

MONNIER, Jérôme (ORCID <https://orcid.org/0000-0001-6227-7396>)
 French. Web site: <https://www.math.univ-toulouse.fr/~jmonnie>

CURRENT POSITION

Professor at INSA Toulouse,
 department of Applied Mathematics.

Institute of Mathematics of Toulouse.



EDUCATION

2007 HDR Computer Sciences &
 Applied Mathematics, Grenoble I.T.
 1995 PhD in Mathematics, university
 of Nice – Sophia-Antipolis.
 1992 M. Sc. in Computational
 Sciences, Sophia-Antipolis.
 1992 M. Sc. in Mathematics,
 university of Nice.

SCIENTIFIC PRODUCTION: <https://www.math.univ-toulouse.fr/~jmonnie/Recherche/Publications.html>

SUPERVISION (since 2015)

6 PhDs, 2 R&D Eng., 2 postdoctoral researchers, X M.Sc. (6 months internships).

Founder and co-lead of the multidisciplinary project-team MathHydroNum <https://mathhydronum.insa-toulouse.fr>

RELEVANT PAPERS (since 2015), h index: 21 (from Google scholar)

- K. Larnier, J. Monnier. "Hybrid physics-informed data-driven estimations of rivers features". Computational Geosciences, vol. , 2023.
- T. Malou, J. Monnier. "Covariance kernels investigation from diffusive wave equations for data assimilation in hydrology." Inverse Problems, vol 38 (4) pp 045003, 2022.
- L. Pujol, P.-A. Garambois, J. Monnier. "Multi-dimensional hydrological-hydraulic model with variational data assimilation for river networks and floodplains". Geoscientific Model Development (GMD) (15) pp. 6085-6113, 2022.
- J. Monnier, J. Zhu. "Physically-constrained data-driven inversions to infer the bed topography beneath glaciers flows. Application to East Antarctica". Computational Geosciences, vol. 25, pp 1793-1819, 2021. DOI pdf.
- J. Monnier, F. Couderc, D. Dartus, K. Larnier, R. Madec, J.P. Vila. "Inverse algorithms for 2D shallow water equations in presence of wet dry fronts. Application to flood plain dynamics". Advances in Water Ressources (97), 11-24, 2016.

CURRENT COLLABORATIONS

- ◆ P.-A. Garambois (Research scientist INRAe Aix-en-Provence) and his group. (Numerical modelling in hydrology).
- ◆ K. Larnier (Senior R&D engineer CS Group, team manager) and his collaborators. Hybrid AI algorithms & databases in spatial hydrology.
- ◆ M. Chyba (Prof. Univ. Hawaii-Manoa). Book writing on “Inverse problems and Data assimilation for real-worlds problems”. Notebook planned to be published in SIAM Series.
- ◆ O. Roustant (Prof. INSA Toulouse, IMT). Uncertainty quantification, multi-fidelity models.
- ◆ International Science Team of SWOT (NASA-CNES). I was the 1st scientific P.I. of the French CNES research project ”rivers discharge” (9 institutes - labs) (2y).

FELLOWSHIPS – AWARDS (on-going ones)

- ANR MUFFINS, lead of a WP (PI: P.-A. Garambois, INRAe). 610 k€. (2021-25).
- CNES funds (SWOT mission project / CS Group collaboration, 9 R&D engineers).
- Marsden fund, Royal Society of New-Zeland. Co-PI (PI: M. Sellier, Univ. Canterbury). (2019-24).

TEACHING ACTIVITIES

- ◆ Creation of numerous (6) Open Online Courses, including post-graduate ones “Inverse problems - Data Assimilation, Model Learning”.
- ◆ ~220 h/y of teaching: lectures, programming practicals (Python).

INSTITUTIONAL RESPONSIBILITIES (on-going)

University of Toulouse (including the 5 universities and the 5 tech. universities “école d’ingénieurs”)

- ◆ Member of the Committee dealing with “Innovation” (2022-xx).

INSA Toulouse

- ◆ President of the Internal Board of Directors (since 2022). (Policy of promotions, hiring, primes etc).
- ◆ Member of the Board of Directors (since 2022), including various of its sub-committees.

Olivier ROUSTANTNationality: French, web site: <https://olivier-roustant.fr/>• **CURRENT POSITION**Professor, INSA Toulouse,
France.• **EDUCATION**

2011 HDR, Université Paul J. Monnet, St-Etienne, France
 2003 PhD (applied math.), Univ. C. Bernard, Lyon, France
 1996 MsC (mathematics): Univ. C. Bernard, Lyon, France

• **INTERNATIONAL RECOGNITION (honors, prizes)**

- Invitation at Isaac Newton Institute for Mathematical Science, Cambridge (UK), for a semester “Uncertainty quantification for complex systems”, 2018.
- Co-Winner of the 2013 ENBIS Greenfield Challenge, with M. Lutz and E. Padonou.
- Recipient of the 2010 ENBIS Young statistician award.

• **SUPERVISION:** 15 PhD students (3 on-going), 2 post-docs.• **SCIENTIFIC PRODUCTION:** <https://olivier-roustant.fr/publications/>• **5 MOST RELEVANT PAPERS (10 last years), h index: 23**

1. Henderson I., Noble P., Roustant O. (2023), “Characterization of the second order random fields subject to linear distributional PDE constraints”, *Bernoulli*, 29(4), p. 3396-3422.
2. Bachoc F., Lopez-Lopéra A. F., Roustant O. (2022), “Sequential construction and dimension reduction of Gaussian processes under inequality constraints”, *SIAM Journal on Mathematics of Data Science*, 4(2), p. 772-800.
3. Roustant O., Barthe F., Iooss B. (2017), “Poincaré inequalities on intervals - application to sensitivity analysis”, *Electronic Journal of Statistics*, 11 (2), p. 3081-3119.
4. Roustant O., Padonou E., Deville Y., Clément A., Perrin G., Giorla J., Wynn H. (2020), “Group kernels for Gaussian process metamodels with categorical inputs”, *SIAM/ASA JUC*, 8(2), p. 775-806.
5. Durrande D., Ginsbourger D., Roustant O., Carraro L. (2013), “ANOVA kernels and RKHS of zero mean functions for model-based sensitivity analysis”, *Journal of Multivariate Analysis*, 115, p. 57-67.

• **EDITORIAL ACTIVITIES**

- Since 2019, Associate Editor of SIAM/ASA Journal on Uncertainty Quantification

• **COLLABORATIONS**

- Co-supervisor of the Chair in applied mathematics OQUAIDO (2016 – 2020). The Chair was a research consortium in computer experiments, gathering 6 partners from technological research (BRGM, CEA, IFPEN, IRSN, Safran, Storengy), and 6 partners from academia (Mines Saint-Etienne, Ecole Centrale Lyon, CNRS, Univ. Grenoble Alpes, Univ. Nice, Univ. Toulouse III). Activity report: <https://hal.archives-ouvertes.fr/hal-03217277>
- Industrial collaborations: Ansys, BRGM, CEA, CCR, IRSN, Renault, SHOM, STMicroelectronics.
- International academic collaborations: J. Fruth, T. Muehlenstaedt, S. Kuhnt (Univ. Dortmund), C. Genest (Mc Gill Univ.), D. Ginsbourger (Univ. Bern), R. Haftka (Univ. Florida), N. Luethen, S. Marelli, B. Sudret (ETH Zürich), H. Wynn (London School of Economics).

• **TEACHING ACTIVITIES (current or planned)**

- Co-supervisor of the double-degree by apprenticeship in artificial intelligence “ModIA”, in collaboration with INP-ENSEEIH (M1-M2, 1344 h at school, 24 students per year).
- Teacher in master courses: Data Analysis (M1, INSA Toulouse), Metamodeling with Gaussian processes (M2, INSA Toulouse), Global sensitivity analysis (M2, Univ. Toulouse III).
- Instructor in training sessions for the diffusion of statistical/machine learning methods to researchers/engineers (Cerfacs, 2023, October, 9-13).