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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, 4 × 6 hours & 1 × 3 hours]
◦ Tutorial works [1 × 6 hours & 5 × 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
Simulation of a regulated basin using a semi-distributed hydrological model: the Seine River basin (France) and its reservoirs
Co-supervision: David Dorchies (INRAE Montpellier) & Guillaume Thirel
- Since 2020 J.-B. Boissonnat – Data scientist - INRAE, HYCAR Research Unit (Antony)**
12 months
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 Liquet (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. hal-03367486
- 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> hal-03379840

Scientific book

- BK1. **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. hal-03367101
- 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. hal-03367563
- 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. hal-03303400
- 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. hal-03303383
- 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. hal-03303390
- 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. hal-03303513
- 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. hal-03303681
- 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. hal-03383159
- 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., Horky, P., Iliescu, S., 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. hal-03303254
- 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-03303119
- R2. Le Coarer, Y. & **Delaigue, O.** (2008). Cypref. Préférences d'habitats des cyprinidés. Projet Maîtrises. Cemagref, Aix-en-Provence, 46 p. hal-03303111
- 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, 38 p. hal-03303111

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-Treytore, C., Menay, M., Morin, S., Pont, D., Rosebery, J., Usseglio-Poletera, 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 0.2.12, 19 p, doi: 10.15454/WOSSKT.

- M2. Piazzì, 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. hal-03303684

Oral communications

Symposiums

- C43. Thirel, G., Collet, L., Rousset, F., **Delaigue, O.**, Francois, D., Gailhard, J., Le Lay, M., Perrin, C., Reverdy, M., Samacoits, R., Terrier, M., Vidal, J.P. & Wagner, J.P. (2021). Impact of climate change on the French part of the River Meuse - the CHIMERE 21 project. *7th International Meuse Symposium*, Online, 21 Sep. 2021. hal-03349036 [oral]
- C42. 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. hal-03370674 [oral]
- C41. 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. hal-03330881 [oral]
- C40. Thirel, G., **Delaigue, O.**, Dorchie, D. & Piazzì, 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. hal-03330861 [oral]
- C39. 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]
- C38. Piazzì, 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]
- C37. 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. hal-03266208 [oral]
- C36. 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]
- C35. Andréassian, V., Terrier, M., Perrin, C., Nicolle, P., Thirel, G. & **Delaigue, O.** (2019). Élasticité du débit d'étiage des rivières françaises aux facteurs climatiques : impact des barrages réservoirs. Sécheresses, étiages et déficits en eau. Société hydrotechnique de France, Paris, 28-29 Nov. 2019. hal-03349624 [oral]
- C34. 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]
- C33. 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]
- C32. Ramos, M.H., Charles, P., Pierre, N., Thirel, G., **Delaigue, O.** & Vazken, A. (2019) Prédiction des sécheresses hydrologiques aux échéances saisonnières : approches de modélisation et communication des risques. Sécheresses, étiages et déficits en eau. Société hydrotechnique de France, Paris, 28-29 Nov. 2019. hal-03349632 [oral]
- C31. Tilmant, F., Nicolle, P., Besson, F., **Delaigue, O.**, Francois, D., Le Lay, M., Perrin, C., Regimbeau, F., Thiéry, D., Magand, C., Laurent, T. & Jacob, E. (2019). PREMHYCE : un outil opérationnel pour la prédiction 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. hal-03370445 [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., Prodosimi, 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. hal-03378483 [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. hal-03276388 [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. hal-03378662 [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-03288044 [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. hal-03380364 [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. hal-03378831 [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-02600171 [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. hal-03380402 [oral]

Seminars

- S12. Thirel, G., Collet, L., Rousset, F., **Delaigue, O.**, Francois, D., Gailhard, J., Le Lay, M., Perrin, C., Reverdy, M., Samacoits, R., Terrier, M., Vidal, J.P. & Wagner, J.P. (2021). Impact of climate change on the French part of the River Meuse - the CHIMERE 21 project. Assemblée générale de l'UR HYCAR, INRAE, Antony, 27 Sep. 2021. hal-03355200 [oral]
- S11. Thirel, G., Collet, L., Rousset, F., **Delaigue, O.**, Francois, D., Gailhard, J., Le Lay, 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, Online, 6 Jul. 2021. hal-03279464 [oral]
- S10. **Delaigue, O.** (2020). Utilisation des MNT et des SIG pour la modélisation hydrologique. Séminaire SIG/télétection. IPGP, université de Paris & université Gustave Eiffel, Online, 20 Nov. 2020. hal-03288014 [oral]
- S9. 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]
- S8. 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]
- S7. **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]
- S6. Blanchouin, A., **Delaigue, O.**, Ansart, P., Guérin, A., Floury, P., Gaillardet, J. & Tallec, G. (2015). Validation des données haute fréquence sur l'observatoire ORACLE. Réseau des bassins versants, Paris, 6-7 Sep. 2015. hal-03379822 [poster]
- S5. 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. hal-03380340 [oral]
- S4. **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. hal-03379775 [oral]
- S3. 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. hal-03379783 [oral]
- S2. 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]
- S1. **Delaigue, O.** (2008-2011). River-Fish Intercalibration meetings. ECOSTAT. Scharfling, 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. (2021). *IPR+: River Fish Index for the Assessment of the Ecological Quality of Rivers in Metropolitan France*. Version 1.0.5, <http://see.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., Dorchie, 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 0.2.12, 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 hydro-climatic 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. Sleziaik, 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]