The following supplement accompanies the article

Foraging behaviour of southern elephant seals over the Kerguelen Plateau

Malcolm O'Toole[1,*], Mark A. Hindell[1], Jean-Benoir Charrassin[2], Christophe Guinet[3]

[1]**Institute of Marine and Antarctic Studies, University of Tasmania, Hobart 7001, Australia**
[2]**Muséum National d'Histoire Naturelle, Paris 75231, France**
[3]**Marine Predator Department, Centre Biologique de Chize, Villiers en Bois 79360, France**

*Corresponding author: otoolem@utas.edu.au

Marine Ecology Progress Series: 502: 281–294 (2014)

Supplement. Additional data

Table S1. *Mirounga leonina*. Trip departure and arrival (or end of transmission) dates from the Kerguelen Islands for each individual seal

Seal ID	Departure date	Arrival/End date
ct11-10097-05	24-Sep-2005	22-Nov-2005
ct16-174-06	11-Feb-2006	21-May-2006
ct16-241-06	30-Mar-2006	24-Jun-2006
ct23-C01-06	30-Dec-2006	26-May-2007
ct23-C02-06	6-Jan-2007	19-Mar-2007
ct23-C03-06	7-May-2007	21-Jun-2007
ct23-C04-06	13-Jan-2007	23-Mar-2007
ct23-C06-06	2-Jan-2007	18-Feb-2007
ct23x-589-08	8-Feb-2009	15-Mar-2009
ct23x-602-08	28-Jan-2009	30-Apr-2009
ct3-9928-04	27-Feb-2004	26-Mar-2004
ct36-B-09	19-Jan-2009	28-Mar-2009
ct36-C-09	13-Feb-2009	9-Apr-2009
ct36-D-09	6-Feb-2009	2-Jun-2009
ct36-R1-09	3-Jan-2009	16-Feb-2009
ct36-R2-09	3-Jan-2009	31-Mar-2009
ct38e-09-07	6-Jan-2008	11-Feb-2008
ct38e-29-07	30-Dec-2007	27-Sep-2008
ft02-G-08	2-Jan-2009	31-May-2009

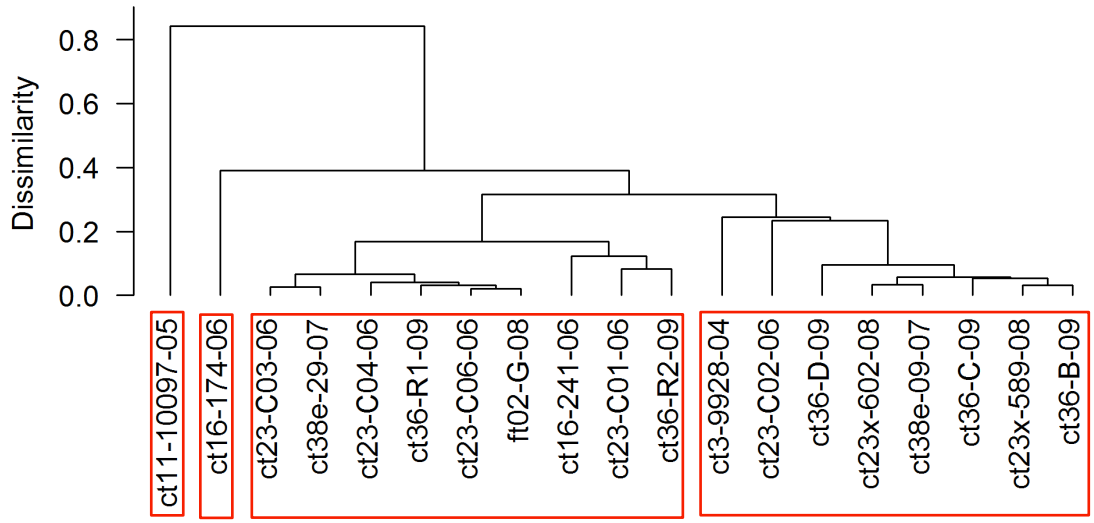


Fig. S1. *Mirounga. leonina*. Dendrogram shows how seals are grouped relative to each other, based on the proportion of dive types they performed. Constructed by hierarchical averaging cluster analysis and cut into 4 of the most distinct groups (groups highlighted by red boxes)

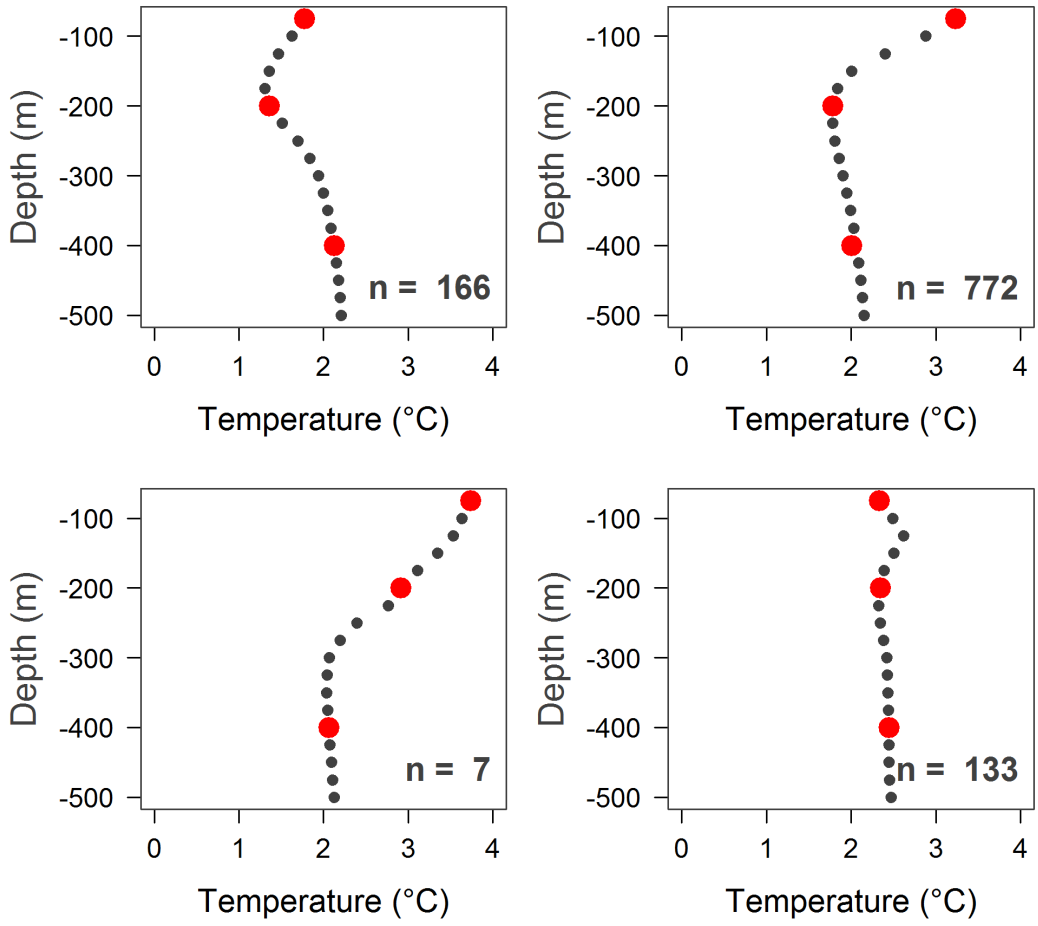
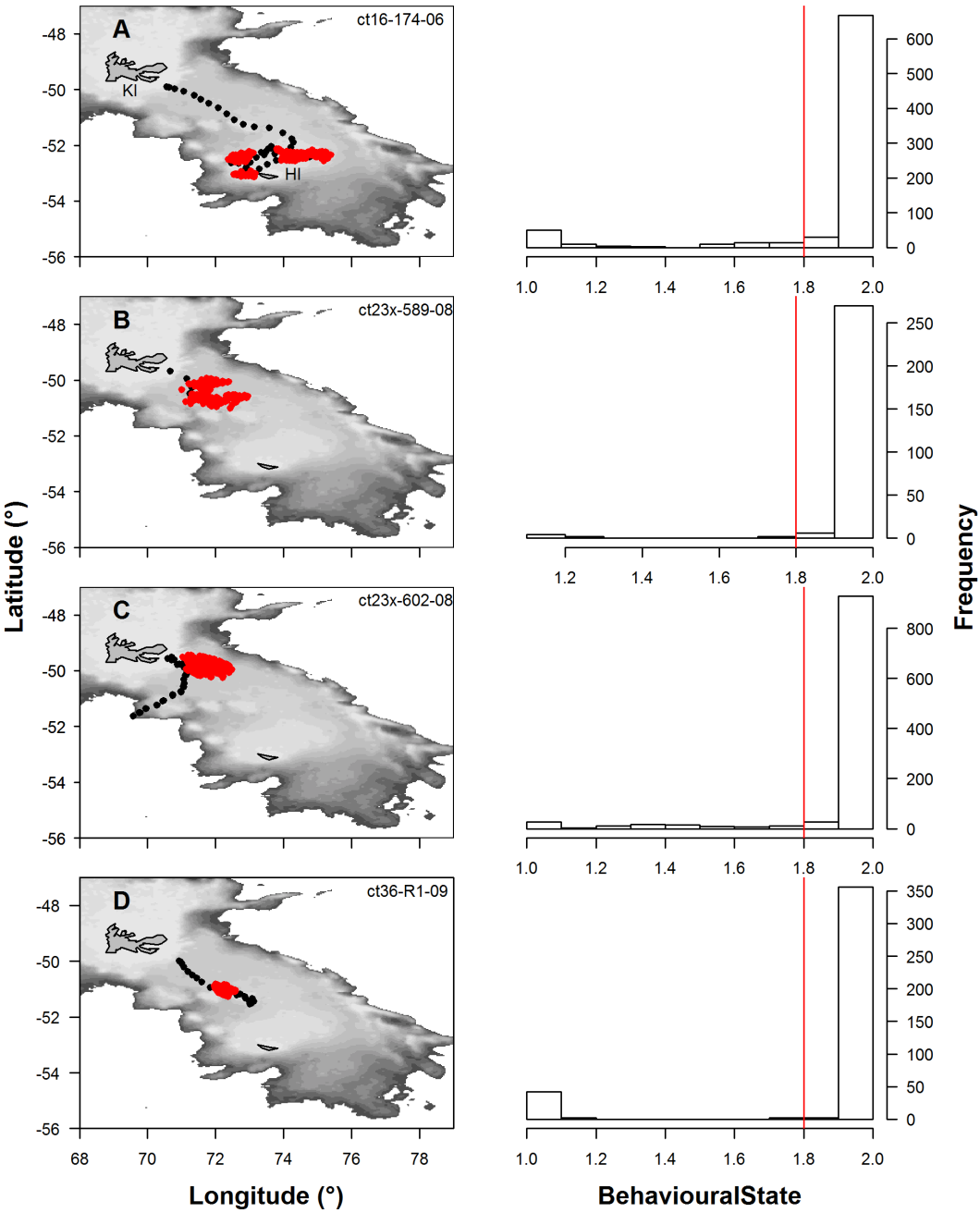
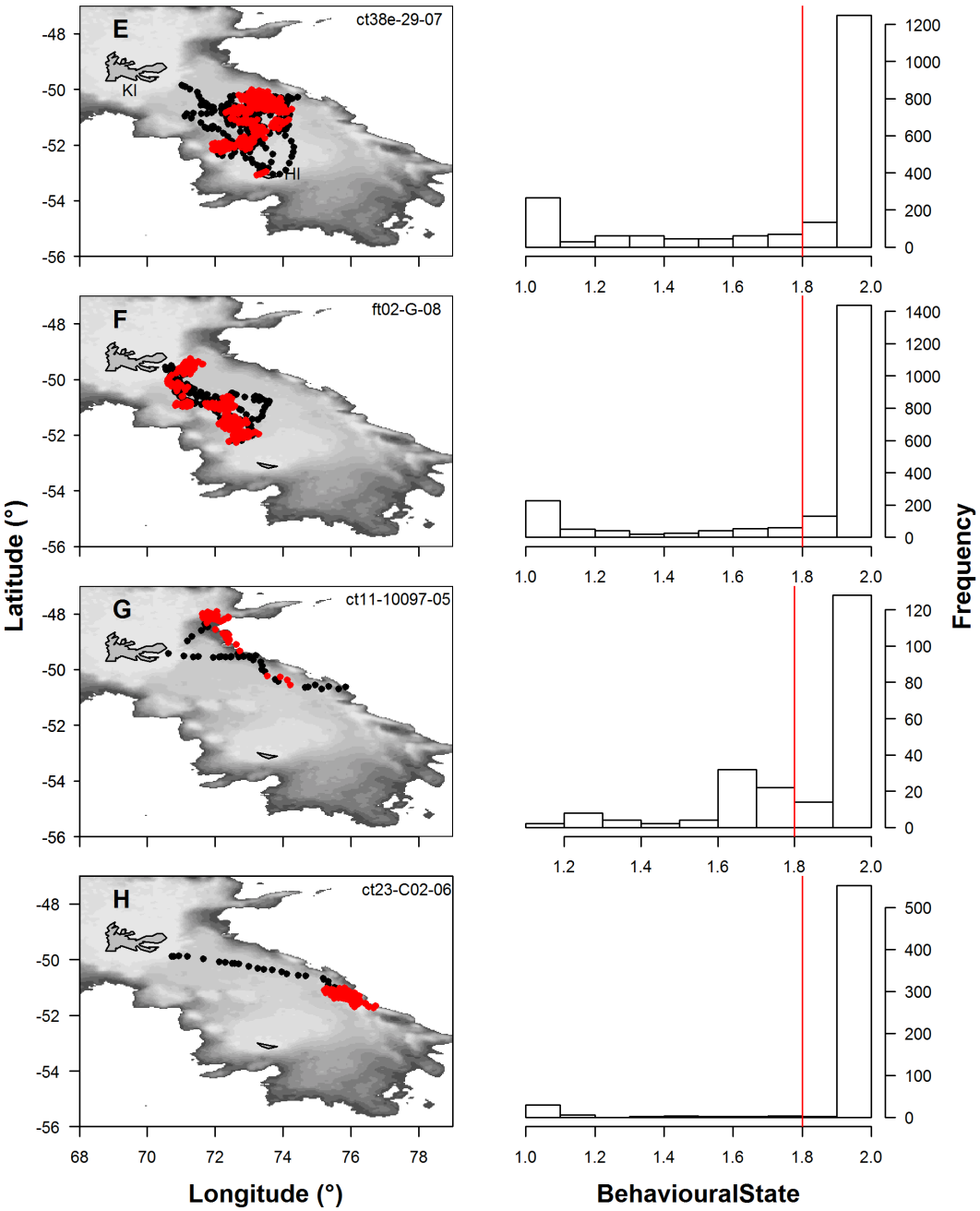
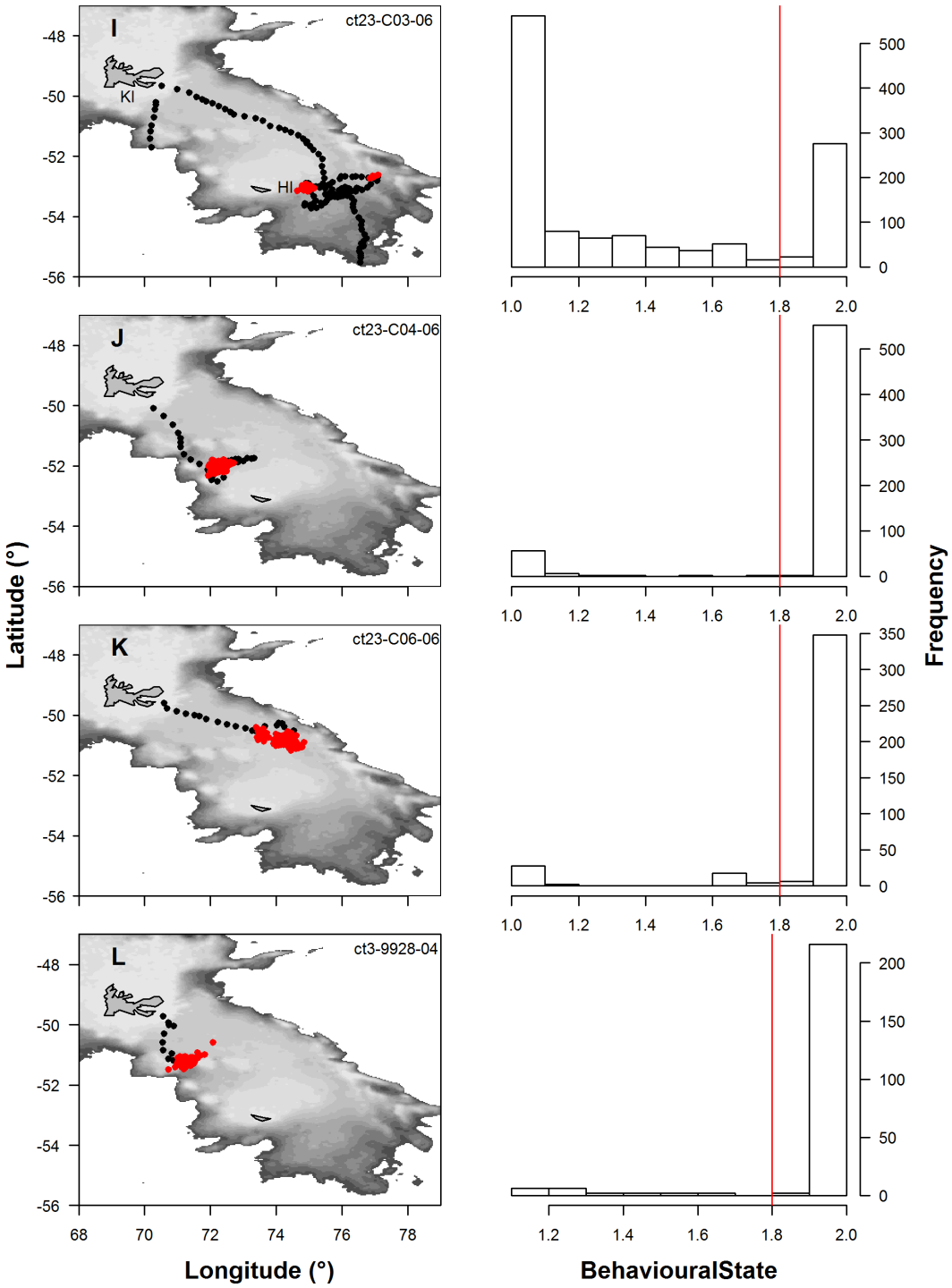
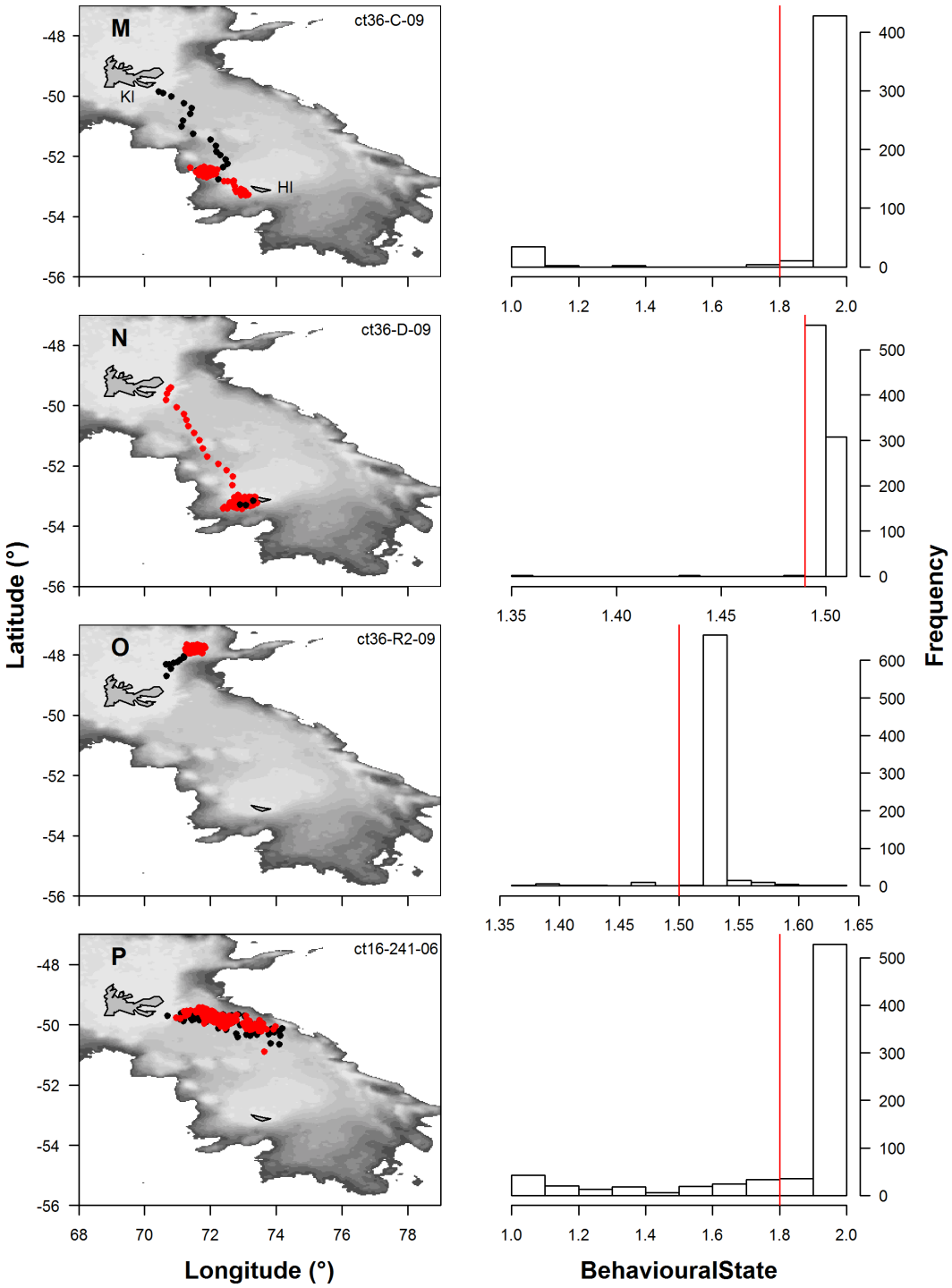


Fig. S2. *Mirounga. leonina*. Common temperature inflection points in the water column. Cluster analysis of the temperature profile in the water column reveals distinct changes in temperature at depth (i.e. 75, 200 and 400 m), which are indicated by red circles. How often seals visit each temperature profile type is indicated by the number of locations associated with each cluster profile (n)


A
ct16-174-06
KI
HI
B
ct23x-589-08
C
ct23x-602-08
D
ct36-R1-09
-48
-50
-52
-54
-56
68
70
72
74
76
78
Latitude (°)
Longitude (°)
1.0
1.2
1.4
1.6
1.8
2.0
BehaviouralState
Frequency
0
100
200
300
400
500
600
50
150
250
350
800


E
ct38e-29-07
KI
HI
F
ft02-G-08
G
ct11-10097-05
H
ct23-C02-06
Latitude (°)
Longitude (°)
BehaviouralState
Frequency


I
ct23-C03-06
KI
HI
J
ct23-C04-06
K
ct23-C06-06
L
ct3-9928-04
Latitude (°)
Longitude (°)
Frequency
BehaviouralState


M
ct36-C-09
KI
HI
N
ct36-D-09
O
ct36-R2-09
P
ct16-241-06
Latitude (°)
Longitude (°)
BehaviouralState
Frequency

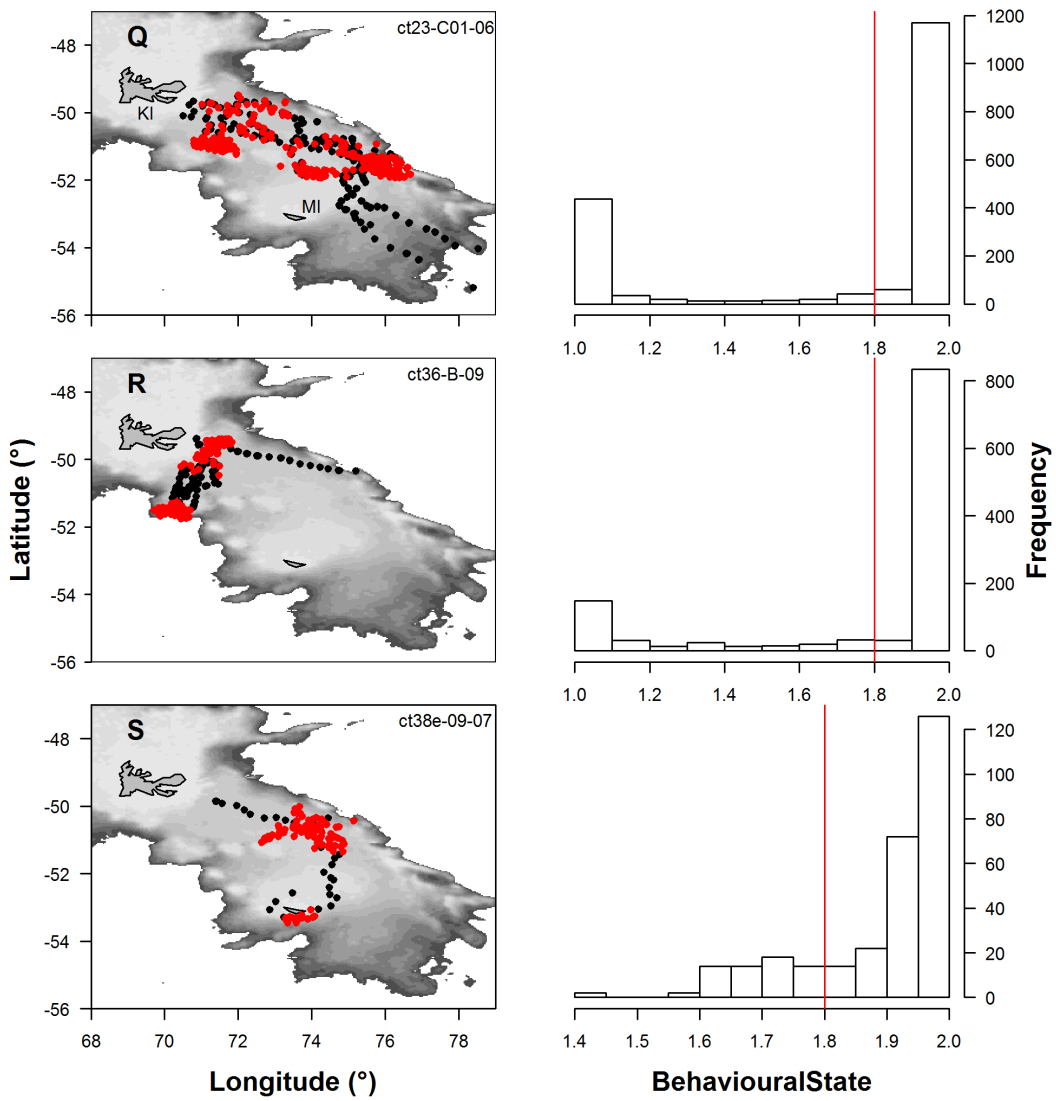


Fig. S3. *Mirounga. leonina*. Spatial distribution of each seal occupying the Kerguelen-Heard Plateau (left panels): (A to F) seals occupying the south deep sea or the Heard Island shelf, (G to O) seals targeting the shelf break and (P to S) seals targeting both. Locations are coloured according to a switch between the 2 behavioural states (i.e. black: transit; red: search). Frequency plots (right panels) show how locations were assigned to a behavioural state. The red line represents the visual threshold of the behavioural state for each seal. Values below and above the threshold are transit and search behaviour, respectively. Bathymetry depth ranges from 0 to 2000 m (colour scale ranges from light grey to dark grey, respectively). Outlined grey areas indicate land: Kerguelen Islands (KI, upper left) and Heard Island (HI, lower centre)

Table S2. *Mirounga. leonina*. Search dive strategy (see Table 2 legend for a description of strategies) adopted by each seal while at sea, defined by the proportion of shallow, meso-pelagic, demersal and benthic dive types

Seal ID	Search dive type				
	Shallow	Meso-pelagic	Demersal	Benthic	
Strategy 1					
ct11-10097-05	8%	65%	21%	6%	
Strategy 2					
ct16-174-06	29%	9%	15%	47%	
Strategy 3					
ct16-241-06	2%	3%	23%	72%	
ct23-C01-06	2%	10%	19%	69%	
ct23-C03-06	0%	3%	8%	89%	
ct23-C04-06	2%	4%	12%	83%	
ct23-C06-06	0%	6%	11%	82%	
ct38e-29-07	1%	4%	9%	87%	
ft02-G-08	1%	7%	10%	82%	
ct36-R1-09	1%	8%	8%	83%	
ct36-R2-09	2%	13%	12%	73%	
Strategy 4					
ct3-9928-04	2%	22%	37%	40%	
ct23-C02-06	8%	25%	15%	52%	
ct38e-09-07	1%	8%	31%	60%	
ct23x-589-08	1%	10%	26%	62%	
ct23x-602-08	1%	11%	31%	57%	
ct36-B-09	2%	11%	28%	60%	
ct36-C-09	4%	12%	27%	57%	
ct36-D-09	4%	5%	35%	56%	

Table S3. *Mirounga. leonina*. Time seal spent within each fisheries management zone (FMZ) on the Kerguelen-Heard shelf (i.e. northern [NMZ] and southern [SMZ] management zones). Shown is the individual dive strategy (dS, see Table 2 legend for a description of strategies), number of days spent in each FMZ each month and proportion of time spent in each FMZ (total days, %). Data were recorded over 5 yr, between 2004 and 2009

Seal ID	dS	FMZ	Month												Total days	Total days (%)
			Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov		
ct3-9928-04	4	SMZ	0	0	0	1	0	0	0	0	0	0	0	0	1	2
		NMZ	0	0	5	25	0	0	0	0	0	0	0	0	30	98
ct11-10097-05	1	SMZ	0	0	0	0	0	0	0	0	0	0	2	0	2	8
		NMZ	0	0	0	0	0	0	0	0	0	4	4	16	24	92
ct16-174-06	2	SMZ	0	0	20	31	30	20	0	0	0	0	0	0	101	98
		NMZ	0	0	2	0	0	0	0	0	0	0	0	0	2	2
ct16-241-06	3	SMZ	0	0	0	0	0	0	1	0	0	0	0	0	1	2
		NMZ	0	0	0	3	30	25	4	0	0	0	0	0	62	98
ct23-C01-06	3	SMZ	1	30	13	8	8	0	0	0	0	0	0	0	59	72
		NMZ	2	0	4	3	16	0	0	0	0	0	0	0	22	28
ct23-C02-06	4	SMZ	0	26	28	18	0	0	0	0	0	0	0	0	72	95
		NMZ	0	4	0	0	0	0	0	0	0	0	0	0	4	5
ct23-C03-06	3	SMZ	0	0	0	0	2	31	25	0	0	0	0	0	58	92
		NMZ	0	2	0	0	0	0	3	0	0	0	0	0	5	8
ct23-C04-06	3	SMZ	0	25	28	24	0	0	0	0	0	0	0	0	77	96
		NMZ	0	3	0	0	0	0	0	0	0	0	0	0	3	4
ct23-C06-06	3	SMZ	0	28	17	0	0	0	0	0	0	0	0	0	45	88
		NMZ	2	3	1	0	0	0	0	0	0	0	0	0	6	12
ct38e-09-07	4	SMZ	0	20	11	0	0	0	0	0	0	0	0	0	31	82
		NMZ	0	6	1	0	0	0	0	0	0	0	0	0	7	18
ct38e-29-07	3	SMZ	3	14	11	31	19	10	23	29	8	1	0	0	148	58
		NMZ	3	17	18	0	0	13	7	0	23	27	0	0	108	42

ct23x-589-08	4	SMZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		NMZ	0	0	21	15	0	0	0	0	0	0	0	0	36	100
ct23x-602-08	4	SMZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		NMZ	0	4	28	28	23	2	0	0	0	0	0	0	85	100
ct36-B-09	4	SMZ	0	0	5	0	0	0	0	0	0	0	0	0	5	7
		NMZ	0	13	23	28	0	0	0	0	0	0	0	0	65	93
ct36-C-09	4	SMZ	0	18	31	10	0	0	0	0	0	0	0	0	58	96
		NMZ	0	2	0	0	0	0	0	0	0	0	0	0	2	4
ct36-D-09	4	SMZ	0	0	25	31	21	27	3	0	0	0	0	0	106	99
		NMZ	0	0	2	0	0	0	0	0	0	0	0	0	2	1
ct36-R1-09	3	SMZ	0	5	6	1	0	0	0	0	0	0	0	0	11	22
		NMZ	0	27	11	3	0	0	0	0	0	0	0	0	40	78
ct36-R2-09	3	SMZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		NMZ	0	30	28	31	2	0	0	0	0	0	0	0	91	100
ft02-G-08	3	SMZ	2	1	0	0	6	27	0	0	0	0	0	0	36	27
		NMZ	3	30	28	9	20	4	2	0	0	0	0	0	95	73
Total		SMZ	5	168	193	153	85	114	52	29	8	1	2	0	809	
days/month		NMZ	10	139	171	143	90	45	16	0	23	31	4	16	687	
Annual %		SMZ	0	11	13	10	6	8	3	2	1	0	0	0		54
		NMZ	1	9	11	10	6	3	1	0	2	2	0	1		46