

Fine scale foraging behaviour of southern Buller's albatross, the only *Thalassarche* that provisions chicks through winter

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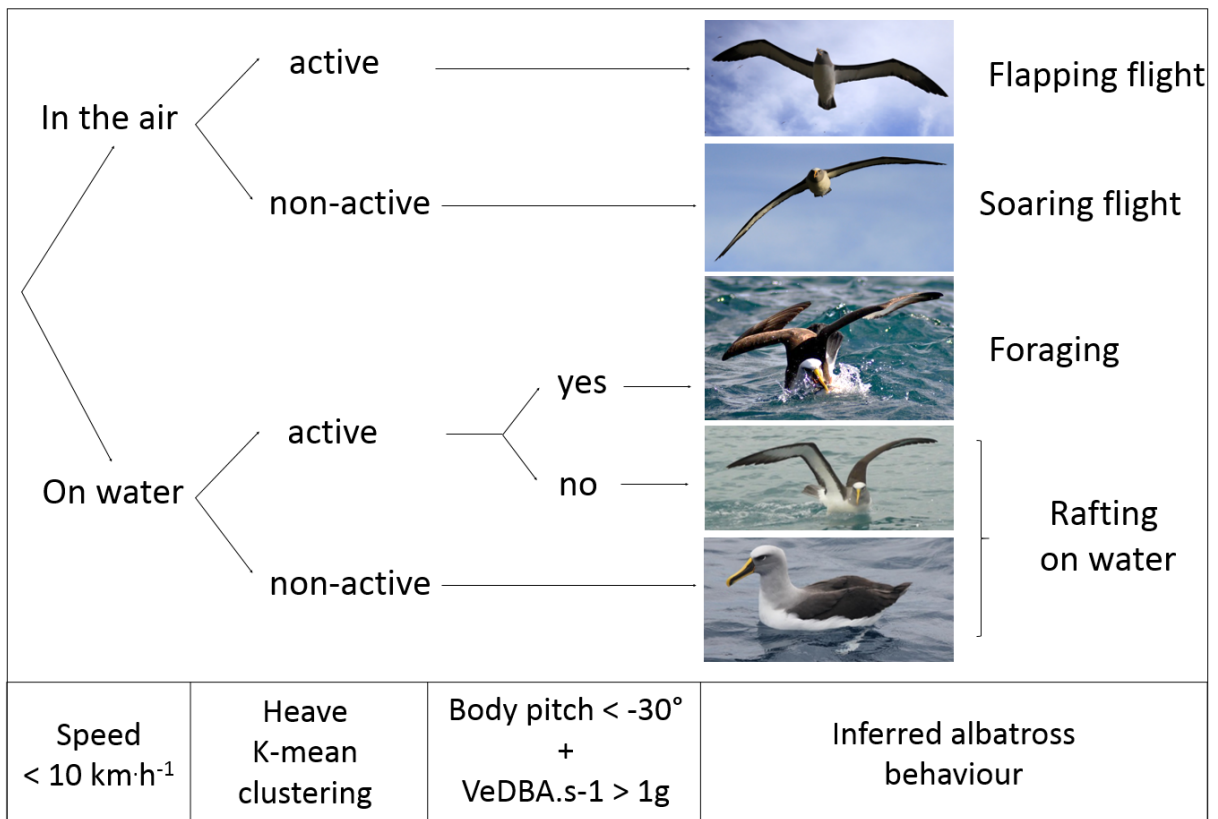
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Supplementary material

Table S1. Environmental variables details. Dynamic variables (*) were gathered from Copernicus (<http://marine.copernicus.eu/services-portfolio/access-to-products/>).

Abbreviation	description	Unit	Spatial / temporal resolution	Product
DEPTH	Ocean depth	m	0.008° / -	GEBCO
SLOPE	Ocean floor slope	°	0.083° / -	Derivated from DEPTH
WAVE*	Sea surface wave significant height	m	0.083° / 3 hours	Global_Analysis_Forecast_Wav_001_027
SST*	SST, Sea surface temperature	°C	0.083° / daily	Global_Analysis_Forecast_PHY_001_024
UCURR*	Eastward sea water velocity	m s ⁻¹	0.083° / daily	Global_Analysis_Forecast_PHY_001_024
VCURR*	Northward sea water velocity	m s ⁻¹	0.083° / daily	Global_Analysis_Forecast_PHY_001_024
CHLA*	Mean chlorophyll <i>a</i> concentration	mg m ⁻³	0.5° / weekly	Global_Analysis_Forecast_Bio_001_014
UWIND*	Eastward 10m wind speed	m s ⁻¹	0.25° / 6 hourly	Cersat-Glo-Blended_Wind-L4-V5-OBS
VWIND*	Northward 10m wind speed	m s ⁻¹	0.25° / 6 hourly	Cersat-Glo-Blended_Wind-L4-V5-OBS

A



B

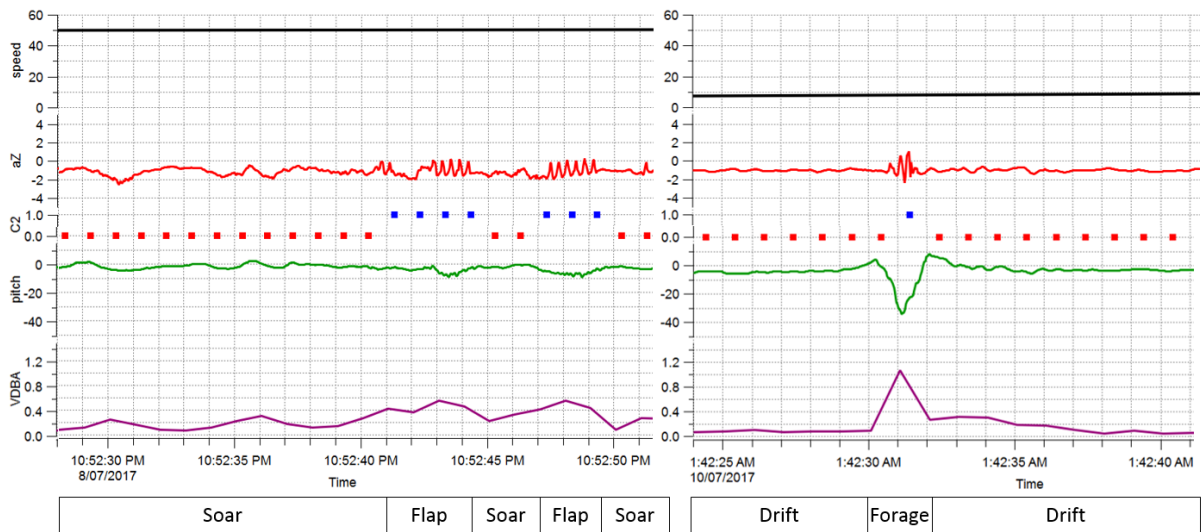


Fig S1. Decision tree (A) and example of the method used to assign key behaviours (B) to southern Buller's albatross during their foraging trips according to their GPS and acceleration data.

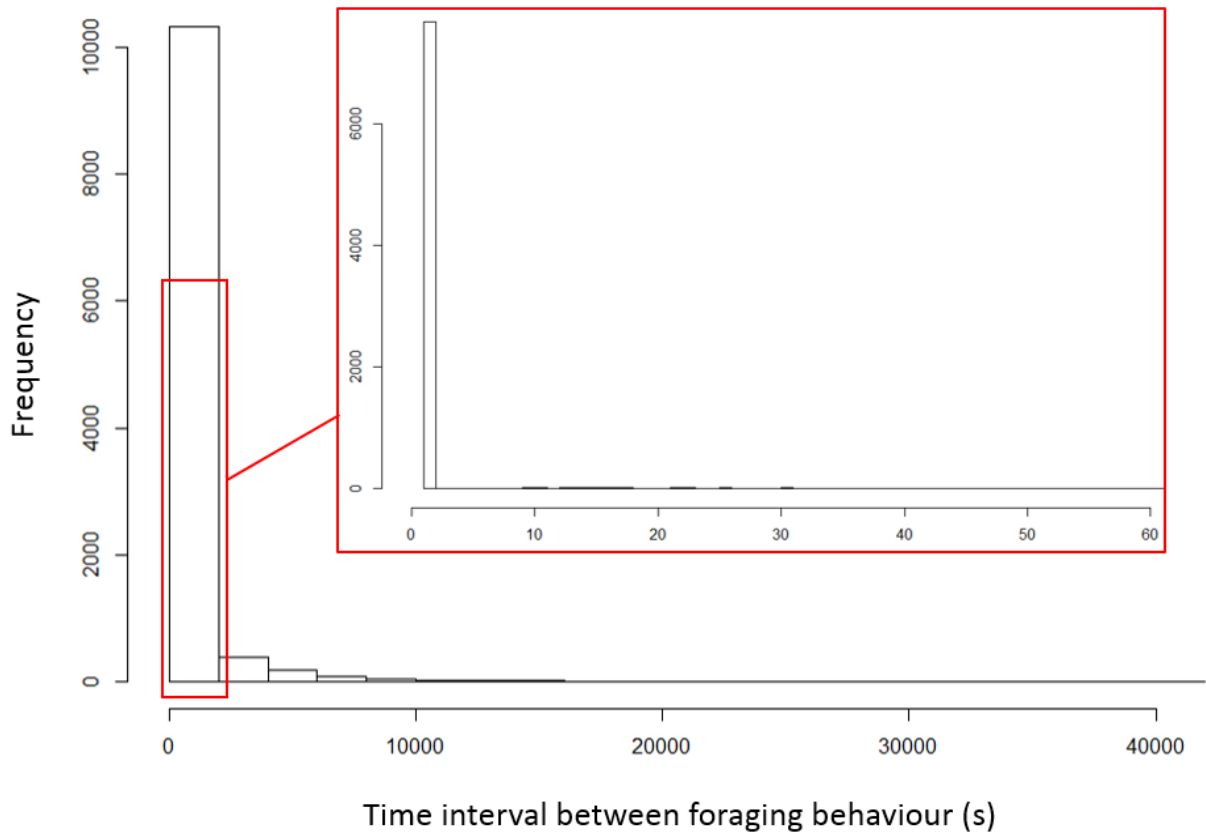


Fig S2. Frequency distribution of the time intervals between foraging behaviour recorded within foraging trips of southern Buller's albatross.

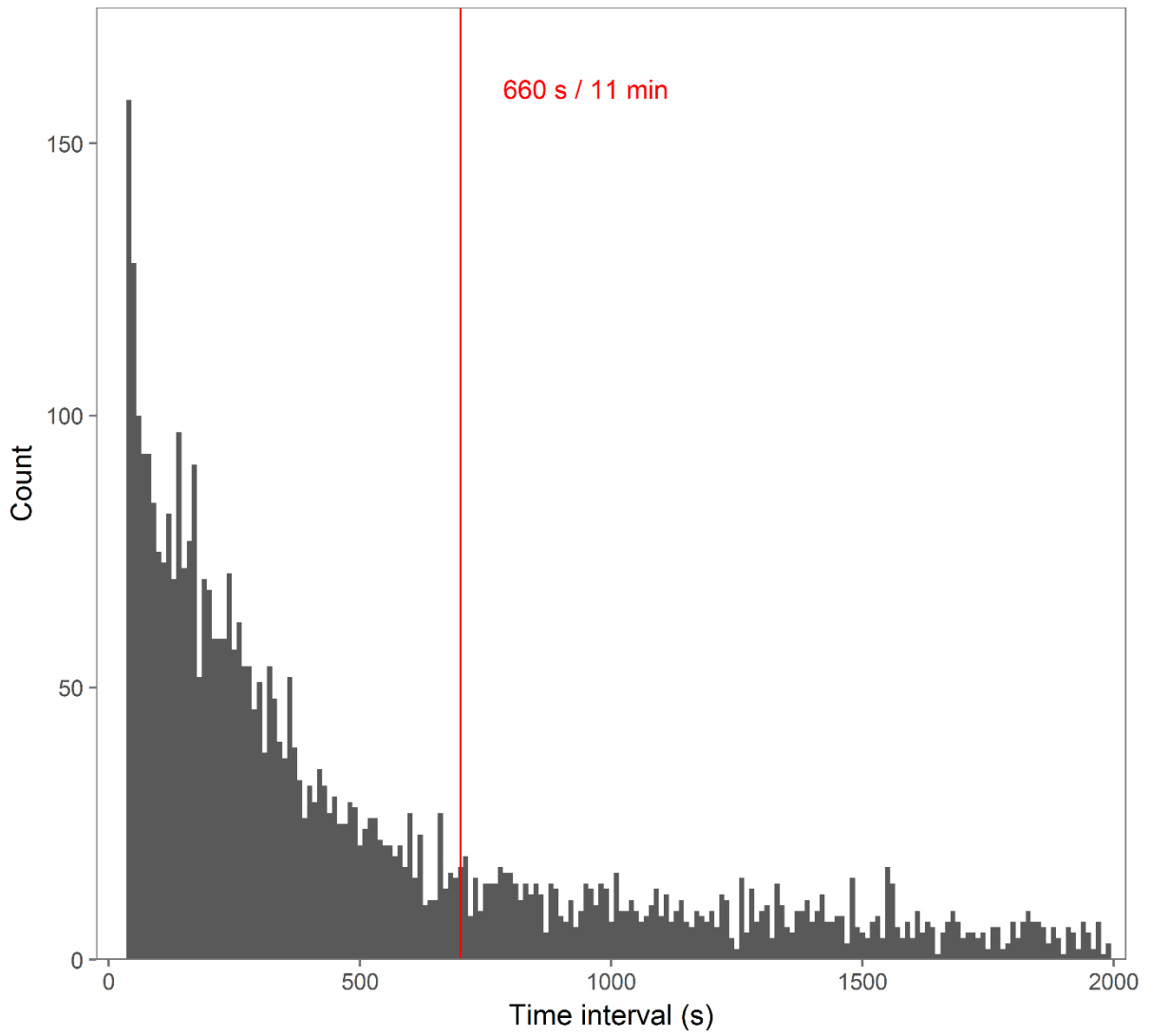


Fig S3. Frequency distribution of the time intervals between foraging events recorded within foraging trips of southern Buller's albatross.

Table S2. Best and most parsimonious models selected explaining the GPS trips and time spent foraging trends of southern Buller’s albatross raising chick at Hautere/Solander Island. These linear mixed models (LMMs) and generalised additive mixed model (GAMM) include individual identity as random effect.

Model	Formula	AICc	Δ AIC	Weight
LMM	% time spent rafting on water ~ sex + year + period of the day	6590	0.0	0.76
LMM	% time spent foraging ~ sex + year + period of the day	676	0.0	0.35
LMM	% nocturnal time spent foraging ~ 0	-245	0.0	0.54
LMM	Nocturnal landing rate ~ moon illumination + Year	2835	0.0	0.66
LMM	Trip duration (single day) ~ sex + year	79	0.0	0.42
LMM	Trip duration (overnight) ~ sex + year	129	0.0	0.40
LMM	Trip duration (multiple days) ~ sex + year	391	0.0	0.90
LMM	Total distance travelled (single day) ~ sex + year	184	0.0	0.90
LMM	Total distance travelled (overnight) ~ sex + year	253	0.0	0.95
LMM	Total distance travelled (multiple days) ~ sex + year	575	0.0	0.99
LMM	Max. distance from the colony (single day) ~ sex + year	150	0.0	0.76
LMM	Max. distance from the colony (overnight) ~ sex + year	208	0.0	0.90
LMM	Max. distance from the colony (multiple days) ~ sex + year	473	0.0	0.98
LMM	Average speed (single day) ~ sex + year	128	0.0	0.66
LMM	Average speed (overnight) ~ sex + year	134	0.0	0.47
LMM	Average speed (multiple days) ~ sex + year	201	0.0	0.66
LMM	Interval distance between foraging ~ sex + year + period of day + marine habitat	17018	0.0	0.72
GAMM	Log(std_time spent foraging) ~ depth+ mixed layer depth + seafloor slope + SST + wave	4186	0.0	0.23

Table S3. Pairwise comparison of 1) the probability to be smaller, and 2) the percentage of overlap (in italics) between Bayesian standard ellipses areas (SEA_B) of breeding southern Buller’s albatrosses provisioning chick at Hautere/Solander island (New Zealand).

	Females 2016	Males 2016	Females 2017	Males 2017
Females 2016	-	0.98 / 21	0.82 / 1.5	0.93 / 18
Males 2016	0.02 / 53	-	0.08 / 1.1	0.23 / 75
Females 2017	0.17 / 2.2	0.91 / 0.6	-	0.76 / 6.5
Males 2017	0.06 / 40	0.76 / 64	0.23 / 40	-