Digital Government and the Environment: Three Areas of Progress

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PROGRESS AREA 1: We’ve advanced in our dialog about how to govern/manage natural resources

- 1968: Hardin’s “Tragedy of the Commons”
- 1990: E. Ostrom: Don’t forget “Common Property”!
- 2002: Recognition that no one form of governance is uniformly associated with sustainable resource governance (NRC, 2002)
- Need to understand the deeper institutional designs of various governance arrangements
  - What works where and why?
2. PROGRESS IN THE DEVELOPMENT/USE OF TECHNOLOGIES FOR UNDERSTANDING OUR ENVIRONMENT

- Remote Sensing/Geographic Information Systems (GIS) and Institutional Analysis
- Other GIS data and analytic approaches
- Computer-based modeling
- Moving rapidly toward real-time sensor monitoring networks

TWO REMOTE SENSING/GIS/INSTITUTIONAL ANALYSIS EXAMPLES

- Habitat Conservation Planning in Coachella Valley California
- Identifying “Forest Anomalies” in Nepal
CASE 1: Evaluation of the Coachella Valley Fringe Toed Lizard Habitat Conservation Plan (California, USA)

Landsat TM “Footprint” and Image of Southern California Region and Salton Sea
The Broad, Ecological System and Preserve

Represents fluvial flow of rock, gravel and sand that occurs infrequently.

Represents strong wind regime that sorts out finer grain sand on alluvial fans, and deposits sand in the dune field.

Landsat TM 06/06/86 Matched Filter Modeling Results

EM1 1986 - Active Sand
EM2 1986 - Packed silt with scattered creosote bushes
EM3 1986 - Unsorted or poorly sorted alluvial sands, gravel and rock
EM4 1986 - Development
EM5 1986 - Bright Live Vegetation
**Case 2:** Can we rapidly locate innovative forest management using satellite-based change analysis and simple Theory related to deforestation processes?

Landsat TM - 1/24/1989
Three Projects Related To Progress Area 3: Internet Collaboration and Environmental Management

1. The ACORN Project: Using the Web for local/regional information sharing and possible collaboration in forest management

2. The Open Research System: Metadata and data sharing in environmental research

3. The Free/Libre and Open Source Collaboration Study
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ACORN

Example of “parcelization” in one U.S. country

(brown areas are state Forest land)
PROJECT 1: ACORN

Screenshots from http://forest.fnr.umass.edu/acorn/
http://www.massacorn.net/

Chances are that if you’ve found this website you own forest land, know someone who does or enjoy spending time in the woods. MassACORN’s goal is to better connect you to your woods and surrounding forests of western Massachusetts. We do this by providing sources of information, maps and air photos (see Tool Box), and opportunities to learn from other woodland owners through their questions and answers (see Tool Box).

Learn About My Woods

Begin by looking inside your property boundaries. Discover new things about your forest and the wildlife that resides there. Explore recreational opportunities and find water sources. Consider the long-term future.

Learn About My Landscape

Think about the land beyond your boundaries. Think about how your property fits into the larger landscape. Examine the role forests play and the story they tell. Identify wildlife in the landscape. Find the boundaries of your watershed. Locate recreational opportunities and recognize changes the future may bring.

Learn About My Community

http://masacorn.net/
Three Projects Related To Progress Area 3: Internet Collaboration and Environmental Management

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2. The Open Research System (ORS): Metadata and data sharing in environmental research

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Charles Schweik. IntDG presentation Oct 12, 2006
Three Projects Related To Progress Area 3: Internet Collaboration and Environmental Management

1. The ACORN Project: Using the Web for local/regional information sharing and possible collaboration in forest management

2. The Open Research System: Metadata and data sharing in environmental research

3. The Free/Libre and Open Source Software (FOSS) Collaboration Study
FOSS Collaboration Study

- 2000: FOSS licensing and collaborative principles could apply to any digital content, not just software!

- Landuse change modeling as an example (farmers in Indiana and China):
  - modules, theoretical papers, data
  - Critical components: author attribution, content management system, peer-review, "next generation e-journal"

- Undertaking theoretical and empirical research on FOSS collaboration
  - FOSS projects are Internet-based common property regimes
  - What factors lead to success and failure of FOSS collaborations?

Some preliminary findings based on interviews

- Different "tragedy of the commons" situations:
  - Environmental commons: Over-appropriation
  - FOSS commons: under-production

- Institutions appear to evolve from small to large teams
  - From norms to more formal rules (but only a few)
  - Operational rules embedded in collaborative platform

- FOSS projects appear to have extremely lean institutional designs – this differs greatly from environmental commons
Concluding thoughts

- In what areas of DG and Environment are there common interests between the US and China?
  - Problems of broad spatial scales (obvious)
    - Global climate, ocean commons, tsunami watch, etc.
  - Common environmental problems
    - To what degree is China facing a similar parcelization problem?
    - Water resource monitoring/watershed management
    - Environmental modeling for decision-support, etc.

- In what areas might there be an opportunity for FOSS-like collaboration?

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