

Next Generation Climate Science in Europe for Oceans
End-term Meeting

EUREC4A-OA

J. Karstensen on behalf of the project partners



29 April 2024





Main outreach materials and dissemination activities

- Making public the results of scientific analysis
- International Conferences
- Meetings
 - internal (weekly ZOOM meetings)
 - Contribute EUREC4A-OA results to external meetings (Institutional seminars, specific meetings)
- Make use of EUREC4A-OA results in university curricular incl. summer school
- Integrate Students (BSc. MSc, PhD) into the science & analysis
- Website
- Interested public (news articles, media outlet)





Effective and ineffective communication strategies (as observed)

EUREC4A-OA was one of “theses COVID projects”

- In-person meetings were limited
- Very effective zoom meetings

Our indicators for effective communication:

- Value and inspiration from scientific discussions
- Collaborations
- Impact on funding (e.g. ERC grant WHIRLS) and strategic decisions (e.g. future vision on research vessel capabilities)

Ineffective communication:

- Non?



How do you ensure that your project results will be taken up by society and/or policy and contribute to a longer-term impact?

- *Various* evidence that our project results have been taken up by diverse stakeholder groups
- Prerequisite: highest quality of science
- Intense student participation (BSc., MSc., PhD) with clear impact on students as e.g. seen in career planning
- Use of results/Examples from Eurec4A in summer schools
- Science result will have long term impact on climate modelling (e.g. parametrization, new process understanding, validation)



Publications

Articles

- G. Reverdin et al., 2021: Formation and evolution of a freshwater plume in the northwestern tropical Atlantic in February 2020. *J. Geophys. Res.*, 126, 4, e2020JC016981.
- B. Stevens et al (267 authors), 2021: EURECA4A. *Earth System Science Data*, 13, 40674119. <https://doi.org/10.5194/essd-2021-18>
- X. Carton, F.C. Kouogang Tchuenkam, A. Vic, 2021: The interaction of two vortices near a boundary in rotating stratified incompressible flows. Ch.5, In *Recent Trends in Chaotic, Nonlinear and Complex Dynamics*. In Honor of Prof. Miguel A.F. Sanjun on His 60th Birthday, *World Scientific Series on Nonlinear Science Series B*, 19, World Scientific Press, 99-131.
- A. Vic, X. Carton, J. Gula, 2022: Eady baroclinic instability of a circular vortex. *Symmetry*, 14, 7, 1438, 1-18.
- L. Olivier, Boutin, J., Reverdin, G., Lefèvre, N., Landschützer, P., Speich, S., Karstensen, J., et al. (2022): Wintertime process study of the North Brazil Current rings reveals the region as a larger sink for CO2 than expected, *Biogeosciences*, 19, 2969–2988, <https://doi.org/10.5194/bg-19-2969-2022>
- C. Subirade, P. L'Hégaret, S. Speich, X. Carton, R. Laxenaire, J. Karstensen, 2023: Combining an eddy detection algorithm with in-situ measurements to study North Brazil Current rings. *Remote Sensing*, 15, 1897. <https://doi.org/10.3390/rs15071897>
- L'Hégaret, P., Schütte, F., Speich, S., Reverdin, G., Baranowski, D. B., et al., 2023 : Ocean cross-validated observations from R/Vs L'Atalante, Maria S. Merian, and Meteor and related platforms as part of the EURECA4A-OA/ATOMIC campaign, *Earth Syst. Sci. Data*, 15, 1801–1830, <https://doi.org/10.5194/essd-15-1801-2023>
- J. Reinaud, X. Carton, 2023: Quasi-geostrophic vortex vertical alignment in near collapse interactions. *Geophys. Astrophys. Fluid Dyn.*, 117, 5, 292-314. <https://doi.org/10.1080/03091929.2023.2242571>
- Y. Barabinot, S. Speich, X. Carton, 2024: Defining Mesoscale Eddies Boundaries from In-situ Data and a Theoretical Framework. *J. Geophys. Res.*, 129, e2023JC020422.
- D. C. Napolitano, Carton, X., & Gula, J. (2024). Vertical interaction between NBC rings and its implications for South Atlantic Water export. *Journal of Geophysical Research: Oceans*, 129, e2023JC020741. <https://doi.org/10.1029/2023JC020741>
- X. Carton, J. Reinaud, A. Vic and J. Gula, (2024): The nonlinear evolution of two surface quasi-geostrophic vortices. To appear in *Geophys. Astrophys. Fluid Dyn.*
- Y. Barabinot, S. Speich, X. Carton, 2024: Defining Mesoscale Eddies Boundaries from In-situ Data and a Theoretical Framework. *J. Geophys. Res.*, 129, 2, e2023JC020422.
- X. Carton, J. Reinaud, A. Vic and J. Gula, 2024: The nonlinear evolution of two surface quasi-geostrophic vortices. To appear in *Geophys. Astrophys. Fluid Dyn.*

submitted / in rev:

- D. C. Napolitano, Gula, J., Coadou-Chaventon, S., Speich, S., McWilliams, J.C., Rocha, C.B., Zhang, D., & Carton, X. Thermohaline gradients galore in the northwestern Tropical Atlantic. Submitted to *Geophysical Research Letters*.
- Y. Barabinot, S. Speich, X. Carton, 2024: On the 3D structure of Anticyclonic Eddies from In situ Data/Trapped heterogeneous waters in eddies cores from in-situ data. Revised version sent to *J. Geophys. Res.*
- Y. Barabinot, S. Speich, X. Carton, 2024: Assessing the Material Coherence of Mesoscale Eddies using In Situ Dat. Resubmitted to *J. Geophys. Res.*
- A. Vic, X. Carton, J. Gula, 2024: Baroclinic instability in a coupled oceanic atmospheric Eady model. Under revision for *Geophys. Astrophys. Fluid Dyn.*
- Napolitano, D. C., Gula, J., Coadou-Chaventon, S., Speich, S., McWilliams, J.C., Rocha, C.B., Zhang, D., & Carton, X. Thermohaline gradients galore in the northwestern Tropical Atlantic. Submitted to *Geophysical Research Letters*
- Tian, F., N. Keenlyside, I. Bethke, P. Fernández, S. Koseki, F. Li (2024) Resolution-Dependent Sensitivity of Tropical Precipitation and Latent Heat Flux in the NorESM Model, submitted to *JAMES*
- Meso-scale air-sea interaction and its impacts on climate in the EURECA4 region: A high-resolution GCM, Koseki et al. to be submitted

Students

Postdocs:

P. L'Hégaret, D. Napolitano, F. Schütte, F. Dilmahamod

full and contributing PhDs:

A. Vic, S. Coadou-Chaventon, L. Olivier

Students (MSc, BSc)

O. Lenoble, Interactions between near-inertial waves and mesoscale eddies during the EURECA4a campaign.

V. Mokuenko, Baroclinic instability in an ocean coupled with a neutrally stable atmosphere.

L. Eisenring, Submesoscale coherent vortices in the Northwestern Atlantic.

M. Menard, Dynamics of river plumes and their interactions with vortices in the Northwestern Atlantic Ocean.

G. Zerbini, Ocean-atmosphere interaction above fronts and eddies during EUREC4a.

C. Galard, Utilisation de données d'AIS pour la reconstruction des courants dans la région EUREC4A-OA et l'analyse des tourbillons de la région (at EODYN).

F. Barge, Ocean-atmosphere interaction above fronts and eddies during EUREC4a.

V. Mokuenko, Ocean-atmosphere interaction above fronts and eddies during EUREC4a.

D. Rudloff, Observations of Vertical Propagation of Near Inertial Waves in a Complex Vorticity Field.

C. Lösel, The Impact of varying Surface Conditions on Air/Sea Heat and Momentum Fluxes during the MSM89 Cruise



Thank you

The background features a series of overlapping, semi-transparent geometric shapes in various shades of teal and blue. These shapes are primarily located on the right side of the frame, creating a modern, layered effect. The rest of the background is plain white.