



## Fanny Ville

ADDRESS: Av. Alcalde Rovira Roure 191, E-25198 Lleida, Catalunya, Spain.

MOBILE: +336 71 18 08 41

EMAIL: [fanny.ville@protonmail.com](mailto:fanny.ville@protonmail.com)

I am interested in the morpho-sedimentary dynamics of rivers. The whole of my study path, from my bachelor's degree to recently my doctoral thesis, have enabled me to develop my skills in data acquisition, processing and analysis in order to continually improve my understanding of river systems.

## WORK EXPERIENCE

JULY 2024 – Present > **POSTDOC: The role of dam removal in restoring morpho-sedimentary equilibrium and carbon fluxes in river networks: hydro-sedimentary balances and dynamics** > *University of Lleida, Spain. Fluvial dynamics Research group (RIUS)*

SEPTEMBER 2017 – APRIL 2018 (7 months) > **ECOGEA: environmental engineer: characterization of the eco-morphological risks associated to the hydropeaking functioning of hydroelectric dams in the Rhône, Mediterranean and Corse watershed** > (*Studies and Advice in Management of the Aquatic Environment, Toulouse, France*)

> Short term contract.

## EDUCATION

2024 > **PhD: Morpho-sedimentary dynamics of mountain rivers affected by hydropeaks**

> *University of Lleida, Spain. Fluvial dynamics Research group (RIUS)*. (grade: EXCELLENT CUM LAUDE)

- > Objectives: Assessment of Hydropeaking impact on (i) hydrology, (ii), hydraulics (iii) bed mobility
- > Methods: Analyse of continues flow and turbidity records and punctual water samples, photogrammetric survey to generate digital model of elevation and 2D hydraulics model, development of Ad hoc toolbox, mobility tracking by photography, tracking of painted sediment tracers, punctual bed mobility tracking by means of ADCP.

2017 > **MASTER DEGREE: Watershed and hydro system** > *University of Tours, France*. (5/16)

- > The course includes: geographic information systems (GIS), changes in watershed and fluvial systems, rivers hydraulics and sediment transport, sedimentary continuity and hydrology.

2014 > **EARTH SCIENCE DEGREE** > *University of Tours, France*. (3/30)

- > The course included: mineralogy, petrology, inorganic chemistry, surface geology, hydrology, soil science, water chemistry, geophysics, thermodynamics, sedimentary geology, geological mapping, magma metamorphic and sedimentary processes, and global tectonics.

2011 > **HIGH SCHOOL DEGREE IN SCIENCE** > *High School Paul Louis Courier Tours, France*.

- > Specialty biology/Earth science.

## RESEARCH STAYS

FEBRUARY 2017 – AUGUST 2017 **INTERNSHIP:** Obtainment of complete digital surface models (dry zone and wet zone as well) of a braided river from high resolutions photogrammetric data and estimation of the sedimentary flow > (CEREGE, European Center for Research and Teaching in Environmental Geoscience, Aix-en-Provence, FRANCE).

- > In the field: GPS surveying - particle size measurement.
- > In laboratory: Realization of a method for processing photogrammetric data and bathymetry determination. Estimation of sediment budgets at different time scales on the Buëch River (Alpes de hautes Provence) via the analysis of photogrammetric data. Then, linking solid transport with hydrological data.

MAY 2016 – July 2016 **INTERNSHIP:** analysis of proposals actions to restore a body of water > (SAVI, Indre Valley planning syndicate FRANCE).

- > In the field: State of play - Identification of the various impacts in different compartments (shift of the riverbed from talweg, re-parcelling, straightening rivers, recalibration bed, siltation of the riverbed, disturbance of stream banks by pastures, plan of water on the course, dyke construction, transverse structure and sedimentary discontinuity)
- > In laboratory: choice of the best restoration option and cost assessment.

FEBRUARY 14 – MARCH 14 **INTERNSHIP:** quantification of the flow of suspended solids > (Laboratory of GéHCO, Geo Hydro-system continental, Tours, FRANCE).

- > In the field: maintaining study sites - recovering data - adjusting of measuring instruments (turbidity sensor and water level) - taking samples and flow measurements (with an electromagnetic current meter).
- > In laboratory: filtering samples - correcting raw data - drawing up rating curves - investigating the relationship between flows rate/suspended material.

## PUBLICATIONS, CONFERENCES AND WORKSHOPS

### PEER REVIEWED PUBLICATIONS

2024

- › Ville, F., Vericat, D., Batalla, R. J., & Rennie, C. (2024). PhotoMOB: Automated GIS method for estimation of fractional grain dynamics in gravel bed rivers. Part 2: Bed Stability and Fractional Mobility accepted under review in *Earth Surface Processes and Landforms*
- › Ville, F., Vericat, D., Batalla, R. J., & Rennie, C. (2024). PhotoMOB: automated GIS method for estimation of fractional grain dynamics in gravel bed rivers. Part 1: grain size (accepted under review in *Earth Surface Processes and Landforms*)

2023› López, R., Ville, F., Garcia, C., Batalla, R.J. and Vericat, D. (2023) Bed-material entrainment in a mountain river affected by hydropeaking. *Science of The Total Environment*, 856, 159065. <https://doi.org/10.1016/j.scitotenv.2022.159065>

2022› Tena, A., Ville, F., Reñe, A., Yarnell, S.M., Batalla, R.J. and Vericat, D. (2022) Hydrological characterization of hydropeaks in mountain rivers (examples from Southern Pyrenees). *River Research & Apps*, <https://doi.org/10.1002/rra.4058>

2020› Vericat, D., Ville, F., Palau-Ibars, A. and Batalla, R.J. (2020) Effects of Hydropeaking on Bed Mobility: Evidence from a Pyrenean River. *Water*, 12, 178. <https://doi.org/10.3390/w12010178>

### OTHER PUBLICATIONS

2018› BARAN P., VILLE F., 2018. Caractérisation des risques écomorphologiques associés au fonctionnement par éclusée des masses d'eau des bassins Rhône-Méditerranée et Corse – Mission 3 : Diagnostic des risques écomorphologiques associés au fonctionnement par éclusée. Rapport ECOGEA E170723 pour AERMC, 77p et annexes.

### IN PREPARATION PUBLICATION

- › Ville, F., Vericat, D., Batalla, R. J., & Rennie, C. (2024). Longitudinal propagation of hydropeaks in contrasted mountain rivers: examples from Southern Pyrenees.
- › Ville, F., Vericat, D., Rennie, C. & Batalla, R. J. (2024). Longitudinal fractional bed mobility patterns in two contrasted hydropeaked mountain rivers (Southern Pyrenees)

### CONFERENCES and WORKSHOPS

2024

- › Sorting workshop 2024 (Grenoble, France, June 10 – June 13). Organised by INRAE, OXALIA, AQUA, CNRS, IGE, RT Terre et Energies, NSF.
- › Ville, F., Vericat, D, Batalla, R. J., Rennie, C. (2023). PhotoMOB: Assessing surface fractional mobility in gravel beds. Poster communication presented at the Sorting workshop 2024 (Grenoble, France, June 10 – June 13)

2023

- › Conference Apports des nouvelles technologies à l'étude du transport sédimentaire et de la morphodynamique (2023, Grenoble, France.). Organised by SHF (Société Hydrotechnique de France).

› Ville, F., Batalla, R. J., Rennie, C. & Vericat, D. (2023). PhotoMOB: Semi-automated fractional bed mobility analysis. Oral communication presented at the Conference Apports des nouvelles technologies à l'étude du transport sédimentaire et de la morphodynamique (2023, France)

› International Conference on Fluvial Sedimentology, ICFS (2023, Riva del Garda, Italy). Organised by University of Padua, Equinor, GeoSed, IAS, SEPM, TIDALITES

› Ville, F., Vericat, D., Batalla, R. J., & Rennie, C. PhotoMOB: Semi-automated analyses of bed fractional dynamics. Oral communication presented at the ICFS (2023, Italy)

› XVI REUNIÓN NACIONAL DE GEOMORFOLOGÍA. (2023, Zaragoza, Spain). Organised by Sociedad Española De Geomorfología.

› Ville, F., Vericat, D., Batalla, R. J., & Rennie, C. PhotoMOB: Semi-automated analyses of bed fractional dynamics. Oral and poster communication presented at the XVI REUNIÓN NACIONAL DE GEOMORFOLOGÍA (2023, Spain)

› I Jornadas de Morfodinámica Fluvial y Observatorio de Sedimentos en Ríos (MorFOS 2023). (2023, Zaragoza, Spain). Organised by la Dirección General del Agua (DGA, MITEC), CN IGME (CSIC, MICIN) y Universidad de Zaragoza (Unizar).

› Ville, F., Vericat, D., Batalla, R. J., & Rennie, C. PhotoMOB: Semi-automated analyses of bed fractional dynamics. Oral communication presented at the MorFOS congress (2023, Spain)

2022 › Conference, (On-line) TSMR CFBP 2022, Transport sédimentaire : rivières et barrages réservoirs (2022, Chatou, France). Organised by Cfbp, EDF, CNRS.

2021

› International symposium on bedload management (2021, Interlaken, Switzerland.). Organised by Wasser-Agenda 21 / Agenda 21 pour l'eau.

› Ville, F.; Monitoring of bed mobility in mountain rivers affected by hydropeaks. Round table introduction at the International symposium on bedload management (2021, Interlaken, Switzerland.)

› Congreso Iberaqua-Net: Red nacional de ecosistemas fluviales: retos y estrategias de futuro. (2021, Spain). Organised by IBERAQUA-NET

› Ville, F., Vericat, D.; Batalla, R.J. ; Rennie, C. Quasi-automated analyses of bed mobility in gravel bed rivers. Poster session presented at the Congreso Iberaqua-Net (2021, Spain)

2019

› MORPHPEAK Think Tank Meeting: measures to improve geomorphic and habitat conditions in hydropeaked rivers (2019, Lleida, Spain). Organised by UdL-RIUS

› Workshop, Eco-geomorphology of hydropeaked rivers: measurements, management and mitigation (2019, Lyon, France). Organised by AERMC, IRSTEA, UdL-RIUS.

2017

› Coutaz, J.; Ville, F.; Tal, M.; Fleury, J. Obtention de modèles numériques de surfaces complètes d'une rivière en tresse à partir des données photogrammétrie haute résolution en zone immergées et émergées. Poster session presented at the TSMR 2017 conference, Villeurbanne, France.

› Conference, TSMR 2017, Transport Solide et Morphodynamique des Rivières (2017, Villeurbanne, France). Organised by IRSTEA, EDF, CNRS, AFB.

## PARTICIPATION IN COMPETITIVE RESEARCH PROJECTS

**PROJECT TITLE:** El papel de la eliminación de represas en la restauración del equilibrio morfosedimentario y flujos de carbono en redes fluviales: balances y dinámica hidrosedimentaria

Funding body: MCIN - Ministerio de Ciencia e Innovación

Call for participation reference: TED2021-130815B-C32

Amount: 87.400,00 Euros

Period from: 2022 to: 2024

Principal Investigator: Ramon J. Batalla; Damián Vericat Querol

**PROJECT TITLE:** La importancia de la dinámica morfo-sedimentaria en la caracterización y evaluación del hábitat físico fluvial. Implicaciones para la gestión eficiente y perdurable de los ríos - MORPHHAB

Funding body: Ministerio de Economía y Competitividad

Call for participation reference: PID2019-104979RB-I00

Amount: 72.600,00 Euros

Period from: 2020 to: 2024

Principal Investigator: Damián Vericat Querol; Ramon J. Batalla

**PROJECT TITLE:** Dinámica morfo-sedimentaria en ríos de montaña afectados por hidro-puntas: efectos sobre el hábitat e implicaciones para su gestión (MorphPeak)

Funding body: Ministerio de Economía y Competitividad

Call for participation reference: CGL2016-78874-R

Amount: 164.560,00 Euros

Period from: 2016 to: 2019

Principal Investigator: Damián Vericat Querol; Ramon J. Batalla

## SKILLS

### FIELD WORK MONITORING AND MAINTENANCE:

- › Knowledge of the pre-requisites for selecting an optimal location for installing a motorisation station. (Trade-off between accessibility of the site, quality of the measurements, long-term robustness of the station, objectives).
- › Installation of data logger and measurement probe and automatics water sampler (Campbell, Solinst, HOBO, ISCO).
- › Control of the acquired data to detect measurement problems or measurement deviations.
- › Maintenance of measuring instruments (cleaning, repair, change of settings).
- › Establishment of calibration for water level and turbidity probes.
- › Creation, management and formatting of databases to facilitate their subsequent analysis.

## FIELD DATA ACQUISITION:

### Flow measurement:

- › Current meter: Valeport
- › Acoustic Doppler current profiler: Sontek RiverSurveyor M9

### Topographic measurement:

- › GPS RTK (Leica Viva GS15)
- › Total station (Leica TPS1200)
- › Terrestrial Laser Scanning (Leica BLK 360)

## LAB WORK:

- › Filtration of water sample to calculate suspended sediment concentration
- › Extraction of the organic matter by calcination.

## OFFICE WORK:

### Post-processing:

- › RTK-GNNS data and topographic survey (Leica Infinity)
- › M9 flow survey (RiverSurveyor Live)
- › Point cloud data (CloudCompare)
- › Image processing (GIMP)
- › Data manipulation analyses and visualisation (R, shiny)
- › Application development (R, shiny)
- › Spatial data (ArcGIS, QGIS)

## RESEARCH TOPICS:

- › Sediment dynamics in the context of agricultural plain (Louroux catchment, *France*; Becquet River, *France*): transfer of material, clogging, siltation of pond, impact of the recalibration of hydraulic sections for agriculture.

## LANGUAGE:

French (mother tongue); English (fluent); Catalan (A2); Spanish (B1)

## INTERESTS

### TRAVEL:

Australia (8 months), Nepal, Mongolia, Iceland, Greenland.

### River bed characterisation:

- › Pebble count method for grain size characterisation: use of template
- › Photographic method for grain size characterisation: Sedimetrics Digital gravelometer, Basegrain, PhotoMOB (tool developed in the background of my PhD (see peer reviewed publications))

- › Sieving of river bed samples
- › Particle size measurement by pebble-box method.

**Digital Photogrammetry:** Use of the photogrammetry method to obtain digital elevation models (both emerged and submerged) and associated error quantification. Use of Agisoft Metashape software.

**Hydraulic Modelling:** 2D modelling with IBER software. Calibration and modelling at kilometre scale in order to obtain rating curves at monitoring stations and hydraulic characterisation of hydropeaks and floods.

- › Sediment dynamics in mountain gravel-bed rivers (Buëch River, *France*; Noguera pallaresa River, *Spain*; Cinca River, *Spain*; Ésera River, *Spain*): hydropeaking, impoundment, gravel mining and embankments.

### SPORTS

Climbing

Horse riding (Galop 4), sailing, windsurfing, wingfoiling

## REFERENCES

**Damià Vericat**

[damia.vericat@udl.cat](mailto:damia.vericat@udl.cat)

**Ramon J. Batalla**

[ramon.batalla@udl.cat](mailto:ramon.batalla@udl.cat)

**Daniel Vázquez-Tarrío**

[danielvazqueztarrio@gmail.com](mailto:danielvazqueztarrio@gmail.com)

This CV is signed as a statement of responsibility on the certainty of the data.