

Fanny Chenillat

Laboratoire des Sciences de l'Environnement Marin (LEMAR)
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Born on 30 September 1985,
French Nationality.

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Research Interests

Biological-physical interactions in the plankton dynamics. Modeling of biological and physical biological interactions. Eulerian and Lagrangian particle-tracking models. Understanding the inter-annual variability and seasonal variability of planktonic ecosystems. Influence of large, mesoscale and submesoscale variability on planktonic ecosystems and diversity.

Education

Ph. D in Physical Oceanography, 2011

Laboratoire des Sciences de l'Environnement Marin
and Laboratoire d'Océanographie Physique et Spatiale,
Université de Bretagne Occidentale, France

M. Sc. in Biological Oceanography and Marine Environment, 2008

Specialization: Data analysis, and Marine ecosystem modeling.
Université Pierre et Marie Curie, Paris, France

B. Sc. in Biology, 2006

Université Pierre et Marie Curie, Paris, France

Professional Background

March 2016 -now: Postdoctoral fellow UBO, Physical & Biological Oceanography

Laboratoire des Sciences de l'Environnement Marin (LEMAR)
Institut Universitaire Européen de la Mer (IEUM)
Université de Bretagne Occidentale (UBO), France

Research project: *Role of submesoscale processes on plankton diversity co-funded by LabexMER and PRESTIGE-Marie Curie (modeling).*

Supervisor: Pascal Rivière, LEMAR, UBO

Jan. 2013-Dec 2015 : Postdoctoral fellow UCSD, Physical & Biological Oceanography

Integrative Oceanography Division (IOD),
Scripps Institution of Oceanography (SIO),
University of California San Diego (UCSD), USA

Research project: *Ecological role of mesoscale features in the California eastern boundary upwelling system (modeling) - California Current Ecosystem Long Term Ecological Program funded by National Science Foundation.*

Supervisor: Pr. Peter J.S. Franks, IOD, SIO, UCSD

Oct.-Dec. 2012 : Postdoctoral fellow CNRS, Physical and Biological Oceanography

Laboratoire d'Océanographie Physique et Spatiale (LOPS),
Université de Bretagne Occidentale (UBO), France

Research project: *Toward a combined Eulerian-Lagrangian approach for an eastern boundary ecosystem study: Application to Canary and Benguela upwelling systems (data analysis).*

Supervisor: Dr. Bruno Blanke, LOPS, UBO

Co-Supervisor: Dr. Pascal Rivière, LEMAR, UBO

Feb.-July 2012 : Postdoctoral fellow UBO, Physical and Biological Oceanography

Laboratoire des Sciences de l'Environnement Marin (LEMAR)
and Laboratoire d'Océanographie Physique et Spatiale (LOPS),
Université de Bretagne Occidentale, France

Research project: *Toward a combined Eulerian-Lagrangian approach for an eastern boundary ecosystem study: Application to the California upwelling system (modeling).*

Supervisor: Dr. Bruno Blanke, LOPS, UBO

Co-Supervisor: Dr. Pascal Rivière, LEMAR, UBO

Oct. 2008 - Dec. 2011: Ph. D in Physical Oceanography, defended on Dec. 13, 2011

Laboratoire des Sciences de l'Environnement Marin (LEMAR)
and Laboratoire d'Océanographie Physique et Spatiale (LOPS),
Université de Bretagne Occidentale, France

Research project: *Variability of structure and functioning of an eastern boundary ecosystem: Application to the California upwelling system (modeling and data analysis).*

Supervisor: Dr. Bruno Blanke, LOPS, UBO

Co-Supervisors: Dr. Pascal Rivière, LEMAR, UBO

and Dr. Xavier Capet, LOCEAN, UPMC

January-June 2008 : Scholar Internship, Physical and Biological Oceanography

Laboratoire d'Ecogéochimie des Environnements Benthiques (LECOB), Banyuls-sur-Mer, France
Université Pierre et Marie Curie (UPMC), Paris, France

Research project: *Minimal modeling of the dynamics of the primary and secondary production in the Catalan Sea : influence of the Balearic front on the ecosystem's productivity (sampling, data analysis, and modeling). Supervisor: Pr. Jean-Marc Guarini, LOOB, UPMC*

July-August 2007 : Internship, Physical and Biological Oceanography

Institut de Ciències del Mar (ICM), Barcelona, Spain

Research project: *Effects of turbulence at small scale on ecophysiology of toxic dinoflagellates (sampling and laboratory experiments).*

Supervisor: Dr. Elisa Berdalet, ICM (elisa.berdalet@icm.csic.es)

May-June 2007 : Scholar Internship, Biological Oceanography

Laboratoire Océanographique de Villefranche sur Mer (LOV), France
Université Pierre et Marie Curie, Paris, France

Research project: *Effects of hydroclimatic modifications of different temporal scales on zooplankton in Ligurian Sea: Inter-calibration of Juday-Bogorov and WP2 nets (data analysis).*

Supervisor: Dr. Lars Stemmann. LOV, UPMC (stemmann@obs-vlfr.fr)

Scientific Communications

Publications

- **Chenillat, F.**, X. Capet, B. A. Ward, and P. Rivière, **20XX**. Planktonic biodiversity triggered by submesoscale processes. *In prep.*
- **Chenillat, F.**, and P. J. S. Franks, **20XX**. Dynamical processes explaining biogeochemical eddy activity in the California Current System. *In prep.*
- Stephen, B., **F. Chenillat**, and P. J. S. Franks, **20XX**. Role of bacteria in planktonic ecosystem dynamics and organic material export in the California Current System. *In prep.*
- **Chenillat, F.**, P.J.S. Franks, P. Rivière, X. Capet, N. Grima, and B. Blanke, **20XX**. Eddy properties in the Southern California Current System. *Submitted to Journal of Geophysical Research: Oceans.*
- **Chenillat, F.**, V. Combes, and P. J. S. Franks, **2016**. Biogeochemical eddy properties in the California Current System. *Geophysical Research Letters*. <http://onlinelibrary.wiley.com/doi/10.1002/2016GL068945/full>.
- **Chenillat, F.**, P. J. S. Franks, P. Rivière, X. Capet, N. Grima, and B. Blanke, **2015**. Mesoscale activity in the Southern California Current System. Biological dynamics of a coastal eddy. *Journal of Geophysical Research: Oceans*. <http://dx.doi.org/10.1002/2015JC010826>.
- **Chenillat, F.**, B. Blanke, N. Grima, P. Rivière, X. Capet, and P. J. S. Franks, **2015**. Combining Eulerian and Lagrangian model analysis for studying planktonic ecosystem dynamics in coastal upwelling systems. *Special Issue in Frontiers in Environmental Science. Front. Environ. Sci.* 3:43. doi: 10.3389/fenvs.2015.00043
- Franks, P. J. S., E. Di Lorenzo, N. Goebel, **F. Chenillat**, P. Rivière, C. Edwards, and A. Miller, **2013**: Modeling physical and biological responses to long-term climate change in the California Current System: The CCE-LTER Program. *Oceanography*, 26(3):26–33, doi: <http://dx.doi.org/10.5670/oceanog.2013.42>
- **Chenillat, F.**, P. Rivière, X. Capet, B. Blanke, and P. J. S. Franks, **2013**. California coastal upwelling onset variability : cross-shore and bottom-up propagation in the planktonic ecosystem. *PLoS ONE* 8(5): e62281. doi:10.1371/journal.pone.0062281.
- Combes, V., **F. Chenillat**, E. Di Lorenzo, P. Rivière, S. J. Bograd, and M. D. Ohman, **2012**. Cross-shore transport variability in the California Current: Ekman upwelling vs. eddy dynamics. *Progress in Oceanography*, 109, 78-89, doi:10.1016/j.pocean.2012.10.001.
- **Chenillat, F.**, P. Rivière, X. Capet, E. Di Lorenzo, and B. Blanke, **2012**. North Pacific Gyre Oscillation modulates seasonal timing and ecosystem functioning in the California Current upwelling system, *Geophysical Research Letters*, 39, L01606, doi:10.1029/2011GL049966.

Conference and workshop presentations

- **Chenillat F.**, P. J. S. Franks, and V. Combes, **2016**. Biogeochemical properties of eddies in the California Current System, European Geosciences Union General Assembly 2016, Vienna, Austria, 21-27 February, 2016. [*Oral Presentation*](#)
- Franks, P. J. S., **F. Chenillat**, V. Combes, **2016**. Biogeochemical properties of eddies in the California Current System, Ocean Science Meeting, New Orleans, LA, USA, 21-27 February 2016. [*Oral presentation*](#)
- **Chenillat, F.**, V. Combes and P. J. S. Franks, **2015**. Biogeochemical eddy properties in the California Current System. Eastern Pacific Ocean Conference (EPOC), Lake Tahoe, California. September 20-23, 2015. [*Oral presentation or poster to be defined*](#)
- **Chenillat, F.**, P. Rivière, X. Capet, P. J. S. Franks, N. Grima and B. Blanke, **2015**. Plankton ecosystem dynamics in a cyclonic eddy in the California Current System. Long Term Ecological Research - All Scientists Meeting, Estes Park, Colorado, USA, 30 August - 2 September, 2015. [*Poster*](#)
- **Chenillat, F.**, P. Rivière, X. Capet, P. J. S. Franks, and B. Blanke, **2015**. Plankton ecosystem dynamics in a cyclonic eddy in the California Current System. Submesoscale dynamics and biology on steep Slopes (SYNBIOS) Workshop. Paris, July 6,7,8, 2015. [*Oral presentation*](#)
- **Chenillat, F.**, **2015**. Plankton dynamics in a cyclonic eddy. CCE-SBC-MCR Long-Term-Ecological-Research Symposium, Santa Barbara, California, USA. April 24, 2015. [*Oral presentation*](#)
- **Chenillat, F.**, P. J. S. Franks, P. Rivière, X. Capet, and B. Blanke, **2014**. Planktonic ecosystem dynamics of a coastal cyclonic eddy in the Southern California Bight. Eastern Pacific Ocean Conference (EPOC), Mount Hood, Oregon, USA. September 17-20, 2014. [*Oral presentation*](#)
- **Chenillat, F.**, P. J. S. Franks, P. Rivière, X. Capet, N. Grima, and B. Blanke, **2014**. Planktonic ecosystems in coastal eddies: Combining Eulerian and Lagrangian model analyses. Ocean Science Meeting, Honolulu, Hawaii, USA. February 23-28, 2014. [*Poster*](#)
- **Chenillat, F.**, P. J. S. Franks, P. Rivière, X. Capet, and B. Blanke, **2013**. Planktonic ecosystem in eddies of the CCS: Introduction to techniques combining Eulerian and Lagrangian model analysis. CCE Mid-term Site Review, La Jolla, California, USA. September 12-13, 2013. [*Poster*](#)
- **Chenillat, F.**, P. Rivière, X. Capet, E. P. J. S. Franks, and B. Blanke, **2011**. Influence of the NPGO index on the Cross-Shore Dynamics of the Central California Current Ecosystem. AMEMR III (Advances in Marine Ecosystem Modeling Research Symposium), Plymouth, UK. June 27-30 2011. [*Oral presentation*](#)
- **Chenillat, F.**, P. Rivière, X. Capet, P. J. S. Franks, and B. Blanke., **2011**. Central California Current ecosystem and upwelling fluctuations controlled by the North Pacific Gyre Oscillation. Annual TANGGO Meeting, LOCEAN, Paris, France, October 2-3, 2011. [*Oral presentation*](#)
- **Chenillat, F.**, V. Combes, P. Rivière, E. Di Lorenzo, S. J. Bograd, M. D. Ohman, and B. Blanke, **2010**. Cross-shore transport dynamics in the Southern California Current System. Scientific Board of Institut Universitaire Européen de la Mer, Plouzané, France, October 18-19, 2010. [*Poster*](#)
- **Chenillat, F.**, V. Combes, P. Rivière, E. Di Lorenzo, S.J. Bograd, M. D. Ohman, and B. Blanke, **2010**. Cross-shore transport dynamics in the Southern California Current System. EUROCEANS/Europôle Mer Conference: Influence of meso- and submesoscale ocean dynamics on the global carbon cycle and marine ecosystems, Aber Wrac'h, France, May 31 - June 2, 2010. [*Poster*](#)
- **Chenillat, F.**, V. Combes, P. Rivière, E. Di Lorenzo, S. J. Bograd, and M. D. Ohman, **2010**. Low frequency transport dynamics in the California Current System. Ocean Science Meeting, Portland, Oregon, USA. February 22-26, 2010. [*Poster*](#)
- **Chenillat, F.**, V. Combes, P. Rivière, B. Blanke, and E. Di Lorenzo, **2009**. Cross-shelf transport and upwelling variability in the California Current System. LPO Tuesday's seminar, October 27, 2009. [*Oral presentation*](#)
- **Chenillat, F.**, V. Combes, P. Rivière and E. Di Lorenzo, **2009**. Low frequency dynamics of cross-shelf and alongshore advection in the California Current System. TWISTED workshop, Paris, France, September 28-29, 2009. [*Oral presentation*](#)

Invited presentations and seminars

- **Chenillat, F., 2016.** How do submesoscale processes control plankton diversity? Ifremer, Plouzané, France, March 29, 2016. [*Oral presentation \(Invited by Aurélien Ponte\)*](#)
- **Chenillat, F., 2015.** Plankton ecosystem dynamics and eddies in the California Current System, a numerical approach. Scripps Institution of Oceanography, UCSD, La Jolla, California, USA, April 1st, 2015. [*Oral presentation \(invited by Mark Ohman\)*](#)
- **Chenillat, F., 2013.** Variability of structure and functioning of the California upwelling system by a numerical approach. Scripps Institution of Oceanography, UCSD, La Jolla, California, USA, May 15, 2013. [*Oral presentation \(invited by Mark Ohman\)*](#)
- **Chenillat, F., 2012.** Variability of structure and functioning of an Eastern boundary ecosystem: application to the California upwelling system, Mediterranean Institute of Oceanography. Campus de Luminy, Marseille, France, December 14, 2012. [*Oral presentation \(invited by Andrea Doqlioli\)*](#)
- **Chenillat, F., 2012.** Variability of structure and functioning of an Eastern boundary ecosystem: application to the California upwelling system. Observatoire Océanologique de Villefranche-sur-Mer, UPMC, Villefranche-sur-Mer, France, December 12, 2012. [*Oral presentation \(invited by Lars Stemmann\)*](#)
- **Chenillat, F., 2011.** Education and Ph.D. Study presentation. LPO days' seminar, Aber Wrac'h, France, March 21-22, 2011. [*Oral presentation*](#)
- **Chenillat, F., P. Rivière, X. Capet and B. Blanke, 2011.** Variability of structure and functioning of an eastern boundary ecosystem: Application to the California upwelling system: main results presentation. LEMAR student seminar, Plouzané, France, January 6-7, 2011. [*Oral presentation*](#)
- **Chenillat, F., P. Rivière and B. Blanke, 2010.** Variability of structure and functioning of an eastern boundary ecosystem: Application to the California upwelling system: presentation of the first results. LEMAR student seminar, Plouzané, France, January 28-29, 2010. [*Oral presentation*](#)
- **Chenillat, F., P. Rivière and B. Blanke, 2009.** Variability of structure and functioning of an eastern boundary ecosystem: Application to the California upwelling system: presentation of the context study. LEMAR student seminar, Plouzané, France, January 20, 2009. [*Oral presentation*](#)

Conference Organizing

- **Co-Chair:** Eastern Pacific Ocean Conference (EPOC), Lake Tahoe, California, USA. 20-23 September **2015:** Role of Submesoscale and Mesoscale processes in structuring ecosystem dynamics in the Eastern Pacific Ocean.

Administrative tasks

- **2016:** Labex-Mer Post-Doc representative.

Scientific Cruises

- **LTER-CCE-P1408**, August **2014** (30 days), R/V Melville.
Scripps Institution of Oceanography,
UCSD, La Jolla, California, USA.
Role on ship: Working with Ralf Goericke's lab for sampling photosynthetic pigments.
Research Project: Characterization of the role of mesoscale and sub-mesoscale fronts and eddies in altering nutrient fluxes, predator-prey interactions, and biogeochemistry, and the relationship of such features to larger scale climate variability in the California Current System (in the context of the Long Term Ecological Research - California Current Ecosystem (LTER-CCE), using quasi-Lagrangian experimental process to follow specific water masses and associated biogeochemical components and planktonic ecosystem dynamics, PI: Mark D. Ohman) - <http://cce.lternet.edu/docs/data/cce-p1408/>

- **POB2008**, March **2008** (4 days), Tethys.
Laboratoire d'Ecogéochimie des Environnements Benthiques (LECOB), Banyuls-sur-Mer, France
Université Pierre et Marie Curie, Paris, France.
Role on ship: organizer and Chief scientist of the mission
Research Project: Characterization of the Catalan front with main biogeochemical analysis and ecological sampling method (in the context of the scholar internship with Pr. Jean-Marc Guarini).
- **OIM2008**, September **2007** (4 days), Tethys.
Laboratoire Océanographique de Villefranche-sur-Mer, France
Université Pierre et Marie Curie, Paris, France.
Role on ship and Research project: Teaching of main biogeochemical analysis and ecological sampling method with characterization of the Liguro-Provençal front (in the context of the scholar courses, M. Sc. in Biological Oceanography and Marine Environment, Université Pierre et Marie Curie).
- **TURECOTOX-0707**, July **2007** (2 days).
Ciencès del Mar, Barcelona, Spain.
Role on ship and Research project: nearshore sampling from a dinghy for integrated study of the coupling between small scale turbulence and the ecophysiology of toxic dinoflagellates in the delta of the River Ebro (in the context of the internship with Dr. Elisa Berdalet).
- **POB2007**, March **2007** (1 day), Tethys.
Laboratoire d'Ecogéochimie des Environnements Benthiques (LECOB), Banyuls-sur-Mer, France
Université Pierre et Marie Curie, Paris, France.
Role on ship and Research project: Teaching of main biogeochemical analysis and ecological sampling method (in the context of the scholar courses, M. Sc. in Biological Oceanography and Marine Environment, Université Pierre et Marie Curie).

Teaching Experience

- Co supervisor of Ana-Patricia Lopez (Undergraduate student, principal supervisor, Pr. Art Miller, SIO UCSD) at SIO, UCSD, La Jolla, USA, **July 2013 - July 2014**.
Research project: Quantification of spatial structures of phytoplankton and their relationship to ocean currents and ocean fronts using data from a coupled physical model (ROMS: Regional Ocean Modeling System) and multiple planktonic ecosystem model (from the Darwin Project).
- Qualified in Meteorology, Oceanography and Physical Environment (section 37), by the Conseil National des Universités, France, **Feb. 2012**.
- Master degree courses at UPMC, Banyuls-sur-Mer, France, **March 2008**.
Subject: frontal structures and their impact on biology.
Courses project: POB2008, Biological Oceanography Practices (in the context of the scholar internship with Pr. Jean-Marc Guarini).
- Sporadic scholar support in Mathematics, Physics, Chemistry, Biology and Geology for undergraduate students, since **2006-2010**.

Education and Public Outreach

- Seminar for high-schooler, Plouzané, France, April 1, **2009**. Oral presentation of "Modeling, and how to understand marine ecology?"
- Presentation and discussion for high-schooler course of choice - Careers fairs. Collège du Pays des Abers, Lannilis. **Février 2010**.
- Active member for PhD candidate association (Merscidoc) and organization of Education and Public Outreach events . **2009-2011**.

Grants

- **Postdoctoral grant, March 2016 - February 2018**, 30000 €
PRESTIGE/Marie Curie co-financing grant award, Co-funded by the European Union (PRESTIGE-2015-3-0017).
- **Postdoctoral grant, March 2016 - February 2018**, 74000 €
LabexMER , cluster of Excellence funded by the French « Investment for the future » program, established by French Ministry of Research and Education.
- **Postdoctoral grant, January 2013 - December 2015**, 121000 €
California Current Ecosystem - Long Term Ecological Research Program (CCE-LTER), National Science Foundation, USA (2010-2016 NSF/OCE-10-26607).
- **Postdoctoral grant, February 2012 - July 2012**, 22000 €
Groupement d'Intérêt Scientifique (GIS) Europôle Mer - Axe 2, France.
- **Ph.D. student travel grant, Apr. 2010 - June 2010**, 3800 €
Université Européenne de Bretagne, France
Invited by Pr. P. J. S. Franks at Scripps Institution of Oceanography, U.C. San Diego, California, USA.
- **Ph.D. grant, October 2008 - September 2011**, 60000 €
French Ministry of Research and Education.
- **M.Sc. merit scholarship, September 2007 - June 2008**, 5000 €
French Ministry of Research and Education.

Others/Skills

- Informatics skills: Matlab (for data analysis), Notion of Python, Fortran, Unix System, vi, use of supercomputer (Caparmor-IFREMER), Adobe Illustrator, Adobe Photoshop, Office, iWork, marine navigation software (C-Map).
- Laboratory skills and work at sea: CTD rosette deployment and sampling, chlorophyll a filtration and pigment analysis, Underwater Video Profiler deployment (Distribution of Particles), zooplankton net sampling and analysis (ZooScan).
- Languages: French (native language), English, Spanish.
- Spare time: surfing, photography, reading, gardening and traveling.

References

- Peter J. S. Franks, IOD, SIO, UCSD, USA: pfranks@ucsd.edu
- Jean-Marc Guarini, LECOB, UPMC, France: jean-marc.guarini@obs-banyuls.fr
- Bruno Blanke, LOPS, UBO, France: bruno.blanke@univ-brest.fr
- Patrice Klein, LOPS, IFREMER, France: patrice.klein@ifremer.fr
- Pascal Rivière, LEMAR, UBO, France: pascal.riviere@univ-brest.fr
- Xavier Capet, LOCEAN, UPMC, France: xclod@locean-ipsl.upmc.fr
- Emanuele Di Lorenzo, EAS, Georgia Institute of Technology, USA: edl@eas.gatech.edu