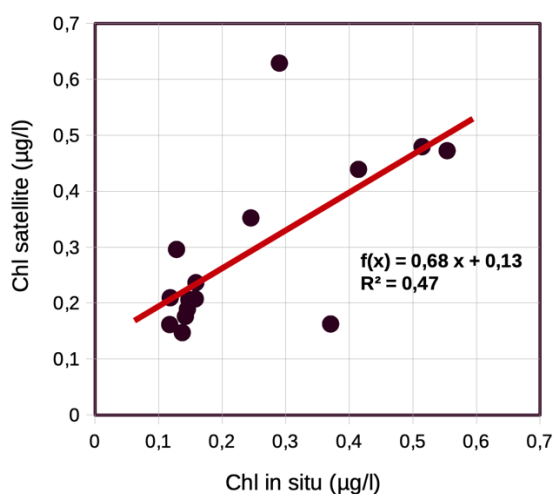


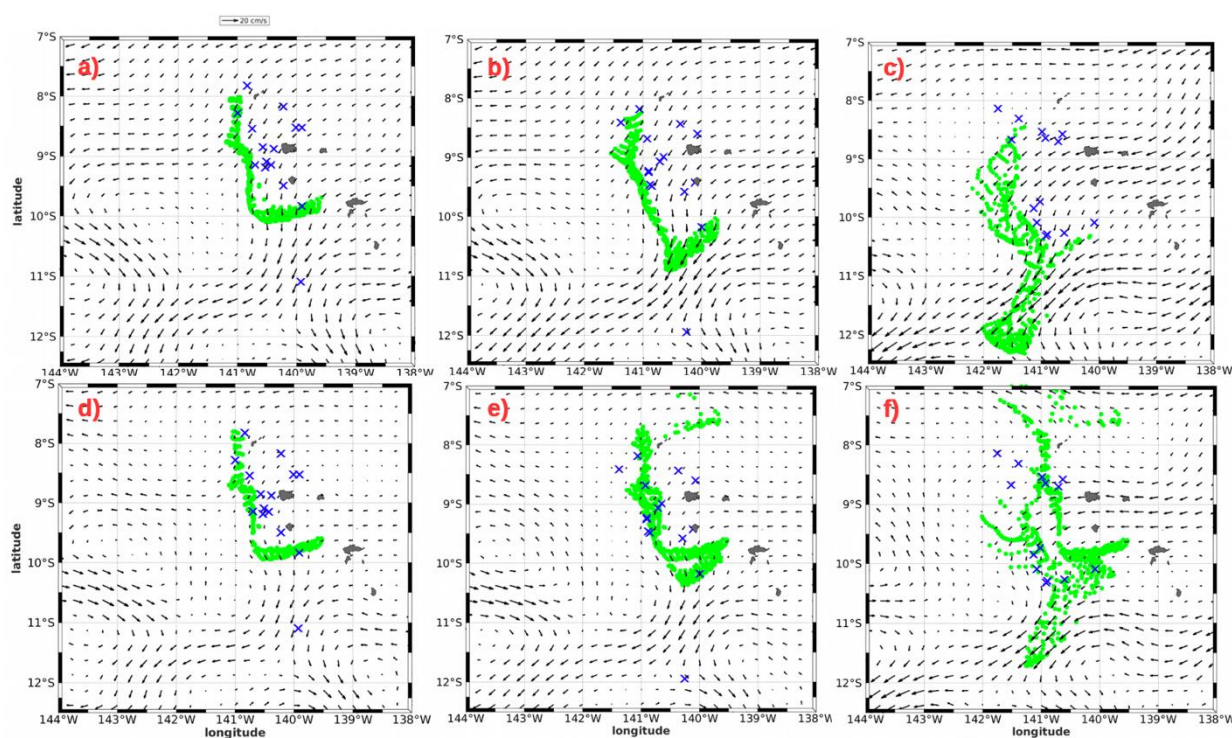
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Supplements



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Figure S1: Correlation between *in situ* Chl from the MOANA MATY cruise and satellite Chl. The linear regression is in red.



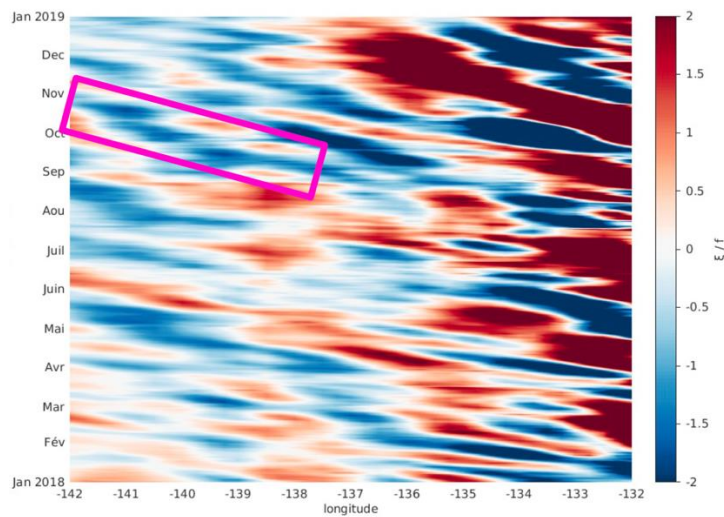
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Figure S2: Comparison of the dispersion of SVP drifters deployed during the MOANA-MATY cruise (blue crosses) and the simulated particles (green dots). Considering the total surface current, from the GEKCO product, as the sum of the geostrophic component and the Ekman component, two simulations are run, with (a-c) 100% and (d-f) 50% of the Ekman component. 549 particles are released in the 100% simulation and 369 particles in the 50% simulation. Particles are released daily between the 1st and 10th of October 2018 and their positions as well as those of the SVP drifters are shown the 15th October (left column), 25th October (center column) and 5th November (right column) 2018.

14 **Table S1:** Average distances (km) of the simulated particles (Figure S2) from their barycenter.
 15 Considering the total surface current, from the GEKCO product, as the sum of the geostrophic
 16 component and the ekman component, two simulations are run, with 100% and 50% of the ekman
 17 component. 549 particles are released in the 100% simulation and 369 particles in the 50% simulation.
 18 The average distances are presented for the 15th and 20th of October 2018 and 5th of November 2018.
 19 Average distances (km) of surface velocity profilers (SVP), deployed during the MOANA-MATY
 20 cruise, from their barycenter are also presented for the same days.

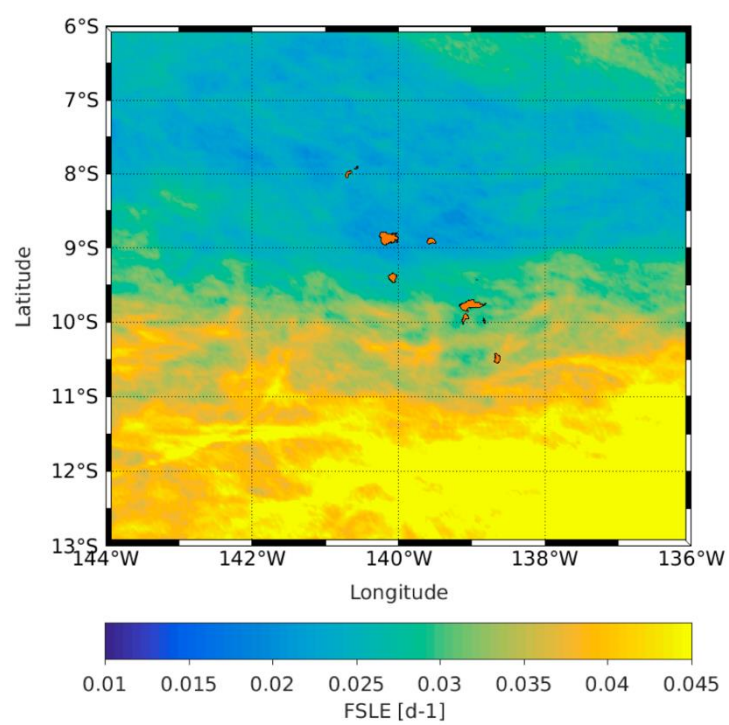
	15 th October	25 th October	5 th November
100 %	56.60	204.81	339.30
50 %	28.98	95.48	171.52
SVP	34.06	67.49	179.36

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23 **Figure S3:** Hovmoller diagram of the vorticity normalized by the Coriolis parameter on latitude 10.3°S
 24 during the 1st January 2018 until the 1st January 2019. The pink box highlights the time-longitude
 25 evolution of the eddy detected the 3rd October 2018.



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Figure S4: Average of FSLEs (d⁻¹) for the year 2018 in the Marquesas archipelago.