Supplementary Material for 'Discovery and analysis of topographic features using learning algorithms: A seamount case-study'

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Table 1. Example seamount picking parameters and performance metrics[a]

	Region	P (m)	λ_P (km)	Order	λ (km)	E_{max}	SR %	FPR %	TP[b]	FN[b]	FP
Reference[c]	Pacific	300	100	3	10	7	73.2	5.2	128 (14)	51 (37)	8
	Atlantic	300	100	3	10	7	67.1	33.7	53 (16)	26 (58)	35
$SR > 80\%$	Pacific	300	250	4	5	15	87.2	27.4	156 (27)	23 (24)	69
	Atlantic	300	250	4	5	15	81.0	58.7	64 (43)	15 (29)	152
$FPR < 1\%$	Pacific	500	100	5	25	8	63.1	0.8	113 (6)	66 (45)	1
	Atlantic	100	100	3	20	4	37.2	0.0	29 (2)	49 (72)	0
K&W[d]	Pacific	100	–	–	–	–	72.8	4.9	131 (6)	49 (45)	7
	Atlantic	100	–	–	–	–	70.9	61.9	56 (40)	23 (35)	156
K&W $> 300\,$m[e]	Pacific	300	–	–	–	–	72.8	4.9	131 (5)	49 (46)	7
	Atlantic	300	–	–	–	–	68.4	52.4	54 (35)	25 (40)	98

[a] 'True positives' (TP), number of hand-selected seamounts identified by automatic algorithm; 'False negatives' (FN), number of hand-selected seamounts missed by automatic algorithm; 'False positives' (FP), number of seamounts found by automatic algorithm that do not correspond to hand-selected seamounts. All other quantities are as defined in main text: P, prominence; λ_P, wavelength of 10th-order Butterworth filter used to calculate prominence; 'Order', order of Butterworth filter applied to E grid; λ, wavelength of Butterworth filter applied to E grid; E_{max}, threshold for picking minima; SR, success rate; FPR, false positive rate. There are $601 \times 601 = 361,201$ grid points, or sites that may be picked, in each E grid.

[b] Quantities in parentheses relate to sites identified as 'possible seamounts' during visual inspection (see Figs. 2 & 3 of main text). Total numbers of definite and possible seamounts are not identical between runs because any picks that produce a match across the boundary of the test region are excluded from the counts.

[c] As illustrated in Figs. 2(f) & 3(f).

[d] Catalogue of *Kim and Wessel* [2011].

[e] Catalogue of *Kim and Wessel* [2011], filtered to remove any seamounts for which the authors report a 'height' of less than 300 m.

References

Kim, S.-S., and P. Wessel (2011), New global seamount census from altimetry-derived gravity data, *Geophysical Journal International*, *186*, 615–631.