Stanford

Simon Treillou

Postdoctoral Scholar, Civil and Environmental Engineering

Bio

BIO

Simon Treillou (he/him) is a postdoctoral researcher at the Baker Coastal Lab at Stanford University, where he studies coastal transport and mixing processes with a focus on wave-driven circulation dynamics. He holds a Master's degree in Applied Mathematics from INSA Toulouse and recently completed his Ph.D. in Coastal Oceanography at the University of Toulouse (France) in the LEGOS lab under the supervision of Patrick Marchesiello. His research uses advanced 3D wave-resolving models to improve the understanding of tracer dispersal in nearshore environments, addressing critical environmental challenges such as contaminant mitigation and ecosystem resilience. Simon's work will integrate numerical modeling, remote sensing, and experimental methods to advance knowledge of coastal physics.

PROFESSIONAL EDUCATION

- Doctor of Philosophy, Université de Toulouse, France , Coastal Oceanography (2024)
- Master of Science, Institut National des Sciences Appliquées (INSA) de Toulouse, France , Applied Mathematics (2021)

STANFORD ADVISORS

- Christine Baker, Postdoctoral Faculty Sponsor

LINKS

- nearshore.stanford.edu: https://nearshore.stanford.edu/
- LinkedIn: https://www.linkedin.com/in/simon-treillou/
- Google Scholar: https://scholar.google.fr/citations?user=ziaU214AAAAJ&hl=fr

Publications

PUBLICATIONS

- **Flashrip dynamics in the surfzone: Contrasting wave-and group-resolving models** *OCEAN MODELLING*
  Marchesiello, P., Klotz, A., Pezerat, M., Treillou, S., Almar, R.
  2026; 202

- **Tracer Dispersion by Surfzone Eddies: Assessing the Impact of Undertow Vertical Shear** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Treillou, S., Marchesiello, P., Baker, C. M., McWilliams, J., Dumas, F.
  2025; 55 (8): 1211-1234

- **PlantBiophysics.jl: a high-performance, modular software for prototyping and scaling biophysical models from leaf to canopy** *IN SILICO PLANTS*
  Vezy, R., Treillou, S., Mackeown, S., Peynaud, E., Perez, R. P. A., Arsouze, T., Dauzat, J.
  2025; 7 (2)

- **Correction of coherent interference in wave-resolving nearshore models and validation with experimental data** *OCEAN MODELLING*
  Treillou, S., Marchesiello, P., Baker, C. M.
  2024; 189
- **Correction of GLS turbulence closure for wave-resolving models with stratification** *OCEAN MODELLING*
  Marchesiello, P., Treillou, S.
  2023; 184