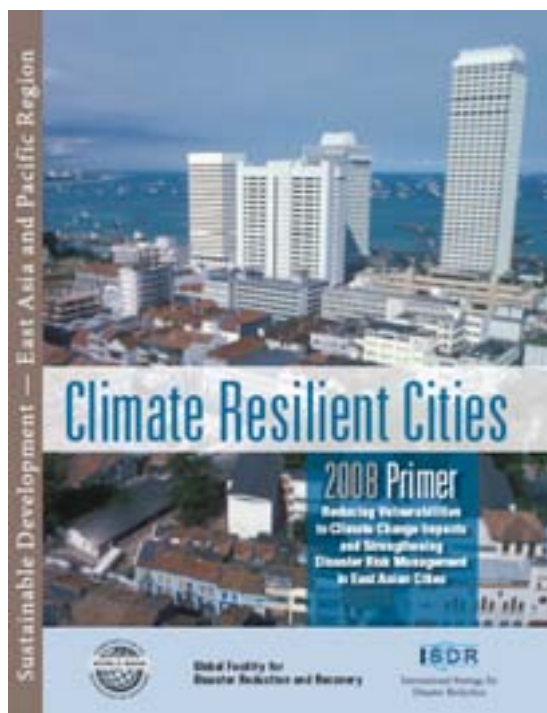


Green Cities Launch Event : A Primer on Climate Change Impacts and Disaster Risk Management in Urban Areas in East Asia



Session 5 – Guidance from the Primer: Understanding the Local Impact of Climate Change and Disasters

Climate Change Adaptation in the New
York Metropolitan Region

Dr. Radley Horton

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14 July 2008, Pattaya



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Outline

Session 5



- Background
- Vulnerability
- Climate Risk Framework
- Solutions
- Conclusions



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Background--New York City

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- Comprised of five boroughs, with a total population of over 8 million
- The larger metropolitan region is home to 20+ million, across multiple states
- Much of the region is low elevation, including:
 - Densely populated areas
 - Key commercial and industrial assets
 - Critical infrastructure
 - Important ecosystems



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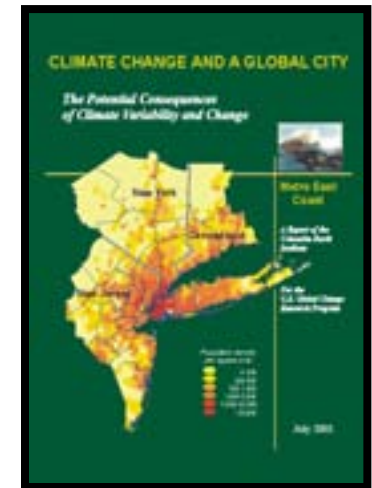


Background—Climate Change Studies

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- 2001: Metro East Coast Assessment released
- 2004: Agency-wide DEP Climate Change Task Force in collaboration with Columbia/GISS
- 2008: DEP Report released
- 2007-2008: MTA Storm, Sustainability Reports released
- 2007-2008: PlaNYC launched, infrastructure task force formed



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Climate Risk and Vulnerability

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- More frequent and intense flooding due to sea level rise
 - Infrastructure, commercial and residential assets
 - Operations
 - Water quality and ecosystem health
- Changes in temperature and precipitation extremes
 - Increased mortality associated with heat waves
 - Changes in water quality and availability
- How well are current climate risks understood? Indirect impacts of climate change? Risks unrelated to climate?
- New York is less vulnerable than many other cities



New York Metropolitan
Transit Authority



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Climate Risk Scenario Framework

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Current Climate

- Current climate **trends, indicators, and variability.**

Global Climate Models and Emissions Scenarios (~5 years)

- GCMs characterize **climate uncertainty** (IPCC AR4, 2007).
- **GHG emissions** scenarios span a range of development futures- population, GDP, technology (IPCC, 2000).

Regional Climate Scenarios for Key Variables

- **Downscaled model-based probabilities, and regional climate model (RCM) simulations.**

Extreme Events

- **Frequency and intensity** of heatwaves, flooding, droughts, and hurricanes and other storms.

High Impact Scenarios

- **Sea Ice extent and ice sheets** are monitored and evaluated.



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Solutions--Mitigation

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- New York City's current greenhouse gas emissions are comparable to those of Portugal or Ireland
- More than $\frac{3}{4}$ of these emissions are associated with buildings' energy consumption, versus a national average of 34 percent
- PlaNYC goal: Reduce total emissions 30 percent by 2030
- Primary initiatives to achieve goal
 - Avoid sprawl
 - Provide cleaner power
 - Make buildings more efficient
 - Encourage more sustainable transportation



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Adaptation Assessment Framework

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- Understanding current climate risks
- Anticipate future climate changes
- Develop climate protection levels
- Develop and evaluate flexible adaptation pathways
- Utilize insurance and policy strategies
- Monitor and reassess



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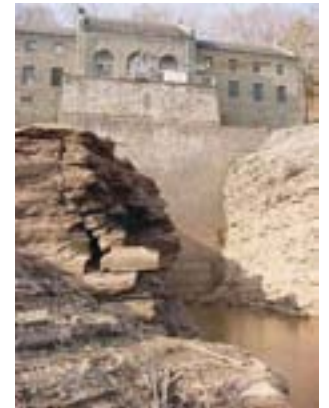


Solutions—Adaptation at NYCDEP

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- DEP adaptation strategies for water availability & quality:
 - Diversify water sources (desalinization, expand groundwater system)
 - Expand water conservation and usage restrictions
 - Increase operational flexibility
 - Treat with chemicals as necessary
- DEP adaptation strategies for drainage & wastewater:
 - Improve collection
 - Raise elevation of key infrastructure
 - Allow some inundation in predetermined areas



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Additional Adaptation Strategies

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- PlaNYC efforts are focused on three strategies:
 - Creation of an intergovernmental infrastructure task force
 - Work with vulnerable neighborhoods to develop site-specific adaptation strategies through the community planning process
 - Conduct strategic planning across city agencies to develop comprehensive climate change adaptation policies
- The Office of Emergency Management has devoted major effort and resources to hurricane evacuation planning



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Conclusions: Summary of Successful Projects

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- Engage with ‘mid-level’ managers, with ‘buy-in’ from highest levels; agency-wide (local leadership)
- Conduct a retreat with stakeholders during the formative stage, with the goal of identifying key questions and knowledge gaps
- Share data and models
- Have regular technical and policy meetings
- Conduct climate change workshops for all staff
- Generate a document of record, and conduct original (peer-reviewed) research in all components
- Consider mitigation and adaptation together
- Clearly define role of research and consultants; 3-way partnership with gov’t agencies
- Know that the agencies will ultimately ‘run with’ the end-product, but insist that they...
- Remain flexible and embrace uncertainty (continue to work with scientists)



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Conclusions: Applicability of New York Findings

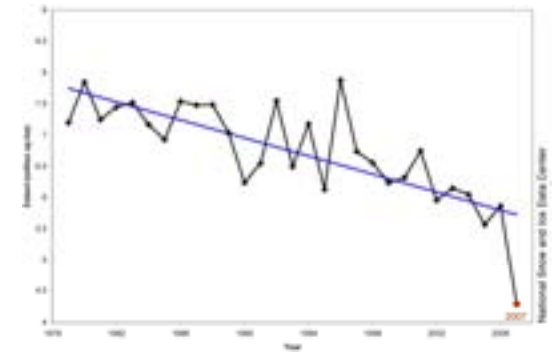
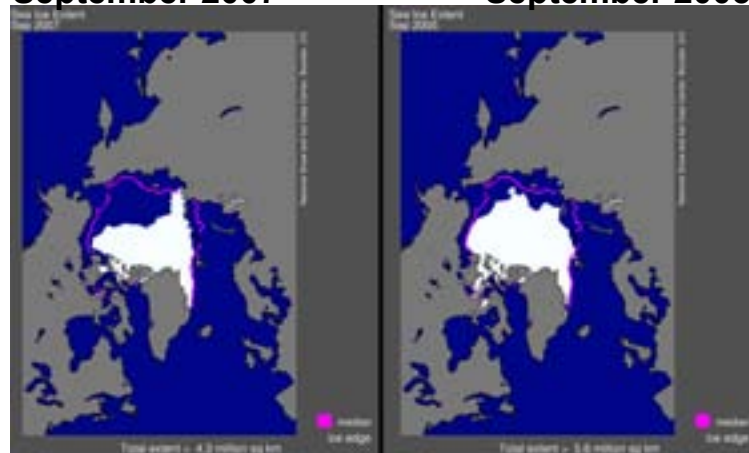
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- Vulnerability may not be as great in New York, even though climate risks may be comparable
- This points at how essential disaster planning is
 - Do not compartmentalize disasters, climate risk, or climate change risk
- Age of infrastructure
- City's rate of change
- Non-climate forecasts.....and surprises

September 2007

September 2005



Source: National Snow and Ice Data Center



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Urban Climate Change Research Network (UCCRN) and 'IPC3'

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- An international consortium dedicated to the analysis of climate change mitigation and adaptation and energy issues from an urban perspective, has launched the...
- International Panel on Climate Change in Cities (IPC3) assessment: a process by which expert knowledge can contribute to the development and implementation of effective urban climate change policies and programs.
- A recent survey sent to 30 C40 cities identified these themes: 1) Vulnerability, 2) Science/policy issues, 3) Urbanization, and 4) Equity/env. Justice
- Next steps: 1) Expand cities, 2) evolve to meet decision-makers knowledge needs, 3) hold kick-off workshop (planned for Copenhagen in November 2008), and 4) release Formal report in 2009



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