



PantaRhei – Everything Flows  
Change in Hydrology and Society  
IAHS Scientific Decade 2013-2022  
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### **Details of the Proposal**

#### **Title of the Working Group**

Integrating history, social conflicts and hydrology: From semi pristine to highly modified hydrological systems

#### **Abstract of the proposed research activity**

Some hydrological systems in Latin America are still in semi pristine conditions; others have been highly modified by human activity. The former are now threatened by new projects of development or exploitation explained in part by the availability of water resources. Many communities are opposed to new projects fearing devastation of the environment and degradation of their precarious wealth. The latter (highly modified hydrological systems) are maintained at great costs not only economically but of population health.

By studying these two extreme examples of hydrological systems, we want to explore the relations between human activities and hydrology. We will build a GIS to trace the paths of ancient settlements with archaeological information, past and present water conflicts between communities and government projects, and water law modifications. All data will be integrated into numerical models of water flow in the “Valle de Nejapa” as an example of semi pristine system, and in the coupled “Valle de Mexico” – “Valle del Mezquital” as an example of a highly modified system.

#### **PantaRhei Research Themes, Targets and Science Questions addressed by the Working Group**

Target #1: Understanding

1. What are the key gaps in our understanding of hydrological change?
2. How do changes in hydrological systems interact with, and feedback to, natural and social systems driven by hydrological processes?
3. What are the boundaries of coupled hydrological and societal systems? What are the external drivers and internal system properties of change? How can boundary conditions be defined for the future?

#### **Societal impact of the Working Group activity**

Understanding the key issues concerning society and hydrology in the past and present will lead to the clarification of the idea of sustainability for local communities and government. Also, the negotiation for future projects and the search of solutions

to water issues will be able to rely on better tools of analysis. Implementation of new knowledge in future modifications of water law will have a better impact in the short and long term to the society based on sustainability. Then the conflicts over water will have better solutions.

Findings of the research will be made available to universities, communities in rural and urban areas and to government stakeholders in particular in Oaxaca, Hidalgo, Estado de Mexico and Distrito Federal states of Mexico. Future work will include the interaction with those actors to continue to build GIS systems to predict and solve water issues.

### List of Participants

Name of Participant	Affiliation (full address and email)	Role in Working Group (Chair or Member)	Main expertise
1 Victor Rosales Sierra	Instituto Mexicano del Petroleo, Mexico Eje Central Lázaro Cárdenas Norte 152 Col. San Bartolo Atepehuacan, México D.F. C.P 07730 <a href="mailto:victor.rosales@free.fr">victor.rosales@free.fr</a>	Chair	Hydrodynamics numerical simulations and field work
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6 Patricia Rosales Sierra	Keio University, Japan 6-4-1-607 Honcho, Nakano-	Member	Changes in water laws

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