The REGARD project brings 4 platforms together to assess the state of the Garonne river catchment (France) - integrating remote sensing data with hydrological and human activities modeling

Sabine Sauvage  
ECOLAB, Université de Toulouse, CNRS, INPT, UPS, sabine.sauvage@univ-tlse3.fr

Eric Martin  
CNRM-GAME, Météo-France, CNRS, UR RECOVER, Irstea, eric.martin@irstea.fr

Gregory Espitalier-Noël  
ECOLAB, Université de Toulouse, Fondation STAE, gregory.espitalier-noel@univ-tlse3.fr

Jordi Etchanchu  
Fondation STAE, Centre d’Etudes Spatiales de la Biosphère (CESBIO)

Youen Grusson  
Fondation STAE, Université de Toulouse, CNRS, INPT, UPS, Youen@univ-toulouse.fr

Part of the Civil Engineering Commons, Data Storage Systems Commons, Environmental Engineering Commons, Hydraulic Engineering Commons, and the Other Civil and Environmental Engineering Commons

Sauvage, Sabine; Martin, Eric; Espitalier-Noël, Gregory; Etchanchu, Jordi; Grusson, Youen; Lardy, Romain; Le Cointe, Pierre; Moussu, François; Portier, Lucie; Belaaziz, Salwa; Truche, Camille; Mballo, Moussa; Ancitl, François; Bardeau, Mélanie; Biancamaria, Sylvain; Chorda, Jacques; Gascoin, Simon; Le Moigne, Patrick; Lhuissier, Ludovic; Murgue, Clément; Ricci, Sophie; and Therond, Olivier, “The REGARD project brings 4 platforms together to assess the state of the Garonne river catchment (France) - integrating remote sensing data with hydrological and human activities modeling” (2016). International Congress on Environmental Modelling and Software. 40.  
https://scholarsarchive.byu.edu/iemssconference/2016/Stream-C/40

This Event is brought to you for free and open access by the Civil and Environmental Engineering at BYU ScholarsArchive. It has been accepted for inclusion in International Congress on Environmental Modelling and Software by an authorized administrator of BYU ScholarsArchive. For more information, please contact scholarsarchive@byu.edu, ellen_amatangelo@byu.edu.
The REGARD project brings 4 platforms together to assess the state of the Garonne river catchment (France) - integrating remote sensing data with hydrological and human activities modeling

Sabine SAUVAGE\(^{(a)}\), Eric MARTIN\(^{(b,c)}\), Grégory ESPITALIER-NOËL\(^{(a,d)}\), Jordi ETCHANCHU\(^{(d,e)}\), Youen GRUSSON\(^{(a,f)}\), Romain LARDY\(^{(g)}\), Pierre LE COINTE\(^{(d,h)}\), François MOUSSU\(^{(b,d)}\), Lucie PORTIER\(^{(d,i)}\), Salwa BELAQQIZ\(^{(d,g)}\), Camille TRUCHE\(^{(d,g)}\), Moussa MBALLO\(^{(j)}\), François ANCTIL\(^{(l)}\), Mélanie BARDEAU\(^{(h)}\), Sylvain BIANCAMARIA\(^{(e)}\), Jacques CHORDA\(^{(i)}\), Simon GASCOIN\(^{(e)}\), Patrick LE MOIGNE\(^{(b)}\), Ludovic LHUISSIER\(^{(k)}\), Sophie RICCI\(^{(l)}\), Vincent RIVALLAND\(^{(e)}\), Hélène ROUX\(^{(l)}\), José-Miguel SANCHEZ-PEREZ\(^{(a)}\), Olivier THEROND\(^{(g,m)}\).

\(^{(a)}\) ECOLAB, Université de Toulouse, CNRS, INPT, UPS, 31400 Toulouse, France sabine.sauvage@univ-tlse3.fr
\(^{(b)}\) CNRM-GAME, Météo-France, CNRS, Toulouse, France patrick.lemoine@meteo.fr
\(^{(c)}\) UR RECOVER, Irstea, Aix-en-Provence, France eric.martin@irstea.fr
\(^{(d)}\) Fondation STAE, 118 route de Narbonne, 31054 Toulouse, France gregory.espitalier-noel@univ-tlse3.fr
\(^{(e)}\) Centre d’Études Spatiales de la Biosphère (CESBIO), Toulouse, France simon.gascoin@cesbio.cnes.fr
\(^{(f)}\) Laval University, Dept Genie Civil & Genie des Eaux, Quebec City, PQ G1V 0A6, Canada Francois.Anctil@gci.ulaval.ca
\(^{(g)}\) UMR 1248 AGIR, INRA-INPT, Castanet-Tolosan, France rillard@toulouse.inra.fr
\(^{(h)}\) BRGM, 3 Rue Marie Curie, 31520 Ramonville-Saint-Agne, France P.LeCointe@brgm.fr
\(^{(i)}\) IMFT - Université de Toulouse, CNRS-INPT-UPS, Toulouse FRANCE Helene.Roux@imft.fr
\(^{(j)}\) LEGOS, Université de Toulouse, CNES, CNRS, IRD, UPS sylvain.biancamaria@legos.obs-mip.fr
\(^{(k)}\) Compagnie d’Aménagement des Coteaux de Gascogne, Chemin de Lalette, 65000 Tarbes, France c.murgue@cacg.fr
\(^{(l)}\) CECI CERFACS/CNRS, 42 avenue G. Coriolis, 31057 Toulouse ricci@cerfacs.fr
\(^{(m)}\) UMR 1121 LAE, INRA, Université de Lorraine, 68021 Colmar, France olivier.therond@toulouse.inra.fr

Abstract: In many watersheds, water resource states depend on human activities and interactions between different hydrological compartments including rivers, aquifers, reservoirs, soil and snow. High human withdrawals may cause difficulties for the management of low water periods. The project REGARD aims at showing how remote sensing data and information on human activity, combined with hydrological modelling, can provide a high spatial (some kilometres) and temporal resolution (daily) view of the water resources dynamics. Formalism of environmental and human activities are implemented into four hydrological modelling platform dealing with different space and time scales in order to simulate interactions between all the hydrological compartments of the water cycle (blue and green water) and
agricultural uses. The 4 platforms being applied to the whole or part of the Garonne catchment (South-West of France, 50 000 km²). The comparison of results allow assessing uncertainties both related to the input data and to the models themselves. The results show the possibility and usefulness to cross-validate the remote sensing data, models input and model outputs. The results also show the importance of the cross-validation between the models themselves. The 4 platforms will be described and can be used for different end-users according to their management purposes.

**Key Words:** Modelling platforms, green and blue water, remote sensing data, anthropogenic impacts, water resources, Garonne River.