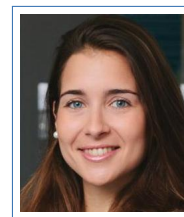


# Bàrbara Barceló-Llull

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## Education

- 2014 - 2017 **Ph.D., Physical Oceanography**, *Instituto de oceanografía y cambio global, IOCAG*, Universidad de Las Palmas de Gran Canaria, Spain.  
Thesis: '*Shedding light into mesoscale dynamics and vertical motion through synthetic and in situ observations*'. Date of defense: 25-09-2017. Supervisors: Pablo Sangrà, Ananda Pascual, Enric Pallàs-Sanz and Ángeles Marrero-Díaz. Pre-doctoral grant from the Spanish National Research Program associated to the PUMP project (BES-2013-065459).
- 2012 - 2014 **M.Sc., Physics**, Universitat de les Illes Balears, Spain, 120 ECTS.  
Thesis: '*Applications of mesoscale dynamics: Impacts of vertical motion on nitrate distribution*'. Directors of thesis: Ananda Pascual and Evan Mason
- 2011 - 2012 **M.Sc., Renewable energies**, Universidad Camilo José Cela, Spain, 71 ECTS.
- 2006 - 2011 **B.Sc., Physics**, Universidad de Salamanca, Spain.

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## Research project participation

- 2018 - Present **Postdoctoral position (project: (Sub)mesoscale Salinity Variability at Fronts funded by the NASA, NNX17AK04G)**, *Applied Physics Laboratory, University of Washington*, Seattle, USA.  
Supervisors: Kyla Drushka and Peter Gaube
- 2017 - 2018 **Postdoctoral position (project: PRE-SWOT, CTM2016-78607-P)**, *Institut Mediterrani d'Estudis Avançats, IMEDEA*, Mallorca, Spain.  
Supervisor: Ananda Pascual
- 2014 - 2017 **Ph.D. student (project: PUMP, CTM2012-33355)**, *Universidad de Las Palmas de Gran Canaria*, Las Palmas, Spain.  
Supervisors: Pablo Sangrà, Ananda Pascual, Enric Pallàs-Sanz and Ángeles Marrero-Díaz.
- 2012 - 2013 **Research assistant (project: E-MOTION, CTM2012-31014)**, *Institut Mediterrani d'Estudis Avançats, IMEDEA*, Mallorca, Spain.  
Supervisor: Ananda Pascual

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## Skills

COMPUTING: Linux; Mac  
Python; Matlab

LyX/L<sup>A</sup>T<sub>E</sub>X; NetCDF

Analysis of remote sensing and *in situ* data

Experienced user of the *py-eddy-tracker* code for mesoscale eddy tracking

Inference of vertical motions through omega equations

LANGUAGES: English – fluent

Spanish – native speaker

Catalan – native speaker

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## Publications

1. **Barceló-Llull, B.**, Pascual, A., Ruiz, S., Escudier, R., Torner, M. & Tintoré, J. (2019). Temporal and spatial hydrodynamic variability in the Mallorca channel (western Mediterranean Sea) from eight years of underwater glider data. *J. Geophys. Res. Oceans*, DOI: <https://doi.org/10.1029/2018JC014636>
2. Estrada-Allis, S. N., **Barceló-Llull, B.**, Pallàs-Sanz, E., Rodríguez-Santana, A., Souza, J. M. A. C., Mason, E., McWilliams, J. C. & Sangrà, P. (2019). Vertical Velocity Dynamics and Mixing in an Anticyclone near the Canary Islands. *J. Phys. Oceanogr.*, 49 (2), 431-451, DOI: <https://doi.org/10.1175/JPO-D-17-0156.1>
3. Martínez-Marrero, A., **Barceló-Llull, B.**, Pallàs-Sanz, E., Gordo, C., Grisolia, D., Aguiar-González, B., Estrada-Allis, S. N., Rodríguez-Santana, A. & Arístegui, J. (Under review). Near-inertial waves trapping near the base of an anticyclonic mesoscale eddy under regular atmospheric conditions. *Geophys. Res. Lett.*
4. **Barceló-Llull, B.**, Pascual, A., Mason, E. & Mulet, S. (2018). Comparing a Multivariate Global Ocean State Estimate With High-Resolution *in Situ* Data: An Anticyclonic Intrathermocline Eddy Near the Canary Islands. *Front. Mar. Sci.*, 5 (66), DOI: <https://doi.org/10.3389/fmars.2018.00066>
5. **Barceló-Llull, B.**, Pallàs-Sanz, E., Sangrà, P., Martínez-Marrero, A., Estrada-Allis, S. N. & Arístegui, J. (2017). Ageostrophic secondary circulation in a subtropical intrathermocline eddy. *J. Phys. Oceanogr.*, 47 (5), 1107-1123, DOI: <http://dx.doi.org/10.1175/JPO-D-16-0235.1>
6. **Barceló-Llull, B.**, Sangrà, P., Pallàs-Sanz, E., Barton, E. D., Estrada-Allis, S. N., Martínez-Marrero, A., Aguiar-González, B., Grisolia, D., Gordo, C., Rodríguez-Santana, A., Marrero-Díaz, A. & Arístegui, J. (2017). Anatomy of a subtropical intrathermocline eddy. *Deep-Sea Res.*, 124, 126-139, DOI: <http://dx.doi.org/10.1016/j.dsr.2017.03.012>. \*Selected for the front cover of Volume 124 by the editor Igor Belkin. [https://doi.org/10.1016/S0967-0637\(17\)30172-3](https://doi.org/10.1016/S0967-0637(17)30172-3)
7. **Barceló-Llull, B.**, Mason, E., Capet, A. & Pascual, A. (2016). Impact of vertical and horizontal advection on nutrient distribution in the southeast Pacific. *Ocean Sci.*, 12, 1003-1011, DOI: <http://dx.doi.org/10.5194/os-12-1003-2016>

8. Rio, M.-H., Pascual, A., Poulain, P.-M., Menna, M., **Barceló, B.** & Tintoré, J. (2014). Computation of a new Mean Dynamic Topography for the Mediterranean Sea from model outputs, altimeter measurements and oceanographic in-situ data. *Ocean Sci.*, 10, 731-744, DOI: <http://dx.doi.org/10.5194/os-10-731-2014>
9. Tintoré, J. *et al.* (2013). The Impact of New Multi-platform Observing Systems in Science, Technology Development and Response to Societal Needs; from Small to Large Scales. *Computer Aided Systems Theory - EUROCAST 2013*, Springer Berlin Heidelberg, 8112, 341-348, DOI: [http://dx.doi.org/10.1007/978-3-642-53862-9\\_44](http://dx.doi.org/10.1007/978-3-642-53862-9_44)
10. Tintoré, J. *et al.* (2013). SOCIB: The Balearic Islands Coastal Ocean Observing and Forecasting System Responding to Science, Technology and Society Needs. *Mar. Technol. Soc. J.*, 47 (1), 101-117, DOI: <http://dx.doi.org/10.4031/MTSJ.47.1.10>

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## Other Publications

1. **Barceló-Llull, B.**, Pascual, A., *et al.* (2018) Cruise Report: Mesoscale and sub-mesoscale vertical exchanges from multi-platform experiments and supporting modeling simulations: anticipating SWOT launch (PRE-SWOT), PRE-SWOT project, 145pp., DOI: <http://dx.doi.org/10.20350/digitalCSIC/8584>

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## Conferences

1. Pascual, A., Ruiz, S., Sánchez-Román, A., Gómez-Navarro, L., **Barceló-Llull, B.**, Díaz-Barroso, L., Chabert, P., Cutolo, E., Freilich, M. A., Heslop, E., Casas, B., Torner, M., Mourre, B., Alou, E., Cotroneo, Y., Aulicino, G., Mason, E., Mahadevan, A., Tintoré, J., D'Ovidio, F., Fablet, R. & Allen, J. (2018). Review: Overview of Fine-scale Multiplatform Experiments in the Southwest Mediterranean Sea: Lessons Learnt in the Last Five Years. *25 Years of Progress in Radar Altimetry Symposium*, Azores, Portugal. Oral.
2. Pascual, A., **Barceló-Llull, B.**, Gómez-Navarro, L., Díaz-Barroso, L., Casas, B., Muñoz, C., Mourre, B., Torner, M., Ruiz, S., Allen, J., D'Ovidio, F., Doglioli, A. & Dumas, F. (2018). PRE-SWOT multi-platform experiment in the SouthWest Mediterranean Sea. *Coastal Ocean and Shelf Seas Task Team (COSS-TT) - GODAE OceanView*, Madrid, Spain. Poster.
3. **Barceló-Llull, B.**, Díaz-Barroso, L., Casas, B., Gómez-Navarro, L., Cutolo, E., Sánchez-Román, A., Escudier, R., Cabornero, A., Calafat, N., Capó, E., Ser-Giacomi, E., Mason, E., Mourre, B., Muñoz, C., Ruiz, I., Alou, E., Ruiz, S., Torner, M., Miralles, A., Rubio, M., Vizoso, G., Tintoré, J., Allen, J. & Pascual, A. (2018). Characterizing the Southwest Mediterranean Sea to anticipate the SWOT satellite launch. *Encuentro Oceanografía Física Española*, Vigo, Spain. Poster.

4. **Barceló-Llull, B.**, Pascual, A., Ruiz, S., Allen, J. & Torner, M. (2018). Temporal and spatial variability of the Mallorca channel from underwater glider data. *EGU General Assembly*, Vienna, Austria. PICO.
5. **Barceló-Llull, B.**, Mason, E., Capet, A. & Pascual, A. (2016). Impact of vertical and horizontal advection on nutrient distribution in the southeast Pacific. *New era of altimetry, new challenges*, La Rochelle, France. Poster.
6. **Barceló-Llull, B.**, Sangrà, P., Pallàs-Sanz, E., Barton, E. D., Estrada-Allis, S. N., Martínez-Marrero, A., Aguiar-González, B., Grisolia, D., Gordo, C., Rodríguez-Santana, A., Marrero-Díaz, A. & Arístegui, J. (2016). Anatomy of a subtropical mode water Eddy. *Encuentro Oceanografía Física Española*, Alacant, Spain. Oral.  
\*Award for best oral communication of students (Organizing Committee).
7. Martínez-Marrero, A., Sangrà, P., Estrada-Allis, S. N., Rodríguez-Santana, A., Aguiar-González, B., Marrero-Díaz, A., Barton, E. D., Pallàs-Sanz, E., **Barceló-Llull, B.**, Gordo, C., Grisolia, D. & Cana, L. (2016). Near-inertial waves trapping and deep mixing in an open ocean anticyclonic eddy. *Encuentro Oceanografía Física Española*, Alacant, Spain. Oral.
8. Marrero-Díaz, A., Gordo, C., Sangrà, P., Rodríguez-Santana, A., Estrada-Allis, S. N., Aguiar-González, B., **Barceló-Llull, B.** & Martínez-Marrero, A. (2016). Efecto de un remolino intratermocline en la mezcla de masas de agua. *Encuentro Oceanografía Física Española*, Alacant, Spain. Poster.
9. **Barceló-Llull, B.**, Pallàs-Sanz, E. & Sangrà, P. (2016). Inference and Biogeochemical Response of Vertical Velocities inside a Mode Water Eddy. *Ocean Sciences Meeting*, New Orleans, United States. Oral.
10. Pascual, A., Gaube, P., Mason, E., **Barceló-Llull, B.** & Ruiz, S. (2016). Ocean mesoscale eddies and vertical motion. *Ocean Sciences Meeting*, New Orleans, United States. Poster.
11. **Barceló-Llull, B.**, Pallàs-Sanz, E. & Sangrà, P. (2015). Inference of vertical velocities in a mid ocean anticyclonic mesoscale eddy. *International Union of Geodesy and Geophysics (IUGG)*, Praga, Czech Republic. Oral.
12. Sangrà, P., **Barceló-Llull, B.**, Estrada-Allis, S. N., Martínez-Marrero, A., Aguiar-González, B., Grisolia, D., Gordo, C., Ramírez-Garrido, S., Pallàs-Sanz, E., Rodríguez-Santana, A., Marrero-Díaz, A., Arístegui, J., Barton, E. D. & Cana, L. (2015). Enhancement of primary production and deep mixing by a mesoscale mid ocean anticyclonic Eddy. *International Union of Geodesy and Geophysics (IUGG)*, Praga, Czech Republic. Oral.
13. Martínez-Marrero, A., Sangrà, P., **Barceló-Llull, B.** & Gordo, C. (2015). Near-inertial waves trapping by a mid ocean anticyclonic eddy. *International Union of Geodesy and Geophysics (IUGG)*, Praga, Czech Republic. Poster.

14. Marrero-Díaz, A., Gordo, C., Sangrà, P., Rodríguez-Santana, A., Estrada-Allis, S. N., Aguiar-González, B. & **Barceló-Llull, B.** (2015). Mixing of water masses in an intrathermocline Eddy. *International Union of Geodesy and Geophysics (IUGG)*, Praga, Czech Republic. Poster.
15. Grisolia-Santos, D., Rodríguez-Cruz, E., Sangrà, P., Martínez-Marrero, A., Cana, L. & **Barceló-Llull, B.** (2015). Lagrangian evolution of a mid ocean anticyclonic eddy. *International Union of Geodesy and Geophysics (IUGG)*, Praga, Czech Republic. Poster.
16. **Barceló-Llull, B.**, Mason, E. & Pascual, A. (2014). Quasi-geostrophic vertical motion from satellite and in-situ observations: Impact on South East Pacific nitrate distribution through a Lagrangian simulation. *Encuentro Oceanografía Física Española*, Las Palmas de Gran Canaria, Spain. Oral. \*Registration grant (Organizing Committee).
17. **Barceló-Llull, B.**, Mason, E. & Pascual, A. (2013). Applications of Mesoscale Dynamics: Impacts of vertical motion on nitrate distribution. *EGU General Assembly*, Vienna, Austria. Poster.
18. Rio, M.-H., Pascual, A., Poulain, P.-M., Menna, M., Adani, M., Balbin, R., Aparicio, A., López Jurado, J. L., **Barceló, B.** & Tintoré, J. (2013). A new Mean Dynamic Topography of the Mediterranean Sea based on model outputs, drifter data, hydrological profiles and altimeter measurements. *EGU General Assembly*, Vienna, Austria. Poster.
19. **Barceló-Llull, B.**, Mason, E. & Pascual, A. (2012). Applications of mesoscale dynamics: Impacts of vertical motion on nitrate distribution. *Encuentro Oceanografía Física Española*, Madrid, Spain. Poster.

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## Merits, achievements and experience

- RESEARCH STAYS**
- Centro de investigación científica y de educación superior de Ensenada, CICESE, México**, 2016, 120 days.  
Pre-doctoral mobility grant from the Spanish National Research Program. Supervisor: Enric Pallàs-Sanz
  - Centro de investigación científica y de educación superior de Ensenada, CICESE, México**, 2015, 120 days.  
Pre-doctoral mobility grant from the Spanish National Research Program. Supervisor: Enric Pallàs-Sanz
  - Institut Mediterrani d'Estudis Avançats, IMEDEA, Spain**, 2015, 30 days.  
Supervisor: Ananda Pascual
- CRUISES**
- PRE-SWOT**, *Mesoscale and sub-mesoscale vertical exchanges from multi-platform experiments and supporting modeling simulations: anticipating SWOT launch*, R/V García del Cid, May 2018, 12 days.

**PUMP**, *Study of the Vertical Oceanic Pump in mesoscale eddies*, R/V Hespérides, September 2014, 22 days.

ADDITIONAL **GODAE OceanView International School**, *Mallorca, Spain*, 2-13 October  
TRAINING 2017.

\*Registration and accommodation grant (GOV International School directors).

**International workshop FineMed 2017**, *Marseilles, France*, 26-28 June 2017, Scientific Committee: F. d'Ovidio (LOCEAN, Paris, France), A. Doglioli (MIO, Marseille, France), G. Grégori (MIO, Marseille, France), P. Testor (LOCEAN, Paris, France), B. Fach (METU, Erdemli, Turkey).

\*Travel grant (SWOT Science Team).

**A Short Course on Time Series Analysis**, *UIB, Mallorca, Spain*, 26-30 Jan 2015, Prof. Dudley B. Chelton (CEOAS, Oregon State University, USA).

**Initiation to physical oceanography**, *Institut Mediterrani d'Estudis Avançats, IMEDEA, Mallorca, Spain*, 24 May 2012 -12 Oct 2012, 440 hours, Supervisors: Ananda Pascual and Evan Mason.

**Técnicas avanzadas para el tratamiento numérico y representación gráfica de datos (7a edición)**, *Universidad de Salamanca, Spain*, 2011, 40 hours.

**Presentaciones y comunicaciones orales: estrategias y nuevas tecnologías (6a edición)**, *Universidad de Salamanca, Spain*, 2011, 40 hours.