

SCIENTIFIC PORTFOLIO

Environmental Decision Support Systems (EDSS)

Last updated: December 2016

Name of scientists in charge

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Technology description

- > Development and implementation of environmental decision support systems for a sustainable management of the urban water cycle (sewer systems, wastewater treatment and recovery systems and receiving media).



Research expertise

- > Knowledge management and development and implementation of multi-criteria Environmental Decision Support Systems (EDSS) to support decision making in water-related systems.
- > Integration of Artificial Intelligence (AI) techniques with conventional modelling techniques and control algorithms in EDSS to support the management of complex environmental systems, especially in water and wastewater management processes (e.g. membrane bioreactors) and fluvial ecosystems.
- > Planning, design, operation and maintenance of small and decentralized, including natural systems, medium and large wastewater treatment systems.
- > Multi-criteria (technical and socio-economical) and life cycle analysis of UWS.
- > Integrated control of the urban water cycle (sewer system, wastewater treatment plant and receiving media) to improve ecological status of water bodies.
- > Knowledge-based modelling of drinking water treatment systems.

Most relevant projects

- > **SANITAS** – Sustainable and Integrated Urban Water Systems Management. European Commission. VII FP Marie Curie Initial Training Network (coordinators). 2011-2015.
- > **NOVEDAR_Consolider** – Conception of the sewage treatment plant of the XXI century. Development, implementation and evaluation of techniques for the treatment and resources recovery from wastewaters. Ministry of Economy and Competitiveness. CONSOLIDER CSD 2007-00055. 2007-2012.
- > **REUCITY** – Innovative technologies for resource efficient cities. ACCIÓ – TECNIO SPRING program. 2015-2017.

Most relevant publications

- > S. Morera, L. Corominas, M. Poch, M.M. Aldaya, J. Comas. **Water footprint assessment in wastewater treatment plants** (2015). *Journal of Cleaner Production*, in press.
- > M. Verdaguer, J. Suy, M. Villaret, N. Clara, M. Bofill, M. Poch. **An exact approach for the prioritization process of industrial influents in wastewater systems** (2015). *Clean Technologies and Environmental Policy*, June 2015.
- > Garrido-Baserba, M., Hospido, A., Reif, R., Molinos-Senante, M., Comas, J., Poch, M. **Including the environmental criteria when selecting a wastewater treatment plant** (2014). *Environmental Modelling and Software*, 56, June 2014, 74-87.
- > Molinos-Senante, M., Reif, R., Garrido-Baserba, M., Hernández-Sancho, F., Omil, F., Poch, M., Sala-Garrido, R. **Economic evaluation of environmental benefits of removing pharmaceutical and personal care products from WWTP effluents by ozonation** (2013). *Science of the Total Environment*, 461-462 (1), 409-415.
- > Verdaguer, M., Clara, N., Poch, M. (2012) **Ant optimization-based method for managing industrial influents in wastewater systems**, *AIChE Journal*, 58(10), 3070-3079.
- > Prat, P., Benedetti, P., Corominas, L., Comas, J., Poch, M. (2012). **Model-based knowledge acquisition in Environmental Decision Support System for wastewater integrated management**. *Water Science and Technology*, 65(6), 1123-1129.
- > Guerrero, J., Guisasola, A., Comas, J., Rodríguez-Roda, I., Baeza, J.A. (2012). **Multi-criteria selection of optimum WWTP control setpoints based on microbiology-related failures, effluent quality and operating costs**. *Chemical Engineering Journal*, 188, 23-29.