

SUPPLEMENTARY TABLE

Supplementary Table S1 - Records of *L. pertusa* living colonies documented in the literature for the Mediterranean Sea and that explicitly reports the geographic coordinates (source). References that report the occurrence of living colonies but not refers the sampling/observing location are not included.

Original Start Longitude	Original Start Latitude	Original End Longitude	Original End Latitude	Record Date	Location	Structure	Station	Source
13°2.630'E	35°45.971'N							Freiwald et al., 2011
13°9.339'E	36°50.328'N							Freiwald et al., 2011
18°26.923'E	39°33.367'N							Freiwald et al., 2011
18°27.032'E	39°33.860'N							Freiwald et al., 2011
18°26.238'E	39°33.891'N							Freiwald et al., 2011
18°4.807'E	39°37.320'N							Freiwald et al., 2011
17°16.700'E	41°17.362'N							Freiwald et al., 2011
17°16.658'E	41°17.418'N							Freiwald et al., 2011
18°40.443'E	41°38.879'N	18°41.494'E	41°38.808'N	2010	Off Montenegro		st. A63	Angeletti et al., 2014
18°41.455'E	41°38.885'N	18°41.456'E	41°38.885'N	2012/13	Off Montenegro		ALTRO35	Angeletti et al., 2014
18°55.176'E	39°53.468'N			2012	Off Tricase		st. MEMA12-36	Angeletti et al., 2014
17°41.25'E	39°45.91'N			2006				Carlier et al., 2009
18°23.89'E	39°35.21'N			2005				Carlier et al., 2009
18°26.20'E	39°33.90'N			2006	Reef A			Carlier et al., 2009
18°23'E	39°34'N				Santa Maria de Leuca			D'Onghia et al., 2016
3°23.862'E	42°33.816'N			2011	Lacaze-Duthiers	Canyon	P15	Fabri et al., 2014
3°23.945'E	42°33.677'N			2011	Lacaze-Duthiers	Canyon	D2	Fabri et al., 2014
3°24.460'E	42°33.100'N			2011	Lacaze-Duthiers	Canyon	D6	Fabri et al., 2014
18°27.150'E	39°33.878'N	18°26.202'E	39°33.902'N	2006	Santa Maria di Leuca		721	Freiwald et al., 2009
17°02.794'E	41°43.508'N	17°03.655'E	41°43.177'N	2006	Gondola slide	Slide	752	Freiwald et al., 2009
17°10.753'E	41°17.825'N	17°09.955'E	41°17.532'N	2006	Bari	Canyon	745	Freiwald et al., 2009

Original Start Longitude	Original Start Latitude	Original End Longitude	Original End Latitude	Record Date	Location	Structure	Station	Source
18°27.385'E	39°33.297'N	18°27.037'E	39°33.834'N	2006	Santa Maria di Leuca		728	Freiwald et al., 2009
17°16.623'E	41°17.477'N	17°16.574'E	41°16.976'N	2006	Bari	Canyon	735	Freiwald et al., 2009
18°04.778'E	39°37.283'N	18°05.018'E	39°37.511'N	2006	Gallipoli escarpment	Escarpment	708	Freiwald et al., 2009
14°06.582'E	35°30.694'N	14°06.398'E	35°30.919'N	2006	off Malta		657	Freiwald et al., 2009
13°09.361'E	36°50.390'N	13°09.255'E	36°50.274'N	2006	Urania Bank	Bank	677	Freiwald et al., 2009
13°02.618'E	35°46.010'N	13°02.605'E	35°45.924'N	2006	Linosa Trough	Trough	673	Freiwald et al., 2009
3°25.28'E	42°32.73'N	3°24.85'E	42°32.39'N	2007	Lacaze-Duthiers	Canyon	T11	Gori et al., 2013
3°23.94'E	42°34.03'N	3°23.94'E	42°33.68'N	2007	Lacaze-Duthiers	Canyon	T16	Gori et al., 2013
3°24.33'E	42°34.69'N	3°24.44'E	42°34.91'N	2007	Lacaze-Duthiers	Canyon	T15	Gori et al., 2013
3°18.90'E	42°23.63'N	3°18.79'E	42°23.47'N	2007	Cap de Creus	Canyon	T3	Gori et al., 2013
3°19.00'E	42°23.25'N	3°18.83'E	42°23.37'N	2007	Cap de Creus	Canyon	T1	Gori et al., 2013
3°20.28'E	42°22.14'N	3°20.19'E	42°22.27'N	2007	Cap de Creus	Canyon	T7	Gori et al., 2013
3°19.15'E	42°23.11'N	3°19.24'E	42°23.24'N	2007	Cap de Creus	Canyon	T5	Gori et al., 2013
3°20.03'E	42°21.41'N	3°20.04'E	42°21.39'N	2007	Cap de Creus	Canyon	T6	Gori et al., 2013
3°24.15'E	42°34.98'N	3°24.14'E	42°34.99'N	2007	Lacaze-Duthiers	Canyon	T12	Gori et al., 2013
03°29.77'W	36°09.37'N	03°30.45'W	36°07.94'N	2009	El Idrissi Bank, NE flank	Bank	GeoB 13757-1; Dive 11	Hebbeln et al., 2009
03°31.82'W	36°05.30'N	03°32.17'W	36°06.00'N	2009	El Idrissi Bank, SE flank	Bank	GeoB 13717-1; Dive 5	Hebbeln et al., 2009
02°33.94'W	35°27.98'N	02°33.39'W	35°28.18'N	2009	Brittlestar Ridge III	Ridge	GeoB 13737-1; Dive 7	Hebbeln et al., 2009
03°29.28'W	36°06.28'N	03°29.70'W	36°06.56'N	2009	El Idrissi Bank, SE flank	Bank	GeoB 13751-1; Dive 10	Hebbeln et al., 2009
03°33.17'W	36°05.45'N	03°33.18'W	36°05.77'N	2009	El Idrissi Bank, S flank	Bank	GeoB 13710-1; Dive 4	Hebbeln et al., 2009
02°55.32'W	36°01.45'N			2009	Alboran Ridge	Ridge	GeoB 13744-1; Dive 9 - Sample 3	Hebbeln et al., 2009
02°30.87'W	35°26.16'N			2009	Brittlestar Ridge I	Ridge	GeoB 13727-1; Dive 6 - Sample 3	Hebbeln et al., 2009
03°25.26'E	42°32.72'N			2010	Lacaze-Duthiers	Canyon		Lartaud et al., 2014
03°25.21'E	42°32.98'N			2009	Lacaze-Duthiers	Canyon	LD9_500; LD10_267	Maier et al., 2012
14°04.90'E	35°49.77'N			2009	southwest off the		MC25_690	Maier et al., 2012

Original Start Longitude	Original Start Latitude	Original End Longitude	Original End Latitude	Record Date	Location	Structure	Station	Source
					island of Malta			
03°24.14'E	42°35.07'N				Lacaze-Duthiers	Canyon		Maier et al., 2013
03°24.15'E	42°34.98'N				Lacaze-Duthiers	Canyon		Maier et al., 2013
03°25.21'E	42°32.98'N				Lacaze-Duthiers	Canyon		Maier et al., 2013
3°18'53"E	42°23'23"N				Cap de Creus	Canyon		Orejas et al., 2008
3°19'E	42°23'05"N				Cap de Creus	Canyon		Orejas et al., 2008
3°19.01'E	42°23.21'N	3°18.84'E	42°23.33'N	2007	Cap de Creus	Canyon	T1	Orejas et al., 2009
3°20.28'E	42°22.14'N	3°20.20'E	42°22.27'N	2007	Cap de Creus	Canyon	T3	Orejas et al., 2009
3°19.75'E	42°22.71'N	3°19.73'E	42°22.79'N	2007	Cap de Creus	Canyon	T2	Orejas et al., 2009; Gori et al., 2013
02°55'19"W	36°31'18"N	02°54'32"W	36°32'15"N	2010/2011	Seco de los Olivos			Pardo et al., 2011
002°34'26"W	35°49'44"N	002°34'22"W	35°50'5"N	2011	Catifas I – Banco de Cabliers	Bank		Pardo et al., 2011
003°58'27"W	36°23'36"N	003°58'9"W	36°23'50"N	2011	El Algarrobo – banco de Djibuti	Bank		Pardo et al., 2011
002°15'9"W	35°47'38"N	002°15'16"W	35°47'43"N	2011	Catifas II – Banco de Cabliers	Bank		Pardo et al., 2011
002°34'36"W	35°52'32"N	002°34'28"W	35°52'31"N	2011	Catifas II – Banco de Cabliers	Bank		Pardo et al., 2011
14°30.18'E	35°35.26'N	14°32.06'E	35°37.76'N	2003			M16	Schembri et al., 2007
14°06.27'E	35°30.47'N	14°06.06'E	35°30.83'N	2003			G19	Schembri et al., 2007
8°54.567'E	38°42.499'N	8°54.485'E	38°42.411'N	2013	Nora	Canyon	Dive 26/2013	Taviani et al., 2017
8°54.737'E	38°42.172'N	8°54.716'E	38°42.220'N	2013	Nora	Canyon	Rec21	Taviani et al., 2017
03°19.273'E	42°23.187'N			2007	Cap de Creus	Canyon		Tsounis et al., 2010; Naumann et al., 2014
18°21.60'E	39°23.99'N	18°19.92'E	39°24.94'N	2000	Santa Maria di Leuca		Station 3	Tursi et al., 2004
18°23.86'E	39°31.93'N	18°25.92'E	39°31.81'N	2001	Santa Maria di Leuca		Station 7	Tursi et al., 2004
18°38.89'E	39°38.69'N	18°38.98'E	39°37.16'N	2000	Santa Maria di Leuca		Station 1	Tursi et al., 2004
18°23.95'E	39°27.28'N	18°24.84'E	39°26.68'N	2000	Santa Maria di Leuca		Station 2	Tursi et al., 2004
18°24.11'E	39°27.75'N	18°23.23'E	39°27.59'N	2001	Santa Maria di Leuca		Station 6	Tursi et al., 2004

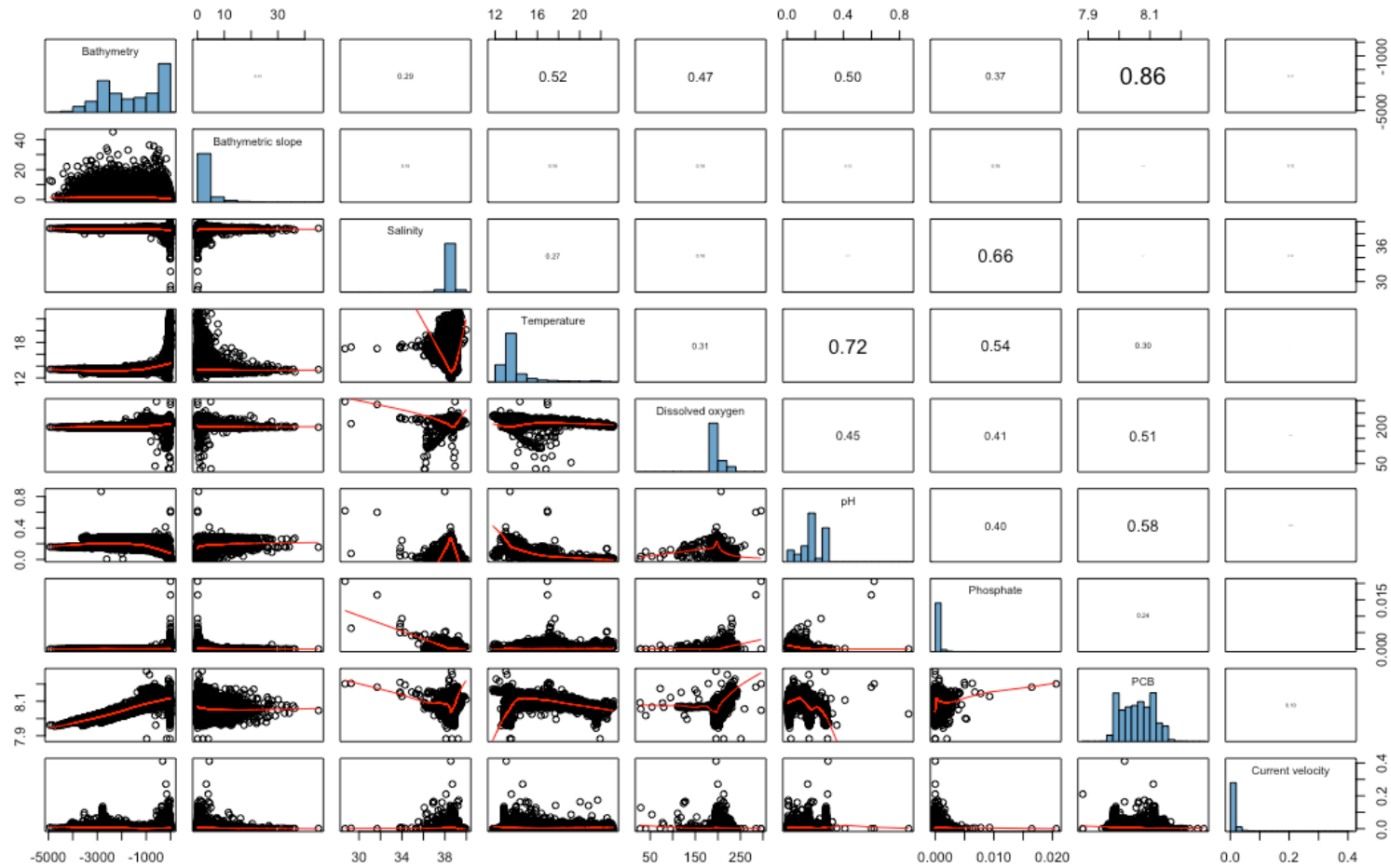
Original Start Longitude	Original Start Latitude	Original End Longitude	Original End Latitude	Record Date	Location	Structure	Station	Source
18°23.14'E	39°36.98'N	18°23.61'E	39°37.34'N	2001	Santa Maria di Leuca		Station 18	Tursi et al., 2004
18°23.62'E	39°27.18'N	18°24.01'E	39°27.51'N	2001	Santa Maria di Leuca		Station 4	Tursi et al., 2004
18°32.09'E	39°33.10'N	18°32.01'E	39°32.70'N	2001	Santa Maria di Leuca		Station 13	Tursi et al., 2004
18°31.11'E	39°36.74'N	18°31.39'E	39°36.86'N	2001	Santa Maria di Leuca		Station 9	Tursi et al., 2004
18°24.027'E	39°35.858'N	18°22.636'E	39°37.347'N		Santa Maria di Leuca		MS6	Vertino et al., 2010; Etiope et al., 2010 - coordinates
18°30.571'E	39°36.761'N	18°30.378'E	39°36.696' N		Santa Maria di Leuca		MS4	Vertino et al., 2010; Etiope et al., 2010 - coordinates
18°22.66'E	39°28.79'N			2002	Santa Maria di Leuca		station 24	Yakimov et al., 2006; Tursi et al., 2004

Supplementary references:

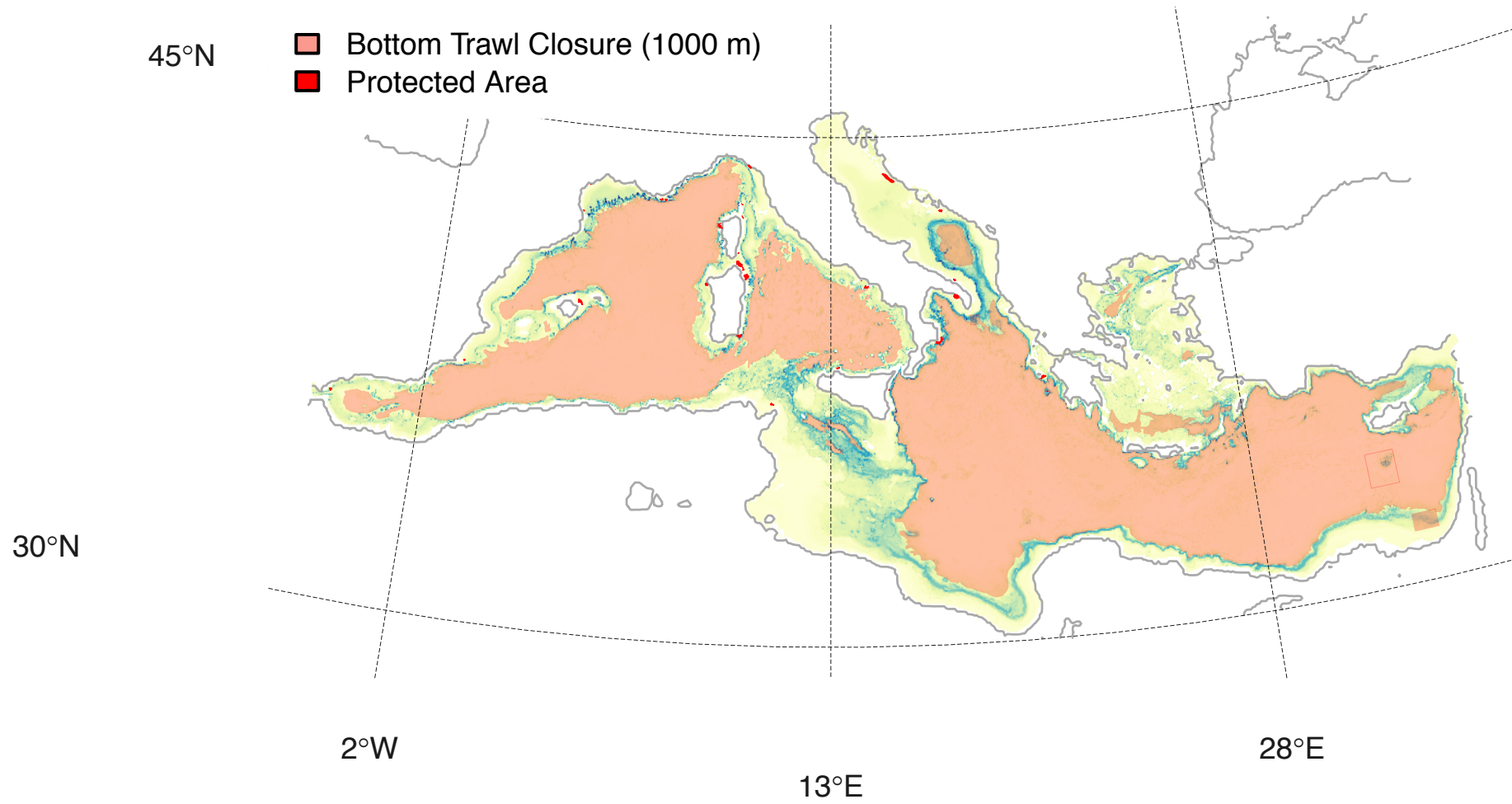
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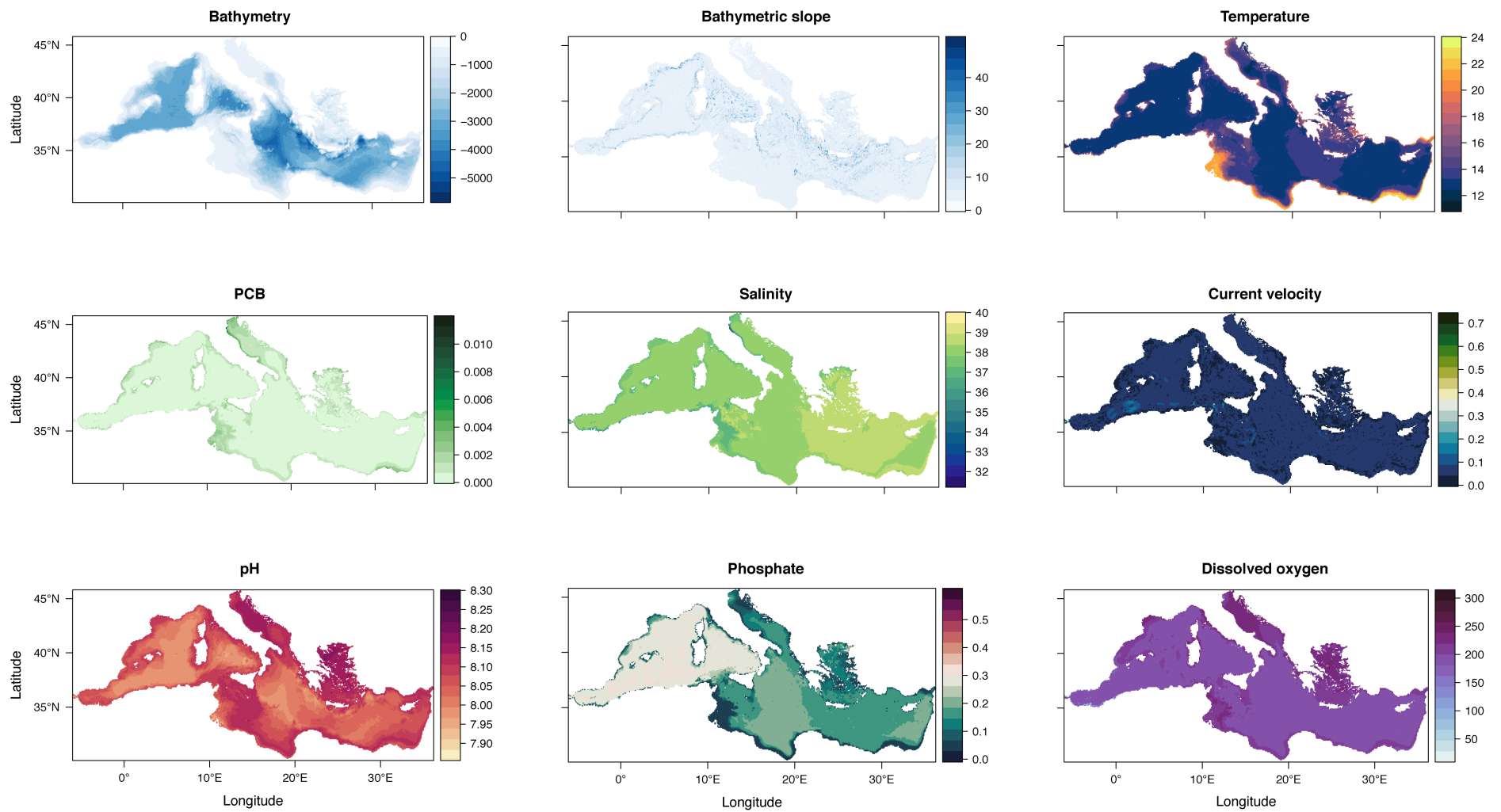
SUPPLEMENTARY FIGURES



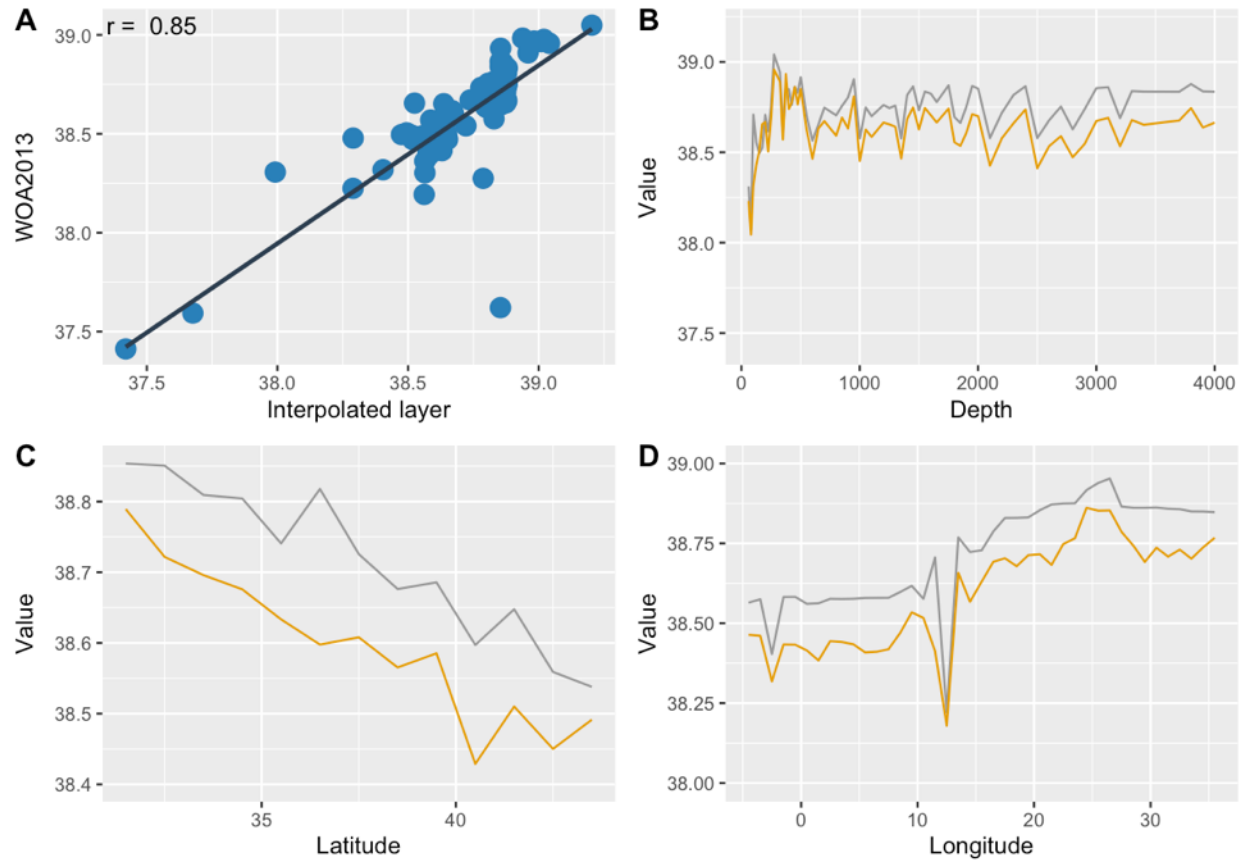
Supplementary Fig. S1 - Variables correlation using information extracted from 10000 randomly distributed data points across the modelling area.



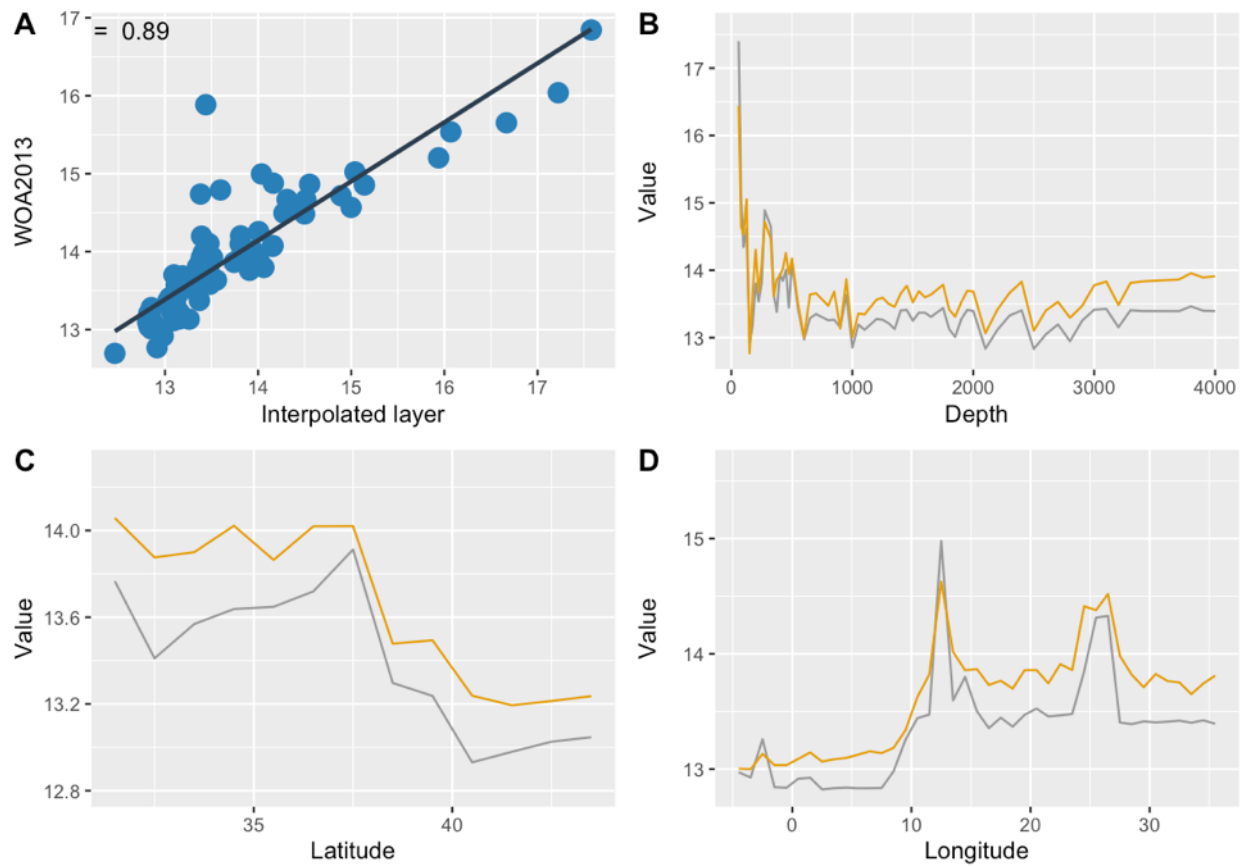
Supplementary Fig. S2 - Marine protected areas with restrictions to fishing activities according to the MPAtlas of the Marine Conservation Institute.



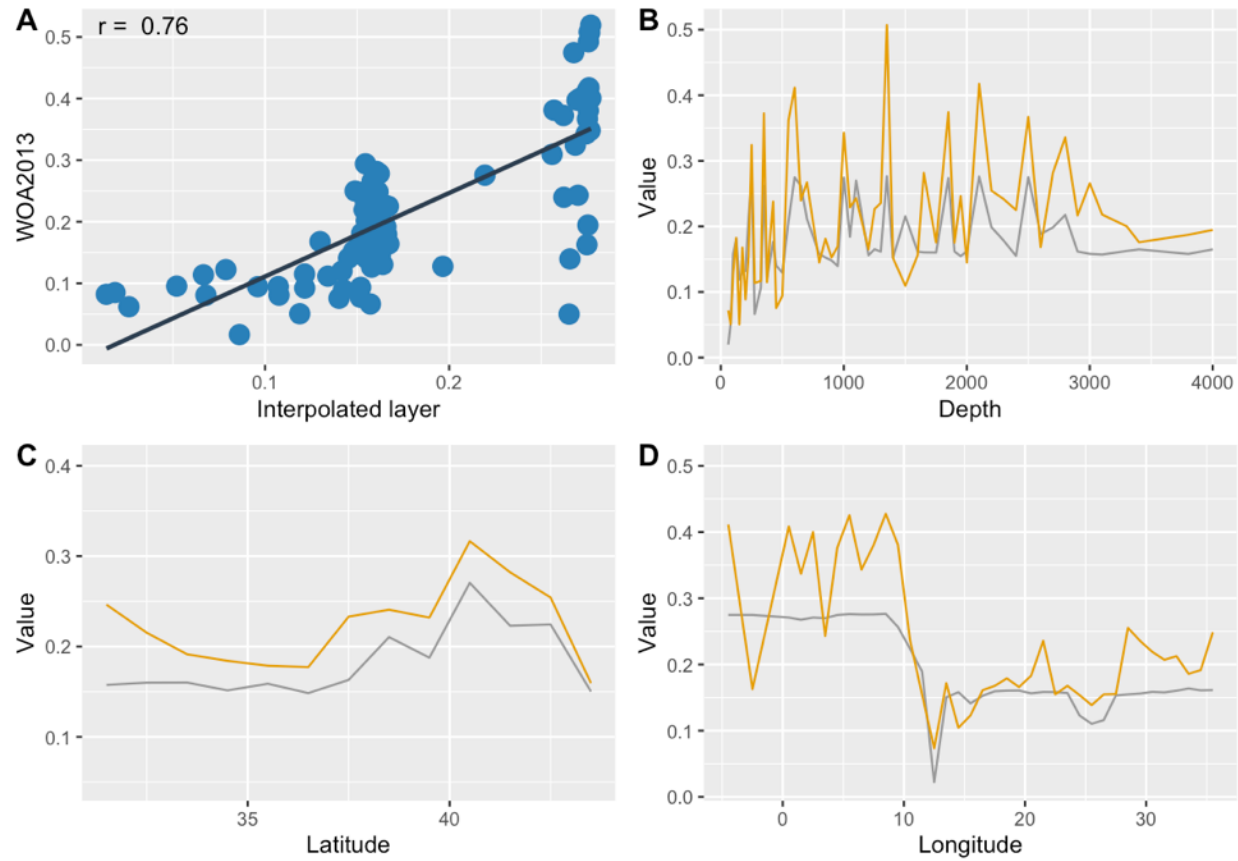
Supplementary Fig. S3 - Predictors environmental variability across the Mediterranean Sea.



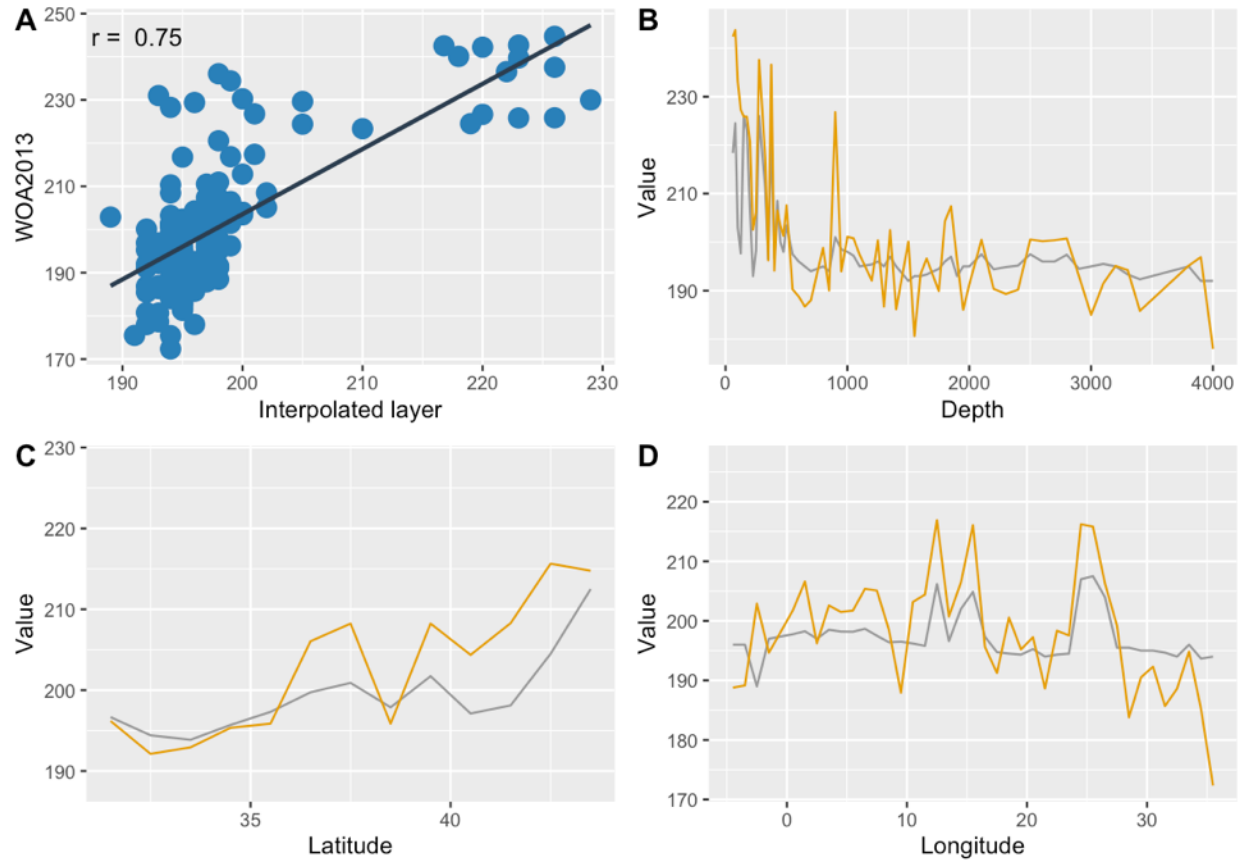
Supplementary Fig. S4 – Validation of the interpolated mean salinity layer for the Mediterranean Sea. A) Correlation (0.85, $n = 175$, $p < 0.001$) of intersected data from WOA 2013 (version 2) with the interpolated data layer, B) mean salinity relationships at depth in 1 m bins, C) mean salinity at latitude in 1° bins and D) mean salinity at longitude in 1° bins. The yellow lines are mean salinity at each WOA 2013 station; the grey lines are the value of the environmental layer at the position of each WOA 2013 station.



Supplementary Fig. S5– Validation of the interpolated mean temperature layer for the Mediterranean Sea. A) Correlation (0.89, $n = 179$, $p < 0.001$) of intersected data from WOA 2013 (version 2) with the interpolated data layer, B) mean temperature relationships at depth in 1 m bins, C) mean temperature at latitude in 1° bins and D) mean temperature at longitude in 1° bins. The yellow lines are mean temperature at each WOA 2013 station; the grey lines are the value of the environmental layer at the position of each WOA 2013 station.



Supplementary Fig. S6 – Validation of the interpolated mean phosphate concentration layer for the Mediterranean Sea. A) Correlation (0.76, $n = 152$, $p < 0.001$) of intersected data from WOA 2013 (version 2) with the interpolated data layer, B) mean phosphate relationships at depth in 1 m bins, C) mean phosphate at latitude in 1° bins and D) mean phosphate at longitude in 1° bins. The yellow lines are mean phosphate at each WOA 2013 station; the grey lines are the value of the environmental layer at the position of each WOA 2013 station.



Supplementary Fig. S7 – Validation of the interpolated mean dissolved oxygen concentration layer for the Mediterranean Sea. A) Correlation ($r = 0.75$, $n = 151$, $p < 0.001$) of intersected data from WOA 2013 (version 2) with the interpolated data layer, B) mean dissolved oxygen relationships at depth in 1 m bins, C) mean dissolved oxygen at latitude in 1° bins and D) mean dissolved oxygen at longitude in 1° bins. The yellow lines are mean dissolved oxygen at each WOA 2013 station; the grey lines are the value of the environmental layer at the position of each WOA 2013 station.