

1 Supporting Information for

2 **EXTREME WAVE ACTIVITY DURING 2013/14 WINTER AND**
3 **MORPHOLOGICAL IMPACTS ALONG THE ATLANTIC COAST OF EUROPE**

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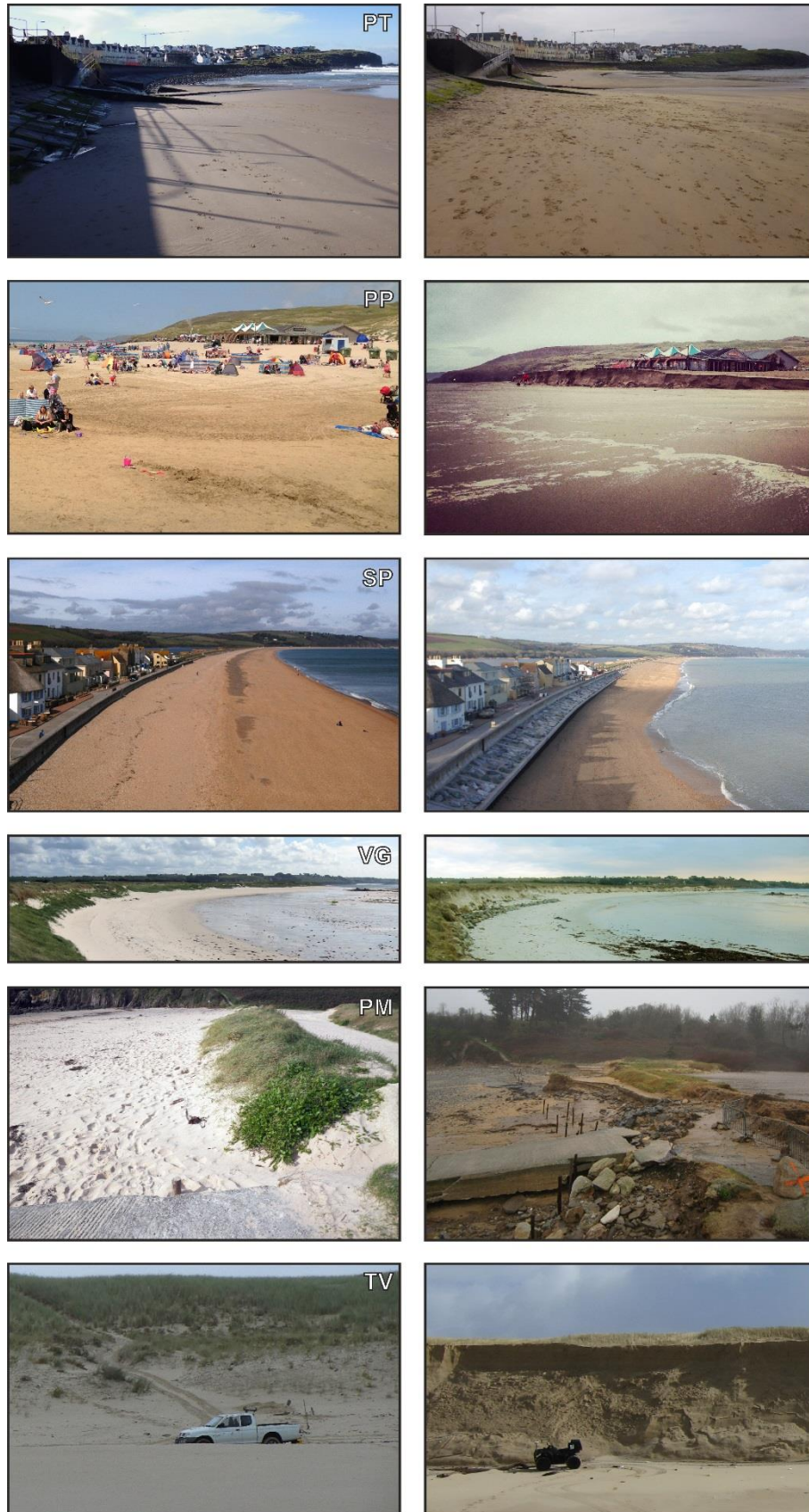
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18 **Contents of this file**

19 Figure S1

20 Tables S1 and S2

21 Data sets:

- 22 • **Dataset 1 - beach_volume_data.xls.** Excell file with time series of beach volumetric data
23 (in m³ m⁻¹ and beach volume at the start of time series set to 0) with each beach on a
24 separate sheet.
- 25 • **Dataset 2 - coordinates_buoys_nodes.xls.** Excell file with coordinates (latitude and
26 longitude) of wave buoys locations (cf. Table **S1**) and WWIII model nodes (#1–97) along
27 the 1000-m isoline (cf. Figure **1**).
- 28 • **Dataset 3 – ISO1000_wave_data.** Zipped folder with 97 files (one file for each model
29 node) of 3-hourly modelled wave data for the 1000-m isoline from 1948 to 2015. Files are
30 .csv files with two columns: (1) date/time (yyyymmddhh); and (2) significant wave height
31 (in m).



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34 **Figure S1.** Photographs of the studied beaches before and after the 2013/14 winter. Beach
35 names: PT = Portrush; PP = Perranporth; SP = Slapton Sands; VG = Vougot; PM =
36 Porsmilin; and TV = Truc Vert.

37 **Table S1.** Information on the wave buoys used in the validation of Wave Watch III (deep-
 38 water buoys) and the inshore wave data analysis (wave buoys shown with grey shading).
 39 Wave buoys K4 and CF were used for both purposes.

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Station label	Station name	WMO #	Lat (°N)	Lon (°W)	Depth (m)	Period (yyyy/mm)	Coverage (%)
K5	K5	64045	59.07	11.42	2000	2011/11 – 2015/05	81.8
K4	K4	62105	55.42	12.57	2900	2003/06 – 2014/03	81.9
M4	Donegal Bay	62093	55.01	09.75	72	2006/08 – 2015/04	64.8
M1	Aran Islands	62090	53.13	11.20	125	2006/08 – 2006/12	75.6
M3	Mizen Head	62092	51.21	10.55	155	2006/08 – 2015/09	73.8
K2	K2	62081	51.00	13.55	1550	2011/11 – 2015/05	58.5
PP	Perranporth	N/A	50.35	05.18	16	2009/12 – 2015/03	99.0
SB	Start Bay	N/A	50.29	03.62	10	2009/12 – 2015/03	100.00
SS	Sevenstones	62107	50.10	06.10	60	2009/12 – 2015/03	99.0
K1	K1	62029	48.72	12.43	1750	1995/06 – 2015/05	69.8
PN	Pierres Noires	N/A	48.29	04.97	60	2009/12 – 2015/03	99.0
BR	Brittany	62163	47.55	08.47	2000	2007/05 – 2015/05	71.5
GA	Gascogne	62001	45.23	05.00	4500	1998/07 – 2015/05	82.0
CF	Cap-Ferret	N/A	44.65	01.45	54	2011/12 – 2014/07	81.9
NS	North Spain	N/A	43.73	06.19	615	2009/12 – 2015/03	85.0
BI	Bilbao-Vizcaya	N/A	43.63	03.04	600	1990/11 – 2009/05	66.4
SL	Cabo Silleiro	N/A	42.12	09.40	323	2003/06 – 2009/05	86.1
LX	Leixoes	N/A	41.20	09.09	83	1993/07 – 1994/12	63.3
FI	Figueira da Foz	N/A	40.19	09.15	83	1993/01 – 1995/12	56.3
SN	Sinés	N/A	37.92	08.93	97	1993/01 – 1995/12	61.0

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43 **Table S2.** Comparison between hindcasted wave conditions predicted by Wave Watch III
 44 model and measurements. RMSE, NRMSE and R^2 refer to root-mean-square error,
 45 normalized root-mean-square error, and coefficient of determination, respectively.

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Station name	BIAS (m)		RMSE (m)		NRMSE (%)		R^2	
	6-h	1-month	6-h	1-month	6-h	1-month	6-h	1-month
K5	0.02	-0.08	0.55	0.16	13.8	6.5	0.93	0.99
K4	0.07	0.04	0.53	0.21	13.4	7.5	0.94	0.99
M4	-0.09	-0.13	0.65	0.25	17.9	7.5	0.87	0.97
M1	0.22	0.02	0.59	0.06	14.0	1.8	0.95	0.99
M3	0.01	-0.04	0.56	0.33	16.8	10.3	0.89	0.89
K2	0.13	0.12	0.52	0.17	15.6	5.8	0.91	0.99
K1	0.00	0.02	0.45	0.09	13.2	3.0	0.92	0.99
BR	0.04	0.03	0.42	0.15	13.1	5.1	0.93	0.98
GA	0.05	0.10	0.38	0.13	13.9	5.1	0.93	0.99
CF	0.16	0.20	0.37	0.21	14.7	7.9	0.94	0.99
BI	0.01	0.00	0.39	0.10	17.4	5.1	0.89	0.97
SL	-0.08	-0.09	0.37	0.13	14.5	5.5	0.91	0.98
LX	-0.10	-0.08	0.40	0.09	14.5	4.4	0.91	0.99
FI	0.04	-0.06	0.38	0.06	15.6	2.8	0.87	0.98
SN	0.34	0.32	0.47	0.33	26.4	21.6	0.90	0.98
Average	0.05	0.02	0.47	0.16	15.7	6.7	0.91	0.98

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