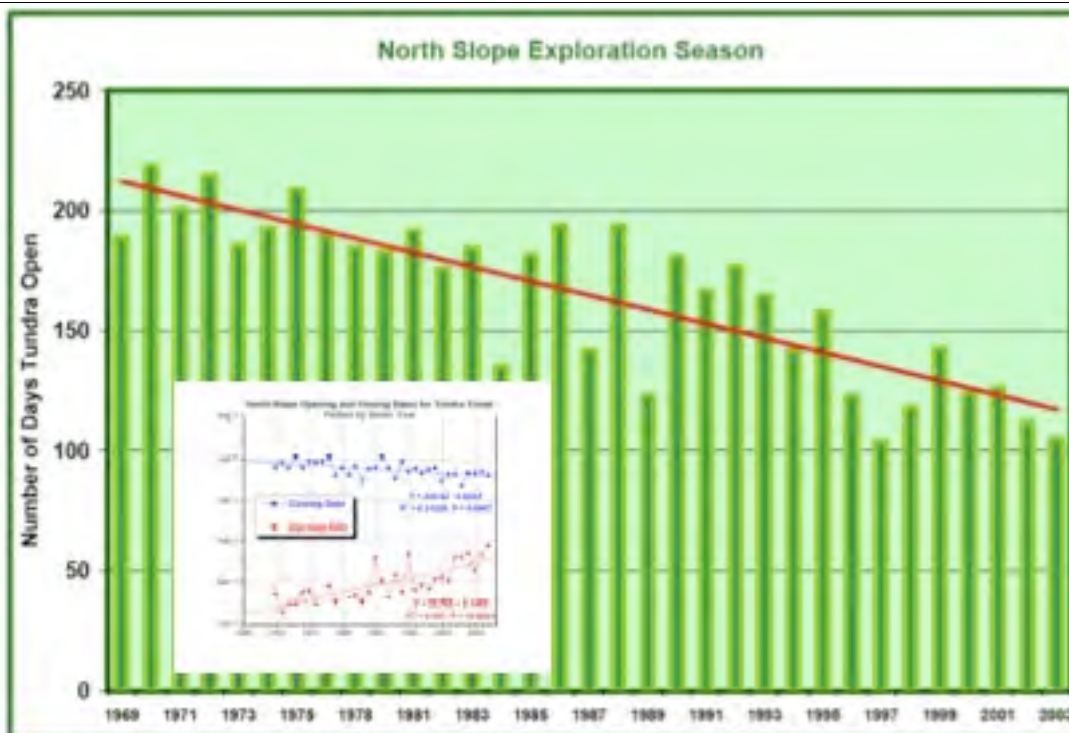
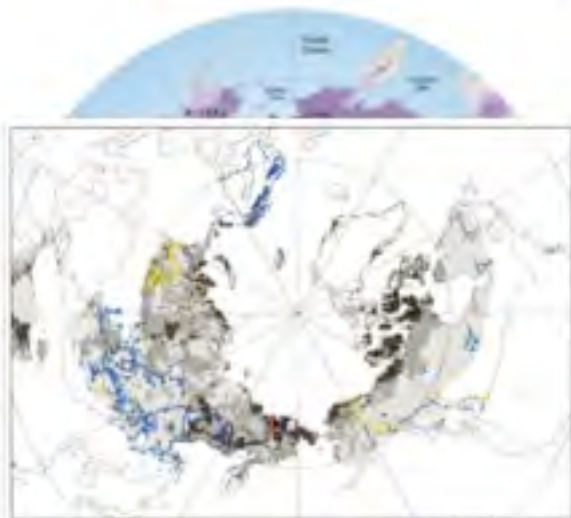


Figure 1- Length of the winter tundra travel season, as determined by the DNR Division of Lands, Northern Regional Office

Permafrost Disintegration

Settlement of *several meters* is possible



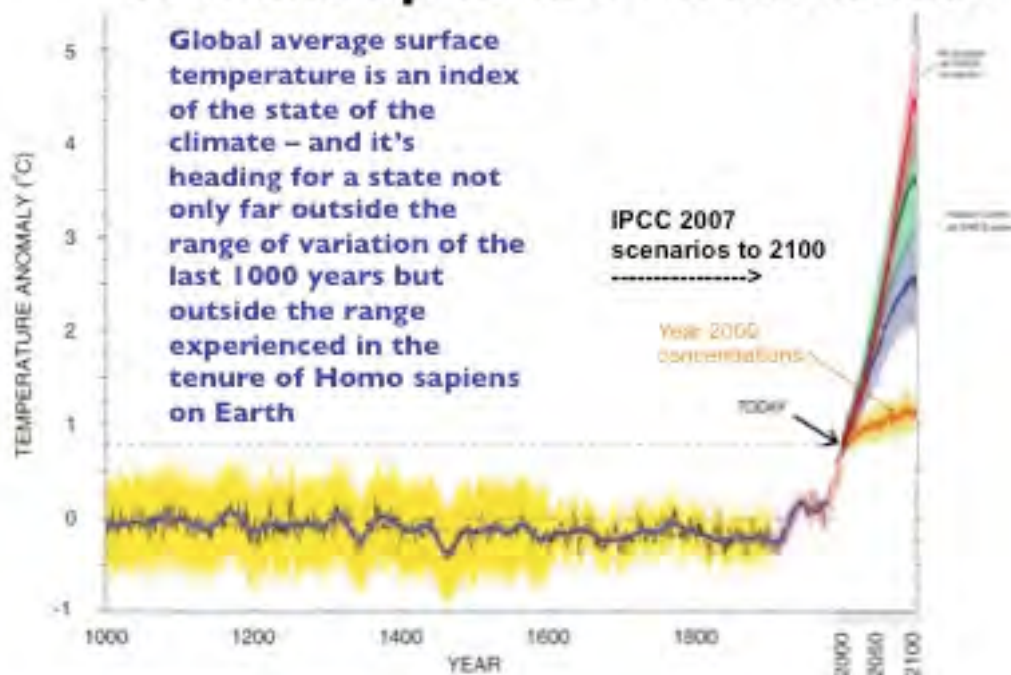
Stable Low risk Moderate risk High risk



Electric Transmission, Pipelines,
Bilbino Nuclear Station

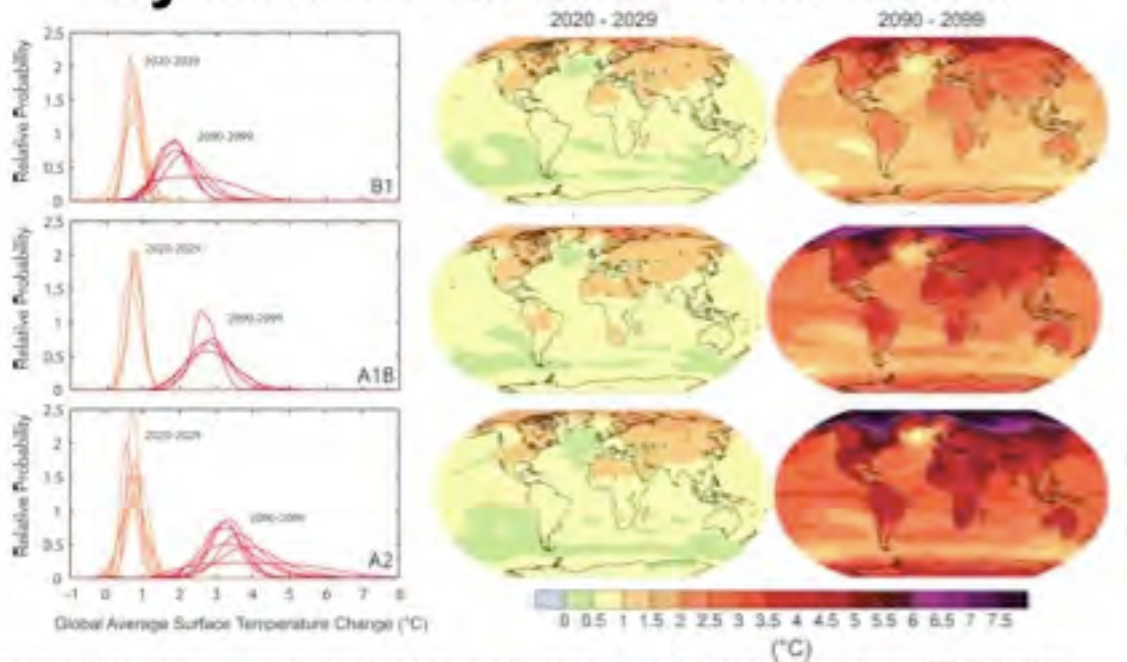
Frederick E. Nelson, Oleg A. Anisimov, Nikolay I. Shiklomanov, *Natura* 410, 889-890(19 April 2001)

If we don't alter course, we'll end up where we're headed



Source: John Holdren, after IPCC (2007)

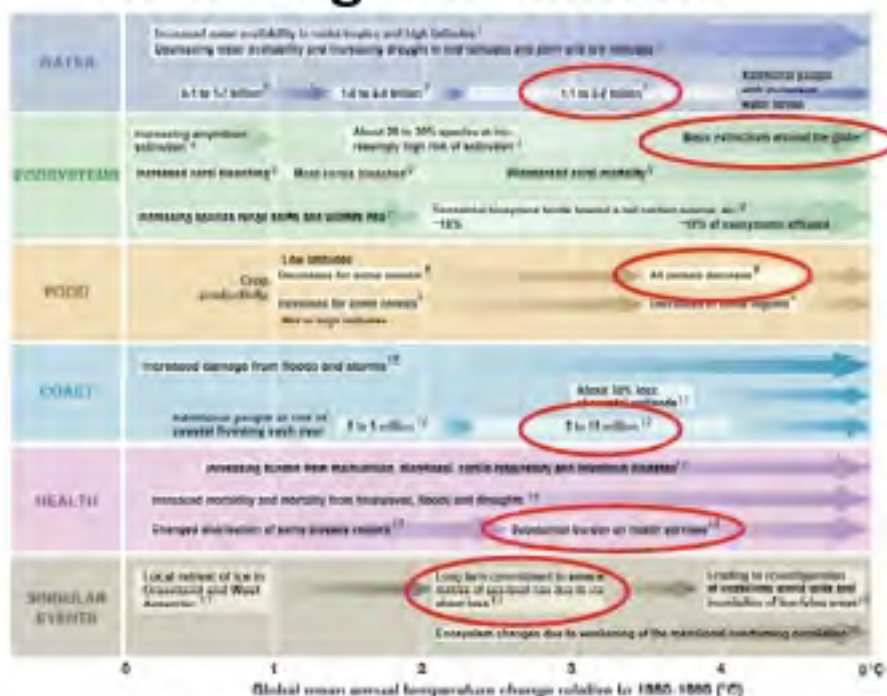
Range of Predicted Warming: By Scenario and Timeframe



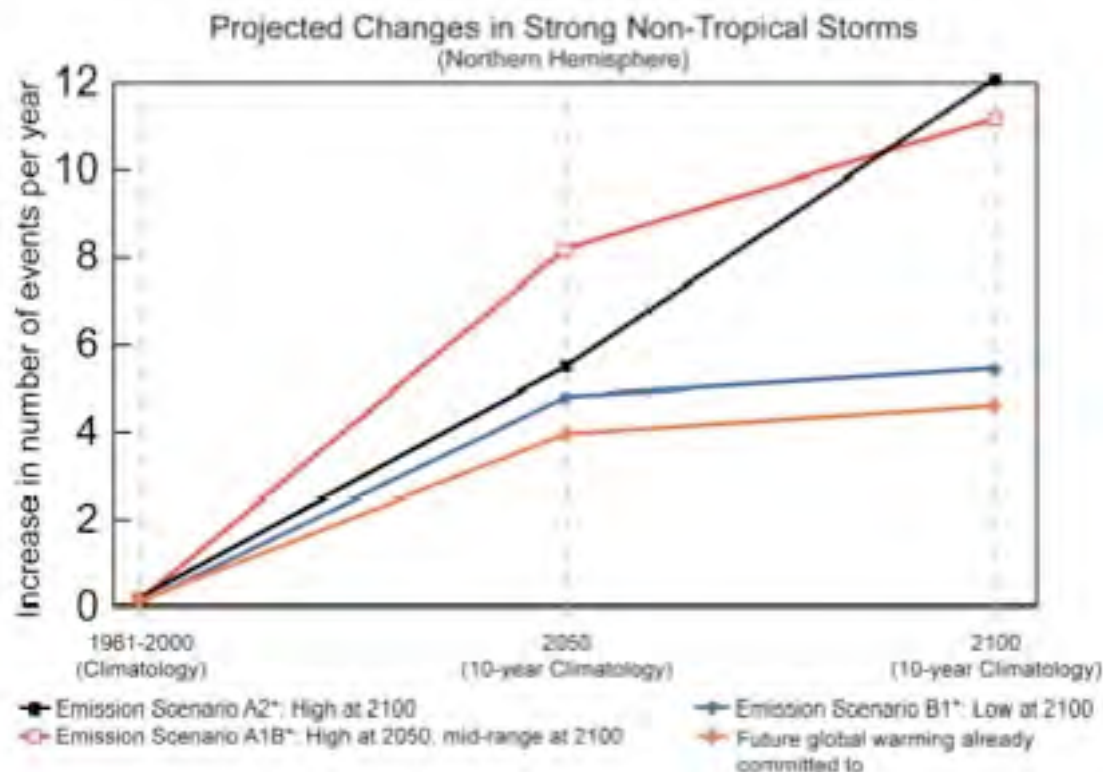
Climate on the Move: *Changing Summers in the Midwest*



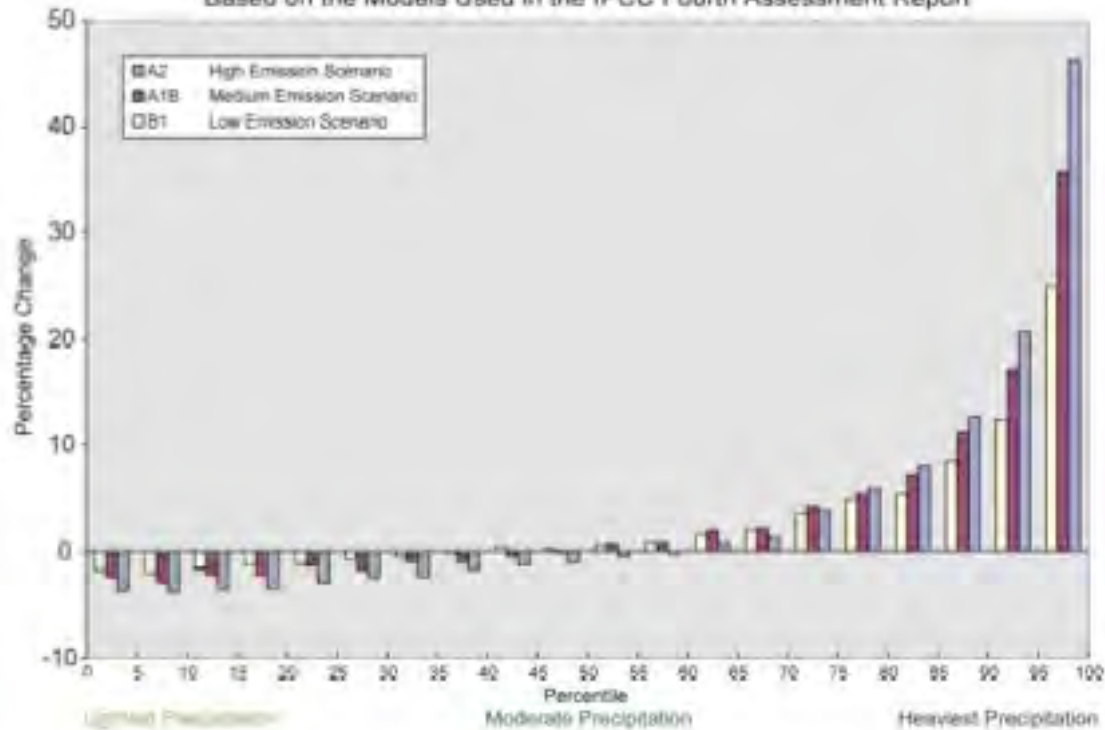
Examples of global impacts projected for changes in climate



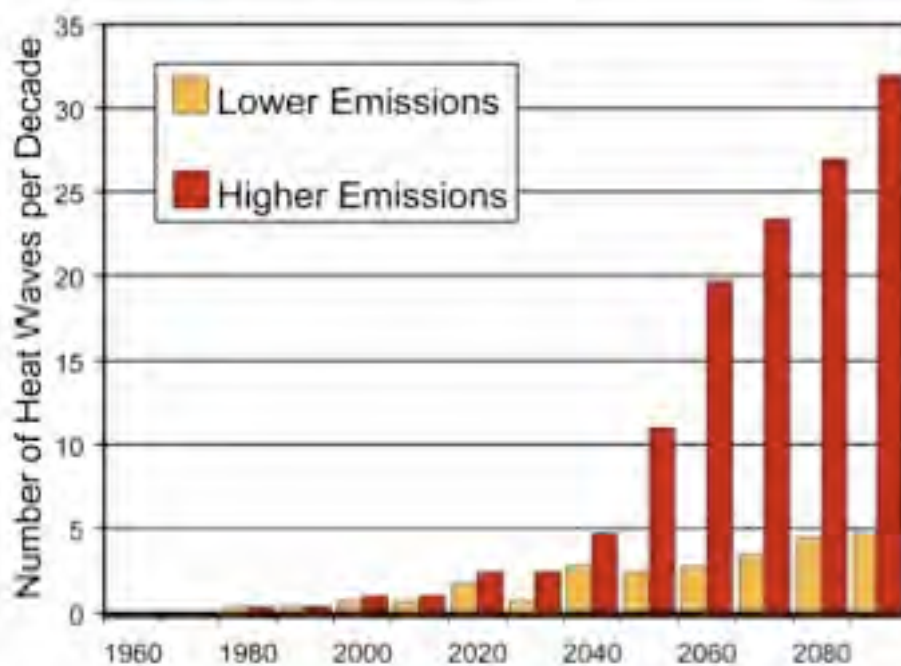
Source: Intergovernmental Panel on Climate Change, AR4-WG2, Technical Summary (2007)



Projected Change in Precipitation Intensity
Based on the Models Used in the IPCC Fourth Assessment Report



Changes in Severe US Heatwaves



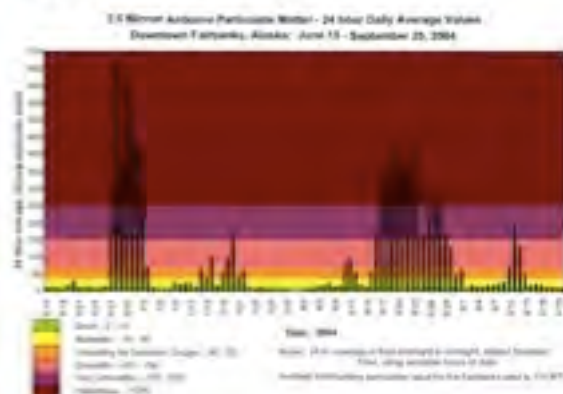
Direction and magnitude of change of selected health impacts

	Negative impact	Positive impact
Very high confidence		
Malaria: contraction and expansion, changes in transmission season	←	→
High confidence		
Increase in malnutrition	←	
Increase in the number of people suffering from deaths, disease and injuries from extreme weather events	←	
Increase in the frequency of cardio-respiratory diseases from changes in air quality	←	
Change in the range of infectious disease vectors	←	→
Reduction of cold-related deaths		→
Medium confidence		
Increase in the burden of diarrhoeal diseases	←	

Source: Intergovernmental Panel on Climate Change, AR4-WG2, Technical Summary (2007)

Human Health Impacts

- Injury from disasters
- Respiratory disease
 - Pollen
 - Mold
 - Smoke and particulates
 - Urban air pollution
- Heat stress
- Food poisoning
- Water quality
- Environmental contamination
- Infectious diseases



Fairbanks June 28, 2004



July 6, 2004

WHO estimates 150,000 human mortalities each year due to current climate change

Abrupt Climate Change



Anticipated Insurance Losses



- Property damage
- Marine mishaps
- Mold/moisture
- Forest products
- Agricultural losses
- Fisheries
- Business interruption
- Roadway

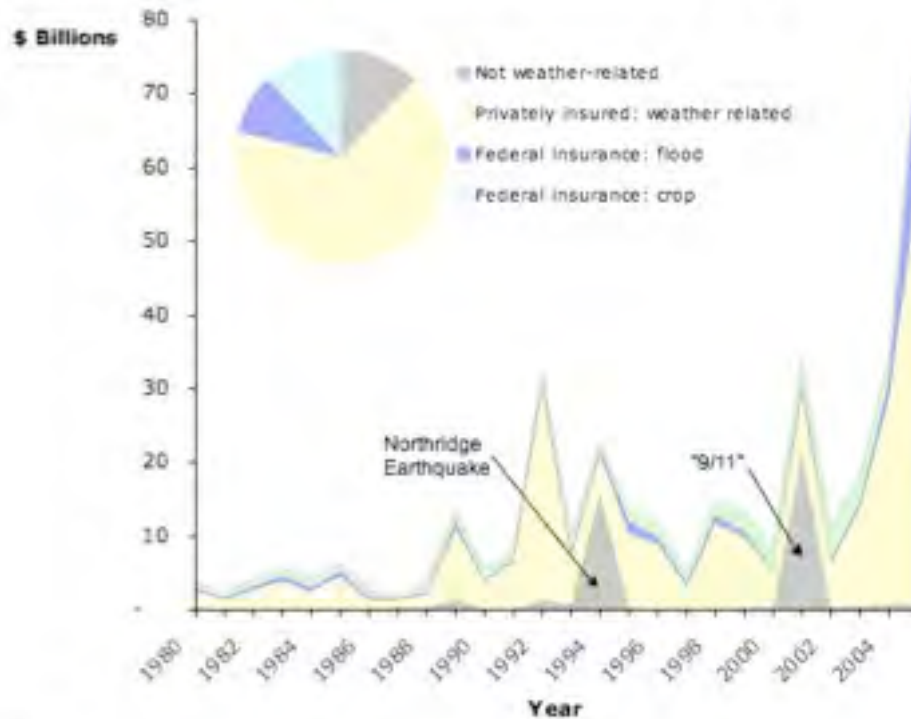


- Injury
- Infectious diseases
- Heat stress
- Respiratory
- Pollution release
- Food poisoning
- Mental health
- Nutrition/water



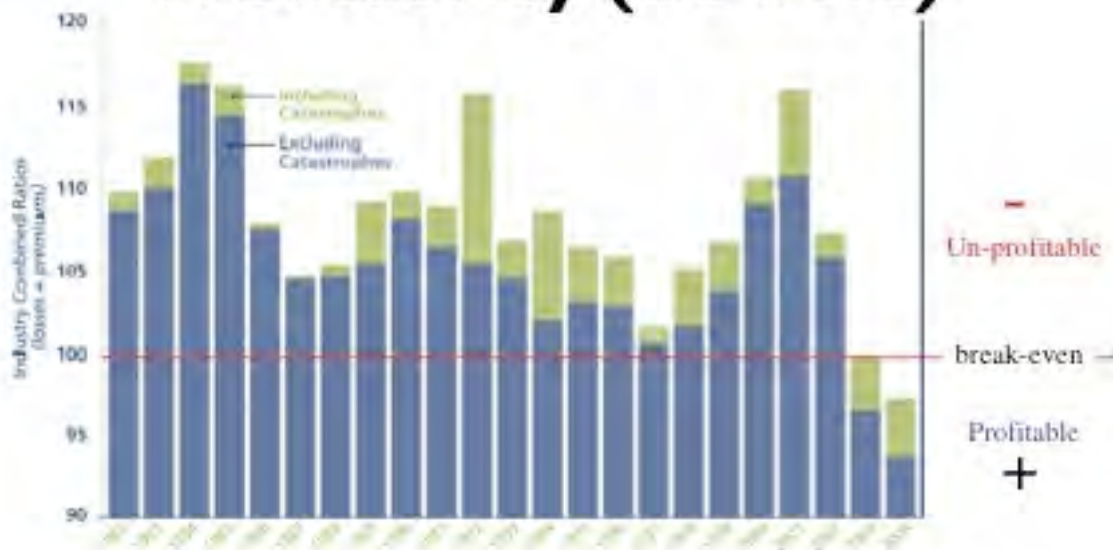
- Products
- Negligence
- Nuisance
- Fiduciary
- Tort / BI
- Environmental
- Roadway liability insurance

US Catastrophe Losses: 1980 to 2005



Source: U.S. Government Accountability Office, 2007

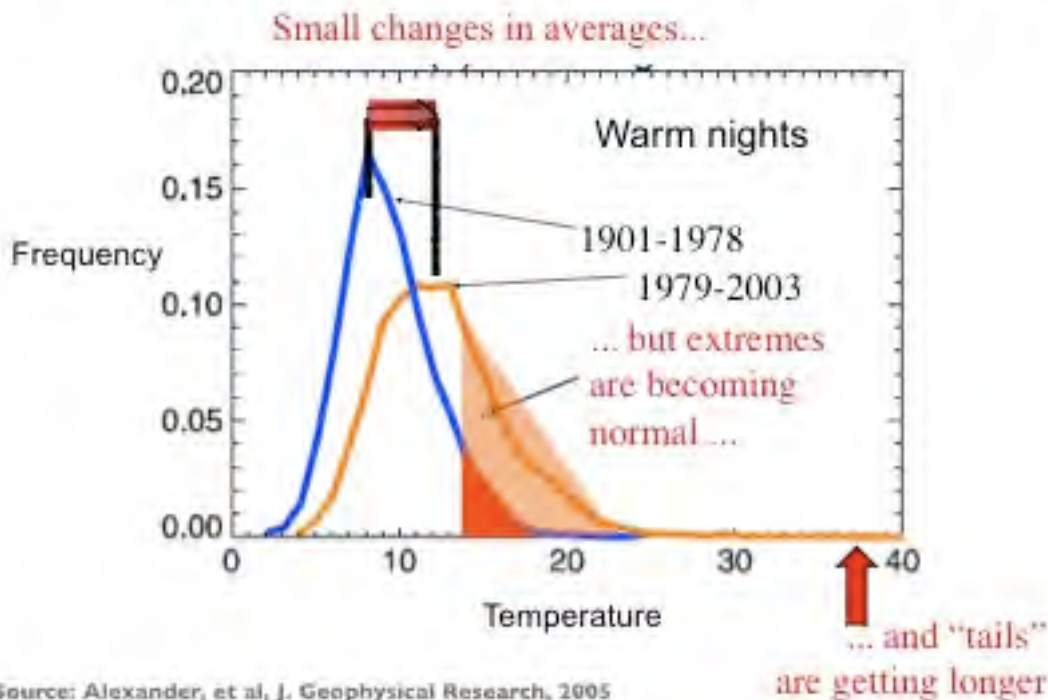
CATs Profoundly Influence Profitability (US P&C)



Note: CATs having increased influence on overall profitability

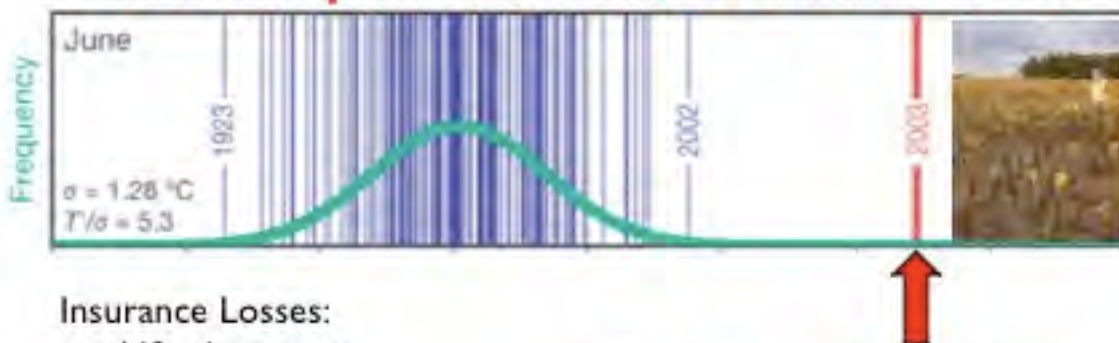
Source: A.M. Best & Co.

Extremes Shift *More* Than Avg's.



Rare Extremes Cause Most of the Damages & Insured Losses

The European heat wave of Summer 2003



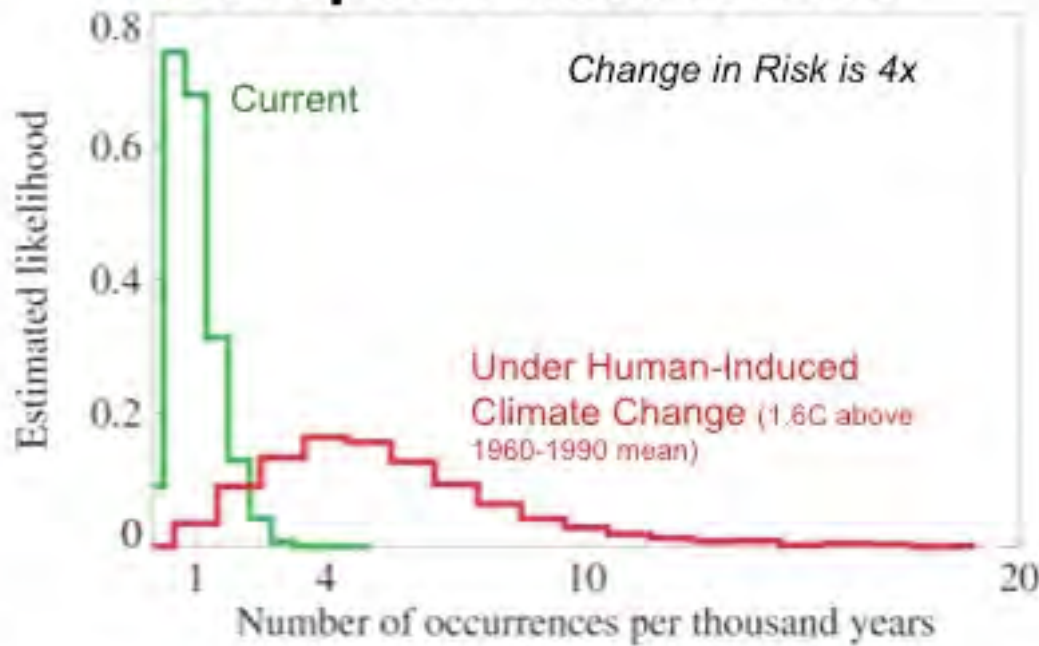
Insurance Losses:

- wildfire/property
- crop
- power sales
- health/mortality

Event was "six-sigma" outside of norm.
16°F above average in France and Germany.
was a 1-in-10,000 event to 1-in-46,000 event

Source: Schar et al, Nature, v. 427, 2004.

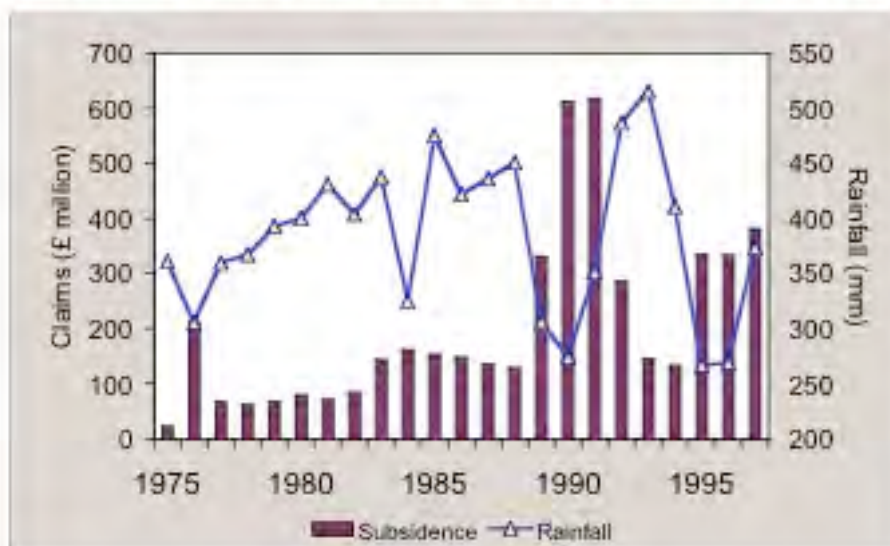
Change in Frequency of Extreme European Heat Waves



Source: IPCC AR4, Corresponds to 1.5C change in mean

Small-scale Losses: Soil Subsidence

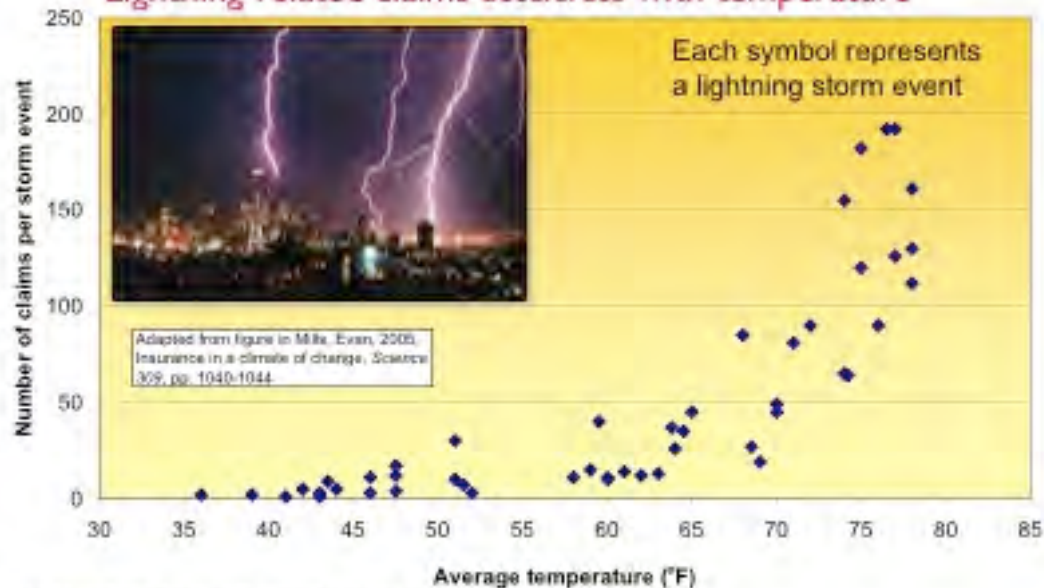
Subsidence claims increase with drought: UK 1975-1999



Source: Association of British Insurers

Small-scale Losses: Lightning

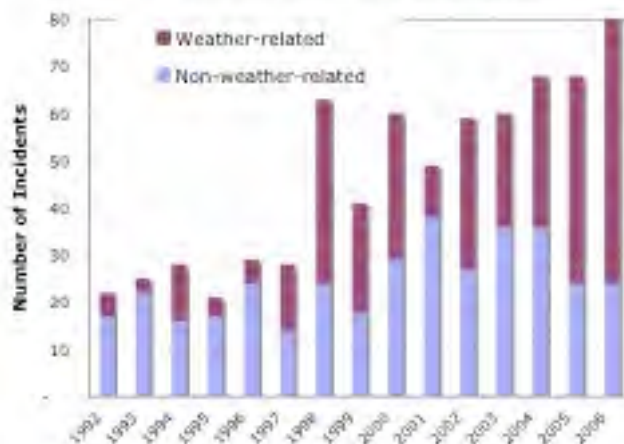
Lightning-related claims *accelerate* with temperature



Source: Hartford Steam Boiler Inspection and Insurance Co.

Small-scale Losses: Power Outages

US Electric Grid Disturbances (1992-2006)
Weather- and Non-Weather-Related
110 million customers effected



Source: US Department of Energy

Power outages were a factor in slowness of draining New Orleans following Hurricane Katrina.



U.S. economy total cost: ~\$80B/ year

Average cost to utilities \$49 million/ storm; max. \$890 million (EEI)

RMS Scenario:
\$2.7B for NY

Small-scale Losses: Floating Ice



Water Quality: California



Correlated Impacts

Drought stress



Wildfire



Mudslide



Insect Infestation

Emerging Risk: Liability



Oil spill following Hurricane Katrina - LIFE



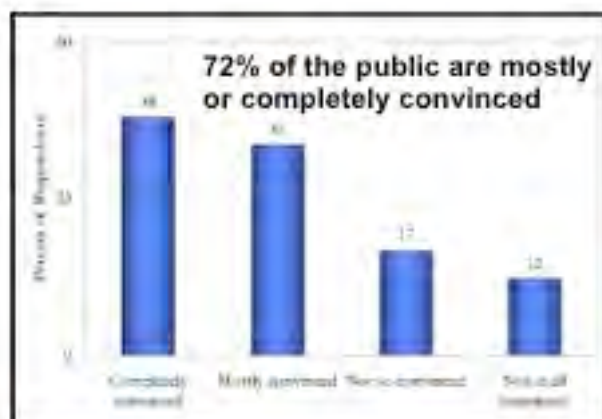
> 30 climate law suits pending as of 1/2008

“We’d be out of our minds if we wrote weather insurance on the opinion global warming would have no effect at all.”

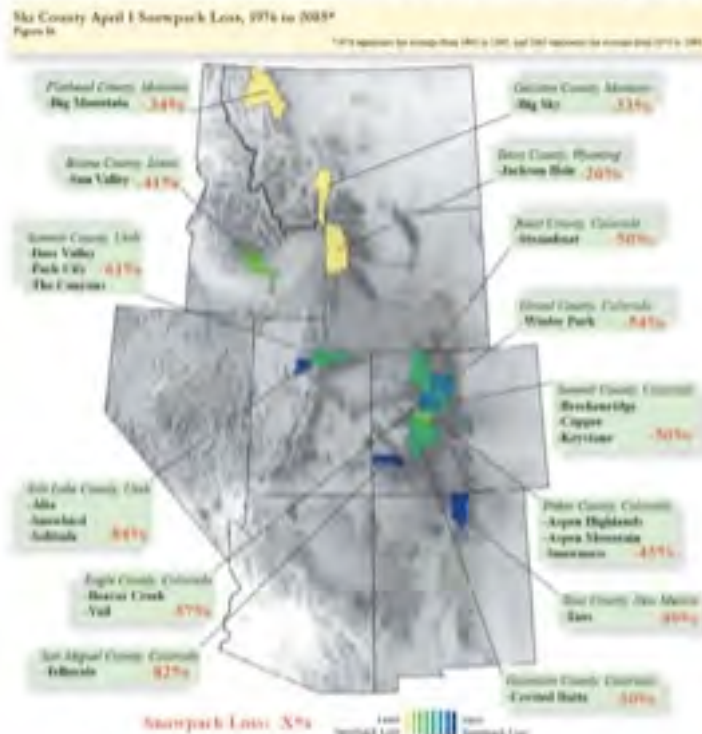
Warren Buffett
2006 annual Shareholder meeting

Temperature of Public Opinion

- In 2007, twice as many people believed climate change is here than did in 2004
- But public opinion lags scientific certainty by a significant margin



Insurance Customers Impacted



Top Concerns: Survey of 139 Insurance Executives in 21 Countries

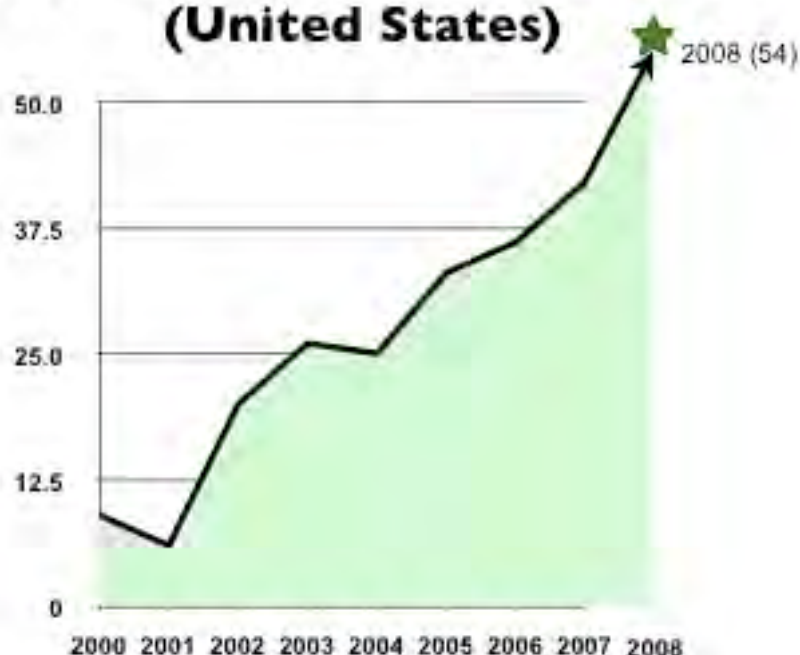
1 Too much regulation	12 Managing technology	23 Corporate governance
2 Natural catastrophes	13 Equity markets	24 Demographic trends
3 Management quality	14 Risk-management techniques	25 Contract wording
4 Climate change	15 Back office	26 Capital availability
5 Managing the cycle	16 Political shocks and pressures	27 Security of reinsurance
6 Distribution channels	17 Pricing new risks	28 Availability of reinsurance
7 Long-tail liabilities	18 Terrorism	29 Business continuation
8 Actuarial assumptions	19 Complex instruments	30 Fraud
9 Longevity assumptions	20 Retail-sales practices	31 Merger mania
10 New types of competitors	21 Pollution	32 Too little regulation
11 Investment performance	22 Interest rates	23 Asbestos

Source: Centre for the Study of Financial Information and PricewaterhouseCoopers survey; 2007

Climate Change is #1 Risk, According to >70 Insurance Industry Analysts

1. *Climate change*
2. Demographic shifts in core markets
3. Catastrophic events
4. Emerging markets
5. Regulatory intervention
6. Channel distribution
7. Integration of technology with operations & strategy
8. Securities markets
9. Legal risk
10. Geopolitical or macro-economic shocks

Shareholder Climate Resolutions (United States)



Sources: 2000-2006 Data: ISS 2007; 2007 Data (as of 02.06.07); Ceres 2007 & 2008

Carbon Disclosure Project

Annual questionnaire on business risks and opportunities presented by climate change and greenhouse-gas emissions data from the world's largest companies

Run by Institutional Investors:
\$57 Trillion under management
(major holdings in insurance)

Started in 2000, the CDP now has 385 signatory investors, including Merrill Lynch, Goldman Sachs, Morgan Stanley, AIG Investments, Barclays and HSBC are among current signatories.

Currently polling 3800 companies

Source: <http://www.cdproject.net/>

Insurance Regulators Recognize the Problem

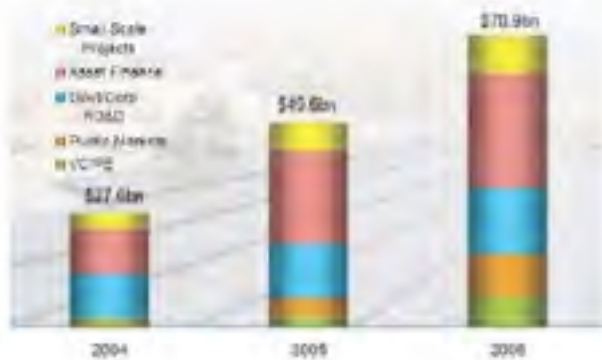
“Global warming is upon us, and it poses unprecedented new threats to the insurance industry and vast segments of society that rely on insurance for peace of mind and financial security.”

Michael Kreidler
Washington Insurance Commissioner

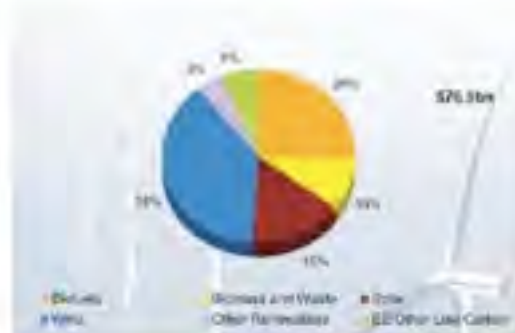
Tim Wagner (deceased)
Nebraska Insurance Commissioner

Global Direct Investment in Sustainable Energy: 2004-2006

Investment by Type



Investment by Technology



* Sylvie Lemmet, Division of Technology, Industry and Economics, UNEP.
 "Back to the Future: Investing in Clean Energy, Climate Action, p. 138 (2007)

Risks Are Also Associated with Responses to Climate Change



- Green buildings
- Nuclear power
- Renewable energy
- Hydrogen
- Carbon capture & storage
- Carbon offsets/trading
- Geo-engineering
- Adaptation projects

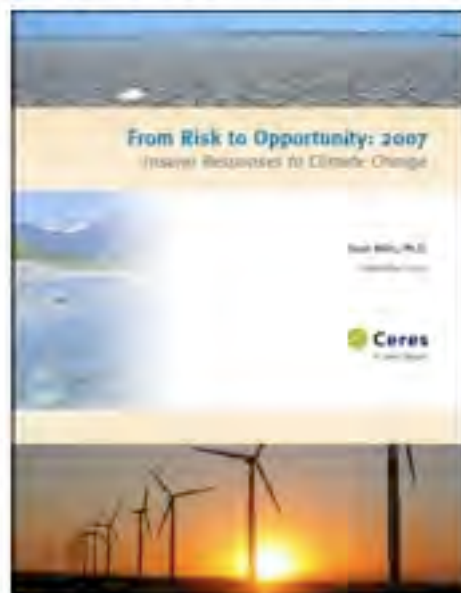
*Comparative risk assessments
needed*

Insurance Paradigm Shift



From Risk ... to Opportunity

30 strategies; 422 examples
~190 parties; 26 countries ... and counting



New Insurer Business Units



"Office of Environment & Climate Change";
"Advanced Energy Solutions"



"Climate Solutions"



"Agri-Fuels Group"



"Green Energy Team"



"Core Business Climate Change Project"



"Climate Change Advisory Council"

Understanding the Problem: CAT+Climate Modeling

– Trade Associations

- III [CAT Modeling Forum]

– Insurers

- AIG
- Travelers
- Lloyds

– Reinsurers

- Swiss Re
- Munich Re

– Brokers

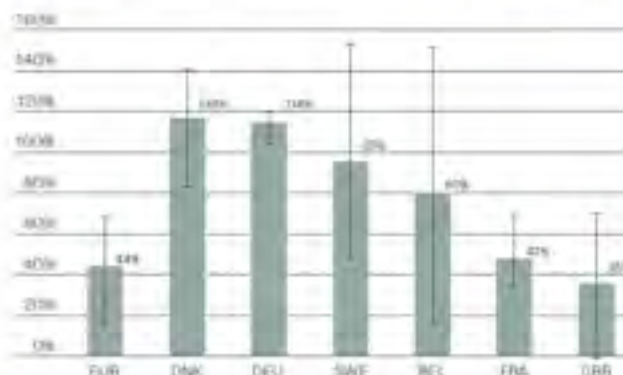
- Willis

– CAT Modelers

- RMS
- AIR

Expected increase in annual loss in Europe

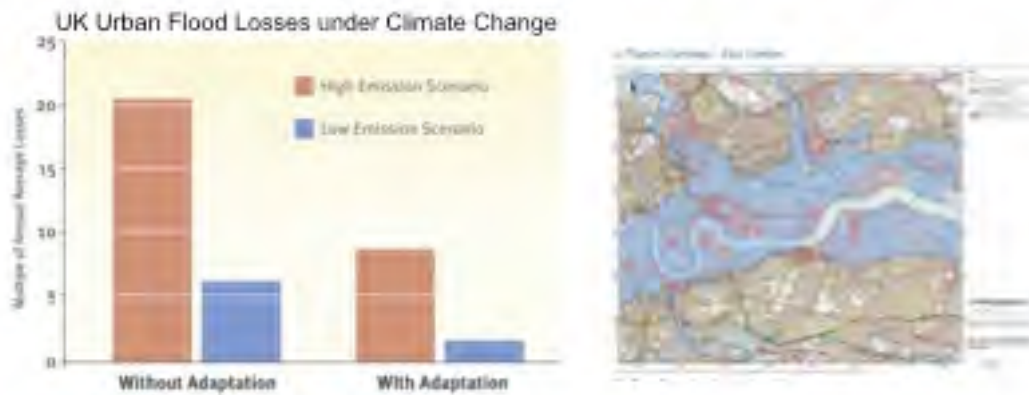
Swiss Re



Expected increase in annual expected loss for Europe (EUR), Denmark (DNK), Germany (DEU), Sweden (SWE), Belgium (BEL), France (FRA) and the UK (GBR) over the period 1870 to 2100 (in %). The broad bars represent the mean value of the climate models, and the error bars show the spread of the results from all models.

Improved Land-use Planning

Association of British Insurers - modeling studies



CEA Report: 13 of 18 countries have >10% penetration of commercial flood insurance

Source: Modeling results for London. Adapted from Association of British Insurers, "Financial Risks of Climate Change" c: 2080s

Improved Building Practices

- **FM Global** - hurricane-resistant building guidelines
- **Institute for Business and Home Safety's** "Fortified... for safer living" stds.
 - Wind-resistant rigid foam panel walls and multi-glazed windows
 - Ice-dam resistant
 - Mold resistant
 - Water-resistant insulation



BASF Home - Patterson NJ

***Some insurers giving premium credits for compliant homes**

Promoting Loss Prevention: Wetlands Restoration

- **Tokio Marine Nichido:** has reforested 12,200 acres of mangroves in Indonesia, Thailand, Philippines, Myanmar and Vietnam



Company states that 2005 Tsunami did less damage in these areas

Source: <http://www.tokiomarine-nichido.co.jp/english/index.html>

Paperless Insurance

- **Progressive:** Tree Planting



Co-benefits


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Allstate Products

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- Drive Green
- Live Green
- Auto Insurance
- Motorcycle Insurance
- Boat Insurance
- Home Insurance
- Boaters / Cruise Insurance
- Off-Road Vehicle / Snowmobile Insurance
- Boaters Insurance
- Cover Insurance Products
- Financial Products
- Allstate Bank
- Allstate Community Partners



Drive Green

Safe Driving Is Green Driving.

If you're curious about Allstate auto insurance, you can get a ballpark car insurance estimate or get the inside scoop on car insurance with [Allstate's Drive Green](#). When you buy car insurance and choose Allstate Green™, you can save a little green and help the environment.

You can also start a green driving habit. Many activities we do as safe drivers can reduce emissions and thereby help the environment.

- **Drive the speed limit.** It saves gas, reduces emissions, and may also reduce the risk of accidents.
- **Tune up your car.** Regular auto maintenance, including tune ups and filter changes, allows cars to run cleaner and more efficiently and can also reduce the risk of breakdowns.
- **Drive better.** Most safe driving techniques, such as accelerating slowly and smoothly (and avoiding rapid starts and stops), also improve gas mileage, which reduces emissions.
- **Check your tires.** When you keep your tires properly inflated, you can save 300-700 pounds of carbon dioxide per year while also helping to keep you safer on the road.
- **Choose a gas sipper.** The next time you buy a car, choose a super efficient model (31+ MPG). Plus, if your household has two cars, use the car with the highest MPG for commuting and running errands around town (of course, combine trips whenever possible).

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See how Your Choice Auto compares to other insurance company policies.
→ Compare Now

Are You a Safe Driver?
Earn the rewards you deserve.
→ More

Aligning Terms & Conditions with Risk-reducing Behavior

- Insurance discounts of up to 40% for low mileage:

- Aioi
- Axa
- GMAC
- Hollard
- Milemeter
- Norwich Union
- Polis Direct
- Progressive
- Rheinland
- Sampo
- Tokio Marine Nichido
- Unigard
- Versicherungen

250,000 policies
in Europe as of
2007;
\$700M revenues
projected by
2010



General Motors Acceptance Corporation
(GMAC) PAYD discount schedule.

Miles/year	Discount offered
1 – 2,500 miles	40%
2,501 – 5,000	33%
5,001 – 7,500	28%
7,501 – 10,000	20%
10,001 – 12,500	11%
12,501 – 15,000	5%
15,001 – 99,999	0%

Some use GPS → stolen-vehicle
recovery; avoids reporting fraud

Aligning Terms & Conditions with Risk-reducing Behavior

- **TrygVesta:**

- Free one-month bus pass while damaged car is being repaired
- Repair claims will not be paid for cars built before 1989 and with high emissions



Hybrid Discounts

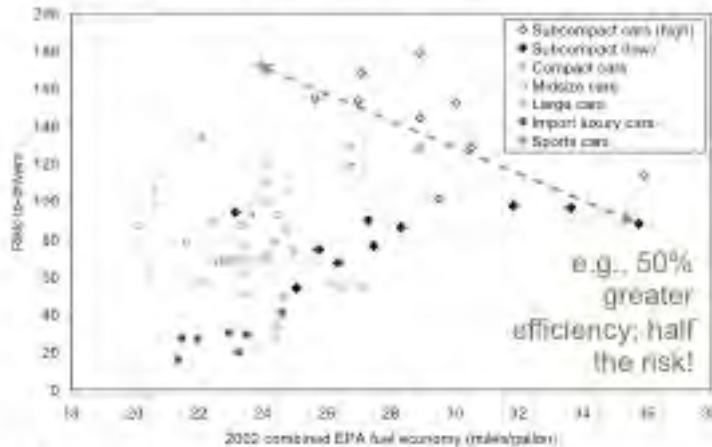
5-15% premium discounts to hybrid drivers

- **AXA**
- **Berkshire/GEICO**
- **Cooperative**
- **Desjardins General**
- **Farmers**
- **Hybernica**
- **SECURA**
- **St. Paul-Travelers**



Fuel Economy & Risk

All models with at least 0.5 mpg/yr, and import luxury and sports cars



- Risk (driver fatalities/mile) of compact cars is 1/2 to 1/3 that of trucks, and lower than SUVs
- Crossover SUVs have 1/2 the risk of standard SUVs and are 17% more fuel-efficient

Source: Tom Wenzel and Marc Ross, Lawrence Berkeley National Laboratory

Carbon Offsets

- **Allianz, AXA, Cooperative,**
- **Insurance Australia Group:**
Car and travel insurance bundled with offsets

The screenshot shows the CIS Cooperative Insurance website. The main navigation menu includes links for Homepage, Motor & Home, ecoinsurance, Saving & Investing, Pensions, Life & Health, Banking, Mortgages, About Us, Ethics in Action, and Content Hub. The 'ecoinsurance' section is highlighted, featuring a car illustration and the text 'Offset 20% of your car's CO₂ emissions*'. A sidebar on the right displays a 'CO₂-neutral and efficient 2008' badge from Allianz.

Changing Risk Profiles



The world is changing. We're changing how we insure it.

Real estate coverages are changing the world. That's why we created our *Integrate to Green™* coverage and *Rebuild to Green™* insurance for commercial sites. These breakthrough coverages set a new standard and are just two of the 15 products we've developed since 2000 and '10 in 2007 alone. Because what a world changes like fast, you need an insurance company who can change right along with it.

Market Leadership Proven by the Spirit of Innovation

Lexington Insurance Company
an AIG Company

Innovative Products

- **Fireman's Fund:** first-ever U.S. commercial "Green-Buildings Insurance"
 - 5% premium credits for existing green features
 - Rebuild to LEED after loss
 - Commissioning
 - ~500 policies sold in first year (2007)
 - Premiums > \$35M in '07; Doubling quarterly
- **AIG (Lexington):** Commercial, and first-ever U.S. residential "Green-Buildings" insurance
 - Rebuilding to LEED (or next-higher LEED level) after loss; LEED design and registration fees
 - Rewards use of EnergyStar-labeled equipment
 - Low-emission materials; IAQ testing
 - Solar "revenue loss" if downtime
- **AIG Environmental:** Sustain-a-Build environmental liability premium credit for green commercial buildings



Innovative Products for Energy Performance

- **Energy Production:**
*Munich Re -
geothermal, Sampo -
wind, others....*



- **Demand reduction:**
*AIG, Zurich and
others...*



Coverage for Under-served Market Segments

- **Lockton Risk Services:**
 - group liability coverage for home energy auditors, if members of RESNET



Source: <http://www.locktonaffinity.com/RESNET/>

Coverage for Under-served Market Segments

- **Swiss Re:** Drought/Crop micro-insurance for 400,000 farmers in Ethiopia, Ghana, Kenya, Malawi, Mali, Nigeria, Rwanda, Senegal, Tanzania and Uganda.



CLIMATE CHANGE REGULATIONS: WHAT'S YOUR UPSIDE?



When climate change enters a company's strategic planning, it can influence the way a company operates. It can lead to new products, services, and markets. It can also lead to new risks and opportunities. The world is changing, and companies need to be ready to embrace the upside.

FIND THE UPSIDE MARSH

Carbon Risk-Management Services: Project Risk

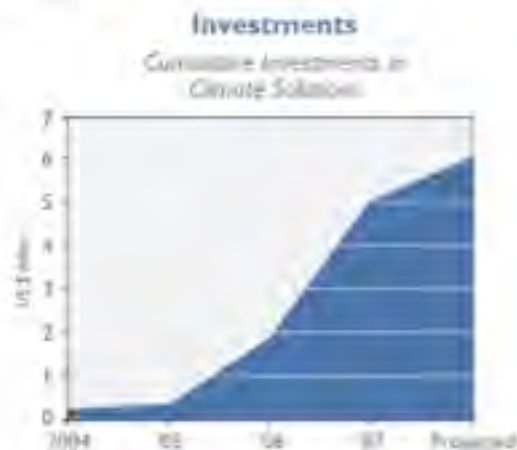
- **AIG, Marsh, Zurich, others:** offering carbon project risk-management consulting services; benchmarking, and insurance



Source: Marsh. 2004. "Responding to Climate Change Risks and Opportunities."

Direct Investment

- **Allianz:** \$15 million in the European Carbon Fund; plans to invest between \$400 and \$650 million in renewable energy
- **Gerling:** Sustainable Development Project operates a \$100 million venture capital fund
- **ING:** Green finance - \$1.16 billion
- **Sompo Japan:** \$100 million green fund
- **Swiss Re:** \$429 million "clean energy" venture fund; \$320 million in individual investments



2008 CERA study predicts \$7 trillion investment in "clean-energy technologies".

Direct Investment

- **AIG:** Atlantic Station
 - Brownfields redevelopment
 - 8 million square feet LEED registered



Among institutional investors, U.S. life insurers hold 22% of all commercial real estate

Financing Emissions-reduction Projects

- **AIG:** \$300 million lending facility for efficiency and clean energy
- **Fortis:**
 - Preferential lending rate for energy-efficiency upgrades +10% premium discount
 - \$106 million "Green Bank" loans
- **HSBC:** \$45 million for wind projects in India
- **Mitsui Sumitomo:** Loans for building-integrated solar systems
- **TrygVests:** \$10k financing for "climate-friendly home energy upgrades" after loss.



Funding Innovation

- **Progressive** \$10-million “X-Prize for Ultra-fuel-efficient cars



Building Awareness & Participating in Public Policy

- **American Insurance Association:** endorses public transportation; reduced speed limits; telecommuting based on win-win benefits to insurers
- **Insurance Institute for Highway Safety:** supports tightened CAFE standards
- **Firemen's Fund, IBHS, ICLR:** have endorsed energy-efficient building codes



Building Awareness & Participating in Public Policy

- ClimateWise announced Sept 17, 2007 -- 41 insurers and trade allies pledged to lead the way in:
 - "Analysing and reducing risks
 - Support climate awareness amongst our customers;
 - Incorporate climate change into our investment strategies
 - Inform and engage in public policy debate
 - And reduce the environmental impact of our businesses."



Additional signatories as of 11 June 2008: ACE, Amlin, ARK, Beazley, BIBA, Cairn, Chaucer, Diagonal Underwriting, Equiry Group, Hardy's Underwriting, Heritage, Hiscox, Legal & General, Marketform, Navigators, NFU Mutual, Prudential, QBE European Operations, RJ Kiln, RMS, Spectrum, Standard Life, UNUM, XL

Source: <http://www.climatewise.org.uk/>

USCAP
United States Climate Action Partnership

Welcome to the U.S. Climate Action Partnership (USCAP) Web Site

United States Climate Action Partnership (USCAP) is a group of business and leading environmental organizations that have come together to call on the federal government to quickly enact strong national legislation to require significant reductions of greenhouse gas emissions. USCAP has issued a landmark set of principles and recommendations to underscore the urgent need for a policy framework on climate change. [More...](#)

USCAP Members Include:

- Allianz Inc.
- AIG
- American International Group, Inc. (AIG)
- Barton Malow Corporation
- BP America Inc.
- Caterpillar Inc.
- Chrysler LLC
- Consolidated
- Dewey & Lemmon
- The Dow Chemical Company
- Duke Energy
- DuPont
- Environmental Defense
- Envision Corporation
- Ford Motor Company
- CTS Systems, Inc.
- General Electric
- General Motors Corp.
- Jalisco & Johnson
- Marsh, Inc.

Our Report: A Call for Action

Our solution based report, *Shared Call for Action* (PDF - 4.18 MB), is the result of a year-long collaboration. It lays out a blueprint for a mandatory economy-wide, market-driven approach to climate protection.

Our Six Principles

- Account for the global dimensions of climate change;
- Create incentives for technology innovation;
- Be environmentally effective;
- Create economic opportunity and advantage;
- Be fair to sectors disproportionately impacted; and
- Reward early action.

What's New

January 8, 2008 - Top Five Business Roundtable Meeting News Stories of 2007 - SocialFundus.com reports that USCAP was a key catalyst in the business community in pushing climate change to the forefront in 2007.

January 2, 2008 - Top Corporate Social Responsibility News of 2007 - CSRWire reports about USCAP's role as a leader in the business community on this issue.

December 10, 2007 - USCAP Leads US Climate Change Conference in Bali (788 943 KB)

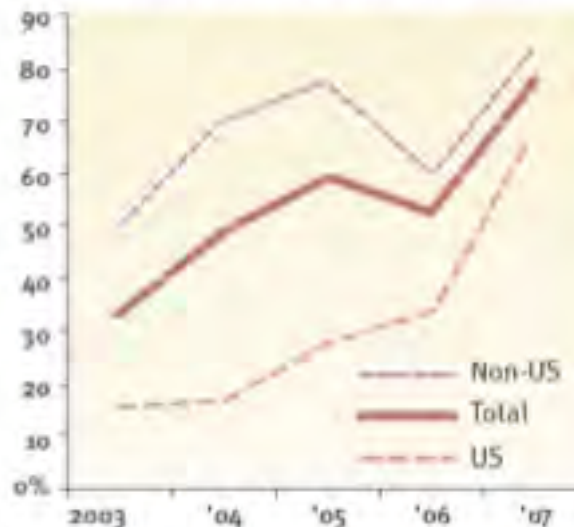
October 23, 2007 - U.S. Climate Action Partnership

Carbon Risk Disclosure

Carbon Disclosure Project: Annual Global Survey by Institutional Investors (\$57 Trillion under management)

113 Insurer responses: 2003-2006
- **AIG, Allstate, Aon, Chubb, Marsh, MBIA, Safeco, St. Paul Travelers, Unum Provident, Munich Re, others...**

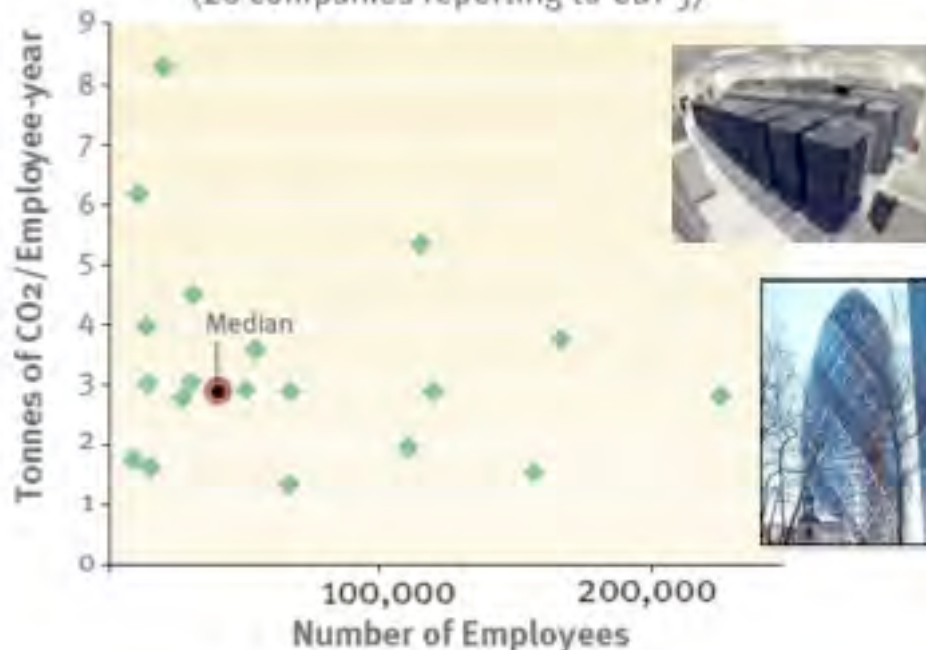
*Carbon Disclosure Project
Full Response Rates Over Time*



Source: <http://www.cdproject.net/>

Leading by Example

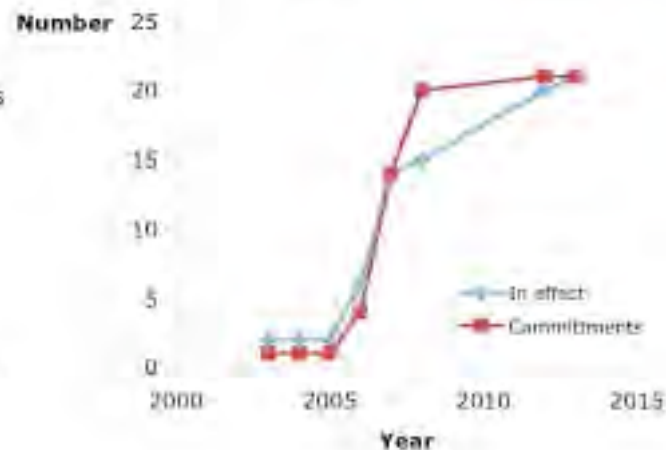
Insurer CO₂ Emissions Intensity
(20 companies reporting to CDP5)



Carbon-neutral Insurers

- AIG
- Aviva
- Bradford & Bingley
- Folksam
- Fortis
- FP Marine
- HSBC
- Independent Insurance Services
- ING
- Insurance Australia Group
- Munich Re
- Royal & Sun Alliance
- Rutherford
- Solar Group
- Specialized Broking Associates
- Storebrand
- Swiss Re
- Tokio Marine Nichido
- Xelektor

Carbon-Neutral Insurers, Reinsurers, Brokers



Untapped Opportunities

- Customer segments: agriculture, commercial auto, shipping, high-tech
- Upgrading after loss: shipping, industrial...
- Value-added services
 - benchmarking or carbon-footprint at renewal
 - climate risk modeling
 - Training: operations, loss control, QA
 - Board coaching (esp. re: liability)
 - Disclosure support
- Tailored products, services for green startups (bonds, letters of credit, etc.)

Roles for Actuaries

1. Help your management make sense of the science and its business implications
2. Understand the risk profiles of climate change responses
3. Push for inclusion of climate change in CAT modeling
4. Participate in the development of innovative products & services



“When the winds of change blow, some build walls ... others build windmills.”

- Chinese Proverb



<http://insurance.lbl.gov>
emills@lbl.gov