



SCARCE is a CONSOLIDER-INGENIO project that aims to understand the effects on rivers being submitted to multiple stressors. SCARCE is developed at four river watersheds in the Mediterranean basin, in order to understand trends and potentials operating at different scales. Iberian Rivers and most of those located in the Mediterranean area are under strong environmental stress due to alterations in water flow, light and temperature regime, nutrient concentration and increasing arrival of toxicants. Potential effects in arid and semiarid regions are related with decreasing resources, variations in water quality, and effects in the ecosystems. These may be related to climate change but also to the human pressure on these systems, which is overwhelming and still rising. Effects of habitat deterioration, point-source or diffuse inputs of nutrients and contaminants, and species invasion or extinction may be relevant on their impact in the ecosystem functioning and services, but also will have social and economic implications. The first Conference SCARCE aims to gather all interested researchers and managers at the cross-roads of using water resources and keeping on conservation and ecological quality.

FINAL PROGRAM

THURSDAY, 2nd December 2010

- 9.00 - 9.30** **Registration**
- 9.30 - 9.50** Scarcity, quality, resources, ecosystems, and society: challenges ahead
Sergi Sabater¹ and Damià Barceló^{1,2}
¹ Institute of Environmental Assessment and Water Research, Barcelona, Spain
² Catalan Institute for Water Research, Girona, Spain

Session I: Assessing and predicting global change effects in water resources and ecosystems

Chairperson: Damià Barceló

- 9.50 - 10.20** *Predicting and Planning for Global Change Effects for the California Delta, USA*
Cliff Dahm
University of New Mexico, Albuquerque, USA
- 10.20 - 10.50** *Groundwater Management in Iberian River Basins*
Emilio Custodio
Technical University of Catalonia, Barcelona, Spain
- 10.50 - 11.10** Impacts of climate change on waterways and navigation: the German research programme KLIWAS
Helmut Fischer
German Federal Institute of Hydrology, Koblenz, Germany



11.10 - 11.30 Poster session/Coffee break

Chairperson: Cliff Dahm

11.30 - 11.50 Effects of global change on the functioning of Mediterranean river ecosystems

Arturo Elosegi¹, Ibon Aristi¹, José Ramón Díez¹, Sergi Sabeter^{2,3} and Vicenç Acuña²

¹ University of the Basque Country, Bilbao, Spain

² Catalan Institute for Water Research, Girona, Spain

³ Univeristy of Girona, Girona, Spain

11.50 - 12.10 The WATER CHANGE Project: Medium and long term water resources modelling as a tool for planning and global change adaptation. Application to the Llobregat Basin

Isabel Escaler¹, Laurent Pouget¹, Daniel Sempere², Pierre-Antoine Versini²

¹ CETaqua, Water Technology Center, Barcelona, Spain

² CRAHI, Centre of Applied Research on Hydrometeorology. Barcelona, Spain

12.10 - 12.30 Climate change scenarios downscaling to bridge the gap between dynamical models and the end user: application for hydrometeorological impact studies in Spain

Marco Turco¹, Maria del Carmen Llasat¹ and Pere Quintana Seguí²

¹ University of Barcelona, Barcelona, Spain

² Observatori de l'Ebre, Roquetes, Spain.

12.30 - 12.50 Distributed hydrological modelling within SCARCE project: integrating water, sediments, quality and vegetation.

Félix Francés, Chiara Medici, Gianbattista Bussi, Alicia García, M. Barrios and M. Pasquato

Technical University of Valencia, Valencia, Spain

12.50 - 14.20 Lunch

Chairperson: Nancy Grimm

14.20 - 14.50 *The challenge of analysing climate change impacts on the hydrology of Mediterranean river basins - A perspective from the CLIMB project*

Ralf Ludwig

Ludwig-Maximilians-Universitaet, München, Germany

14.50 - 15.10 Morphological adjustments in riverchannels: the case of large Mediterranean regulated rivers

Ramón J. Batalla^{1,2} and Damià Vericat²

¹ University of Lleida, Lleida, Spain

² Forest Technology Centre of Catalonia, Solsona, Spain

- 15.10 - 15.30** Enhancement of Soil Aquifer Treatment to Improve the Quality of Recharge Water in the Llobregat River Delta Aquifer
Marta Hernández García¹, Joana Tobella Brunet¹ and Manuela Barbieri^{2,3}
¹ CETaqua, Water Technology Center, Barcelona, Spain
² Institute of Environmental Assessment and Water Research, Barcelona, Spain
³ Technical University of Catalonia, Barcelona, Spain
- 15.30 - 15.50** Follow-up of the state of the quality of the water in the area of competences of Andalusian council
Esperanza Caro
Junta de Andalucía, Sevilla, Spain

Session II: Water quality under scarcity

Chairperson: Amadeo R. Fernández-Alba

- 15.50 - 16.20** *The AquaTerra Project: Occurrence and Fate of Priority and Emerging Contaminants in the Ebro River Basin*
Mira Petrovic¹, Alícia Navarro-Ortega¹, Alain Hildebrandt¹, Meritxell Gros², Ethel Eljarrat¹ and Damià Barceló^{1,2}
¹ Institute of Environmental Assessment and Water Research, Barcelona, Spain
² Catalan Institute for Water Research, Girona, Spain
- 16.20 - 16.40** *Identification of Key Biological Mechanisms Associated with emerging Contaminants and Risk Evaluation in Aquatic Systems*
Peter-Diedrich Hansen
Technische Universitaet Berlin, Berlin, Germany

16.40 - 17.00 Poster session/Coffee break

Chairperson: Mira Petrovic

- 17.00 - 17.20** Quantitative characterization of mixture complexity of environmental chemical monitoring inventories: Tentative relationships with ecotoxicity and ecosystem variables
Antoni Ginebreda¹, Aleksandra Jelić¹, Mira Petrović², Miren López de Alda¹, Damià Barceló^{1,3}, Marianne Köck¹, Marta Ricart^{3,4}, Helena Guasch⁴, Rikke Brix¹, Anita Geiszinger⁴, Julio C. López-Doval⁵, Isabel Muñoz⁵, Cristina Postigo¹, Anna M. Romani⁴, Marta Villagrasa³, Sergi Sabater^{3,4}, Maria H. Conceição⁶
¹ Institute of Environmental Assessment and Water Research, Barcelona, Spain
² Institució Catalana de Recerca i Estudis Avançats, Barcelona, Spain.
³ Catalan Institute for Water Research, Girona, Spain
⁴ University of Girona, Girona, Spain
⁵ University of Barcelona, Barcelona, Spain
⁶ Universidade de Brasília, Brasília, Brazil



- 17.20 - 17.40** Effects of water abstraction and chemical pollutants on fish assemblages in Mediterranean streams
Emili García-Berthou, Lluís Benejam, Josep Benito, Gerard Carmona-Catot, Leslie Faggiano and Roberto Merciai
University of Girona, Girona, Spain
- 17.40 - 18.00** Analysis of perfluorinated compounds in water and sediments
Yolanda Pico¹, Matthias Onghena¹, Marinella Farré², Cristina Blasco¹ and Damià Barceló^{2,3}
¹Universitat de València, Burjassot, Valencia, Spain
²Institute of Environmental Assessment and Water Research, Barcelona, Spain
³Catalan Institute for Water Research, Girona, Spain

21.00 **Joint dinner**

FRIDAY, 3rd December 2010

Chairperson: Antoni Ginebreda

- 9.00 - 9.20** Influence of water scarcity on the effects of toxicants in fluvial biofilms
Helena Guasch¹, Vicenc Acuña², Natàlia Corcoll¹, Berta Bonet¹ and Alexandra Serra³
¹Institute of Aquatic Ecology, Girona, Spain
²Catalan Institute for Water Research, Girona, Spain
³Centre d'Estudis Avançats de Blanes, Girona, Spain; ICRA
- 9.20 - 9.40** Application of new mass spectrometric (MS) techniques for the efficient evaluation of contaminants in river waters. A case of study, the Henares River (Madrid, Spain)
A.R. Fernández-Alba^{1,2}, M.M. Gómez-Ramos¹, M.J. Gómez², M.J. Martínez-Bueno¹, A. Pérez^{1,3} and E. García-Calvo²
¹Pesticide Residue Research Group, University of Almería, Almería, Spain
²IMDEA-Agua, Madrid, Spain
³Facultad de Química, Universidad de la República, Montevideo, Uruguay
- 9.40 - 10.00** Applicability of Water Passive Samplers to Assess the Chemical Pollution and Ecotoxicity of Catalan Rivers
Neus Roig^{1,2}, Martí Nadal², Jordi Sierra^{1,3}, Antoni Ginebreda⁴, Marta Schuhmacher^{1,2} and José L. Domingo²
¹Department of Chemical Engineering, Universitat Rovira i Virgili, Tarragona, Spain
²Laboratory of Toxicology and Environmental Health, URV, Reus, Spain
³Universitat de Barcelona, Barcelona, Spain
⁴Institute of Environmental Assessment and Water Research, Barcelona, Spain

Session III: Facing the challenges ahead: approaches and case studies

Chairperson: Helena Guasch

10.00 - 10.30 *Urban Ecosystems - the Next Challenge*

Nancy Grimm

University of Arizona, Tucson, USA

10.30 - 10.50

The MODELKEY project: Connections between chemical and ecological status in the Llobregat River Basin

Isabel Muñoz¹, Damià Barceló^{2,3}, Roberta Carafa⁴, Antoni Ginebreda², Helena Guasch⁵, Miren López de Alda², Julio López-Doval¹, Marta Ricart⁵, Anna Romani⁵, and Sergi Sabater^{3,5}

¹ Department of Ecology, University of Barcelona, Barcelona, Spain

² Department of Environmental Chemistry, IDAEA-CSIC, Barcelona, Spain

³ Catalan Institute for Water Research (ICRA), Girona, Spain

⁴ Limnology Department / URS, Barcelona, Spain

⁵ Institute of Aquatic Ecology, University of Girona, Girona, Spain

10.50 - 11.20

How ecosystem services could improve hydrologic sustainability in river basins

Driss Ennaanay

Stanford University, Stanford, USA

11.20 - 11.40

Poster session/Coffee break

Chairperson: Arturo Elosegi

11.40 - 12.00

Emerging tools for risk assessment of key toxicants

Roberta Carafa¹, Montserrat Real¹, Antoni Munné², Antoni Ginebreda³, Helena Guasch⁴

¹ URS, Barcelona, Spain

² Agència Catalana de l'Aigua, Barcelona, Spain

³ Institute of Environmental Assessment and Water Research, Barcelona, Spain

⁴ Universitat de Girona, Girona, Spain

12.00 - 12.20

Use of integrative decision support systems to assess impacts of climate change in water resources systems. Application to Júcar river basin, Spain

J. Andreu, A. Solera, J. Paredes, M. Ángel Pérez, and L. Hernández-Barrios

Technical University of Valencia, Valencia, Spain

12.20 - 12.40

Valuing ecosystems services: opportunities and limits

Miguel A. Gual¹, Graciela Ferrer², Francisco Morillas², Francesc La-Roca²

¹ University Pablo de Olavide, Sevilla, Spain

² University of Valencia, Valencia, Spain



- 12.40 - 13.00** A Divide and Conquer Approach to Cope with Uncertainty, Health Risk and Decision Making in Hydrological Systems
Xavier Sanchez-Vila¹, Felipe P. J. de Barros^{1,2}, Diogo Bolster^{1,3}, and Wolfgang Nowak⁴
¹ Technical University of Catalonia, Barcelona, Spain
² Institute of Applied Analysis and Numerical Simulation University of Stuttgart, Stuttgart, Germany
³ University of Notre Dame, USA.
⁴ Institute of Hydraulic Engineering, University of Stuttgart, 70569 Stuttgart, Germany.

Final remarks and closure of the meeting

- 13.00 - 13.20** Final remarks and closure of the meeting
Damià Barceló
Institute of Environmental Assessment and Water Research, Barcelona, Spain and Catalan Institute for Water Research, Girona, Spain
- 13.20 - 15.00** **Lunch**
- 15.00** **End of meeting**

POSTERS

- 1.-** Climate-related shifts in matter budgets and phytoplankton dynamics in Germany's large rivers
Paulin Hardenbicker, Annette Becker and Helmut Fischer
German Federal Institute of Hydrology, Koblenz, Germany
- 2.-** Functional responses of stream biofilms to intermittency
Timoner X.^{1,2}, von Schiller D.³, Acuña V.², Tockner K.³ and Sabater S.^{1,2}
¹ Institute of Aquatic Ecology, University of Girona, Girona, Spain
² Catalan Institute for Water Research, Girona, Spain
³ Leibniz - Institute of Freshwater ecology and Inland Fisheries, Germany
- 3.-** Bio-geomorphic characterization of Mediterranean rivers. A methodological approach
Lobera, G.¹, Andres, I.², Díez, JR.³, Elosegi, A.³ Ibisate, A.⁴, López-Tarazón, J.A.¹, Martínez-Capel, F.⁵, Muñoz-Mas, R.⁵, Tena, A.¹, Vallés, F.², Vericat, D.^{6,7}, Batalla, R.J.^{1,6}
¹ University of Lleida, Lleida, Spain
² Institute of Water Engineering and Environment, UPV, Valencia, Spain
³ Department of Plant Biology and Ecology, University of the Basque Country, Bilbao, Spain
⁴ Department of Geography, Prehistory and Archaeology, EHU, Vitoria-Gasteiz, Spain
⁵ Research Institute for Integrated Management of Coastal Areas, UPV, Valencia, Spain
⁶ Forest Technology Centre of Catalonia, 25280 Solsona, Spain
⁷ Institute of Geography and Earth Sciences, Aberystwyth University, Wales, Ceredigion, UK

- 4.- Assessment of ecosystem services in 4 Mediterranean basins
Marta Terrado¹, Vicenç Acuña¹, T Mohamedali², Driss Ennaanay² and Sergi Sabater¹
¹ Catalan Institute for Water Research, Girona, Spain
² Stanford University, Stanford, USA

- 5.- Illicit drugs and metabolites in waste and surface waters along the ebro and llobregat river basins: levels and trends
Nicola Mastroianni¹, Cristina Postigo¹, Miren López¹ de Alda and Damià Barceló^{1,2}
¹ Institute of Environmental Assessment and Water Research, Barcelona, Spain
² Catalan Institute for Water Research, Girona, Spain

- 6.- Occurrence of phosphodiesterase type V inhibitors and their metabolites in WWTP
Jaume Aceña¹, Bianca Ferreira da Silva^{1,2}, Victoria Osorio¹, Antonio A. Mozeto², Sandra Perez¹, Damia Barcelo^{1,3}
¹ Institute of Environmental Assessment and Water Research, Barcelona, Spain
² Laboratório de Biogeoquímica Ambiental, UFSCar, São Carlos, Brasil
³ Catalan Institute for Water Research, Girona, Spain

- 7.- Analysis of perfluorinated compounds in tap water of Spanish cities by liquid chromatography-mass spectrometry
Marta Llorca¹, Marinella Farré¹, Yolanda Picó² and Damià Barceló^{1,3}
¹ Institute of Environmental Assessment and Water Research, Barcelona, Spain
² University of Valencia, Valencia, Spain
³ Catalan Institute for Water Research, Girona, Spain

- 8.- Relation between the presence of pharmaceuticals and the hydrological parameters of the Llobregat river
Victoria Osorio¹, Oriol Algaba², Sandra Pérez¹, Antoni Ginebreda¹ and Damià Barceló^{1,3}
¹ Institute of Environmental Assessment and Water Research, Barcelona, Spain
² Technical University of Barcelona, Barcelona, Spain
³ Catalan Institute for Water Research, Girona, Spain

- 9.- Simulation of the water balance of the NE Iberian Peninsula
Pere Quintana Seguí¹, Marco Turco² and Maria del Carmen Llassat²
¹ Observatori de l'Ebre, Roquetes, Spain
² University of Barcelona, Barcelona, Spain

- 10.- Understanding variability and thresholds for the management of ecosystem services
Honey-Rosés, J.
Catalan Institute for Water Research, Girona, Spain
Urban and Regional Planning, University of Illinois, Urbana Champaign, Champaign, IL, USA

- 11.- Determination of pesticides in sediments: comparison of extraction procedures
Ana Masia, Pablo Vázquez-Roig, Cristina Blasco and Yolanda Pico
University of Valencia, Valencia, Spain



- 12.- Application of a Spatially Referenced Regression Model for the Estimation of Nutrient Sources Related to Land Uses in the Llobregat Basin

R. Aguilera¹, R. Marcé^{1, 2} and S. Sabater^{1, 3}

¹ Catalan Institute for Water Research (ICRA), Girona, Spain

² Fluvial Dynamics and Hydrological Engineering (FLUMEN), University of Barcelona, Barcelona, Spain

³ Institute of Aquatic Ecology, University of Girona, Girona, Spain

- 13.- Response of community structure to sustained drought in Mediterranean rivers
Dani Boix¹, Emili García-Berthou¹, Stéphanie Gascón¹, Lluís Benejam¹, Elisabet Tornés^{1, 2}, Jordi Sala¹, Josep Benito¹, Antoni Munné³, Carolina Solà³ and Sergi Sabater^{1, 2}

¹Institute of Aquatic Ecology, University of Girona, Girona, Spain

²Catalan Institute for Water Research (ICRA), Girona, Spain

³Catalan Water Agency (ACA), Provença 204-208, 08036 Barcelona, Spain

- 14.- Multiclass determination of UV absorbing chemicals in sediments along the Ebro River basin

Pablo Gago¹, Silvia Díaz-Cruz¹ and Damià Barceló^{1, 2}

¹ Institute of Environmental Assessment and Water Research, Barcelona, Spain

² Catalan Institute for Water Research, Girona, Spain

- 15.- Polar pesticides in the Llobregat River (NE, Spain): Occurrence and risk assessment

Marianne Köck-Schulmeyer¹, Victoria Osorio¹, Sandra Pérez¹, Ramón López-Roldán², Susana González², Jose Luis Cortina², Miren López de Alda¹, Antoni Ginebreda¹ and Damià Barceló^{1, 3}

¹ Institute of Environmental Assessment and Water Research, Barcelona, Spain

² CETaqua, Water Technology Center, Barcelona, Spain

³ Catalan Institute for Water Research, Girona, Spain

- 16.- Exploring hydrological inter/intra annual variability in a Mediterranean mountains area. A way to evaluate potential effects of climate change on water resources with observed data?

Jérôme Latron, Pilar Llorens, Pablo Garcia-Estringana and Francesc Gallart

Institute of Environmental Assessment and Water Research, Barcelona, Spain

- 17.- Assessing the effect of 'global-change-type droughts' on evapotranspiration and water balance in a Mediterranean headwater catchment

P. Llorens¹, R. Poyatos², J. Latron¹, J. Delgado¹, I. Oliveras³, P. García-Estringana¹ and F. Gallart¹

¹ Institute of Environmental Assessment and Water Research (IDAEA), CSIC, Barcelona, Spain

² CREAM, Universitat Autònoma de Barcelona, Barcelona, Spain

³ School of Geography and the Environment, University of Oxford, Oxford, UK

- 18.- Using reach flow status frequency analysis for assisting the determination of the ecological quality in temporary streams.
Gallart, F.¹, Prat, N.², Brito, D.³, García-Roger, E.², De Girolamo, A.M.⁴, González-Barberá, G.⁵, Latron, J.¹, Llorens, P.¹, Lo Porto, A.⁴, Neves, R.³, Tzoraki, O.⁶, Querner, E.P.⁷, Quiñonero, JM.⁵, Rieradevall, M.², Tournoud, M.G.⁸, Nikolaidis, N.P.⁶
¹ IDAEA, CSIC, Barcelona, Spain
² FEM, D. Ecologia, UB, Barcelona, Spain
³ IMAR, Coimbra, Portugal
⁴ IRSA, CNR, Bari, Italy
⁵ CEBAS, CSIC, Murcia, Spain
⁶ EED, TUC, Chania, Greece
⁷ Alterra, Wageningen, Netherlands
⁸ Université Montpellier, Montpellier, France
- 19.- Illicit drugs in protected areas: levels and distribution in surface waters of the pego-oliva marsh (valencia, spain)
P. Vazquez-Roig¹, C. Blasco¹, V. Andreu², Y. Picó¹
¹ Facultat de Farmàcia, Universitat de València, Burjassot, València, Spain
² Centro de Investigaciones sobre Desertificación-CIDE (CSIC, Univ. Valencia). Albal, Spain
- 20.- Flood reconstruction from historical information to improve the extreme flood frequency analysis in the Ebro River
Balash, J.C., Sánchez-Herrero, A. & Ruiz-Bellet, J.L.
Department of Environment and Soil Sciences, University of Lleida, Spain
- 21.- Influence of naturally high fine sediment loads on benthic invertebrate community in a pyrenean river.
Buendía, C.^{1,2}, Gibbins, C.N.¹, Vericat, D.^{3,4}, López-Tarazón, J.A.² Batalla, R.J.^{2,3}
¹ University of Aberdeen, Aberdeen, UK
² University of Lleida, Lleida, Spain
³ Forest Technology Centre of Catalonia, Solsona, Spain
⁴ Aberystwyth University, Ceredigion, UK
- 22.- Designing flushing flows to remove the excess of macrophytes. The example of the lower Ebro River
Gonzalo, Laura E. ¹, Vericat, Damià^{2,3}, Batalla, Ramon J. ^{1,2}
¹ University of Lleida, Lleida, Spain
² Forest Technology Centre of Catalonia, Solsona, Spain
³ Aberystwyth University, Wales, UK
- 23.- Optimization and validation of a PLE-based method for the HPLC-QqLiT-MS analysis of fullerenes in particulate samples
Josep À. Sanchís¹, Marinella Farré¹, Damià Barceló^{1, 2}
¹ Institute of Environmental Assessment and Water Research (IDAEA), Barcelona, Spain
² Catalan Institute of Water Research (ICRA), Girona, Spain
- 24.- Sources, Occurrence and Environmental risk assessment of pharmaceuticals in the Ebro river basin
Meritxell Gros¹, Mira Petrovic^{2,3}, Antoni Ginebreda³, Damià Barceló^{1,3}
¹ Catalan Institute for Water Research (ICRA), Girona (Spain)
² Catalan Institution for Research and Advanced Studies (ICREA), Barcelona, Spain
³ Institute of Environmental Assessment and Water Studies (IDAEA-CSIC), Barcelona, Spain



- 25.- A conceptual model to assess the ecological risk in river basin. Application to the Ebro river

William Ocampo-Duque^{1,2}, Ronnie Juraske³, Vikas Kumar¹, Marti Nadal⁴, José L. Domingo⁴ And Marta Schuhmacher¹

¹ETSEQ, Universitat Rovira i Virgili, Països Catalans 26, Spain

²Faculty of Engineering, Pontificia Universidad Javeriana, Colombia

³Institute of Environmental Engineering, Zurich, Switzerland.

⁴Laboratory of Toxicology and Environmental Health, Universitat Rovira i Virgili, Reus, Spain

- 26.- Reconstructing the Santa Tecla flash-flood in the Sió River (Ebro River, NE Spain)

J. Tuset²; J. Balasch¹ and Ruiz-Bellet, J.L.¹

¹Department of Environment and Soil Sciences, University of Lleida, Spain

²Hydrology and soil conservation area, Forest Technology Centre of Catalonia, Spain

- 27.- Monitoring the effect of tides in the distribution of polar organic contaminants in the East River (NY)

Pablo A. Lara-Martín^{1,3}, Eduardo González-Mazo¹, Mira Petrovic², Damià Barceló² and Bruce J. Brownawell³

¹ Universidad de Cádiz, Puerto Real, Spain

² Departamento de Química Ambiental, IDAEA-CSIC, Barcelona, Spain

³ Stony Brook University, Stony Brook, NY, United States

- 28.- Removal of veterinary pharmaceuticals with RO/NF membranes

Davor Dolar^{1,2}, Ana Vuković³, Danijela Ašperger², Krešimir Košutić²

¹ Catalan Institute for Water Research, Girona, Spain

² Faculty of Chemical Engineering and Technology, Zagreb, Croatia

³ INA - Industrija nafte, Sisak, Croatia

- 29.- Antibiotic-resistance patterns in aquatic bacterial communities

Elisabet Marti and José Luis Balcázar

Catalan Institute for Water Research (ICRA), 17003 Girona, Spain

- 30.- Lessons learnt from past Flash Floods and Debris Flow events to propose future strategies on risk management

Àngels Cabello, Marc Velasco and Isabel Escaler

CETAqua Water Technology Center, Barcelona, Spain