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USE SWAN eNEWSLETTER

Latest news on University of Seville' SWAN team

In this issue

Networking, collaboration and mutual learning opportunities between teams, stakeholders and participating research centers involved are essential aims of the SWAN project.

The research leading to these results has received funding from the European Community's Seventh Framework Programme FP7/2007-2013 under grant agreement n° 294947 FP7–INCO-2011–7

The SWAN Project

SWAN (Sustainable Water ActioN): ***Building Research Links between EU and US***, is a four-year International Cooperation Project granted by the European Commission (FP7-INCOLAB -2011). It focuses on the creation of a research center on water to reinforce links between Europe and United States research in the field. The project promises to strengthen European research capacity in the USA, promote competitiveness of European research and industry while also informing and involving policy-makers and the general public.

The SWAN project has five European Union Member States (Bulgaria, France, Netherlands, Spain and United Kingdom) and a University of Arizona team from the Hydrology and Water Resources Department. It is coordinated by the French CNRS (Centre National de la Recherche Scientifique), that created an International Centre (UMI "Water, Environment and Public Policy") in collaboration with the University of Arizona in 2008. This extension of the UMI broadens its current activities from a bi-national focus to one that incorporates ideas, disciplines and methods from Europe.

Workshop on New Paradigms in Water Resources and Risk Management

University of Seville, January 25th, 2013

The identification of key data for water resource and risk management is an important contribution of the SWAN project, and the University of Seville team has a prominent role in this task. The ***workshop on New paradigms in water resources and risk management: Key water data and information for sustainability*** organized by the USE SWAN Team was focused on this objective.

The workshop aimed to advance in the definition of the new and emerging concepts related to Sustainable Water Management (Integrated Water Resources Management, water governance, water security, and others), and to promote thinking about the information required to develop them.

Over 50 experts including representatives of regional, local and water administrations, environmental groups, university researchers, water managers and other stakeholders were invited to participate and contribute their ideas and expertise. The workshop was organized around five topics of particular relevance for the goals of the activity, with a keynote presentation followed by debate with workshop participants.

Leandro del Moral is a Professor of Geography at the University of Seville, where he is the Chair of the Department of Human Geography. He has conducted research, advised and evaluated decision-making processes related to water management and land use in Andalusia, Spain, the European Union and more recently, Latin America.

In recent years he has led the Spanish teams of several international competitive research projects on water resources (SIRCH, ADVISOR, SWAN) with especial focus on the analysis and diagnosis of socio-ecological systems and the definition of strategies for action based on the involvement and active participation of social agents.

Topic 1: Current Debates on Water Resources and Risks Management Paradigms. Resulting Information Needs.

Prof. Leandro del Moral, University of Seville

This talk highlighted the features of the emerging new paradigm in water management:

- Complexity and uncertainty;
- Hybridization between society and nature (hydro-social systems, including human subsystems, which involve reflexivity, intentionality, complex adaptive systems, that are difficult to be analyzed with conventional models);
- Multiple hierarchical level organizations requiring multiple scales for their perception and representation;
- Contextuality and expression of implicit positions, values and interests; strong need of explicit choice of narratives and external references;
- Big stakes in presence, incommensurability and legitimacy of several positions;
- Integration (skills, sectors, perspectives, political science). Transparency and public participation. Policy, experts and public interaction.

Jose Manuel Naredo holds a PhD. in Economics and belongs to the Spanish Official School of State Statistitians. He has devoted his research career to reflecting on topics such as the fundaments of economics, analysing the evolution of the economic situation, the functioning of urban, industrial and agricultural systems and their relation to natural resources.

He is professor emeritus at the Technical University of Madrid and the Complutense University. In 2000 he received the Spanish National Economics and Environment award and in 2008 the International Geocritics award.

Topic 2: An Approach to Natural Resources from the Perspective of Eco-Integrative Economics. Water Costs and Water Accounts.

Dr. José Manuel Naredo

The WFD uses the *Full Cost Recovery* (FCR) principle as one of the keys for the proper management of the scarce and polluted water resources in the European Union. The FCR concept includes the financial costs of water services, as well as resource and environmental costs.

The first two terms can fairly easily be calculated through classical economic accounting. However the estimation of the environmental costs of water services requires new theoretical and applied approaches, based on sound quantitative data that ensures the homogeneity, comparability, as well as the ability to aggregate or disaggregate the different components.

Dr. Naredo postulates the need to apply an ecointegral approach, able to include in the same "eco" root, the practical aims of standard economy with the worries of stability and conservation of systems that "ecology" deals with.

His key idea is not to substitute traditional reasonings through new ones, but to open the old closed schemes and give way to other approaches which are open, multidimensional and multidisciplinary.

The ecointegral approach does not decline the monetary analysis, but links the latter to the physical knowledge of the system.

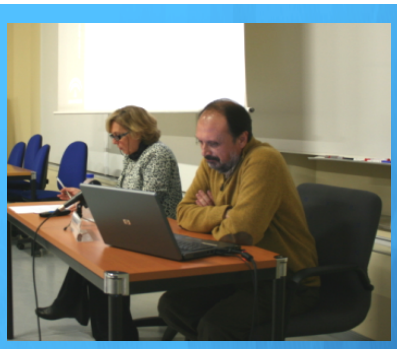
Topic 3: New Technologies for the Management of Water Resources. Resulting Opportunities and Requirements.

Dr. José Manuel Moreira, Andalusia Environmental Agency

Dr. Moreira discussed the advantages and limitations that new information technologies present in the management of water data. Existing technologies have allowed for an exponential growth in the capacity to generate and store data. This increase demands the social construction of a philosophy of information, so that it serves public policy purposes and goals and is readily available, usable and accessible. Today only 4% of the information on the web is publicly available. Some of the advantages and possibilities include:

- Avoiding duplication of data;
- Reducing the inconsistency of data due to errors;
- Sharing data without conflicts;
- Strengthening standards;
- Maintaining the security and integrity of data;
- Allowing the dissemination and transparency through free and updated information networks.

While new technologies for storage of geographic information offer immense possibilities, the speaker also cautioned that their full potential can only be realized through a cultural change in water administrations and other institutions who still consider themselves owners of the information they produce. Too often institutions work without integrating knowledge and information generation, guaranteeing compatibility or relying on local knowledge and expertise. This is a key area for improvement.



José Manuel Moreira holds a PhD in Physical Geography from the University of Seville. He is Coordinator of the Department of Information and Sustainable Development of the Environmental Agency of Andalusia, where he is responsible for the Environmental Information Network of Andalusia (REDIAM). He combines these tasks with his scientific research. He has multiple scientific publications and articles in international journals about information management and GIS technologies supporting management decisions.

Prof. **Mª Fernanda Pita** introduced and chaired the workshop as Director of the *Research Group on Spatial Structures and Systems* and member of the SWAN team.

Topic 4: The Hydrosocial Systems Modeling. Information Needs and Key Data.

Prof. Julia Martínez, University of Murcia

The talk focused on the explanation of how to model socio-ecological systems from the point of view of the new conceptual framework based on complexity, uncertainty and the co-existence of multiple social agents perspectives. The key findings were:

- There is a need to build regional-specific models. General models are less useful in practice.
- Descriptive and normative models have to be explicitly differentiated.
- Social agents should be included from the outset in the modeling process to successfully integrate their perspectives.
- It is necessary to create models that are capable of including qualitative factors, as well as to develop techniques to tackle qualitative information in a "quantitative" way.
- Models should take into account the dynamic relationships and synergies between the components of the cycle, including feedback processes leading to accelerations and delays.
- The development of prospective models is more useful than the development of predictive models.

Julia Martínez holds a PhD in Biology and is Professor of Ecology at the University Miguel Hernández in Elche and Principal Researcher at the Sustainability Observatory of the Region of Murcia, Spain (OSERM). She has collaborated in several research projects on integrated management of coastal lagoons and their drainage basins, water resources in arid lands and dynamic modeling of irrigation systems and their environmental impacts. She has authored over 90 scientific publications and has over 80 contributions to scientific congresses. She is one of 100 scientific expert signatories of the "European Declaration for a New Water Culture" and a Founding Member of the Foundation for a New Water Culture.

Topic 5: Transparency and Public Participation as Key Components of the New Water Governance. Resulting Information Needs.

Nuria Hernández-Mora, Foundation for a New Water Culture & University of Seville

Changing water management paradigms determine changing information needs. Information requirements are specific to the social, political, legal, and environmental contexts of each time and place. The WFD requires information transparency for effective public participation. These requirements are legally and conceptually nested in the principles of participation, access to environmental information and justice set forth by the Aarhus Convention. In the IWRM paradigm that the WFD represents, publicly available information should provide responses for the following questions:

- How much water do we have and who uses it?
- What is the current state of our waters?
- What is the (financial, environmental and resource) cost of water services?
- How do we involve the public in decisions over water?
- What measures need to be implemented to attain our goals? How effective are they?

This information should come from all areas and sectors of society and it should be of high quality, easily accessible (preferably via Internet), regularly updated, complete, adequate to management objectives, detailed, traceable and customized for specific target audiences.

Conclusions and Main Findings

• The information necessary to inform decisions on water policy and management is contingent upon place and time-specific social, environmental, political, institutional and economic contexts. Changing discourses and framings of water management challenges determine policy and management goals. These goals, in turn, condition the questions that need to be answered and the data and information requirements to offer possible alternatives and responses.

• In parts of Europe, the Water Framework Directive (WFD) has marked a paradigm change, from an emphasis on supply augmentation to meet increasing water demands to a management approach that prioritizes the protection of ecosystem services. This shift has resulted in significant changes in information needs. In Spain, specifically, this shift has required an evolution from a focus on water quantity and chemical quality data, toward the necessary development of monitoring networks for biological and hydromorphological indicators, as well as indicators for the quality of water-related terrestrial ecosystems.

• At the same time, the WFD requires the use of price incentives to rationalize water demand and help contribute to the goals of attaining good (ecological and quantitative) status for all water bodies. This requires economic information that helps understand the links between human activities (pressures), the impacts on the water environment, or the effects…

Nuria Hernández-Mora is an Economist specializing in water governance and water policy analysis. She has participated in research projects focusing on water governance, risk management and vulnerability to extreme climatic events, and has published extensively on these issues. She actively participates in Spanish water policy evaluation and analysis through her involvement in the Foundation for a New Water Culture, which she currently presides. She is part of the USE SWAN team.

The presentations were followed by a lively debate where all the experts participants were able to give their opinion on these topics, expand the information given during the event and share their conclusions.

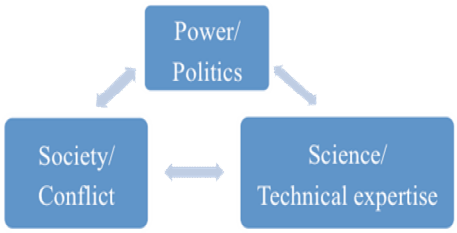
Conclusions and Main Findings

• ...that the correcting measures (Programme of measures) have on the problems being addressed (cost-efficacy analysis). The economic information currently available in Spain is targeted toward the management of hydraulic infrastructures (through water use fees and tariffs) and the control of point-source pollution (water discharge fees), but does not permit an economic analysis targeted toward the recuperation of the ecological functioning of aquatic ecosystems.

• The ecointegral water management approach proposed by the WFD and the dominant or emerging water management paradigms (IWRM, eco-adaptive management, water security, etc.) recognize the complexity inherent to the management multi-faceted and interrelated resources and processes: water, land, urban and industrial processes, agricultural activities, socioeconomic, cultural and political processes. It is difficult to adequately quantify (in either physical or monetary terms) all the parameters necessary to understand and explain these processes. It is therefore necessary to develop monitoring and modeling approaches that effectively combine quantitative (precise, probabilistic, stochastic or fuzzy) and qualitative parameters.

• In a context of complexity and uncertainty, where economic and political interests are at stake, and where cultural and identity discourses play a significant a role, it is key to:

- Explicitly recognize the limitations of scientific knowledge and of technocratic solutions to socio-ecological management challenges.
- Incorporate the public into decision-making processes, developing effective information mechanisms for public participation. Information must be the core around which agreements are reached and consensual decisions are made.
- Promote adaptive decision-making processes that explicitly recognize costs and benefits and their social distribution.
- Accept the inevitable presence of conflicts in decisions surrounding the allocation, distribution and management of water resources and its associated ecosystems.
- Generate information to inform water management taking into account the interrelation of three determining axis:



• Information systems for water management must comply with the following requirements:

- Relevant for specific management questions;
- Easily accessible and understandable for managers and stakeholders;
- Compatible, relevant and useful for each decision making context;
- Integrated with decision-making timeframes;
- Traceable;
- Explicit with regard to its limitations, assumptions and uncertainties.

• The economic and institutional crisis that is currently affecting the European Union is further aggravated in Spain and other countries by a profound crisis in the legitimacy of basic democratic institutions. This systemic crisis is directly affecting the paradigm change in water policy required by the WFD. The necessary investments to adapt existing monitoring networks to the new management requirements are being hampered by important budgetary constraints. Additionally, the change in discourse and management model is meeting significant resistance from the 'traditional water policy community' that benefits from the status quo.

• It is key to develop effective information support systems that increase transparency and legitimacy at different levels: in the operation and structure of the water administration; in planning and management processes; in the relationships of the administration with the public and stakeholders; and in budgeting and economic management processes.

SWAN Consortium & Contact Information

- Centre National de la Recherche Scientifique, France.
- National Institute of Geophysics, Geodesy and Geography; Bulgarian Academy of Sciences (BAS-NIGGG).
- UNESCO- IHE; Institute for Water Education.
- Universidad de Sevilla; Departments of Geography.
- University of Arizona; Department of Hydrology and Water Resources.
- University of the West of England, Bristol; The Bristol Group for Water Research at UWE, Bristol (BGWR).

The **University of Seville (USE) Team** is led by Dr. Leandro del Moral (Department of Human Geography), lmoral@us.es. The other team members are proffesors and PhD candidates that belong to the Spatial Structures and System Research Group (GIEST-HUM 396):

USE Professors
Juanma Camarillo jmcamarillo@us.es
Belén Pedregal bpedregal@us.es
Maria Fernanda Pita mfpita@us.es

Phd Candidates Contracts
Nuria Hernández-Mora
nhernandezmora@us.es
Natalia Limones natalialr@us.es

Phd Candidates Students
Violeta Cabello vcabello@us.es
Sergio Segura ssegura@us.es
María Villarín mvillarin@us.es

SWAN web page:
http://swanproject.webhost.uits.arizona.edu/

Forthcoming Events

Next April 29th – May 3rd the SWAN partners will meet in the city of Tucson (Arizona, USA) to attend the workshop entitled ***Challenges of Integrating Science into Urban(+) Decision Making***.

The University of Arizona partners organized this workshop following this schedule.

	Mon Apr 29	Tue Apr 30	Wed May 1	Thu May 2	Fri May 3
	SCIENCE PRESENTATIONS (Moderator A. Serrat)	SWN BRAINSTORM DAY–1 (Moderator H. Gupta)	SWN BRAINSTORM DAY-2 (Moderator C. Staddon)	PLANNING DAY (Moderator N. Hernandez)	SITE VISIT
8:30 - 9	*Arrival / Coffee*	*Coffee*	*Coffee*	*Coffee*	SRP Site Visit (Vans to Phoenix and back) or Mount Lemmon (Tucson)
9 to 10	Introduction & Goals (Hoshin/Franck/Jude)	Intro to SWN Brainstorm (Hoshin Gupta)	Intro/Recap (Chad Staddon)	Intro/Recap (Nuria Hernandez-Mora)	
10 to 11	Universidad de Sevilla (40+20)	SWN* BRAINSTORM Short '*vision*' presentations (10 min each) on SWN goals concept, structure, etc. Followed by moderated discussion	Vince Tidwell Sandia National Lab, NM	PLANNING SESSION Plans for the Future White Paper Structure & Writing Assignments	
11 to 12	University of the West of England, Bristol (40+20)		Russ Scott USDA-ARS		
12 to 1	UNESCO-IHE Institute for Water Education (40+20)		Kathy Chavez Pima County		
1 to 2:30	*Lunch on own + Posters*	*Lunch*	*Lunch*	*Lunch*	
2:30 to 3:30	University of Arizona (40+20)	Ralph Marra SW Water Resources Consultant	SYNTHESIS DISCUSSION Determine Key Issues & Transdisciplinary Integrating Questions	Free Time	
3:30 to 4:30	National Institute of Geophysics Geodesy & Geography – Bulgarian Academy of Sciences (40+20)	Dave White Co-Director NSF DCDC			
4:30 to 5:30	Centre National de la Recherche Scientifique(40+20)	David Brookshire Professor , UNM			
5:30 to 6:30	Synthesis Discussion	Synthesis Discussion	Wrap Up		

*SWN = Sustainable Water Network

Grupo de Investigación Estructuras y Sistemas Territoriales

Presentations and further information on the ***Workhop on New paradigms in water resources and risk management: Key water data and information for sustainability*** *can be found at the web page of the GIEST Research Group:*
http://grupo.us.es/giest/

This e-Newsletter was developed by the University of Seville' SWAN team, for further information & suggestions please email: natalialr@us.es or bpedregal@us.es