

**Public Policymaking and Climate  
Change: The Essential but Little  
Known Contribution of Earth Science  
Remote Sensing Data and Products**

Molly K. Macauley

Senior Fellow

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# The Context

- *“We find the value of information is not zero, but it is not enormous, either.”*

**William D. Nordhaus, Sterling Professor of Economics, Yale University, writing about the value of weather and climate information, 1986.**

- *“If we’d been able to produce a forecast last spring that California would be deluged this winter, it would have been worth whatever research investment was involved, if only because of the human misery it would have relieved.”*

**D. James Baker, then Administrator of the National Oceanic and Atmospheric Administration, writing shortly after heavy rains had flooded many parts of California, 1995.**

# Purpose

- Congress, NASA administrators, and other decision makers ask “what is the contribution of earth science in ‘making a difference’ in societal well-being?”
- Much of policy debate is informed (or not) by extent to which science results are translated and communicated
- “Route of influence” usually by way of “decision support systems”
- Examples – renewable energy and public health/ecosystem assessment

# The “Decision Support” Framework

- Now adopted in Climate Change Science Program
- Now adopted as framework document for the Earth Observation Summit
- Recently adopted in the World Climate Research Program (August 2005 report)

# The Idea of “Societal Benefit”

- “The Committee on Earth Science and Applications from Space affirms the imperative of a robust Earth observation and research program to address such profound issues as the sustainability of human life on Earth and to provide specific benefits to society. Achieving these benefits further requires that the observation and science program be closely linked to decision support structures that translate knowledge into practical information matched to and cognizant of society’s needs.” *Source: “Urgent Needs” Report, SSB/NRC 2005, p. 2*

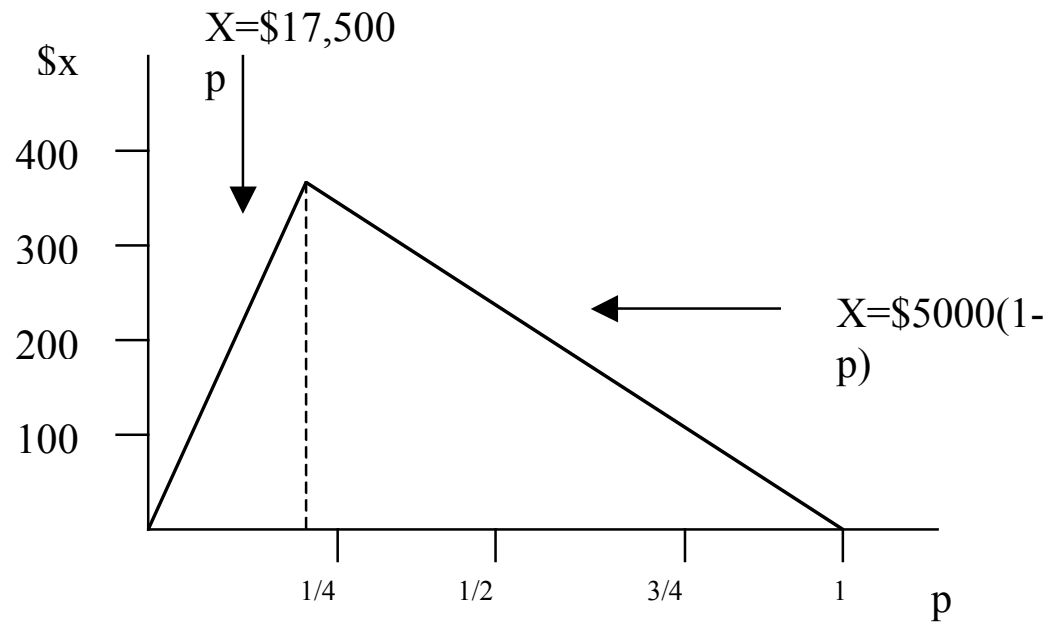
# The Idea of “Societal Benefit” cont’d

- *“A fundamental challenge for the coming decade is to ensure that established societal needs help guide scientific priorities more effectively, and that emerging scientific knowledge is actively applied to obtain societal benefits.”*  
*Source: Urgent Needs Report, NRC/SSB, 2005, p. 11 Italics in original text.*

# The WCRP (WMO)

- “The World Climate Research Program (WCRP) is introducing a new strategic framework for its activities in the decade 2005-2015.... This strategic framework has as its aim: **To facilitate analysis and prediction of Earth system variability and change for use in an increasing range of practical applications of direct relevance, benefit and value to society**” (WCRP, August 2005, p. 7, bold from original text).

Figure 1. Value of Information (based on Quirk, 1976)





# National Research Council for US Department of Energy

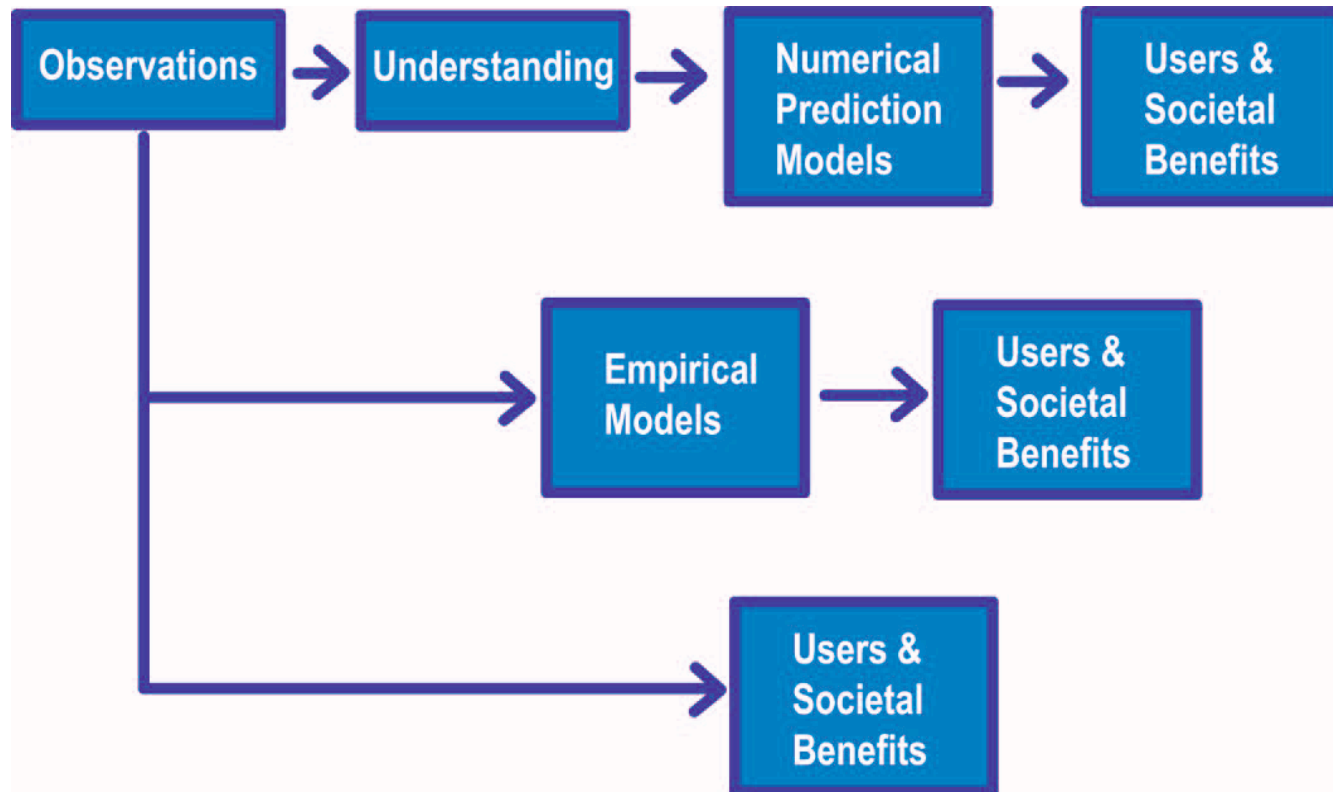
	Realized benefits	Options benefits	Knowledge benefits
Economic benefits			
Environmental benefits			
Security benefits			

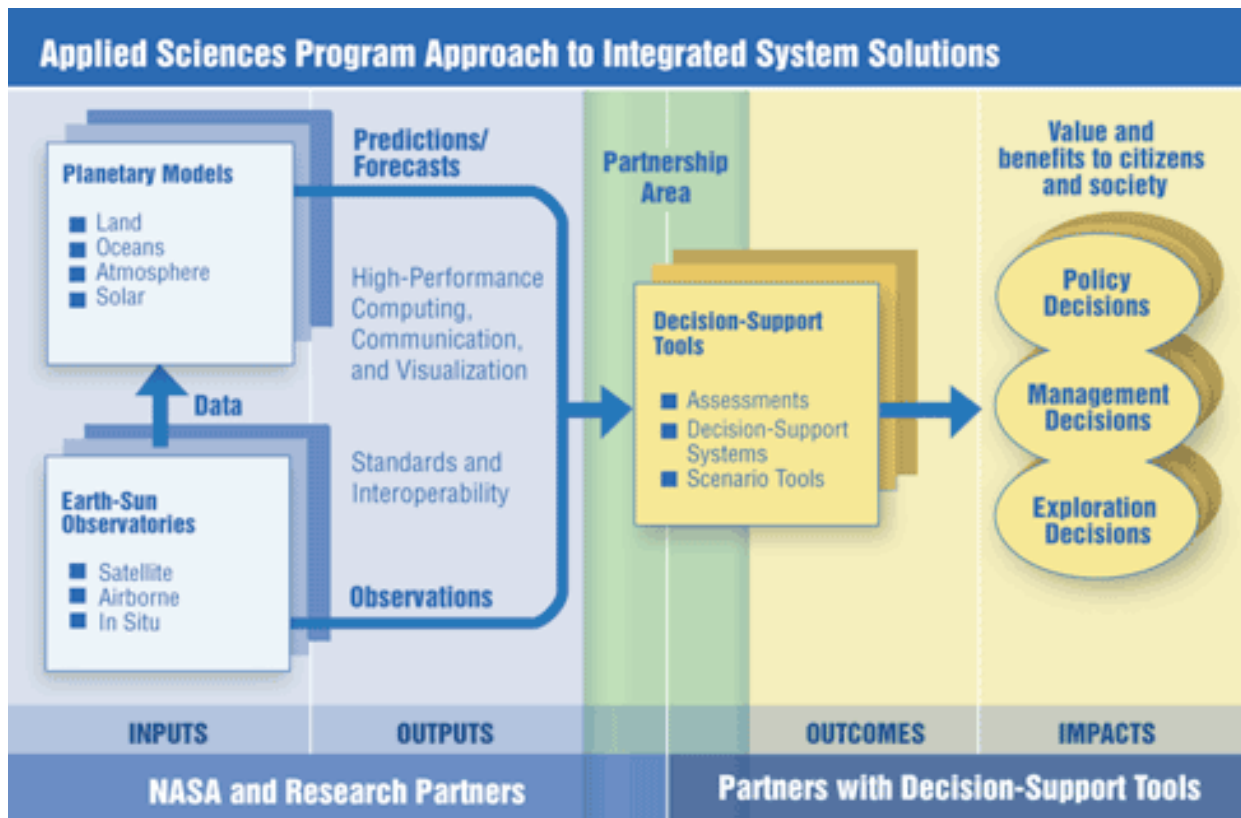
Matrix for assessing benefits\*

Source: National Research Council, 2001.

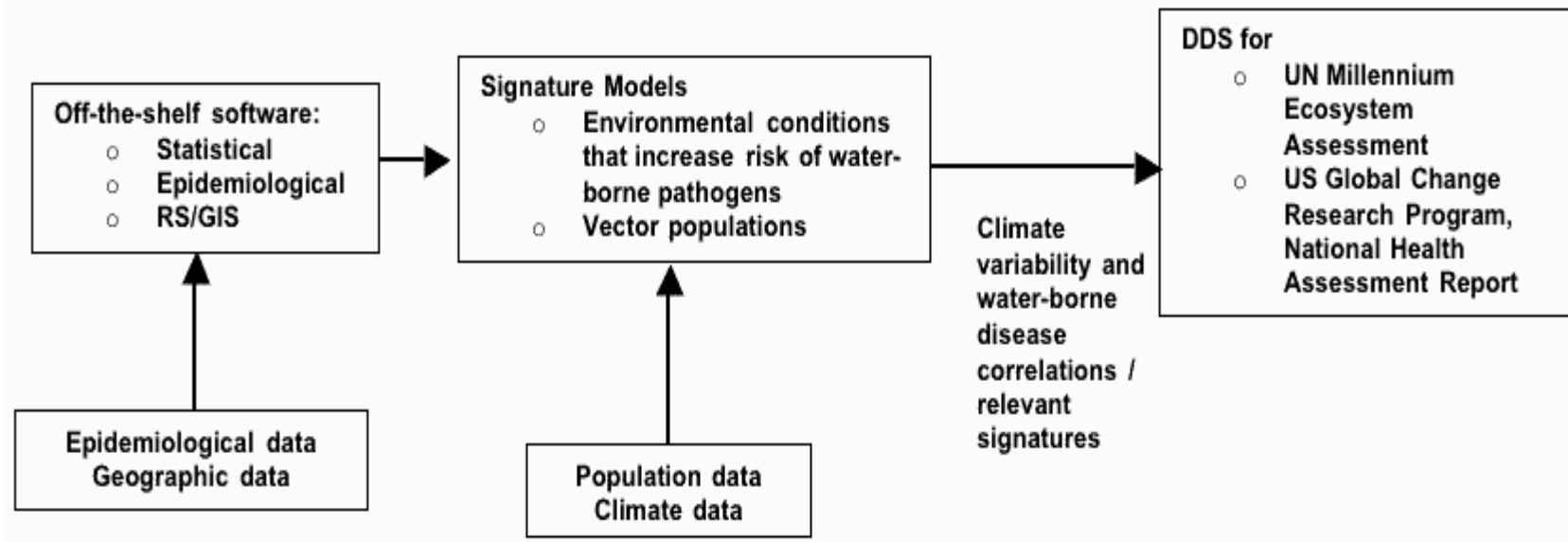
\* Original figure includes “and costs” in each row and column heading.

# “Pathways” in WCRP August 2005 Report





# Risk Algorithms for Public and Ecosystem Health and Water-Borne Diseases

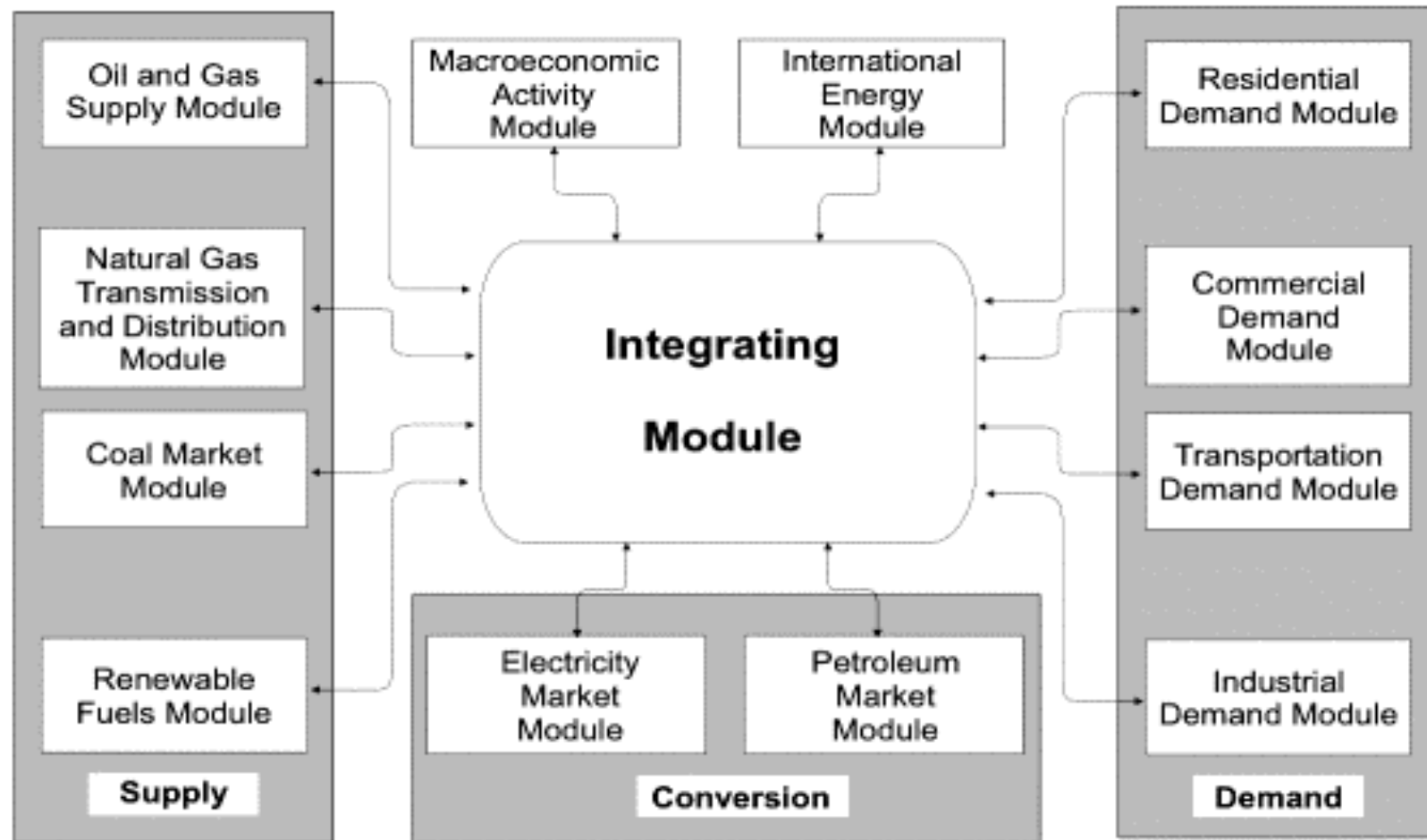


*Source: NASA Policy Project Website (Accessed Summer 2004)*

<http://appl-policy.saic.com/Water->

[Borne\\_Disease\\_GIS\\_And\\_Statistical\\_Algorithms.html](http://appl-policy.saic.com/Water-Borne_Disease_GIS_And_Statistical_Algorithms.html)

# Schematic Diagram of NEMS



Source: NASA Policy Project Website (Accessed Summer 2004)

[http://apl-policy.saic.com/National\\_Energy\\_Modeling\\_System.html](http://apl-policy.saic.com/National_Energy_Modeling_System.html)