



# David Demory

## Microbial oceanography and ecological modelling

### Education

David Demory

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#### Address

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USA

**Dec 2013 - Jan 2017, University Paris 6 (UPMC).**

Ph.D in oceanography and ecological modelling – Oceanography Laboratory of Villefranche-sur-Mer (UPMC), Biological Station of Roscoff (UPMC), INRIA Sophia Antipolis, France.

**Aug 2012 - Jun 2013, University Paris 6 (UPMC).**

2nd year M.Sc. – Oceanography, modelling and data analysis – Oceanography Laboratory of Villefranche-sur-Mer (UPMC), France.

**Aug 2011 - Jun 2012, University of Quebec at Rimouski (UQAR).**

1st year M.Sc. – Oceanography – Marine Sciences Institute of Rimouski (UQAR), Canada.

**Aug 2008 - Jun 2011, Aix Marseille II University.**

B.Sc. – Marine science, mathematics and ecology – Mediterranean Institute of Oceanography, Aix Marseille II University, France.

### Experience

**Oct 2017 - present, Postdoctoral Scientist – Joshua Weitz group.**

Ecological dynamics of virus-host interactions in aquatic environments – Georgia Institute of Technology, Atlanta, USA.

**Feb 2017 - Jun 2017, Visiting Scholar – Curtis Suttle Lab.**

University of British Columbia, Vancouver, Canada.

**Dec 2013 - Jan 2017, Ph.D. student – University of Paris 6 (UPMC).**

Impact of temperature on phytoplankton-virus population dynamics – Oceanography Laboratory of Villefranche-sur-Mer (UPMC), Biological Station of Roscoff (UPMC), INRIA Sophia Antipolis, France

**June 2013 - Nov 2013, Engineer – INRIA Sophia Antipolis.**

Light impact on microalgae in high rate ponds, BIOCORE team, France.

**Jan 2013 - Jun 2013, M.Sc. thesis – University Paris 6 (UPMC).**

Theoretical and experimental study of the hydrodynamic effect on phytoplankton photosynthesis for optimisation of biofuels production - Oceanographic laboratory of Villefranche-sur-Mer, France.

**Jun 2012 - Aug 2012, Internship – Peter Mumby lab.**

Building and analysis of an Ecopath/Ecosim model for understand the fishery impact of *Ocyurus chrysurus* on the reef ecosystem of Utila island in Honduras - Marine Spacial Ecology Lab, University of Queensland, Australia.

**Jun 2012 - Aug 2012, Internship – Peter Mumby lab.**

Observation by video of grazing activity of 3 reef fish families: Scaridae, Acanthuridae and Siganidae - Marine Spacial Ecology Lab, University of Queensland, Australia.

**Jul 2009 - Aug 2009, Internship – NGO Opération Cétacés.**

Impacts of whale watching on Humpback whales – South lagoon, New Caledonia.

## Research Support

**2018 - present, *Simons Life Science Grant.***

Virus-picoplankton dynamics in the Southern Pacific Ocean. (PI: Joshua Weitz, **Co-PI: David Demory**, \$64,030 - grant no. 639682; 2019-2020)

**2018 - 2019, *Georgia Institute of Technology Research Development Grant, College of Sciences.***

Analyzing virus effects on the marine carbon cycle and food web at the Chatham Rise. (PI: Joshua Weitz, **Co-PI: David Demory**, \$10,000).

**2013 - 2016, *Ph.D. Fellowship – French government.***

University of Paris 6 (UPMC), France.

**2012, *M.Sc. Fellowship – French government.***

University of Paris 6 (UPMC), France.

## Peer-reviewed publications

**2019, *Linking light-dependent life history traits with population dynamics for Prochlorococcus and cyanophage*, submitted to *mSystem*.**

**Demory, D.**, Liu R., Chen Y., Zhao F., Zeng Q. and Weitz J.S.

**2019, *Unveiling membrane thermoregulation strategies in marine Synechococcus temperatures ecotypes*, *New Phytologist*.**

Breton S., Jouhet J., Guyet U., Gros V., Pittera J., **Demory D.**, Partensky F., Doré H., Ratin M., Marechal E., Nguyen NA., Garczarek L. and Six C.  
– doi:10.1111/nph.16239.

**2018, *Picoeukaryotes of the Micromonas genus: sentinels of a warming ocean*, *The ISME J*.**

**Demory, D.**, Baudoux, A.C., Monier, A., Simon, N., Six, C., Gei, P., Rigault-Jalabert, F., Marie, D., Sciandra, A., Bernard, O. and Rabouille, S.  
– doi:10.1038/s41396-018-0248-0.

**2018, *How do microalgae perceive light in a high rate pond? Towards more realistic Lagrangian experiments.*, *Royal Society Open Science*.**

**Demory, D.\***, Combe, C.\*, Hartmann, P., Talec, A., Pruvost, E., Hamouda, R., Souillé, F., Lamare, P-O., Bristeau, M-O., Rabouille, S., Mairet, F., Sainte-Marie, J., Sciandra, A. and Bernard, O.  
– doi:10.1098/rsos.180523.

**2017, *Temperature is a key factor in Micromonas-virus interactions*, *The ISME J*.**

**Demory, D.**, Arsenieff, L., Simon, N., Gei, P., Rigault-Jalabert, F., Marie, D., Sciandra, A., Rabouille, S., Bernard, O. and Baudoux, A.C.  
– doi:10.1038/ismej.2016.160.

**2014, *Growth Rate Estimation of algae in Raceway Ponds: A novel Approach*, *IFAC***

Hartmann, P., **Demory, D.**, Combe, C., Hamouda, R., Boulanger, AC., Bristeau, MO., Sainte-Marie, J., Sialve B., Steyer, JP., Rabouille, S., Sciandra, A. and Bernard, O.  
– doi:10.3182/20140824-6-ZA-1003.02408.

## Popular publications

**2017, *Les virus marins sont-ils les régulateurs de l'écosystème et du climat océanique*, *SUBAQUA***

**Demory, D.**, Gaubert, M. and Jacquet, S.

## Field expeditions

### 2018, *The Ocean Vacuum Cleaner oceanographic cruise*

On board Tangaroa, Chatham rise, New Zealand.

### 2011, *Oceanographic cruise, ISMER-UQAR.*

On board the Coriolis II, Saint-Laurent Estuary and Sagueney fjord, Canada

## Scientific skills

### Programming and mathematics

- **OS:** OSX, Linux and Windows
- **Software:** Excel, Access, Latex, Paraview, QGIGS, Ecopath w/ Ecosim
- **Statistics:** Univariate and multivariate analysis, phylogenetic analysis.
- **Computer language:** Matlab, R and python
- **Modelling:** Dynamic systems, ODE, mathematical and numerical study of models, non-linear fitting, MCMC, machine learning

### Field and lab work

- **Field work:** Navigation, physical and biogeochemical measurements, cell and viral metagenomics, metatranscriptomics, fixation
- **Laboratory:** Phytoplankton and viruses cultures, growth and viability measurements, flow cytometry (BD FACSCanto, BD FACSCalibur, BD Accuri C6), spectrophotometry, CHN, HPLC, PAM fluorometry, PCR, Polony method

### Teaching and student supervision

- **Tutoring:** Teaching Assisant during the Marine Microorganisme M.Sc. module (UPMC)
- **Mentoring:** Laure Arsenieff, M.Sc. student (UPMC)

### Other

- **Languages:** French (mother tongue), English (read, spoken, written), Italian (notions)
- **Scubadiving:** 2d level FFESSM

## Interests

### Professional

**Fundamental science:** Oceanography and mathematical modelling, dynamic systems, population dynamics, species interactions, theoretical and experimental ecology, abiotic and biotic impact on phytoplankton eco-physiology and diversity, epidemiology and role of viruses on phytoplankton mortality and biogeochemical cycles.

**Applied science:** Optimisation of micro-algae cultures for purposes of biofuels and organic compounds production, fishery sciences.

### Personal

Music, nature photography, climbing, hiking