

Table S1. List of environmental variables and associated online repository.

Variable	Unit	Mechanistic	Dataset	Institution	Temporal resolution	Spatial resolution	Access
Chl-a	mg m ⁻³	Proxy of primary production	Aqua Modis	NASA/GSFC OBPG	8-days	0.04°	https://coastwatch.pfeg.noaa.gov/erddap
Surface wind speed	m sec ⁻¹	Ocean surface wind regime	DMSP-F16/SSMIS	NASA/Earth data	weekly	0.25°	https://earthdata.nasa.gov
Sea Surface Temperature (SST)	°C	Thermal regime	Multi-scale Ultra-high Resolution (MUR)	NOAA NMFS SWFSC ERD and NOAA NESDIS CoastWatch WCRN	daily	0.01° (resampled at 0.08°)	https://coastwatch.pfeg.noaa.gov/erddap
FSLE (Finite Size Lyapunov Exponent)	day ⁻¹	Mesoscale circulation, water stirring	Backward in time FSLEs based on the maximum eigenvalue of the Cauchy-Green strain tensor	Aviso+ LOcean CLS CTOH Cnes	daily	0.04°	https://www.aviso.altimetry.fr
Sea Surface Height (SSH)	M	Current and ocean regime	Global Ocean 1/12° Physics analysis	Copernicus Marine Environment Monitoring Service (CMEMS)	daily	0.08°	https://resources.marine.copernicus.eu

Eastward (u) and Northward (v) water velocity components	m sec ⁻¹	Index of convergence and divergence (prey retention)	Global Ocean 1/12° Physics analysis	Copernicus Marine Environment Monitoring Service (CMEMS)	daily	0.08°	https://resources.marine.copernicus.eu
Depth	M	Depth to seafloor (Bathymetry)	ETOPO1	NOAA ERD	-	0.02°	https://coastwatch.pfeg.noaa.gov/erddap
EKE	m sec ⁻¹	Index of convergence and divergence (prey retention)	Calculated daily from eastward (u) and northward (v) water velocity components using $0.5(u^2 + v^2)$				
SST range	°C	Index of thermal front	Calculated daily using a moving window function at a resolution of 0.08° (15 x 15 grid cells; function max(value) – min(value)) around focal location thus with 100 km eastward and 135 km northward displacement				
Chla range	mg m ⁻³	Index of primary productivity front	Calculated at 8-days using a moving window function at a resolution of 0.04° (15 x 15 grid cells; function max(value) – min(value)) around focal location thus with 50 km eastward and 67 km northward displacement				
SSH range	m	Index of oceanic front	Calculated daily using a moving window function at a resolution of 0.08° (15 x 15 grid cells; function max(value) – min(value)) around focal location thus with 100 km eastward and 135 km northward displacement				
Frequency of chlorophyll peak index (FCPI)	-	Variability and anomalies persistence in Chl-a	Calculated from monthly Chl-a from 2002-2019 (Suryan et al. 2012)				

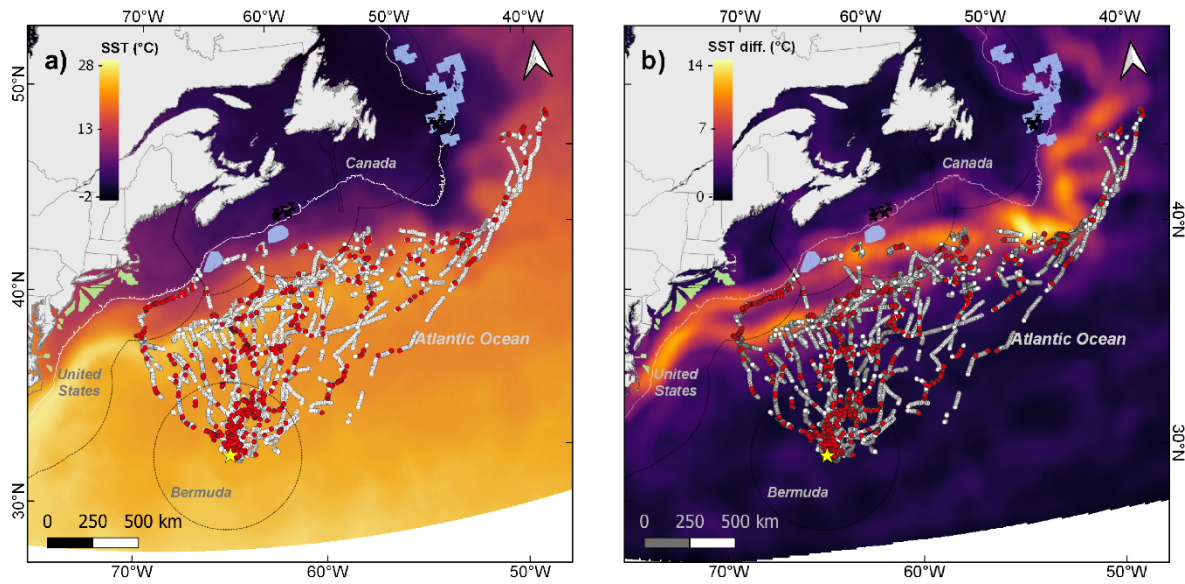


Fig. S1: GPS locations of the five Bermuda Petrels tracked during the chick-rearing period in 2019 overlaying the a) daily SST ($^{\circ}\text{C}$) and b) daily range in SST ($\text{m unit distance}^{-1}$) both averaged over the study period (11-April to 4-June, 2019). Warmer colors indicate warmer SST and larger SST range. Foraging locations (see Materials and Methods for description of behavioral classification) are highlighted in red. Active oil and gas exploration licence areas (blue polygons) and production platforms (black crosses) in Canada and wind energy areas (green polygons) in the US are presented. The star represents the colony. The 500-m isobath is included (white line) to represent the approximate location of the shelf break. Projection is Quebec Lambert EPSG:6622