

# Tristan BABEY, Ph.D.

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Nationality: French  
Born 25 April 1989 (29)



## RESEARCH INTERESTS

- Influence of geological structures and transport heterogeneity on contaminant degradation and immobilization
- Interface between models and data in hydrogeology
- Modelisation of reactive transport in dual porosity media

## EDUCATION AND RESEARCH EXPERIENCE

- **2019** **Postdoctoral Fellow**, Dept. of Earth System Science, Stanford University (USA)  
*'Reactive transport modelling of coupled biogeochemical-hydrologic processes in the unsaturated zone'* (Postdoctoral faculty sponsor: K. Maher)
- **2017** **Postdoctoral Fellow**, University of Rennes 1 – CNRS (France)  
*'Marine and continental controls of groundwater flooding in coastal areas. Impact of climate change on the coasts of Normandy (Western France)'* (Advisors: J.-R. de Dreuzy and L. Aquilina).
- **2016** **PhD in Hydrogeology**, University of Rennes 1 – CNRS  
*'Compartmentalization and contaminant transfer in underground media: interaction between transport processes, chemical reactivity and biological activity'* (Advisor: J.-R. de Dreuzy). Dissertation available [online](#) (in French).  
2015 International mobility: NCGRT, Flinders University, Adelaide, Australia  
*'Circovirus longevity and movement in groundwater: development of a transport model for the Ashbourne experimental site'*. Grant from the city of Rennes (3000€). (Advisor: E. Bresciani).  
2014 International mobility: University of California Davis, USA  
*'Modeling of pollutant degradation in aquifers with the software PhreeqC'* (Advisor: T. R. Ginn).
- **2013** **Master's Degree in Hydrogeology, Hydropedology and Hydrobiogeochemistry**, University of Rennes 1  
2013 Master internship: IDAEA, Barcelona, Spain, *'Influence of diffusive porosity structure on transport and reactivity in underground media'* (Advisor: J.-R. de Dreuzy).  
2012 Master internship: University of Rennes 1, *'Numerical assessment of the validity of the common hydrogeological model TOPMODEL'* (Advisors: E. Bresciani and P. Goderniaux).
- **2011** **Bachelor's degree in Geology**, University of Rennes 1

## SKILLS

- Programing: Matlab, C++ (notions), Python (notions)
- Modelisation software: PhreeqC, Modflow (interfaces PMWIN and Freewat)
- GIS: QGIS
- Langues: French (mother tongue), English (fluent)

## PUBLICATIONS

- Kolbe, T., J.-R. de Dreuzy, B. W. Abbott, L. Aquilina, **T. Babey**, C. T. Green, J. H. Fleckenstein, T. Labasque, A. M. Laverman, J. Marçais, S. Peiffer, Z. Thomas, and G. Pinay (2019), *Stratification of reactivity determines nitrate removal in groundwater*, Proceedings of the National Academy of Sciences, 201816892, doi: [10.1073/pnas.1816892116](https://doi.org/10.1073/pnas.1816892116).
- Babey, T.**, J.-R. de Dreuzy, A. Rapaport, and A. Rojas-Palma (2017), *Inherent relevance of MRMT models to concentration variance and mixing-induced reactivity*, Advances in Water Resources, 110 (Supplement C), 291-298, doi: [10.1016/j.advwatres.2017.09.024](https://doi.org/10.1016/j.advwatres.2017.09.024).
- Babey, T.**, Vieublé-Gonod, L., Rapaport, A., Pinheiro, M., Garnier, P. and J.-R. de Dreuzy (2017), *Spatiotemporal simulations of 2,4-D pesticide degradation by microorganisms in 3D soil-core experiments*, Ecological Modelling, 344, 48-61, doi: [10.1016/j.ecolmodel.2016.11.006](https://doi.org/10.1016/j.ecolmodel.2016.11.006).
- Babey, T.**, de Dreuzy, J.-R. and Ginn, T. R. (2016), *From conservative to reactive transport under diffusion-controlled conditions*, Water Resources Research, 52(5), 3685-3700, doi: [10.1002/2015WR018294](https://doi.org/10.1002/2015WR018294).
- Babey, T.**, de Dreuzy, J.-R. and Casenave, C. (2015), *Multi-Rate Mass Transfer (MRMT) models for general diffusive porosity structures*, Advances in Water Resources, 76(0), 146-156, doi: .
- de Dreuzy, J.-R., Rapaport, A., **Babey, T.** and Harmand, J. (2013), *Influence of porosity structures on mixing-induced reactivity at chemical equilibrium in mobile/immobile Multi-Rate Mass Transfer (MRMT) and Multiple INTERacting Continua (MINC) models*, Water Resources Research, 49(12), 8511-8530, doi: [10.1002/2013WR013808](https://doi.org/10.1002/2013WR013808).

## COMMUNICATIONS

- 2015 **AGU Fall Meeting** (San Francisco, USA), '*Modeling the impact of heterogeneous spatial distribution of soil microbes on pesticide biodegradation at the centimeter scale*'. Poster.
- 2014 **AGU Fall Meeting**, '*Influence of diffusive porosity architecture on kinetically-controlled reactions in mobile-immobile domain*'. Poster.
- 2013 **AGU Fall Meeting**, '*Impact of immobile porosity architecture on reactive transport in mobile/immobile models*'. Oral presentation.

## TEACHING

- 2013 Teacher assistant, 72h/y, Master's degree level
  - 2015 *Basics in hydrogeology and hydrogeological modeling*
- 2013 Online coach, 24h/y, undergraduate level
  - 2015 *Basics in environmental sciences for the online campus [ENVAM](#)*