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VAdm. Lautenbacher Introduced the GEOSS Perspective ...

- To access and provide the right information, in the right format, at the right time, to the right people, to make the right decisions.

www.earthobservations.org

Then Joe Roman Examined

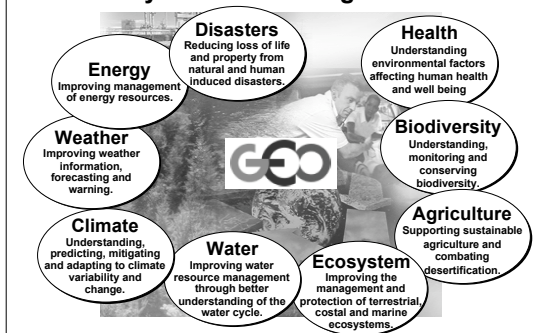
- The links in the science between biodiversity and human health
- The results of the Workshop on Biodiversity and Human Health in DC last September
- The Focus of the Biodiversity-Health Research at the USEPA



The Group on Earth Observations

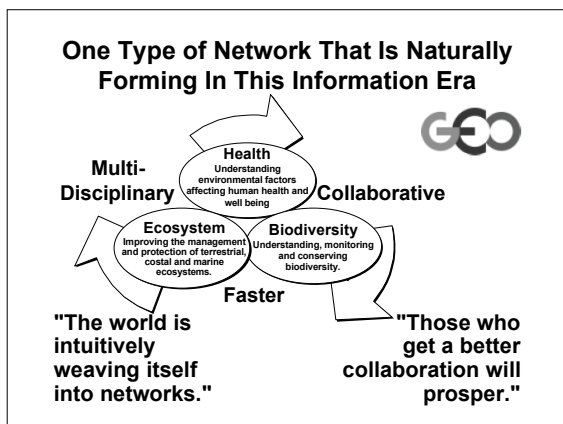
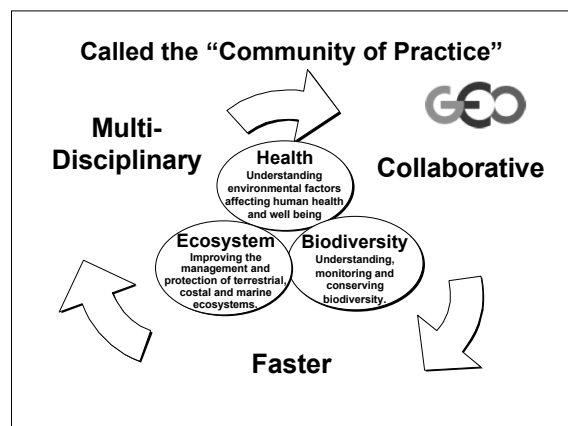
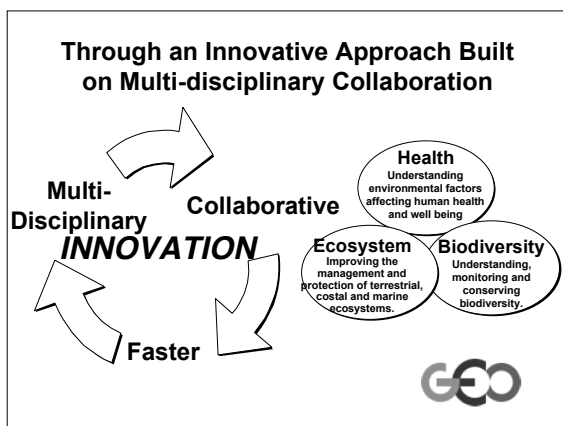
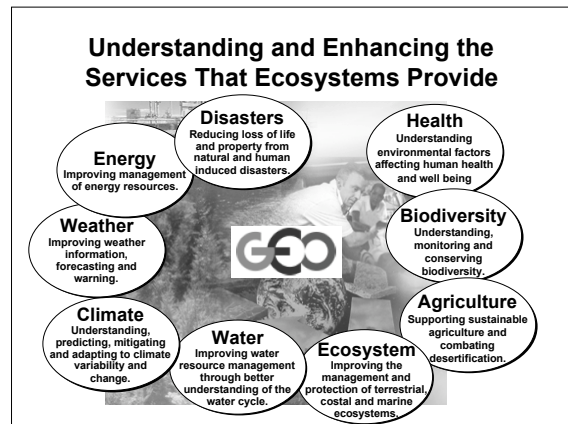
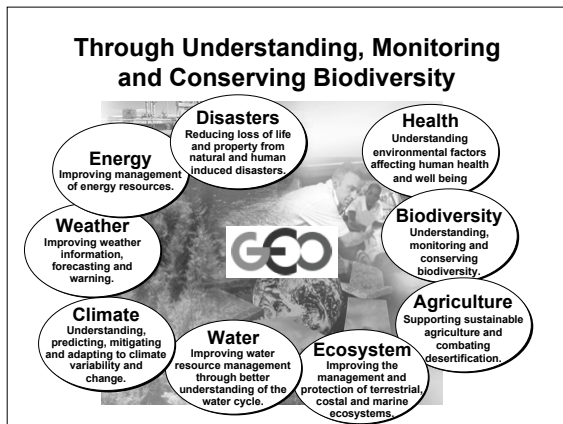
The goal is to “take the pulse of the planet”, that is, for the international community to develop a comprehensive, coordinated, and sustained Earth observation system, called GEOSS (a Global Earth Observation System of Systems), that will promote better understanding about and solutions for global environmental and economic challenges, and

Enhance Delivery of Benefits to Society in the Following Initial Areas



Such As Reducing the Occurrence of Vector-borne Diseases in Humans





- ### Communities of Practice (CP)
- A user-led community of stakeholders, from providers to the final beneficiaries of Earth observation data and information, with a common interest in specific aspects of societal benefits to be realized by GEOSS implementation.
 - The Communities of Practice will be self organized and will include stakeholders required to achieve benefits.

The Generic Communities

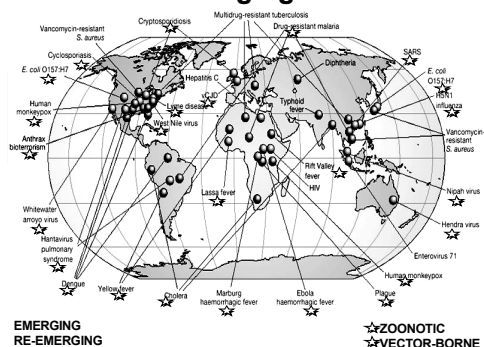
- From observations
- Earth observations and earth system models
 - Data-to-Information archiving and services
 - Scientific Knowledge
 - Decision support tool development
 - Decision making
 - Assessment of benefits
- Earth system scientists and modelers
 - Earth system service providers
 - Sci Discipline Researchers
 - Environmental, Economic and Health modelers and researchers
 - Policy Makers, Environmental Managers and PH Officials
 - Public officials, advocacy groups and the Public

To societal benefits

A Possible Biodiversity and Health Community of Practice



Global Emerging Diseases



From the
Center for Disease
Control
Department of
Health
& Human Services
United States

www.cdc.gov/eid

EMERGING INFECTIOUS DISEASES

August 2005

On the Cover Cover image: A woman with a fever, likely representing a patient with an emerging infectious disease.	Editorial Editorial: Emerging infectious diseases: A global perspective.
Synopsis Synopsis: A review of the current state of knowledge on emerging infectious diseases.	Policy Review Policy Review: A review of the current state of policy on emerging infectious diseases.
Research Research: A review of the current state of research on emerging infectious diseases.	Outlook Outlook: A review of the current state of outlook on emerging infectious diseases.

What Are Ecosystem Services? (from the Ecological Society of America)

- Natural ecosystems perform fundamental life-support services upon which human civilization depends.
- The many services include
 - Maintaining biodiversity
 - Regulate disease carrying organisms

This report identifies methods for assigning economic value to ecosystem services - even intangible ones - and calls for greater collaboration between ecologists and economists in such efforts.

VALUING ECOSYSTEM SERVICES

TOWARD BETTER ENVIRONMENTAL DECISION-MAKING

Committee on Assessing and Valuing the Services of Aquatic and Related Terrestrial Ecosystems
Water Science and Technology Board
Division on Earth and Life Studies
NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES

THE NATIONAL ACADEMIES PRESS
Washington, D.C.
www.nap.edu



<http://www.epidmio.info/index.php?section=homepage>

- There is a growing international awareness about the importance of the epidemiology of diseases and it is recognized that improved up-to date information of the environment, in which infectious diseases occur, will help epidemiologists to study, understand and predict threats to human health.
- Within the scope of the project "Epidmio" satellites will join this field as data source of epidemics. The scope of this ESA - founded project is to demonstrate and use the potential of Earth Observation for a new service which supplies new types of environmental information for epidemiology.



<http://www.idrc.ca/ecohealth/>

A call for concept notes for research on the use of ecosystem approaches to human health in the control and prevention of communicable diseases with a thematic focus on three public health priority vector-borne diseases in the region: Chagas disease, dengue and malaria.



The Environment & Human Health Programme

United Kingdom

A three-year inter-disciplinary capacity-building programme.

All applications must link the environmental sciences with clearly defined and significant problems in human health. We are looking to encourage multi- and inter- disciplinary teams combining environmental scientists with researchers from other disciplines, in particular medical and related fields (e.g. biomedical, public health). Proposals from teams that also include relevant social, biological, mathematical, physical and engineering sciences are strongly encouraged.



The Environment & Human Health Programme

United Kingdom

Science Themes include

Emerging infectious diseases.

- Risk assessment, the use of indicators, and anticipatory modelling of novel pathogen dynamics.
- Influence of global and local environmental change (e.g. climate change, N deposition, deforestation; as well as land use change).
- Ecology of wildlife reservoirs & vectors in emergent diseases.

ESSP (Diversitas) Joint Projects Global Environmental Change and Human Health

The Challenge

- Human activities increasingly affect the structure and functioning of ecosystems. In turn, these changes can influence the entire chain of factors involved in the infectious disease cycle: pathogens, vectors, reservoir species and human populations. Seemingly unrelated human activities can thus have serious consequences for human diseases, both infectious and non-infectious.

ESSP Joint Projects http://www.diversitas-international.org/essp_global.html

The Challenge

- The scientific community recognises the growing need to better understand the multi-faceted and complex linkages between global change (including climate change, land and sea use change, global biodiversity loss and change, global socio-economic change) and human health. However, as yet, little systematic research has been undertaken on the many important aspects of this topic. Nor has there been any sustained attempt to establish an international research community.

THORPEX

A World Weather Research Programme

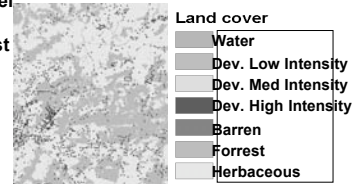
3-7 April 2006
at the World Meteorological Organization,
Geneva, Switzerland

WWRP/THORPEX Health Demo Project
Team Kick-off Meeting and
WWRP/THORPEX Health Application
Workshop

Land-Cover Pattern Explains Lyme Disease Incidence Rate in Suburban Maryland

L.E. Jackson and E.D. Hilborn, U.S. EPA ORD/NHEERL

- Regression model ($R^2 = 0.85$) estimates highest rates in landscapes with:
 - 50% forest
 - 50% herbaceous
- High degree of interspersion →



Results suggest practical public-health guidelines using large-scale landscape design, with associated environmental benefits.



USEPA Exploratory Research Grants

Examining the Links Between Biodiversity and Human Health: A Multidisciplinary Approach



Biodiversity and Human Health: A Contribution to GEO

- Reducing the emergence and spread of vector-borne diseases is a societal benefit.
- Producing information that links human health and biodiversity can contribute to this societal benefit.

Biodiversity and Human Health: A Contribution to GEO

- Help to demonstrate the value of working through the GEO structure
 - At the local level, experts in public health and ecology will carry out basic science and identify data needs – how can earth observations fill these gaps?
 - Economists can help identify data needed to do valuation.
 - Social scientists can help with communication and gauge community knowledge of and responses to risk.

Biodiversity and Human Health: A Contribution to GEO

- Determine whether studies and assessment done at the local level are scalable to the global level.

In Conclusion...

- Understanding the dynamics and mechanisms underlying the biodiversity-human health relationship is about understanding earth systems.
- Valuation of the health benefits of protecting biodiversity can show value of an earth observation system that supplies information on ecosystems, biodiversity and disease.

In Conclusion...

- Societal benefits are interconnected - studied in the same context, can enhance decision-making to promote collective and multiple benefits for health and the environment.
- This research initiative will place EPA and US GEO at the forefront of a new field focusing on the central role of biodiversity in human health and well-being.

A Possible Biodiversity and Health Community of Practice



Questions for the Audience

- How interested is the Public Health Community (researchers, practioners & officials) in taking multi-disciplinary approaches to forecasting and preventing disease outbreaks?
- What will get the Public Health Community to be engaged in GEO?
- Are there other Public Health programs that are relevant here?