



Okinawa Institute of Science and Technology

Coral-reef dynamics – S2T Unit

The Okinawa Institute of Science and Technology Graduate University (OIST; see www.oist.jp) is a dynamic new graduate university of science and technology in Okinawa Prefecture, Japan. The university is located on 85 hectares of protected forestland overlooking beautiful shoreline and coral reefs. The campus is striking architecturally, and the facilities are outstanding ([OIST campus video tour](#)). There are no academic departments, which facilitates multidisciplinary research. Outstanding resources and equipment are provided and managed to encourage easy access and collaboration. English is the official language of the University, and the university research community is fully international, with more than 50 countries represented. OIST is rapidly gaining recognition in the worldwide academic community as a model for excellence in education and research.

Position summary:

[The Shocks, Solitons & Turbulence \(S2T\) Unit](#) is looking for a postdoctoral scholar to study the dynamics of coral reefs using mathematical, computational and observational tools. We are developing models to capture transport phenomena (e.g. nutrients, spawning) associated with atmosphere-ocean energy exchanges (e.g. reef-induced breaking waves, shear-induced currents and tidal flows) and its coupling with coral growth/death (e.g. reaction-advection-diffusion equations). These models are used to capture the high-frequency content of reef dynamics (e.g. down to tide cycles) which then feed long-term dynamical models (e.g. on millennial time scales) from which the successful candidate will extract reef-front propagation properties that can be compared with actual satellite data. The model will then be exploited to explore long-term reef-front evolutions under different climate and environmental scenarios as well as to comment on the sensitivity and controllability of the reef-front structure. The successful candidate will benefit from broad expertise on coral reefs available from the Marine Science units at OIST and a unique view on actual reefs from the office to contemplate reality daily. The work is theoretical in nature, and we are looking for talented applied mathematicians. However, the credibility of the mathematical model relies on measurements and knowledge from other research units and unit members. For this reason, excellent team spirit is required.

Working Location:

1919-1 Tancha, Onna-son, Okinawa, Japan 904-0495

Responsibilities:



1. Perform innovative research in the context given above (see position summary)
2. Publish the results in high-quality journals
3. Present the results at conferences

Qualifications:

(Required)

1. PhD in Fluid Mechanics, or related discipline
2. Solid experience with partial differential equations and high-performance computing
3. Proficiency in English

(Preferred)

1. Experience with compressible flows (shock waves), thermodynamics and/or dissipative solitons
2. Experience with linear-stability and bifurcation theories
3. Experience with Python and Fortran languages

Report to:

Professor Emile Toubert / Shocks, Solitons and Turbulence Unit

Starting Date:

As early as possible

Term & Working hours:

Term: Full-time, fixed term appointment for 3 years

Working hours: Discretionary

Compensation & Benefits:

Compensation in accordance with the OIST Employee Compensation Regulations

Benefits:

- Relocation, housing and commuting allowances
- Annual paid leave and summer holidays
- Health insurance (Private School Mutual Aid <http://www.shigakukyosai.jp/>)
- Welfare pension insurance (kousei-nenkin)
- Worker's accident compensation insurance (roudousha-saigai-hoshou-hoken)



How to Apply:

Apply by emailing your Submission Documents to:

emile.touber[at]oist.jp

(Please replace [at] with @ before using this email address)

* Prior to the start of employment all new hires are required to successfully complete a background check. Personal information including employment history and academic background should be submitted to OIST after a conditional offer of employment.

* [Postdoctoral position in coastal oceanography](#) is also available at the Marine Biophysics Unit of OIST.

Submission Documents:

- Cover letter in English
- Curriculum vitae in English
- Contact details of at least two referees

Application Due Date:

Open until filled

Declaration:

* OIST Graduate University is an equal opportunity, affirmative action educator and employer and is committed to increasing the diversity of its faculty, students and staff. The University strongly encourages women and minority candidates to apply.

* Information provided by applicants or references will be kept confidential, documents will not be returned. All applicants will be notified regarding the status of their applications.

* Please view our policy for rules on external professional activities

(<https://groups.oist.jp/acd/information-disclosure/>).

* Further details about the University can be viewed on our website (www.oist.jp).