

Frédéric Bouchette – CV

Shallow-water hydrodynamics and inferred sedimentary processes

Keywords: Geophysics, littoral, hydro-morphodynamics, shallow water, interdisciplinarity, paleo-geography & climate, sedimentary geology

I live in Nîmes, a small roman town to the South of France, along the northwestern Mediterranean coast.

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www.bouchette.org www.soltc.org
www.gm.univ-montp2.fr www.gladys-littoral.org
www.mirmidon.org www.atlashydrolittoral.org

Research Gate and ORCID accounts (not always up-to-date):

https://www.researchgate.net/profile/Frederic_Bouchette

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My scientific activity concerns the development of concepts and methods in relation with the dynamics of shallow water environments. I study the domain that extends from a few tens of meters of water depth at sea to the coastal watershed onshore, with a particular emphasis on the littoral area and the shoreline itself. I have worked mainly in Spain, Taiwan, Canada, Norway, Chad, Italy, Greece, Switzerland, USA, in the french Alps and in the Gulf of Lions (Mediterranean Sea). I build my research combining various points of view from geophysics to geology, including applied mathematics, quantitative geomorphology, civil engineering and relations with coastal archeology and the analysis of littoral hazards. To reach my scientific goals, I combine numerical simulation, basin/ flume experimentation, geophysical monitoring & imagery and works in the field.

Present-day position and personal informations

Associate professor at University of Montpellier [UM], lab. **Géosciences-Montpellier**

Born on january 2nd, 1973. Single, with two children

French (mother tongue), fluent Spanish and English speaking/writing. Basics of Norwegian.

C and Bash scripting advanced developer, advanced GMT user, open-source and GPL active sustainer

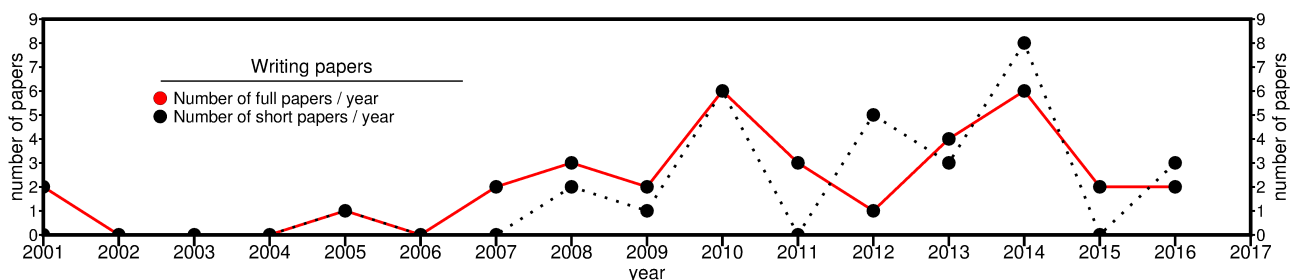
I play guitar for 35 years. I like: skiing, trekking, scuba diving, and doing judo.

I am (or have been) member of AGU, ASF, SGF, IAS (AGU on January, 1st, 2017)

Life member of Coastal Education and Research Foundation (<http://www.cerf-jcr.org/>)

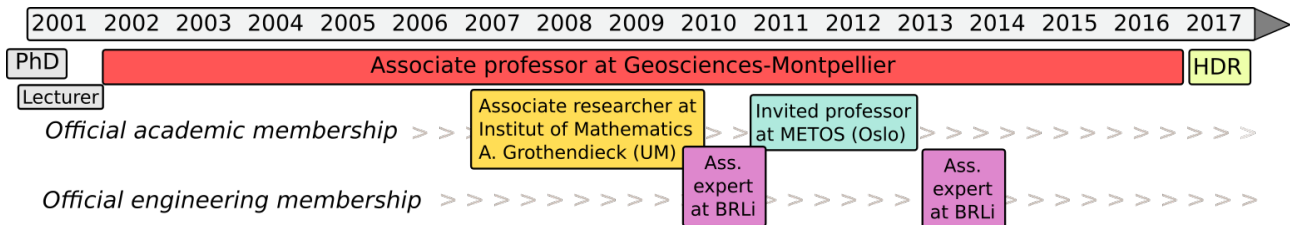
Scientific references – Summary

68 (35 + 33) papers and short papers in rank A peer-reviewed journals with DOI
4 contributions to books and edition works
12 scientific and technical reports for academics and engineering
6 invited lecture conferences (by a University strictly)
> 70 proceedings in conferences (oral presentation & posters)



Working experience / Position history

Jan. 2013 – Aug. 2013	Associate Expert (50%) at Bas-Rhône Languedoc Engineering, Nîmes
Jul. 2011 – Aug. 2012	Gjesteprofessor at University of Oslo (Department of oceanography/ meteorology)
Sep. 2010 – Jan. 2011	Associate expert at Bas-Rhône Languedoc Engineering, Nîmes
Sep. 2010 – present	Associate Professor at Geosciences-M [UMR 5243], UM2
June 2009 – Sep. 2010	CNRS delegate scientist at Institute of Mathematics and Modeling [UMR 5149], UM2
Aug. 2008 – present	Associate researcher at Institute of Mathematics and Modelling [UMR 5149], UM2
May 2001 – Aug. 2008	Associate Professor at Geosciences-M [UMR 5243], UM2
Dec. 2000 – May 2001	Lecturer (ATER) at University of Montpellier 2
Oct. 1997 – Oct. 2000	PhD grant & Lecturer at University of Montpellier 2 (french MENRT + Monitorat)



Educational background

Oct. 1997 – Dec. 2000	PhD at University of Montpellier [UM] PhD Thesis title: Wave/seabottom interaction. The South East Basin carbonate ramp, France (2001). Institute of Earth Sciences of Montpellier, 22 , 250 pp. PhD Supervisor: Michel Séguret with reviews of V. Rey (LSEET Toulon), F. Guillocheau (Géosciences-Rennes), D. Bernoulli (UTZ, Switzerland), J.-L. Rubino (TOTAL) and M. Daignières (UM)
Sep. 1997 – Jun. 1998	Master of Civil Engineering at UM (Additional training courses)
Sep. 1996 – Jun. 1997	Master (DEA) of Earth Sciences at UM (+ Master Civil engineering)
Sep. 1992 – Jun. 1996	Graduate classes in several concomitant formations including: Physics & Geosciences (UM), Archaeology and Art History (UM3). Graduate Thesis: The wave-induced liquefaction process.

Distinctions

2012	Prize <i>Chercheur d'Avenir</i> for a work on the calculation of nearshore water levels
2010 – present	PES <i>Prime d'Excellence Scientifique</i> (a french national grant)
1996	Grant <i>Jeunesse et Sport</i> for ASTEME initiative (Geology of Bolivia for Children)
1996	Grant for ASTEME initiative (Geology and landscapes of Bolivia for children)

Administrative tasks

2016 – present	Head of staff <i>Dynamics of surface processes</i> at Laboratoire Géosciences-M
2013 – present	Leader for the creation of a program MISTRALS littoral & Shoreline (www.mistrals-littoral.org)
2011 – 2014	Co-head of national SOERE Littoral – Trait de côte
2010 – present	Head of SO-LTC (Mediterranean shoreline observatory, see www.soltc.org)
2010 – 2012	Deputy director of OSU OREME in charge of scientific observatories
2009 & 2012	Involvement in COPS committees (recruitment of scientists in french universities)
2009 – 2012	Active member of the Office of Observatory OREME
2009 – 2012	Elected member of the Council of Observatory OREME in Montpellier
2007 – 2011	Elected member of the Council of Geosciences-M laboratory
2007 – 2008	Elected member of the Administrative Council of University of Montpellier II
2005 – 2014	Leader of GLADYS (scientific group for littoral dynamics in Languedoc Roussillon) and GLADYS 2 from 2008 (See www.gladys-littoral.org)
2003 – 2005	Nominated member of the Council of ISTEEM
2004 – present	Representative member of the Observatoire Départemental du Littoral Héraultais

Scientific review & evaluation

2014 – present	Member of the Editorial Board of the Journal of Environmental Processes (Springer)
2013 – 2014	Expert Member of the ARP MERMED (discuss the future of the marine research in the Mediterranean basin), personally in charge of the axis "vulnerability of littoral"
2010	Member of the AERES for the evaluation of french research laboratories
2009 – present	Scientific expert for AAP (review of several proposals for french ANR)
2005 – present	Reviewer for various journals (Terra Nova, Journal of Coastal Research, Norois, J. African Sciences, Marine Geology, Geophysical Research Letters,...)

Research supervision

PhD & post-docs:

2014 – 2016	PhD Lise Petitjean (50% co-supervisor); GLADYS Funds
2012 – 2015	PhD Fabien Rétif (50% effective co-supervisor); FUI LITTOCMS
2012 – 2015	PhD Romain Chailain (30% effective co-supervisor) CIFRE IBM
2011 – 2013	PhD Lucie Campmas (50% effective co-supervisor); ANR KUNSHEN
2010 – 2013	PhD Alexis Nutz (20%; contribution to the supervision)
2008 – 2009	Post-doc Adrien Lambert (supervisor); Project COPTER ANR-05-BLAN-0005
2008 – 2011	Post-doc Elena Brambilla (supervisor); Project Marie-Curie NESTS
2007 – 2008	Post-doc Cléa Denamiel (supervisor); GLADYS funds
2007 – 2008	Post-doc Elena Brambilla (supervisor); GLADYS funds
2008 – 2010	PhD Afaf Bouharguane (Privileged collaboration; member of examination panel)
2005 – 2009	PhD Nans Bujan (50%; effective co-supervisor; member of examination panel)
2005 – 2008	PhD Olivier Raynal (100%; effective supervisor; member of examination panel)
2004 – 2007	PhD Damien Isèbe (30%; contribution to supervision; member of examination panel)
2003 – 2006	PhD Cléa Denamiel (50%; effective co-supervisor; member of examination panel)
2006 – 2011	Member of 7 PhD official committees (Coastal engineering, Civil engineering, Geosciences, Geophysics, Soil dynamics)

Master/ graduate :

2014	Master Afentoulis Vasileios (supervisor); ANR MORHOC'H
2014	Master Hugo Humbert (supervisor); SO LTC funds
2013	Master Lise Petitjean (supervisor); SO LTC funds
2013	Master Soufiane Benjeddi (supervisor); SO LTC funds
2011 – 2012	Master Fabien Rétif (supervisor); SOLTC funds
2011 – 2012	Master Romain Chailain (co-supervisor); LIRMM funds
2010 – 2011	Master Lucie Campmas (supervisor); GLADYS funds
2010	5 graduate thesis (Master 1 st) in the framework of OSU OREME
2001 – 2006	16 graduate thesis (Licence, DEA or Master 1 st or 2 nd year)

Dissemination of science

2015 – present	<i>Journées GLADYS</i> and <i>Retraites GLADYS</i> : organizer of collaborative work sessions
2014	Session convener at the Int. Sedimentology Conf. (Aug. 2014, Geneva, Switzerland)
2014	Session convener at the 24 th RST conference (Nov. 2014, Pau, France)
2013	Session convener at the EAGER conference (Nov. 2013, Chung Li, Taiwan)
2010 – present	management of numerous GLADYS week long workshops (2 or 3 per year)
Sep. 25–28, 2010	Taiwan-France meeting (Montpellier)
2009 – 2011	Scientific coordinator of a TV documentary fiction "Ora Maritima" (2 × 52')
2010	Contribution to short (5') documentary videos on littoral dynamics
Feb. 1–3, 2010	In charge of the organization of the 2 nd workshop MATHOCEAN (Montpellier)
Jul. 14–21, 2009	Organization of a Taiwan-France meeting and field trip (Montpellier)
2004 – present	many (> 30) public conferences on littoral dynamics and coastal management
2004 – present	management of numerous GLADYS meetings (more than 10)
Feb. 5–7, 2007	Organization of a workshop INSU LEFE/IDAO (Montpellier)
2001	5 th french congress of Sedimentology ASF (Montpellier)

Teaching activity

My teaching service can be divided in three distinct periods from 2001 to 2017. The first period has lasted from 2002 to 2007 and corresponds to a deep involvement (up to 400 hours / year) in a set of courses dedicated to **geophysics, remote sensing and GIS**, in tight connection with risk analysis. It also included a significant contribution to the management of a computer network dedicated to these highly specialized courses. A transitional period, from 2008 to 2010 corresponds to a reduced teaching activity due to a research position at CNRS, with a focus on **field courses**. A third period from 2010 to 2014 corresponds to a significant widening of my teaching service, ranging from **geodynamics to climate**, including a significant contributions in **tectonics & structural geology** and a limited activity in **coastal processes and quantitative geomorphology**. From 2014, my contribution to tectonics has reduced significantly and I have more room for specialized teachings on beach hydro-morphodynamics. The only course that I have managed since my enrollment is a 5 hours long lecture on **facies analysis in river mouth and delta environments**. I also sustain the field trips dedicated to structural geology & facies sedimentology actively ("free" spent time and fundings from my research projet).

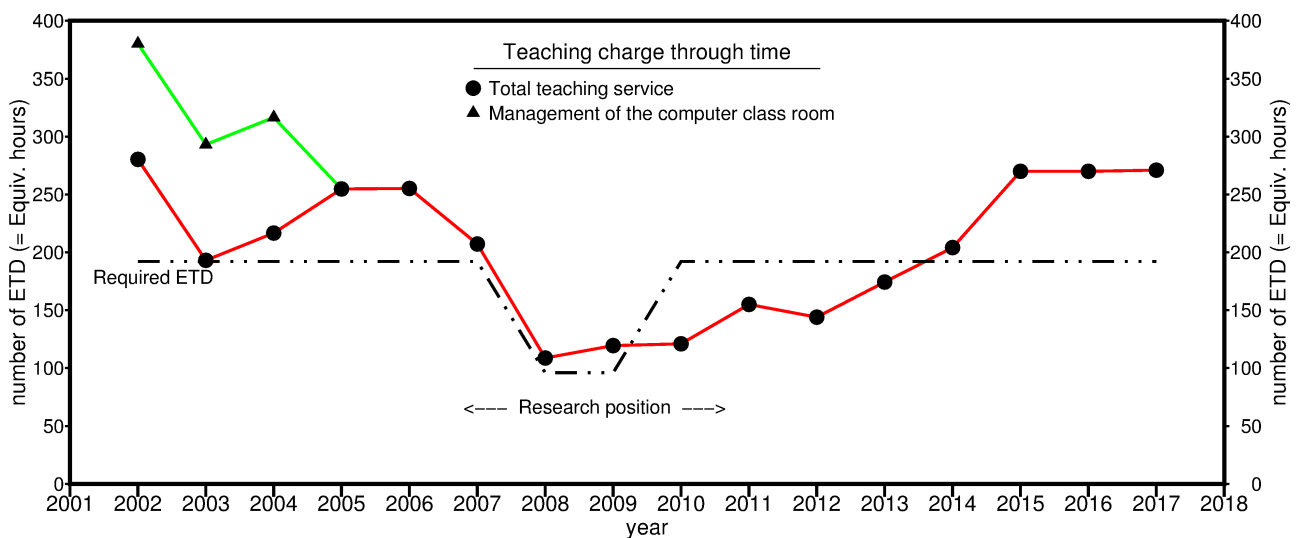


Figure 1: Teaching service from 2001. Ordinate axis gives a quantitative overview of my yearly teaching activity.

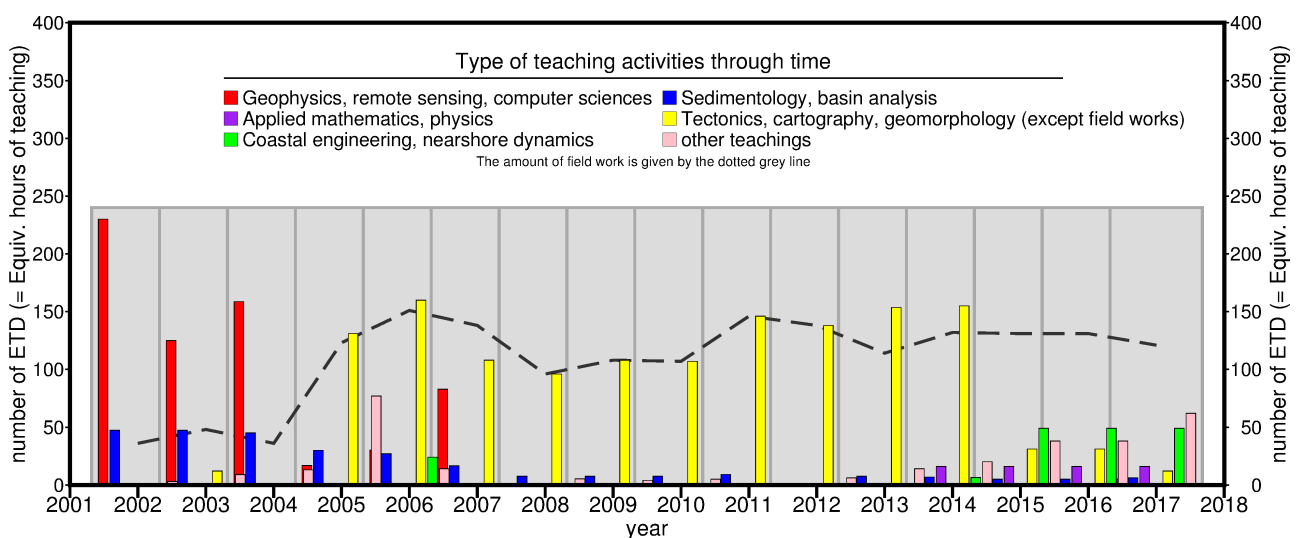


Figure 2: Types of teaching performed through time. My teaching activity was first focussed on geophysics and remote sensing, then by geodynamics, structural geology, and geological field trips, then quite diverse courses including coastal sciences.

Management of industrial and engineering partnerships

2017	Partnership with Bas-Rhône Languedoc Ingénierie (BRLi) <i>Topic: fighting erosion in Tel Aviv (Israel)</i>
2015	Partnership with "Communauté de Commune de Saint Tropez" <i>Topic: understanding river / shoreface coupling at the Préconil river mouth</i>
2015	Partnership with ARKOLIA Energies <i>Topic: ZEPHYR-MEFOC: a tool to determine the best wind resources worldwide</i>
2015	Partnership with ARKOLIA Energies <i>Topic: R&D relative to the deployment of offshore aeolian farm in the Gulf of Lions</i>
Prospect	Scientific head of a common laboratory between UM and BRLi <i>Topic: development of several HPC numerical tools dedicated to coastal dynamics</i>
2014	Scientific Head of an official framework convention between BRLi and UM2 <i>Topic: alert system for coastal submersion and HPC computation</i>
2011 – present	Expert in a partnership involving BRLi & UM <i>Topic: coastal alert system and HPC computation : www.mirmidon.org</i>
2010 – 2013	Expert for Bas-Rhône Languedoc Ingénierie (BRLi) <i>Topic: sand resources in the Gulf of Aigues-Mortes</i>
2010 – 2012	Expert for Entente Interdépartementale de Démoustication (EID Méd) <i>Topic: review of the submersion process</i>
2009 – present	Scientific Head of an official framework convention between DREAL and UM2 <i>Topic: development of an Hydrodynamic Atlas : www.atlashydro littoral.org</i>
2008	Partnership with SOGREAH Consultants (Grenoble) <i>Topic: basin/ flume experimentation relative to beach morphodynamics and geotubes</i>
2005 – 2009	Expert for Bas-Rhône Languedoc Ingénierie (BRLi) <i>Topic: water circulation around geotubes</i>
2004 – 2006	Expert Direction Littorale et Maritime (CG34 Hérault) <i>Topic: general informations on coastal dynamics</i>
2004 – present	Partnership with Direction Régionale de l'équipement Languedoc-Roussillon <i>Topic: analyses of coastal management problems in relation with erosion/ submersion</i>

Funded research projects (P.I = I am the fellow in charge)

REVOBAR	[2017] Dotation: 8 500 € from CNRS (TELLUS–INSMI) Title: Beach hydromorphodynamics by shape optimization Topic: <i>Mathematics, minimization theory</i>
DEMEAUX R	[2017] Dotation: 380 000 € from FEDER and Agence de l'Eau Title: Groundwater dynamics near La Tet shoreface (Roussillon) Topic: <i>Mathematics, hydrogeology, physics of waves</i>
STATSUB II	[2017] Dotation: 7 000 € from CNRS INSU (LEFE–MANU) Title: Spatialized statistical analysis of submersion/ erosion of beach face Topic: <i>Mathematics, HPC spatial statistics</i>
GLADYS HOME II	[2016] Dotation: 580 000 € from CPER LR (proposed, to be voted) Title: Edification of an Institute GLADYS along the shore of northernmost Mediterranean Sea Topic: <i>Measurement, metrology, networking</i>
STATSUB I	[2016] Dotation: 7 000 € from CNRS INSU (LEFE–MANU) Title: Spatialized statistical analysis of submersion/ erosion of beach face Topic: <i>Mathematics, HPC spatial statistics</i>
DEFI LITTORAL	[2015] Dotation: 5 000 € from CNRS MI Title: connect GLADYS & mathematicians Topic: <i>workshop</i>

Funded research projects (P.I = I am the fellow in charge)
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GLADYS HOME	[2015] Dotation: 25 000 € from CNRS INSU Title: develop a coastal institute in LR. Topic: <i>Organizing CPER proposal</i>
MORHOC'H	[2014 – 2017] Dotation: 27 000 € from ANR Title: wave transformation under sheared current Topic: <i>wave hydrodynamics</i>
SOLTC 2013-B	P.I [2013 – 2015] Dotation: 330 000 € from DREAL Title: Deployment of ESPIG OBS Topic: <i>coastal engineering, physics</i>
SOLTC 2013-A	P.I [2013 – 2014] Dotation: 48 000 € from DREAL Title: Processing of littoral data Topic: <i>database, geosciences</i>
COAST_4_ALL	P.I [2012 – 2014] Dotation: 85 000 € from Région LR Title: Cuspate theory and instantaneous sea level Topic: <i>mathematics, physics of waves, coastal engineering</i>
LITTO CMS	Universitary P.I [2012 – 2014] Dotation: 450 000 € from OSEO/ Région Title: HPC computational platform for coastal hydro-morphodynamics Topic: <i>coastal engineering, informatics, cloud computing</i>
SO LTC 2012-A	P.I. [2012 – 2013] Dotation: 350 000 € from DREAL authorities Title: monitoring of shoreline hydrodynamics Topic: <i>coastal engineering</i>
SOBOL	In charge for geosciences-M [2010 - 2011] Dotation 40 000 € from UM Title: Sensitive analysis and environment Topic: <i>Applied mathematics, statistics, coastal engineering</i>
SO LTC 2010-B	P.I [2010 - 2011] Dotation 30 000 € from DREAL authorities Title: Observatory "Littoral – Trait de côte" Topic: <i>geophysics, littoral hydro-morphodynamics monitoring, weather forecasting</i>
KUNSHEN	P.I [2011 – 2014] Dotation 418 500 € from France/ Taiwan international program ANR/ NSC (+ grant from Pole Compétitivité) Title: Hydromorphodynamics of sand barrier under extreme typhoon events Topic: <i>From nearshore hydro-morphodynamics field measurement to conceptual modelling</i>
SO LTC 2010-A	P.I [2010 - 2011] Dotation 180 000 € from DREAL authorities Title: Observatory "Littoral – Trait de côte" Topic: <i>geophysics, littoral hydro-morphodynamics monitoring, weather forecasting</i>
NUCLEASPIT I	P.I [2010 – 2011] Dotation 3 000 € from PEPS PTI (Physique théorique et ses interfaces) Title: How can so-called nuclear bomb equation serve the physical modelling of sand spit dynamics ? Topic: <i>Theoretical physics, coastal engineering</i>
LAGUNA I & II	P.I [2009 – 2011] Dotation 9 300 € from Egide European Title: France-Taiwan prospective collaboration for coastal hydrodynamics Topic: <i>Coastal Engineering, Physical experimentation</i>
VULSACO	In charge for Geosciences-M [2006 – 2009] Dotation 28 000 € from ANR-06-VULN-009 Title: Vulnerability of sandy coast systems to climatic and anthropic changes Topic: <i>Coastal Engineering and Climate change</i>

Funded research projects (P.I = I am the fellow in charge)	
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MICROLIT	In charge for lab. Geosciences-M [2008 – 2010] Dotation 42 000 € from SHOM + INSU RELIEF Title: Morphodynamics of microtidal sandy shoreface Topic: <i>Sedimentology, Coastal Engineering</i>
OILDEBEACH	French P.I. [2009 – 2011] Dotation 50 000 € from PRECODD Europe AMPERA ERA-NET Ref. CA-016165 (ANR-08-ECOT-002) Title: Buried oil in the intertidal beach zone: coupling between beach morphodynamics, natural degradation, forcings mechanisms and biological activity Topic: <i>Beach management, Applied Mathematics</i>
NAUSICAA	P.I. of the whole project [2005 – 2008] Dotation 284 000 € from Europe BMe-3S0155R-2.2 – INTERREG IIIC Title: Hydrodynamic Atlas for the integrated management of littoral hazards, coastal defence structures and <i>Posidonia oceanica</i> effects Topic: <i>Oceanography</i>
COPTER	In charge for lab. Geosciences-M [2005 – 2008] Dotation 230 000 € from ANR-05-BLAN-0005 (+ grant from Pole Compétitivité) Title: Conception Optimisation et Prototypage d'ouvrages de lutte contre l'ERosion en domaine littoral Topic: <i>Coastal Engineering</i>
GLADYS (Project)	P.I. of the whole project [2005 - 2006] Dotation 250 000 € from Languedoc-Roussillon regional authorities Title: Monitoring the hydrodynamics of Languedoc-Roussillon coastline Topic: <i>Coastal engineering, oceanography</i>
PROGELAC	P.I. of the whole project [2003 – 2005] Dotation 35 000 € from ATIP CNRS Title: high-resolution architecture of Holocene coastal tracts in the north-westernmost Mediterranean sea Topic: <i>Geophysics and sedimentology</i>

The fundings from SOERE Trait de côte, OSU OREME and MISTRALS littoral & shorelines are not listed above as they are relative to the development of scientific networking, and not directly dedicated to my scientific activities. The total current amount of money collected for my research from the list of projects above is around 3.5 MEu from 2003 to 2017.

