



Olivier DELAIGUE

1 rue Pierre-Gilles de Gennes, CS 10 030
92 761 Antony CEDEX, France
+33 (0)1 40 96 60 55
olivier.delaigue@inrae.fr
webgr.inrae.fr

HAL ID: olivier-delaigue
ORCID ID: 0000-0002-7668-8468
Scopus ID: 55650039500
gitlab.irstea.fr/olivier.delaigue

Data Scientist

Work experience and internships

- Since Feb. 2013** **Permanent position at INRAE – HYCAR Research Unit (Antony)**
IRSTEA & INRA became INRAE in 2020
- Hydrological modelling
 - Software development
 - Database management for the ORACLE hydrological and biogeochemical observatory
 - Cartography and spatial analysis
 - Statistics and data analysis
- Sep. 2012 to Jan. 2013** **Fixed term contract at ONEMA – Research & Development Department (Vincennes)**
Assessing the impact of new bioindicators (study for French Ministry of Environment)
ONEMA & ONCFS became OFB in 2020
- Relationship with scientists to identify possibilities for adjusting the quality class limits of indicators in relation with the results of the European WFD intercalibration exercise
 - Aggregation of the different bioindicators and development of the national summary of results
- Supervision: Yorick Reyjol*
- Oct. 2008 to Aug. 2012** **Fixed term contract at CEMAGREF – Hydrosystems and Bioprocesses Research Unit (Antony)**
IPR+ programme (study for ONEMA)
CEMAGREF became IRSTEA in 2012
- Developing the new French fish-based index to assess river ecological quality: modelling metric responses to the environment, analysing the sensitivity of metrics and index responses to human pressures, ratification of results in interaction with users
- Supervision: Didier Pont & Jérôme Belliard*
- European WFD intercalibration exercise (study for the JRC of the European Commission)**
- Co-leader of the ECOSTAT group in charge of European fish-based methods to assess river ecological quality
 - Establishing the official European database of the group
 - Developing methods and computing programs in order to harmonize the European indices
- Supervision: Didier Pont*
- May 2008 to Sep. 2008** **Fixed term contract at CEMAGREF – Hydrobiology Research Unit (Aix-en-Provence)**
IPR+ programme (study for ONEMA)
- Establishment of the national database for the development of the new French fish-based index to assess river ecological quality
- Supervision: Didier Pont*
- Apr. 2007 to Apr. 2008** **Fixed term contract at CEMAGREF – Hydrobiology Research Unit (Aix-en-Provence)**
CYPREF project
- Computing cyprinids habitat preferences and developing fish-habitat models on the 5M7 software
- Supervision: Yann Le Coarer*
- Oct. 2006 to Mar. 2007** **Fixed term contract at CEMAGREF – Hydrobiology Research Unit (Aix-en-Provence)**
Therm and Hydrobiology programme (study for Electricity of France [EDF])
- Analysis of the influence of temperature on growth of juvenile cyprinid fish on the Lower Rhône river
- Supervision: Georges Carrel*
- Feb. 2006 to Aug. 2006** **Internship at ONCFS – Predatory Animals Research Unit (Gières)**
Master's 2nd year in Biomathematics and Biocomputing
ONEMA & ONCFS became OFB in 2020
- Analysis of grey wolf (*Canis lupus*) diet and analysis of results sensitivity to determination bias
- Supervision: Christophe Duchamp*
- Nov. 2004 to May 2005** **Internship at Claude Bernard University, Lyon 1 – Biometry and Evolutionary Biology Laboratory (Villeurbanne)**
Master's 1st year in Biomathematics and Biocomputing
- Analysis of the effects of heavy metals on life history traits of chironomids (*Chironomus riparius*)
- Supervision: Sandrine Charles*

Academic education

- Sep. 2006** **Master's 2nd year in Biomathematics & Biocomputing**
Claude Bernard University, Lyon 1 [UCBL] (Villeurbanne)
- Jun. 2005** **Master's 1st year in Biomathematics & Biocomputing**, UCBL (Villeurbanne)
- Jun. 2004** **Maîtrise [4th year post-graduate degree] in Population & Ecosystem Biology**, UCBL (Villeurbanne)
- Jun. 2003** **Bachelor's in Biology of Organisms**, UCBL (Villeurbanne)
- Jun. 2002** **DEUG [General University Studies Diploma] in Life Sciences**, UCBL (Villeurbanne)

Teachings provided

- 2020** **GIS/Remote Sensing Seminar (online) – Master 2 Fundamentals of Remote Sensing (IPGP), Master 2 TGAE (univ. de Paris) & Master 2 IGAST (univ. Gustave Eiffel)**
◦ Use of DTMs and GIS for hydrological modelling [2 hours]
- Since 2017** **Hydrological modelling course – VET engineers & Master 2 SAGE - École des Ponts ParisTech (Marne-la-Vallée)**
◦ Tutorial works [1 × 2.5 hours & 3 × 5 hours]
- Since 2016** **Hydrological modelling course – Master 2 SDUEE-HHGE - Sorbonne University (Paris)**
◦ Lecture course [1 × 9 hours, 3 × 6 hours & 1 × 3 hours]
◦ Tutorial works [1 × 6 hours & 4 × 3 hours]
- 2016** **Statistical hydrology course – 1st year engineers in Water engineering - Polytech Nice–Sophia (Antibes)**
◦ Lecture course [1 × 2 hours]
◦ Tutorial works [2 × 2 hours]

Training courses provided

- Since 2018** **Trainings in hydrological modelling using the airGR & the airGRteaching software**
◦ Flood forecasting workshops: familiarisation with tools and methods (Rabat, Morocco)
Presentation and familiarization with the software [12 hours / 15 attendees]
◦ HydroGR days 2019 meetings for academic researchers (Antony)
Organisation of the meetings. Presentation and familiarization with the software [18 hours / 25 attendees]
◦ HydroGR days 2018 meetings for operational departments and design offices (Antony)
Organisation of the meetings. Presentation and familiarization with the software [13 hours / 20 attendees]
- Since 2014** **R trainings (Antony) for researchers and students from INRAE, Sorbonne University, CNRS and the GRNE Doctoral School (ED 398)** [5 to 10 attendees]
in French or in English
◦ Beginners' course (programming and statistics) [1 × 14 hours & 2 × 21 hours]
◦ Language basics (programming) [4 × 14 hours & 14 × 21 hours]
◦ Geomatics basics (programming and geomatics) [6 × 14 hours]
- 2014** **IPR+ training for the engineers from ONEMA and the French water agencies (Vincennes)**
◦ Presentation and familiarization with of the fish-based index [28 hours / 15 attendees]

Supervisory responsibilities

- 2021** **L. Nunez Torres – Master 2 of engineering in Geoscience - Polytech Sorbonne (Paris)**
6 months ongoing
Simulation of a regulated basin using a semi-distributed hydrological model: the Seine River basin (France) and its reservoirs
Co-supervision: David Dorchies & Guillaume Thirel
- Since 2020** **J.-B. Boissonat – Data scientist - INRAE, HYCAR Research Unit (Antony)**
12 months / ongoing
Hydro-climatic databases management
- 2019-2020** **V. Mansanarez – Postdoc - University of Pau and Pays de l'Adour (Anglet)**
15 months
Statistical hydrological modelling of the Adour basin (BIGCEES project)
Co-supervision: Guillaume Thirel
Cooperation: Benoît Liqueur (University of Pau and Pays de l'Adour)
- 2019-2020** **R. Bertrand & L. Coquemont – Master 2 of engineering in Geoscience - Polytech Sorbonne (Paris)**
20 days
Establishment of a reference sample of watersheds in France
Co-supervision: Benoît Génot
- 2019** **P. Astagneau – Master 2 of engineering in Geoscience - Polytech Sorbonne (Paris)**
6 months
Comparison of hydrological modelling R packages
Co-supervision: Guillaume Thirel
Cooperation: Juraj Parajka (Technische Universität Wien) & Alberto Viglione (Politecnico di Torino)
- 2018-2020** **B. Génot – Data scientist - INRAE, HYCAR Research Unit (Antony)**
26 months
Hydro-climatic databases management & software development
- 2017** **S. V. Mata Espinoza – Master 2 SDUEE-HHGE - Pierre and Marie Curie University (Paris)**
6 months
airGR, a hydrological modelling package to improve? Assessment on a large sample of watersheds
Co-supervision: Guillaume Thirel
- 2016** **I. Haddadi – Master 1 Applied mathematics, statistics - Blaise Pascal University (Clermont-Ferrand)**
3 months
Statistical tests of significance applied to hydrology
Co-supervision: Guillaume Thirel

Social and cultural life

- Music** Graduate of the conservatory (trumpet, musical theory, musical analysis, chamber music). Member of the *Brassage Brass Band* (1st prizes in the Excellence division at the French national contests in 2009, 2011 to 2017, 2019 and 2020), of the *Brassage Wind Ensemble* and of the *Ut cinquième* and *Note & Bien* symphony orchestras. Additional musician in several other orchestras (*Hélios* symphony orchestra, etc.)
- Entertainment** Instructor and trumpet teacher at the musical summer camp of the Dauphiné Musical Federation (FSMD) at Estrablin during the months of July from 2000 to 2003
- Reading** Essays on the theory of evolution, ethology, history of science or epistemology
- Sport** Hiking, ultimate frisbee, badminton, cross-country skiing
- Misc** Driving license, first aid rescuer at work (since 2015)

Publications

Scientific papers

- A11. Astagneau, P.C., Thirel, G., Delaigue, O., Guillaume, J.H.A., Parajka, J., Brauer, C.C., Viglione, A., Buytaert, W. & Beven, K.J. (2021). Technical note: Hydrology modelling r packages – a unified analysis of models and practicalities from a user perspective. *Hydrology and Earth System Sciences* 25, 3937–3973, doi: 10.5194/hess-25-3937-2021.
- A10. Piazzzi, G., Thirel, G., Perrin, C. & **Delaigue, O.** (2021). Sequential data assimilation for streamflow forecasting: assessing the sensitivity to uncertainties and to updated variables of a conceptual hydrological model at basin scale. *Water Resources Research* 57, e2020WR028390, doi: 10.1029/2020WR028390.
- A9. Pont, D., Valentini, A., Rocle, M., Maire, A., **Delaigue, O.**, Jean, P. & Dejean, T. (2021). The future of fish-based ecological assessment of european rivers: from traditional EU Water Framework Directive compliant methods to eDNA metabarcoding-based approaches. *Journal of Fish Biology* 98, 354–366. doi: 10.1111/jfb.14176.
- A8. Tilmant, F., Nicolle, P., Besson, F., Bourgin, F., **Delaigue, O.**, Etchevers, P., Francois, D., Le Lay, M., Perrin, C., Rousset, F., Thiéry, D., Magand, C., Leurent, T. & Jacob, E. (2020). PREMHYCE: An operational tool for low-flow forecasting. *La Houille Blanche* 5, 37–44, doi: 10.1051/lhb/2020043.
- A7. Slater, L., Thirel, G., Harrigan, S., **Delaigue, O.**, Hurley, A., Khouakhi, A., Prodoscimi, I., Vitolo, C. & Smith, K. (2019). Using R in hydrology: a review of recent developments and future directions. *Hydrology and Earth System Sciences* 23, 2939–2963. doi: 10.5194/hess-23-2939-2019.
- A6. Belliard, J., Beslagic, S., **Delaigue, O.** & Tales, E. (2018). Reconstructing long-term trajectories of fish assemblages using historical data: the Seine River basin (France) during the last two centuries. *Environmental Science and Pollution Research* 25, 23430–23450. doi: 10.1007/s11356-016-7095-1.
- A5. Uher, E., Besse, J., **Delaigue, O.**, Husson, F. & Lebrun, J. (2018). Comparison of the metal contamination in water measured by diffusive gradient in thin film (DGT), biomonitoring and total metal dissolved concentration at a national scale. *Applied Geochemistry* 88, 247–257. doi: 10.1016/j.apgeochem.2017.05.003.
- A4. Beslagic, S. & **Delaigue, O.** (2017). The otter in Belgium: an unpopular and maltreated species (19th-early 20th centuries). *Anthropozoologica* 52, 155–170. doi: 10.5252/az2017n2a2.
- A3. Coron, L., Thirel, G., **Delaigue, O.**, Perrin, C. & Andréassian, V. (2017). The suite of lumped GR hydrological models in an R package. *Environmental Modelling & Software* 94, 166–171. doi: 10.1016/j.envsoft.2017.05.002.
- A2. Marzin, A., **Delaigue, O.**, Logez, M., Belliard, J. & Pont, D. (2014). Uncertainty associated with river health assessment in a varying environment: the case of a predictive fish-based index in France. *Ecological Indicators* 43, 195–204. doi: 10.1016/j.ecolind.2014.02.011.
- A1. Segurado, P., Caiola, N., Pont, D., Oliveira, J., **Delaigue, O.** & Ferreira, T. (2014). Comparability of fish-based ecological quality assessment for geographically distinct Iberian regions. *Science of the Total Environment* 476–477, 785–794. doi: 10.1016/j.scitotenv.2013.09.004.

Inproceedings

- IN3. Riffard-Chenet, M., Lebecherel, L., Andréassian, V. & **Delaigue, O.** (submitted). Using historical ground rainfall data to adjust a global rainfall reanalysis data-base over Africa. Africa 2019 Conference & Exhibition, Windhoek, 2-4 avr. 2019. hal-02609371
- IN2. Nicolle, P., Besson, F., **Delaigue, O.**, Etchevers, P., François, D., Le Lay, M., Perrin, C., Rousset, F., Thiéry, D., Tilmant, F., Magand, C., Leurent, T. & Jacob, E. (2020). PREMHYCE: An operational tool for low-flow forecasting. *Proceedings of the International Association of Hydrological Sciences* 383, 381–389, doi: 10.5194/piahs-383-381-2020.
- IN1. **Delaigue, O.**, Thirel, G., Coron, L. & Brigode, P. (2018). airGR and airGRteaching: Two open-source tools for rainfall-runoff modeling and teaching hydrology. *HIC 2018. 13th International Conference on Hydroinformatics* (eds. G.L. Loggia, G. Freni, V. Puleo & M.D. Marchis), vol. 3 of *EPiC Series in Engineering*, p. 541–548, EasyChair. doi: 10.29007/qsqj.

Scientific popularization

- AP2. **Delaigue, O.**, Eveillé, F., Le Fur, S., Pont, D. & Usseglio-Polatera, P. (2013). Milieux Aquatiques. De nouveaux bioindicateurs, plus sensibles, plus précis. *Techniques sciences méthodes*, 3, p. 14–16, Association scientifique et technique pour l'eau et l'environnement.
- AP1. **Delaigue, O.** (2006). Analyse du régime alimentaire du loup et sensibilité des résultats au biais de détermination. *Quoi de neuf ? Bulletin d'information du réseau loup* (eds. E. Marboutin & C. Duchamp), 16, p. 12–13, ONCFS, Réseau Grands Carnivores Loup-Lynx, Gap. <http://www.loupfrance.fr/pdf/Bulletin-Reseau-Loup-2007-N16.pdf>

Scientific book

- BO1. **Delaigue, O.** (2016). *Géomatique avec R. Manipuler, analyser et représenter des données géographiques*. IRSTEA. 229 p, hal-03094949.

Collective book chapter

- BC1. Tallec, G., Ansart, P., Guérin, A., Derlet, N., Pourette, N., Guenne, A., **Delaigue, O.**, Boudhraa, H. & Loumagne, C. (2013). L'Orgeval, un observatoire long-terme pour l'environnement : caractéristiques du bassin et variables mesurées. *L'Observation long terme en environnement. Exemple du bassin versant de l'Orgeval* (eds. G. Tallec & C. Loumagne), p. 11–33, Quae. ISBN: 978-2-7592-2073-1. hal-02599373

Scientific and technical reports (selection)

- R20. Thirel, G., Collet, L., Rousset, F., **Delaigue, O.**, François, D., Gailhard, J., Le Lay, M., Perrin, C., Samacoits, R., Terrier, M., Vidal, J.P. & Wagner, J.P. (2021). Projet CHIMERE 21. Chiers–Meuse. Évolution du régime hydrologie au 21e siècle. Agence de l'eau Rhin–Meuse. Convention 17C08004, 152 p. hal-03206168
- R19. Tilmant, F., Bourgin, F. & **Delaigue, O.** (2020). Évolution de l'outil de prévision des étiages PREMHYCE. INRAE-OFB. Partenariat 2019-263. Projet PREMHYCE, Antony, 20 p.

- R18. **Delaigue, O.** & Perrin, C. (2019). Expertise sur le calcul du module au droit de la centrale hydroélectrique Cabillon (Pyrénées-Atlantiques). IRSTEA, Antony, 41 p. hal-02609949
- R17. Lebecherel, L., Andréassian, V. & **Delaigue, O.** (2019). Base de données spatiale de pluie en Afrique. IRSTEA, Antony, 37 p. hal-02609962
- R16. Ramos, M.H., Perrin, C., Andréassian, A., **Delaigue, O.** & Viatgé, J. (2017). Assessment report on the 2016 flood event on the Seine and Loire basins (France). European Flood Awareness System (EFAS) dissemination centre, Rijkswaterstaat (NL), SCHAPI (France), IRSTEA (France), Antony, 43 p.
- R15. Nicolle, P., Lebecherel, L., Perrin, C. & **Delaigue, O.** (2016). Détermination de valeurs seuils sécheresse pour les eaux de surface du département de Mayotte. IRSTEA, Antony, 95 p. hal-02606202
- R14. Talès, E., Le Pichon, C., Mathieu, A., Zahm, A., Slawson, D., Albert, M.B., Girondin, M., Roy, M., Chevalier, R., Beslagic, S., **Delaigue, O.** & Belliard, J. (2015). Influence des aménagements sur les peuplements de poissons. *Programme PIREN-Seine. Phase 6, 2011-2015. Axe 4 : Écologie & Écotoxicologie : Les Déterminants de la qualité écologique du milieu aquatique*, p. 9–62, CNRS. hal-02604920
- R13. Vincent, B. & **Delaigue, O.** (2015). État du drainage en France : évolution et impact de réserves de substitution à partir des eaux drainées. IRSTEA-MAAF (DGPAAT/S DIR B&E BSE). Partenariat 2012-2014, Antony, 20 p. hal-02606289
- R12. Lobligeois, F., **Delaigue, O.** & Furusho, C. (2015). Développement de modèles hydrologiques semi-distribués GRP et TGR sur les bassins du Rhin, Sarre, Bruche, Ill et Zorn. SCHAPI-IRSTEA. Partenariat 2014/MRN/SPC, Antony, 86 p.
- R11. Marzin, A., Logez, M., **Delaigue, O.** & Pont, D. (2013). Programme IPR+. Révision de l'indice poisson rivière pour l'application de la DCE. Variabilité temporelle de l'indicateur et incertitudes associées à l'évaluation de la qualité écologique. ONEMA-IRSTEA. Partenariat 2012. Domaine Qualité des eaux. Action 37, Antony, 14 p.
- R10. Pont, D., **Delaigue, O.**, Belliard, J., Marzin, A. & Logez, M. (2013). Programme IPR+. Révision de l'indice poisson rivière pour l'application de la DCE. Version V.2.0 de l'indicateur. ONEMA-IRSTEA. Partenariat 2012. Domaine Qualité des eaux. Action 37, Antony, 208 p.
- R9. **Delaigue, O.** (2012). Étude comparative entre les résultats des anciens et des nouveaux indicateurs biologiques. Réalisation pour l'exercice d'évaluation de l'état écologique des eaux (hors substances) sur les stations RCS 2007-2009. Test de différents scénarios d'agrégation et de jeux de seuils de classes d'état. ONEMA, Vincennes, 43 p.
- R8. Beslagic, S., **Delaigue, O.**, Gorges, G. & Belliard, J. (2012). Répartition historique des espèces piscicoles et astacicoles sur le bassin de la Seine. ONEMA-Cemagref. Partenariat 2011. Domaine Changements globaux et climatiques et hydrosystèmes. Action 11, Antony, 49 p.
- R7. Logez, M., Belliard, J., Melcher, A., Kremser, H., Pletterbauer, F., Schmutz, S., Gorges, G., **Delaigue, O.** & Pont, D. (2012). Water bodies in Europe - Integrative Systems to assess Ecological status and Recovery. Deliverable 5.1-3: BQEs sensitivity to global/climate change in European rivers: implications for reference conditions and pressure-impact-recovery chains. WISER, 183 p. hal-02597152
- R6. Beslagic, S., Tales, E., **Delaigue, O.**, Van Buuren, L. & Belliard, J. (2012). Programme PIREN-Seine. Évolution à long terme de l'état écologique des cours d'eau du bassin de la Seine. Cemagref, Antony, 17 p.
- R5. Belliard, J., Beslagic, S., Demougin, V., **Delaigue, O.** & Pont, D. (2010). Développement d'une métrique basée sur les espèces migratrices. ONEMA-Cemagref. Partenariat 2010. Domaine Espèces aquatiques continentales. Action 5.2, Antony, 19 p. hal-02599672
- R4. Pont, D., **Delaigue, O.**, Beers, M., Breine, J., Buijse, T., Caiola, N., Carrasco, I., Dahlberg, M., Demol, T., Duncan, W., Dussling, U., Ferrera, T., Iliescu, S., Horky, P., Kelly, F., Kovac, V., Roset, N., Schabuss, M., Segurado, P., Schuetz, C., Storey, G., Urbanic, G., Vehanen, T., Virbickas, T. & Zogaris, S. (2011). River Fish Intercalibration Group. WFD Intercalibration Phase 2. Milestone report 6, ECOSTAT, Report to the European Community, 105 p.
- R3. Pont, D., Beers, M., Buijse, T., **Delaigue, O.**, Ferrera, T., Jepsen, N., Kovac, V., Schabuss, M., Segurado, P., Schuetz, C. & Vehanen, T. (2009). River Fish Intercalibration Group. WFD Intercalibration Phase 2. Milestone report 1, ECOSTAT, Report to the European Community, 48 p. hal-02592962
- R2. Le Coarer, Y. & **Delaigue, O.** (2008). Cypref. Préférences d'habitats des cyprinidés. Projet Maîtrises. Cemagref, Aix-en-Provence, 48 p.
- R1. **Delaigue, O.**, Carrel, G. & Pont, D. (2007). Influence de la température sur la croissance des juvéniles de poissons Cyprinidae. Cemagref-EDF, Aix-en-Provence, 47 p.

Technical guide

- G1. Reyjol, Y., Spyrtatos, V., Basilico, L., Archaimbault, V., Argillier, C., Bertrin, V., Boutry, S., Chauvin, C., **Delaigue, O.**, Delmas, F., Dutartre, A., Gevrey, M., Laplace-Treyture, C., Menay, M., Morin, S., Pont, D., Rosebery, J., Usseglio-Polettera, P., Mondy, C., Bouchez, A., Caquet, T., Rimet, F., Roucaute, M., Monnier, O., Stroffek, S. & Genin, B. (2013). *Bioindication : des outils pour évaluer l'état écologique des milieux aquatiques - Perspectives en vue du 2e cycle DCE - Eaux de surface continentales*. Les Rencontres de l'ONEMA. 56 p. hal-02598686

Manuals (latest versions)

- M4. Coron, L., **Delaigue, O.**, Thirel, G., Dorchies, D., Perrin, C. & Michel, C. (2021). *airGR: Suite of GR Hydrological Models for Precipitation-Runoff Modelling*. R package version 1.6.12, 97 p, doi: 10.15454/EX11NA.
- M3. **Delaigue, O.**, Coron, L. & Brigode, P. (2021). *airGRteaching: Teaching Hydrological Modelling with GR Rainfall-Runoff Models (Shiny Interface Included)*. R package version 0.2.11, 19 p, doi: 10.15454/WOSSKT.
- M2. Piazzzi, G. & **Delaigue, O.** (2021). *airGRdatassim: Ensemble-Based Data Assimilation in GR Hydrological Models*. R package version 0.1.3, 11 p, doi: 10.15454/WEYYVZ.
- M1. Pont, D., **Delaigue, O.** & Sidi, E. (2015). *Programme IPR+. Révision de l'indice poisson rivière pour l'application de la DCE. Manuel utilisateur*. ONEMA-IRSTEA. Partenariat 2014. Mise au point de l'indicateur poisson IPR+. Action 27, Antony, 109 p.

Symposiums

- C40. Andréassian, V., **Delaigue, O.**, Perrin, C., Janet, B. & Addor, N. (2021). CAMELS-FR: A large sample, hydroclimatic dataset for France, to support model testing and evaluation. 18th edition of the EGU general assembly. European Geosciences Union, Sharing Geoscience Online, 19-30 Apr. 2021. [oral]
- C39. Dorchie, D., **Delaigue, O.** & Thirel, G. (2021). airGRiwr: an extension of the airgr r-package for handling integrated water resources management modeling. 18th edition of the EGU general assembly. European Geosciences Union, Sharing Geoscience Online, 19-30 Apr. 2021. [oral]
- C38. Thirel, G., **Delaigue, O.**, Dorchie, D. & Piazzzi, G. (2021). New airGR developments: semi-distribution and data. 18th edition of the EGU general assembly. European Geosciences Union, Sharing Geoscience Online, 19-30 Apr. 2021. [oral]
- C37. Mansanarez, V., Thirel, G., **Delaigue, O.** & Liquet, B. (2020). Development of a semi-distributed hydrological model on a tidal-affected river: application to the Adour catchment, France. 17th edition of the EGU general assembly. European Geosciences Union, Sharing Geoscience Online, 4-8 May 2020. hal-03266300 [oral]
- C36. Piazzzi, G., Thirel, G., Perrin, C. & **Delaigue, O.** (2020). Assessing sensitivity and persistence of updated initial conditions through Particle filter and EnKF for streamflow forecasting. 17th edition of the EGU general assembly. European Geosciences Union, Sharing Geoscience Online, 4-8 May 2020. hal-03154766 [oral]
- C35. Thirel, G., **Delaigue, O.** & Ficchi, A. (2020). Latest developments of the airGR rainfall-runoff modelling R package: inclusion of an interception store in the hourly model. 17th edition of the EGU general assembly. European Geosciences Union, Sharing Geoscience Online, 4-8 May 2020. [oral]
- C34. Belliard, J., Beslagic, S., **Delaigue, O.**, Le Pichon, C., Tales, E. & Zahm, A. (2019). Évolution à long terme des peuplements de poissons du bassin de la Seine. 31e édition du PIREN-Seine. CNRS, Paris, 11-13 Dec.. 2019. hal-02609953 [oral]
- C33. Génot, B., **Delaigue, O.**, Brigode, P. & Andréassian, V. (2019). Convertir les cartes hydrologiques en profils en long du débit des rivières. Sécheresses, étiages et déficits en eau. Société hydrotechnique de France, Paris, 28-29 Nov. 2019. hal-02609948 [oral]
- C32. Nicolle, P., Lebecherel, L., Mauduit, C., **Delaigue, O.**, Ben Hassen, F., Chevaleraud, Y. & Perrin, C. (2019). Modélisation hydrologique en contexte peu jaugé: vers une meilleure connaissance des dynamiques d'étiages à mayotte. Sécheresses, étiages et déficits en eau. Société hydrotechnique de France, Paris, 28-29 Nov. 2019. hal-02609912 [oral]
- C31. Tilmant, F., Nicolle, P., Besson, F., **Delaigue, O.**, Francois, D., Le Lay, M., Perrin, C., Regimbeau, F., Thiéry, D., Magand, C., Leurent, T. & Jacob, E. (2019). PREMHYCE: un outil opérationnel pour la prévision des étiages. Sécheresses, étiages et déficits en eau. Société hydrotechnique de France, Paris, 28-29 Nov. 2019. [oral]
- C30. **Delaigue, O.**, Thirel, G., Coron, L., Brigode, P. & Andréassian, V. (2019). Les modèles pluie-débit GR en open source pour l'enseignement et la recherche. 3es Journées de modélisation des surfaces continentales. Sorbonne Université, Paris, 14-15 Nov. 2019. [poster]
- C29. **Delaigue, O.**, Thirel, G., Coron, L. & Brigode, P. (2019). airGRteaching: understanding basic hydrological processes with a free open source. 27th edition of the IUGG General Assembly. International Union of Geodesy and Geophysics, Montréal, 8-18 Jul. 2019. hal-02609945 [oral]
- C28. Slater, L., Thirel, G., Harrigan, S., **Delaigue, O.**, Hurley, A., Khouakhi, A., Prodoscimi, I., Vitolo, C. & Astagneau, P. (2019). Using R in hydrology: recent developments and future directions. 27th edition of the IUGG General Assembly. International Union of Geodesy and Geophysics, Montréal, 8-18 Jul. 2019. hal-02609946 [oral]
- C27. **Delaigue, O.**, Thirel, G., Coron, L. & Brigode, P. (2019). airGR and airGRteaching: two packages for rainfall-runoff modeling and teaching hydrology. 15th edition of the International R User Conference. R Foundation Conference Committee, Toulouse, 9-12 Jul. 2019. hal-02609956 [poster]
- C26. Génot, B., **Delaigue, O.** & Lebecherel, L. (2019). Cross-referencing catchment data: how R can provide essential tools for the development of models for flood prediction. 15th edition of the International R User Conference. R Foundation Conference Committee, Toulouse, 9-12 Jul. 2019. hal-02609958 [poster]
- C25. Brigode, P., **Delaigue, O.**, Thirel, G. & Coron, L. (2019). airGRteaching: How an interactive visualization tool can help students to evaluate the performance of a hydrological model and understand the role of its parameters. 16th edition of the EGU general assembly. European Geosciences Union, Vienna, 7-12 Apr. 2019. hal-02609369 [pico]
- C24. **Delaigue, O.**, Thirel, G. & Riboust, P. (2019). Latest developments of the airGR rainfall-runoff modelling R-package: composite calibration/evaluation criterion and improved snow model to take into account satellite products. 16th edition of the EGU general assembly. European Geosciences Union, Vienna, 7-12 Apr. 2019. hal-02609368 [poster]
- C23. Nicolle, P., Besson, F., **Delaigue, O.**, Francois, D., Le Lay, M., Perrin, C., Regimbeau, F., Thiéry, D., Tilmant, F., Magand, C., Leurent, T. & Jacob, E. (2019). PREMHYCE: an operational tool for low-flow forecasting. 16th edition of the EGU general assembly. European Geosciences Union, Vienna, 7-12 Apr. 2019. [pico]
- C22. Slater, L., Thirel, G., Harrigan, S., **Delaigue, O.**, Hurley, A., Khouakhi, A., Prodoscimi, I. & Vitolo, C. (2019). Using R in hydrology: recent developments and future directions. 16th edition of the EGU general assembly. European Geosciences Union, Vienna, 7-12 Apr. 2019. hal-02609370 [pico]
- C21. Thirel, G., Santos, L., Perrin, C. & **Delaigue, O.** (2019). The difficult use of discharge transformations in efficiency criteria calculation. 16th edition of the EGU general assembly. European Geosciences Union, Vienna, 7-12 Apr. 2019. hal-02609233 [oral]
- C20. Nicolle, P., Besson, F., **Delaigue, O.**, Francois, D., Le Lay, M., Perrin, C., Thiéry, D., Tilmant, F., Magand, C., Leurent, T. & Jacob, E. (2018). PREMHYCE: an operational tool for low-flow forecasting. 8th edition of the Global FRIEND-Water Conference, UNESCO, Beijing, 6-9 Nov. 2018. [oral]
- C19. **Delaigue, O.**, Thirel, G., Coron, L. & Brigode, P. (2018). airGR and airGRteaching: two open-source tools for rainfall-runoff modeling and teaching hydrology. 13th edition of the International conference of Hydroinformatics. University of Palermo, Palermo, 1-6 Jul. 2018. hal-02069222 [oral]

- C18. **Delaigue, O.**, Thirel, G., Bourgin, F. & Coron, L. (2018). Latest developments of the airGR rainfall-runoff modelling R package: new calibration procedures and other features. 15th edition of the EGU general assembly. European Geosciences Union, Vienna, 8-13 Apr. 2018. hal-02607857 [poster]
- C17. **Delaigue, O.**, Thirel, G., Coron, L. & Brigode, P. (2018). Using the airGRteaching R package for hydrology courses using lumped hydrological models. 15th edition of the EGU general assembly. European Geosciences Union, Vienna, 8-13 Apr. 2018. hal-02607859 [poster]
- C16. Lebecherel, L., Andréassian, V., **Delaigue, O.** & Riffard-Chenet, M. (2018). Using historical raingage data to adjust a global rainfall reanalysis over Africa. 15th edition of the EGU general assembly. European Geosciences Union, Vienna, 8-13 Apr. 2018. hal-02607858 [poster]
- C15. Perrin, C., Andréassian, V., Ramos, M.H., Thirel, G., Nicolle, P. & **Delaigue, O.** (2018). Empirical approach to hydrological modelling: a historical perspective in the case of the GR models. 15th edition of the EGU general assembly. European Geosciences Union, Vienna, 8-13 Apr. 2018. hal-02607860 [poster]
- C14. Thirel, G. & **Delaigue, O.** (2018). Using R in hydrology. Hydrological modelling and teaching with airGR and airGRteaching. 15th edition of the EGU general assembly. European Geosciences Union, Vienna, 8-13 Apr. 2018. [short course]
- C13. **Delaigue, O.**, Coron, L., Brigode, P. & Thirel, G. (2017). airGRteaching : un package pour l'apprentissage de la modélisation hydrologique pluie-débit. 6es Rencontres R. Univ. Pau & Pays de l'Adour, Anglet, 28-30 Jun. 2017. [poster]
- C12. Thirel, G., **Delaigue, O.**, Coron, L., Andréassian, A. & Brigode, P. (2017). airGRteaching: an R package designed for teaching hydrology with lumped hydrological models. 14th edition of the EGU general assembly. European Geosciences Union, Vienna, 24-28 Apr. 2017. hal-02606384 [pico]
- C11. Thirel, G., **Delaigue, O.**, Coron, L., Perrin, C. & Andréassian, A. (2017). Recent developments of the airGR R package, an open source software for rainfall-runoff modelling. 14th edition of the EGU general assembly. European Geosciences Union, Vienna, 24-28 Apr. 2017. hal-02606379 [poster]
- C10. Beslagic, S. & **Delaigue, O.** (2017). Du statut de nuisible à celui d'espèce protégée : la loutre en Belgique de la fin du 19e siècle à nos jours. Sales bêtes ! Mauvaises herbes ! "Nuisibles", une notion en débat. Association pour l'histoire de la protection de la nature et de l'environnement, Paris, 31 Jan. - 1 Feb. 2017. hal-02606288 [oral]
- C9. Thirel, G., **Delaigue, O.**, Coron, L., Perrin, C. & Andréassian, A. (2016). airGR: an R-package suitable for large sample hydrology presenting a suite of lumped hydrological models. 49th edition of the AGU general assembly. American Geophysical Union, San Francisco, 12-16 Dec. 2016. hal-02605221 [poster]
- C8. **Delaigue, O.**, Coron, L., Perrin, C., Andréassian, A. & Thirel, G. (2016). airGR : un package de modélisation hydrologique pour la simulation des débits. 5es Rencontres R. Univ. Toulouse 1, Toulouse, 22-24 Jun. 2016. hal-02606286 [poster]
- C7. Coron, L., Perrin, C., **Delaigue, O.**, Andréassian, A. & Thirel, G. (2016). airGR: a suite of lumped hydrological models in an R-package. 13th edition of the EGU general assembly. European Geosciences Union, Vienna, 17-22 Apr. 2016. hal-02603432 [poster]
- C6. Belliard, J., Beslagic, S., Tales, E. & **Delaigue, O.** (2015). Évolution à long terme des peuplements de poissons dans les cours d'eau du bassin de la Seine. 27e édition du PIREN-Seine. CNRS, Paris, 27-29 May 2015. [oral]
- C5. Furusho, C., Lobligeois, F., Riffiod, F., **Delaigue, O.**, Dorchie, D., Perrin, C. & Andréassian, V. (2015). Comment concilier efficacité des modèles de prévision des crues et contraintes opérationnelles ? Gestion des risques d'inondations. Société hydrotechnique de France, Montreuil, 27-28 May 2015. [poster]
- C4. Tales, E., Beslagic, S., **Delaigue, O.**, Belliard, J., Stefani, F. & Wolter, C. (2014). Réponse des peuplements de poissons à l'urbanisation et aux altérations anthropiques à long terme des fleuves. 26e édition du PIREN-Seine. CNRS, Paris, 5-7 Feb. 2014. hal-0260017 [oral]
- C3. Beslagic, S., **Delaigue, O.**, Marival, M., Petit, C. & Belliard, J. (2013). Fish settlements in the Seine River basin under Human pressures during the last two Centuries: contribution of historical data. 7th edition of ESEH conference. European Society for Environmental History, Munich, 20-24 Aug. 2013. hal-02599290 [oral]
- C2. Beslagic, S., **Delaigue, O.** & Belliard, J. (2012). Evolution of the seine catchment fish communities: what does the historical data reveal? 1st edition of I.S. Rivers. GRAIE, Lyon, 26-28 Jun. 2012. hal-02597325 [oral]
- C1. Beslagic, S., **Delaigue, O.**, Gorges, G., Tales, E. & Belliard, J. (2012). Évolution historique des peuplements de poissons dans le bassin de la Seine. 24e édition du PIREN-Seine. CNRS, Paris, 6-7 Feb. 2012. [oral]

Seminars

- CS11. Thirel, G., Collet, L., Rousset, F., **Delaigue, O.**, Francois, D., Gailhard, J., Lelay, M., Perrin, C., Reverdy, M., Samacoits, R., Terrier, M., Vidal, J.P. & Wagner, J.P. (2021) The CHIMERE 21 project. *MICCA meeting*, The Mosan Initiative for Climate Change Action "MICCA", Online, 6 Jul. 2021. hal-03279464 [oral]
- CS10. **Delaigue, O.** (2020). Utilisation des MNT et des SIG pour la modélisation hydrologique. Séminaire SIG/téledétection. IPGP, université de Paris & université Gustave Eiffel, Online, 20 Nov. 2020. hal-03288014 [oral]
- CS9. Thirel, G. & **Delaigue, O.** (2019). Découverte de la modélisation hydrologique GR à l'aide des packages R airGR et airGRteaching. idealCO, Online, 10 May 2019. [oral]
- CS8. Beslagic, S. & **Delaigue, O.** (2016). Histoire d'une espèce malmenée : la loutre en Wallonie (fin 19e - début 20e siècles). Les Midis de l'Histoire. Univ. de Namur, Namur, 28 Apr. 2016. hal-03288044 [oral]
- CS7. **Delaigue, O.** & Tallec, G. (2015). Outils pour l'observation long terme de l'environnement. Validation et bancarisation. Atelier technique RESOMAR. Mesure haute fréquence dans les réseaux SOMLIT et HOSEA, Ifremer, Brest, 15-16 Oct. 2015. hal-03288026 [oral]
- CS6. Blanchouin, A., **Delaigue, O.**, Ansart, P., Guérin, A., Flourey, P., Gaillardet, J. & Tallec, G. (2015). Validation des données haute fréquence sur l'observatoire ORACLE. Réseau des bassins versants, Paris, 6-7 Sep. 2015. [poster]

- CS5. Beslagic, S., **Delaigue, O.**, Gorges, G. & Belliard, J. (2012). Apport des documents historiques dans la compréhension de l'évolution des communautés piscicoles. Biodiversité aquatique : quelles pistes pour la gestion des rivières et plans d'eau ? ONEMA, Paris, 14-15 Nov. 2012. [oral]
- CS4. **Delaigue, O.** & Reyjol, Y. (2012). Principes généraux de la bioindication. Panorama des nouvelles méthodes développées. Commission Ressources en eau et milieux aquatiques. Association scientifique et technique pour l'eau et l'environnement, Nanterre, 18 Oct. 2012. [oral]
- CS3. Pont, D., **Delaigue, O.** & Belliard, J. (2011). Présentation du nouvel indicateur poisson rivière IPR+. Les Méthodes d'évaluation de l'état des eaux : situation et perspectives dans le contexte de la DCE. ONEMA, Paris, 19-20 Apr. 2011. [oral]
- CS2. Pont, D. & **Delaigue, O.** (2010). Intercalibration of fish-based methods to assess river ecological quality – Annex V process + River fish IC group: testing intercalibration methods. Drafting Group meeting on Intercalibration Comparability Criteria. ECOSTAT, Ispra, 26-27 août 2010. [oral]
- CS1. **Delaigue, O.** (2008-2011). River-Fish Intercalibration meetings. ECOSTAT. Sharfling, 25-26 Nov. 2008 ; Dublin, 27-29 May 2009 ; Edimbourg, 14-16 Oct. 2009 ; Düsseldorf, 2-4 Jan. 2010 ; Paris, 22-23 Apr. 2010 ; Langenargen, 23-25 Jun. 2010 ; Bratislava, 2-4 Feb. 2011 ; Ljubljana, 19-20 May 2011 ; Ispra, 27-28 Jun. 2011. [oral]

Databases

Hydrobiology

- DB1. **Delaigue, O.** & ECOSTAT European Group (2011). *WFD intercalibration of fish-based methods to assess river ecological quality*. Joint Research Centre of the European Commission.

Hydroclimatology

- DH2. Brigode, P., Génot, B., Lobligeois, F. & **Delaigue, O.** (2020). *Summary sheets of watershed-scale hydroclimatic observed data for France*. Université Paris-Saclay, INRAE, HYCAR Research Unit, Hydrology group, Antony. doi: 10.15454/UV01P1.
- DH1. **Delaigue, O.**, Génot, B., Lebecherel, L., Brigode, P. & Bourgin, P.Y. (2020). *Database of watershed-scale hydroclimatic observations in France*. Université Paris-Saclay, INRAE, HYCAR Research Unit, Hydrology group, Antony. <https://webgr.inrae.fr/activites/base-de-donnees/>.

Hydrology and Biogeochemistry

- DC2. Arpin-Pont, F., Ansart, P., Azougui, A., Barral, H., Blanchouin, A., Cappelaere, B., Chazarin, J.P., Cohard, J.M., **Delaigue, O.**, Demarty, J., Guerin, A. & Tallec, G. (2020). Flux tower by eddy covariance & infrared scintillometry on the ORACLE observatory. doi: 10.15454/M7OK9E.
- DC1. Tallec, G., Ansart, P., Guérin, A., **Delaigue, O.** & Blanchouin, A. (2015). *ORACLE observatory*. doi: 10.17180/OBS.ORACLE.

Computer software (latest versions)

Hydrobiology

- SB2. Corneil, D., Mondy, C., **Delaigue, O.**, Pont, D., Logez, M., Marzin, A. & Sidi, E. (2018). *IPR+: River Fish Index for the Assessment of the Ecological Quality of Rivers in Metropolitan France*. Version 1.0.3, <http://seee.eaufrance.fr/>. [developer] [2008-2012]
- SB1. Le Coarer, Y., Languille, P. & **Delaigue, O.** (2008). *5M7: A Model to Build River-Specific Fish Trajectories*. [developer] [2007-2008]

Hydrology

- SH9. Coron, L., **Delaigue, O.**, Thirel, G. Dorchies, D., Perrin, C. & Michel, C. (2021). *airGR: Suite of GR Hydrological Models for Precipitation-Runoff Modelling*. R package version 1.6.12, doi: 10.15454/EX11NA, <https://CRAN.R-project.org/package=airGR>. [maintainer, developer] [since 2014]
- SH8. **Delaigue, O.**, Coron, L. & Brigode, P. (2021). *airGRteaching: Teaching Hydrological Modelling with GR Rainfall-Runoff Models (Shiny Interface Included)*. R package version 0.2.11, doi: 10.15454/W0SSKT, <https://CRAN.R-project.org/package=airGRteaching>. Web app, <https://sunshine.irstea.fr/app/airGRteaching>. [maintainer, developer] [since 2017]
- SH7. **Delaigue, O.**, Génot, B., Coquemont, L. & Bertrand, R. (2020). *basinSample: Selection of French catchments based on hydroclimatic and morphological criteria*. Web app, <https://sunshine.irstea.fr/app/basinSample>. [maintainer, developer] [since 2019]
- SH6. **Delaigue, O.** & Tilmant, F. (2020). *Graphical user interface of Premhyce: Low-flow forecasting platform based on hydrological modelling*. Web app, <https://sunshine.irstea.fr/app/premhyce>. [developer] [2020]
- SH5. Génot, B., **Delaigue, O.**, Andréassian, V. & Brigode, P. (2020). *profilsHydro: Mapping of streamflows longitudinal profiles of French rivers*. Web app, <https://sunshine.irstea.fr/app/profilsHydro>. [maintainer, developer] [since 2020]
- SH4. Génot, B., **Delaigue, O.**, Andréassian, V. & Poncelet, C. (2020). *airGRmaps: Mapping of GR model parameters in France (for ungauged basins)*. Web app, <https://sunshine.irstea.fr/app/airGRmaps>. [maintainer, developer] [since 2020]
- SH3. Pelletier, A., Andréassian V. & **Delaigue, O.** (2021). *baseflow: Computes Hydrograph Separation*. R package version 0.13.2, doi: 10.15454/Z9IK5N, <https://cran.r-project.org/package=baseflow>. [contributor] [2019]

- SH2. Piazzì, G. & **Delaigue, O.** (2021). *airGRdatassim: Ensemble-Based Data Assimilation in GR Hydrological Models*. R package version 0.1.3, 10.15454/WEYYVZ, <https://CRAN.R-project.org/package=airGRdatassim>.
[maintainer, developer] [since 2020]
- SH1. Sleziaek, P. & **Delaigue, O.** (2019). *TUWteaching: Web application for hydrology modelling*. Web app, <https://webaapptuwmodel.shinyapps.io/TUWteaching/>.
[developer] [2019]

Websites (latest updates)

- W3. **Delaigue, O.**, Thirel, G., Bourgin, F. & Dorchie, D. (2021). *airGR: the INRAE GR Hydrological Models in a R Package*.
<https://hydroGR.github.io/airGR/>.
[maintainer, developer, writer] [since 2016]
- W2. **Delaigue, O.** & Thirel, G. (2021). *airGRteaching: Teaching Hydrological Modelling with GR*.
<https://hydroGR.github.io/airGRteaching/>.
[maintainer, developer, writer] [since 2017]
- W1. Ramos, M.H., Thirel, G. & **Delaigue, O.** (2021). *webGR: Catchment Hydrology research group, INRAE Antony*.
<https://webgr.inrae.fr/>.
[maintainer, writer] [since 2015]