Workshop Drought Vulnerability
Wouter Buytaert, Boris Ochoa, Barbara Orellana
The science – policy interface

10 – 12.30pm: The science – policy interface in water management
(Wouter Buytaert)
A participatory monitoring network (Boris Ochoa)
Discussion

1.30 – 4pm: Changing Water Cycle: Hydrological Extremes and Feedbacks (Barbara Orellana)
Discussion and breakout working groups
The science – policy interface in water management
Experiences from the Andes

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The science – policy interface

The “classic model”
A polycentric, multidirectional and interactive model
Conceptualization

Actionable knowledge generation

Information collection
- Multi-level monitoring, data collection & citizen science

Information processing
- Modular and distributed workflow construction, simulation, and prediction

Information provision
- De-centralized communication and policy support systems

Polycentric governance of natural resources
New technologies for environmental sensing

Sensor networks

oxfloodnet.co.uk
Participatory monitoring

- Precipitation and river discharge
- Responding to local questions on land-use impacts
- Local buy-in and participation
Information collection: new institutional dynamics

- Potential to break open traditional and formal monitoring silos
- Multilevel, multipurpose
- Complementarity vs. resilience
- Adaptive governance
- Trust, credibility, acceptance
- “Polycentric monitoring”

Information processing: new technologies

- web technologies
- Cloud computing
- Big data
- Web-based processing and modelling
- Model coupling, uncertainty analysis, uncertainty propagation
Information processing: new policy dynamics

- ICT, web technologies
- Multilevel, multipurpose, multidirectional
- Integration of heterogeneous data & knowledge
- Polycentric models of data curation, knowledge co-generation, and governance
Simulating the impact of land-use changes

This system allows you to simulate the impact of land-use changes in the Pacaipampa basin. Select the land-use scenario with the sliders below and click the simulation button. Simulations are performed in real-time using a hydrological model (topmodel).

Basin characteristics

Land use

Change the sliders from top to bottom. You cannot change the last slider. Instead change the other three.

- Native Forest: 15%
- Pine forest: 0%
- Grassland: 80%
- Cultivation: 5%

Simulate

You can also call the modelling server directly using this link or pasting the following url in your browser:

http://paramo.cc.ic.ac.uk/esp3/server?
Service=WPS&Version=1.0.0&Request=GetCapabilities

Note: you will need to authenticate first.
### Information provision

- Visualization & communication
- User interface design
- Scenario building

#### UXD methodology

<table>
<thead>
<tr>
<th>Discovery</th>
<th>Conceptual design</th>
<th>Detailed design</th>
<th>Build-test-launch!</th>
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</thead>
<tbody>
<tr>
<td>(Research intensive)</td>
<td>(User interviews, user testing, co-design workshops)</td>
<td>Wireframes</td>
<td>Front and back end development</td>
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<tr>
<td>Who are the users?</td>
<td>Storyboards</td>
<td>User interface layout and functionalities</td>
<td>User testing</td>
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<tr>
<td>What are user motivations, goals, needs, pain points?</td>
<td>Sketches</td>
<td>Visual and interaction</td>
<td>Infographics</td>
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<tr>
<td>Are there similar solutions (good, bad)?</td>
<td>Workflows</td>
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Technological opportunities
User experience design
User requirements
- useful information
- usable information
- exchangeable information

**Phase 1: Define**
- Conceptual design
  - DSS type
  - Information base
  - Interactivity
  - Visualisation

**Phase 2: Refine**
- Actor-network analysis
  - Roles and relations
  - Interests
  - Decision making processes and goals
  - Knowledge creation and exchange

**Phase 3: Deliver**
- User testing
- Build!
- Deploy

Zulkaflı et al., in review
Challenges

- Leveraging new technologies
- Ensuring a user centered approach
- Recognizing the polycentric nature of systems
- Adaptive governance & knowledge co-generation
Thank you


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Questions

• What are major gaps of data in your decision-making field and how can they be addressed?

• How are raw data processed in your decision-making field and how can this processing be made more actionable and relevant?

• How is information communicated in your field and how can these practices be improved?