UNIVERSITÉ Grenoble Alpes
FRANCE

Master's Program in
Environmental Fluid Mechanics

The research internship subjects below have been selected among those chosen by the students during the last five years. The objective of this list is to provide you with an overview of the variety of possible topics.

Title of internship	Scientific domain	Laboratory or Company	Advisor(s)
2020-2021			
A climatological study of heat waves in Grenoble over the 21st century	Climate science	LEGI, Grenoble	Prof Chantal Staquet Dr Sara Bacer
Hybrid wave energy converter: experimental study for propagating waves	Renewable marine energy	LMFA, Lyon	Dr Emmanuel Mignot Dr Nicolas Rivière
Recovery of heavy chlorinated organic compounds in saturated porous media	Hydrology, soil remediation	BRGM, Lyon	Dr Hossein Davarzani Dr Stefan Colombano
Analysis of turbulent wind data and generation of synthetic turbulent winds	Turbulence, renewable wind energy	Center for wind energy research, Oldenburg, Germany	Prof Joachim Peinke
Developing new innovation strategies for technological fields related to wind turbine powertrains	Renewable energy (hydrogen)	ZF company, Belgium	Dr Sonja Goris
Modelling of an outdoor comparative test cell	Civil engineering	Ecole Spéciale des Travaux Publics, Paris	Dr Andrea Kindinis Dr Francesca Contrada
Analysis of sediment transport and morphodynamics in a model experiment of an estuary	Sediment transport, fluid dynamics	LEGI, Grenoble	Dr Joël Sommeria
Dynamics of rotating downslope gravity currents from experiments on the Coriolis platform	Fundamental fluid dynamics	LEGI, Grenoble	Dr Eletta Negretti Dr Achim Wirth
Prediction of wintertime atmospheric stability in the Grenoble valley around 2030 with machine learning	Atmospheric science	LEGI, Grenoble	Prof Chantal Staquet Dr Sara Bacer

2019-2020			
On the vortices generated by gravity currents	Fundamental fluid dynamics - Oceanography (experimental)	LEGI, Grenoble	Dr Eletta Negretti Dr Achim Wirth
Prediction of pollution level in an Alpine valley using machine learning	Atmospheric dynamics, air quality	LEGI, Grenoble	Prof Chantal Staquet Enzo Le Bouedec
Dynamics of inertial particles in sheared turbulence	Fundamental fluid dynamics (experimental)	LEGI, Grenoble	Dr Martin Obligado Dr Nathanael Machicoane
Experimental Study of a Double Chamber Injector	Fundamental fluid dynamics - Industry (experimental)	LEGI, Grenoble	Dr Martin OBLIGADO Dr Zhujun HUANG
Impact of Climate Change on the Characteristics of Anticyclones Over Europe	Climate change (data analysis)	LEGI, Grenoble	Prof Chantal Staquet Dr Sara Bacer
Abyssal turbulence in the vicinity of Lucky Strike	Oceanography (data analysis + numerical modeling)	University of Britany, Brest	Prof Guillaume Roullet Dr Jonathan Gula
Towards optically iso-indexed particles with the ambient fluid for modeling powder snow avalanches	Chemical engineering	LEGI, Grenoble	Dr Marie Rastello
Mixed layer depth variability in the North Atlantic Ocean in the ARMOR 3D dataset	Oceanography (data analysis)	University of Britany, Brest	Dr Anne Marie Treguier Prof Guillaume Maze
Flows in rotating fluids: Modal Acoustic Velocimetry in the ZoRo experiment	Earth science (experimental)	Institute of Earth Sciences, Grenobe	Dr Henri-Claude Nataf Dr Philippe Cardin
Analysis of vertical mixing by turbulence in stratified fluids	Fundamental fluid dynamics (theoretical)	LEGI, Grenoble	Dr Joël Sommeria
Back and forth nudging SWOT-like observations in a quasi-geostrophic two-layer model	Oceanography, data assimilation (numerical)	Institute of Geophysics and the Environment, Grenoble	Dr Emmanuel Cosme Dr Bruno Deremble Dr Florian Le Guillou Dr Sammy Metref
2018-2019			
Understanding mass transport in colloidal dispersion flows with microfluidic systems	Rheology (experimental)	Laboratory of Chemical Engineering, Toulouse	Dr Yannick Hallez
Laboratory experiments of rotating gravity currents on a conical slope	Fundamental fluid dynamics - Oceanography (experimental)	LEGI, Grenoble	Dr Eletta Negretti
Hydrodynamics and vortex	Fundamental fluid	Technical University of	Prof Koen Blanckaert

shedding behind spanwise cylinders in open channels	dynamics - Sediment transport (experimental)	Wien, Austria	
2D CFD simulations of a farm of vertical axis water turbines	Renewable marine energy (numerical)	LEGI, Grenoble	Dr Thierry Maître
Pressure from 2D-PIV Snapshot for Unsteady Model Velocities	Fundamental fluid dynamics (experimental)	Institute of Fluid Dynamics and Technical Acoustics, Technical University of Berlin, Germany	Dr Marvin Jentzsch
Dynamics of liquid-solid Contact Line at Nano-scale	Physics of liquids (experimental)	Institute of Fluid Mechanics, Toulouse	Pr Thierry Ondarçuhu
Characterization of viscoelastic liquids thanks to particle migration in a microfluidic device	Rheology (experimental)	Laboratory of Rheology and Processes, Grenoble	Prof Hugues BODIGUEL Dr Antoine NAILLON
Impact of regional wind forcing on the formation and the intensification of coastal eddies	Fundamental fluid mechanics - Oceanography (numerical)	Ecole Polytechnique, Paris	Dr Alexandre Stegner
Experimental Studies of the Threshold of Oscillation of a Scarred Vocal Fold Replica	Bio-Fluid Mechanics (experimental)	LEGI, Grenoble	Dr Annemie Van Hirtum and Dr Xavier Pelorson
Numerical simulation of high-voltage circuit breakers	Gas dynamics (numerical)	General Electric (GE) company	Dr Quentin Rognard
Sediment transport from the Cotopaxi Volcano	Sediment transport (numerical)	National Polytechnic School of Equator, Equator	Dr Khaled Hamad Dr Rubén Basantes
2017-2018			
Simulation of a turbine wake with OPENFOAM	Renewable marine energy (numerical)	LEGI, Grenoble	Dr Joël SOMMERIA
Experimental and CFD studies of the wake generated by water vertical axis turbine	Renewable marine energy (numerical and experimental)	LEGI, Grenoble	Dr Joël SOMMERIA
Analysis of foam flow in porous media	Rheology, porous media (experimental)	Laboratory of Rheology and Processes, Grenoble	Prof Hugues BODIGUEL Dr Antoine NAILLON
Forced and chaotic variability of basin-scale heat budgets in the global ocean : focus on the South Atlantic crossroads	Oceanography (numerical)	Institute of Geophysics and Environment, Grenoble	Dr Thierry PENDUFF
Measurement of concentration fluctuations in a bubbly flow by laser-induced fluorescence	Fundamental fluid dynamics (experimental)	Institute of Fluid Mechanics, Toulouse	Dr Frédéric RISSO
Fog by stratus lowering: experimental and numerical	Atmospheric dynamics	Météo France	Dr Christine LAC Dr Frédéric BURNET

study of the life cycle	(numerical + data analysis)		
Parametric subharmonic instability of an internal gravity wave field	Fundamental fluid mechanics (theoretical)	LEGI, Grenoble	Prof Chantal STAQUET
Identification of weather types over the Grenoble valley	Atmospheric dynamics (data analysis)	LEGI, Grenoble	Prof Chantal STAQUET
Measurement of turbulent fluxes at col du Lautaret by Eddy Covariance	Atmospheric dynamics (data analysis)	Institute of Geophysics and Environment, Grenoble	Dr Jean-Martial Cohard
An analytical study on shallow jets	Fundamental fluid mechanics (theoretical)	LEGI, Grenoble	Dr Eletta NEGRETTI
Morphological and dynamical characterization of porous media using micro computed-tomography	Fundamental solid mechanics (experimental)	Institute of Geophysics and Environment, Grenoble	Dr Laurent OXARANGO
2016-2017			
Influence of the initial and boundary conditions on gravity currents	Fundamental fluid dynamics (experimental)	LEGI, Grenoble	Dr Eletta NEGRETTI
Design of sulfides nano-particles for optimal electronic properties energy and environmental applications	Chemical engineering (experimental)	IFP Energies Nouvelles, Lyon	Dr Audrey BONDUELLE Dr Antoine FECANT
An alternative approach to correct CO_2 fluxes from eddy-covariance measurements in the atmospheric boundary layer	Atmospheric dynamics (experimental)	University of Grenada, Spain	Dr Andrew S. KOWALSKI
The influence of wave speed in idealized vortex dynamics	Fundamental fluid dynamics (numerical)	LEGI, Grenoble	Dr Achim WIRTH
Modeling the temperature profile of Martian glaciers at mid-latitudes	Atmospheric dynamics of planets (numerical)	Center for Ice and Climate, University of Copenhagen, Denmark	Dr Nanna KARLSSON Dr Mai WINSTRUP Dr Christine SCHØTT HVIDBERG
North Atlantic chaotic heat content modulated by the atmosphere : an ensemble ocean simulation analysis	Oceanography (numerical)	Institute of Geophysics and the Environment, Grenoble	Dr Thierry PENDUFF
Construction of TELEMAC-2D model on the southern Lagoon of Camargue with marine influence	Coastal oceanography (numerical)	LEGI, Grenoble	Dr Philippe SECHET
Experimental study of water turbine wakes	Renewable marine energy	LEGI, Grenoble	Dr Joël SOMMERIA

	(experimental)		
Parametric sub-harmonic instability of an internal gravity wave beam	Fundamental fluid mechanics (numerical)	LEGI, Grenoble	Prof Chantal STAQUET