

SUPPORTING INFORMATION

Occurrence of Aerosol-Bound Fullerenes in the Mediterranean Sea Atmosphere

Josep Sanchís¹, Naiara Berrojalbiz¹, Gemma Caballero¹, Jordi Dachs^{1}, Marinella Farré¹, Damià Barceló^{1,2,3}*

¹ Institute of Environmental Assessment and Water Research (IDAEA-CSIC), C/Jordi Girona, 18-26, 08911, Barcelona, Catalonia, Spain

² Catalan Institute of Water Research (ICRA), C/Emili Grahit, 101, 17003, Girona, Catalonia, Spain

³ King Saud University, P.O. Box 2455, 11451, Riyadh, Saudi Arabia

- Corresponding author; e-mail: mfuqam@cid.csic.es

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Information regarding the analyzed samples and their characterization

Table S1. Complete list of samples

Sample Code	Approximate sampling location	Sampling date	Air volume (m³)	Particulate weight (g)	Initial latitude (°)	Initial longitude (°)	Final latitude (°)	Final longitude (°)
S01	Catalan Sea	02-June-2006	379	0.0375	41.15	2.15	39.46	2.53
S02	Sea of Sardinia	03-June-2006	417	0.0416	39.15	3.42	38.61	6.46
S03	South of Sardinia	04-June-2006	586	- ¹	38.61	6.46	37.92	11.33
S04	Sea of Sicily	06-June-2006	262	0.0481	37.29	12.87	36.79	14.25
S05	Sea of Sicily	07-June-2006	230	0.0377	36.79	14.25	36.46	16.10
S06	Ionian Sea	07-June-2006	359	0.0162	36.46	16.10	36.53	17.48
S07	Ionian Sea	08-June-2006	836	0.0613	36.73	18.99	36.70	20.78
S08	Peloponnese Coast	12-June-2006	493	- ¹	36.23	22.35	36.68	23.80
S09	Myrtoan Sea	12-June-2006	350	- ¹	36.75	23.92	37.52	25.26
S10	Marmara Sea	15-June-2006	775	0.1942	40.19	26.39	41.04	29.03
S11	Black Sea	16-June-2006	373	0.0399	41.49	29.71	41.04	29.02
S12	Black Sea	19-June-2006	277	0.0400	41.87	30.07	41.89	30.03
S13	Black Sea	19-June-2006	294	0.0420	41.89	30.03	41.91	29.98
S14	Black Sea	19-June-2006	328	0.0892	41.91	29.98	41.88	29.84
S15	Black Sea	20-June-2006	371	0.0517	41.90	29.64	41.13	29.07
S16	Aegian Sea	22-June-2006	304	0.0406	39.56	24.63	38.46	25.22
S17	Aegian Sea	23-June-2006	743	0.1006	38.46	25.22	37.06	25.92
S18	Ionian Sea	25-June-2006	448	0.0615	35.72	20.74	35.69	20.77
S19	Ionian Sea	25-June-2006	304	0.0710	35.68	20.79	35.67	20.05
S20	East of Malta	26-June-2006	347	0.0562	35.72	16.06	35.89	14.51
S21	Strait of Sicily	30-June-2006	351	0.0657	36.76	11.94	37.80	9.31
S22	North of Tunisia	01-July-2006	512	0.0518	37.80	9.13	37.77	7.01
S23	North of Argelia	02-July-2006	353	0.0420	37.78	6.91	37.92	5.59
S24	North of Argelia	03-July-2006	383	0.0630	37.95	5.47	37.97	5.39
S25	Balears (halfway)	05-July-2006	300	0.0465	38.40	3.61	38.43	3.64
S26	Catalan Sea	04-May-2007	282	0.0117	40.59	2.12	39.55	3.86
S27	Balearic Sea	05-May-2007	573	- ¹	39.30	2.90	39.56	2.63
S28	Balearic Sea	07-May-2007	141	0.0160	39.27	3.24	39.49	4.07
S29	Strait of Sicily	11-May-2007	959	- ¹	38.01	11.15	36.11	16.33
S30	East of Malta	12-May-2007	482	0.0279	36.13	15.56	35.08	19.40
S31	Lybian Sea	13-May-2007	947	0.0327	35.08	19.40	34.28	21.02
S32	Lybian Sea	14-May-2007	950	0.0785	34.28	21.02	33.11	24.72
S33	Lybian Sea	15-May-2007	814	- ¹	33.10	24.34	32.46	27.26
S34	Alexandria arrival	16-May-2007	414	0.0410	32.46	27.26	31.29	29.21
S35	Alexandria	17-May-2007	139	0.0199	31.29	29.21	31.18	29.80
S36	Alexandria departure	19-May-2007	307	- ¹	31.44	29.74	32.59	29.44
S37	Levantine Basin	21-May-2007	307	0.0314	33.69	29.12	36.08	28.22
S38	Sea of Crete	25-May-2007	746	0.0176	36.17	25.25	36.13	22.58
S39	Ionian Sea	26-May-2007	806	0.0334	36.13	22.55	36.73	18.61
S40	Ionian Sea	27-May-2007	661	0.0833	36.73	18.61	37.06	15.29
S41	Srait of Sicily	31-May-2007	691	0.0479	36.91	13.97	38.67	10.27
S42	Balearic Sea	04-June-2007	441	0.0246	39.06	5.76	39.56	2.64
S43	Catalan Sea	05-June-2007	263	0.0261	39.94	2.28	40.87	2.27

¹Particulate weights of these samples could not be obtained.

Table S2. Set of optimized transitions. Those transitions remarked in bold were used for quantification. Those transitions remarked with cursive were used for confirmation purposes.

Compound	Retention time (min)	Transition	Type of transition	Cone Voltage (V)	Collision Energy (V)	Relative response
CPTAE	0.95	993.5 → 993.5	<i>[M → M]</i>	65	5	0.91
		993.5 → 720	[M → 720]	65	60	1.00
PCBM	1.05	910 → 910	<i>[M → M]</i>	125	5	1.00
		910 → 720	[M → 720]	125	70	0.68
ThPCBM	1.05	916 → 916	<i>[M → M]</i>	125	5	1.00
		916 → 720	[M → 720]	125	60	0.56
MFP	1.20	777 → 777	<i>[M → M]</i>	150	40	0.23
		777 → 720	[M → 720]	150	40	1.00
C ₆₀	1.42	736 → 736	<i>[MO → MO]</i>	250	50	0.11
		720 → 720	[M → M]	250	50	1.00
¹³ C ₆₀	1.42	756 → 756	<i>[MO → MO]</i>	250	50	0.10
		740 → 740	[M → M]	250	50	1.00
C ₇₀	1.62	856 → 856	<i>[MO → MO]</i>	250	50	0.65
		840 → 840	[M → M]	250	50	1.00
¹³ C ₇₀	1.62	889 → 889	<i>[MO → MO]</i>	250	50	0.10
		873 → 873	[M → M]	250	50	1.00

Table S3. Analytical methods quality parameters

	Linearity	ILD (pg)	ILQ (pg)	MLD (pg/m ³)	MLQ (pg/m ³)	CC α (pg/m ³)	Intraday (%)	Interday assay (%)			Recovery (%)
								145 pg/m ³	4.3 ng/m ³	8.7 ng/m ³	
CPTAE	0.99897	0.3	0.9	9.9	32.9	17.1	8.0	8.0	12.7	12.1	70.6
PBCM	0.99892	0.5	1.6	9.5	31.6	8.9	10.1	12.3	13.6	2.9	60.0
ThPCBM	0.99850	0.8	2.5	18.1	60.2	12.3	7.5	5.8	12.5	6.8	60.0
MFP	0.99807	0.4	1.5	20.9	69.5	24.6	13.2	11.2	12.3	4.1	60.1
C₆₀	0.99900	0.2	0.8	9.9	33.0	8.0	7.4	7.8	8.1	5.2	61.5
C₇₀	0.99929	0.1	0.3	5.4	17.9	3.2	7.7	5.9	11.7	1.8	61.4

Table S4. C₆₀ and C₇₀ fullerenes concentration in the samples from Barcelona (B1-B3) and the Mediterranean Sea (S1-S43)

Sample Code	C ₆₀ fullerene		C ₇₀ fullerene		Sample Code	C ₆₀ fullerene		C ₇₀ fullerene	
	Average (ng/m ³)	RSD (%)	Average (ng/m ³)	RSD (%)		Average (ng/m ³)	RSD (%)	Average (ng/m ³)	RSD (%)
B1	0.037	5.6	<MLQ	-	S21	0.438	2.3	1.768	10.8
B2	<MLQ	-	<MLQ	-	S22	<MLQ	-	<MLQ	-
B3	0.063	5.8	<MLQ	-	S23	0.121	6.9	0.950	8.4
S1	5.800	8.2	9.970	4.9	S24	0.035	12.2	6.223	9.2
S2	49.31	4.6	233.8	3.2	S25	0.067	14.2	0.201	8.8
S3	0.114	14.7	1.016	11.3	S26	0.104	8.8	0.641	7.9
S4	1.525	7.3	15.31	6.4	S27	<MLQ	-	0.077	6.1
S5	0.124	5.1	1.386	12.5	S28	0.065	1.4	0.282	7.3
S6	4.567	6.2	58.82	3.6	S29	0.074	0.5	0.331	9.1
S7	0.058	4.0	0.344	10.6	S30	0.043	7.3	0.833	4.9
S8	2.293	6.2	8.288	11.1	S31	0.033	5.9	0.175	10.5
S9	0.048	12.4	0.147	5.8	S32	<MLQ	0.0	0.954	9.5
S10	<MLQ	-	0.300	14.3	S33	<MLQ	0.0	0.425	8.9
S11	0.075	14.5	0.123	10.2	S34	<MLQ	0.0	0.184	5.0
S12	6.576	3.5	26.28	4.9	S35	0.144	10.8	0.265	8.0
S13	3.323	5.9	20.05	6.2	S36	0.174	7.4	1.846	9.1
S14	<MLQ	0.0	0.385	12.6	S37	<MLQ	-	<MLQ	-
S15	0.057	6.8	0.485	5.7	S38	<MLQ	-	<MLQ	-
S16	0.288	14.4	3.294	7.2	S39	<MLQ	-	<MLQ	-
S17	<MLQ	-	0.182	11.3	S40	<MLQ	-	<MLQ	-
S18	<MLQ	-	<MLQ	-	S41	0.042	16.3	1.014	11.5
S19	0.952	14.9	2.555	11.6	S42	<MLQ	-	0.581	6.9
S20	0.359	7.8	1.857	7.3	S43	<MLQ	-	<MLQ	-

Table S5. Organic carbon (OC) and soot carbon (EC) content of several chosen samples

Sample	OC ($\mu\text{g}/\text{cm}^2$)	EC ($\mu\text{g}/\text{cm}^2$)
S02	4.68	0.51
S04	1.07	0.10
S06	0.94	0.23
S13	2.82	0.54
S10	5.93	0.95
S16	2.96	0.43
S26	2.68	0.44
S35	1.40	0.32
S36	0.72	0.26
S41	3.03	0.82
S43	2.62	0.38
S37	2.45	0.33

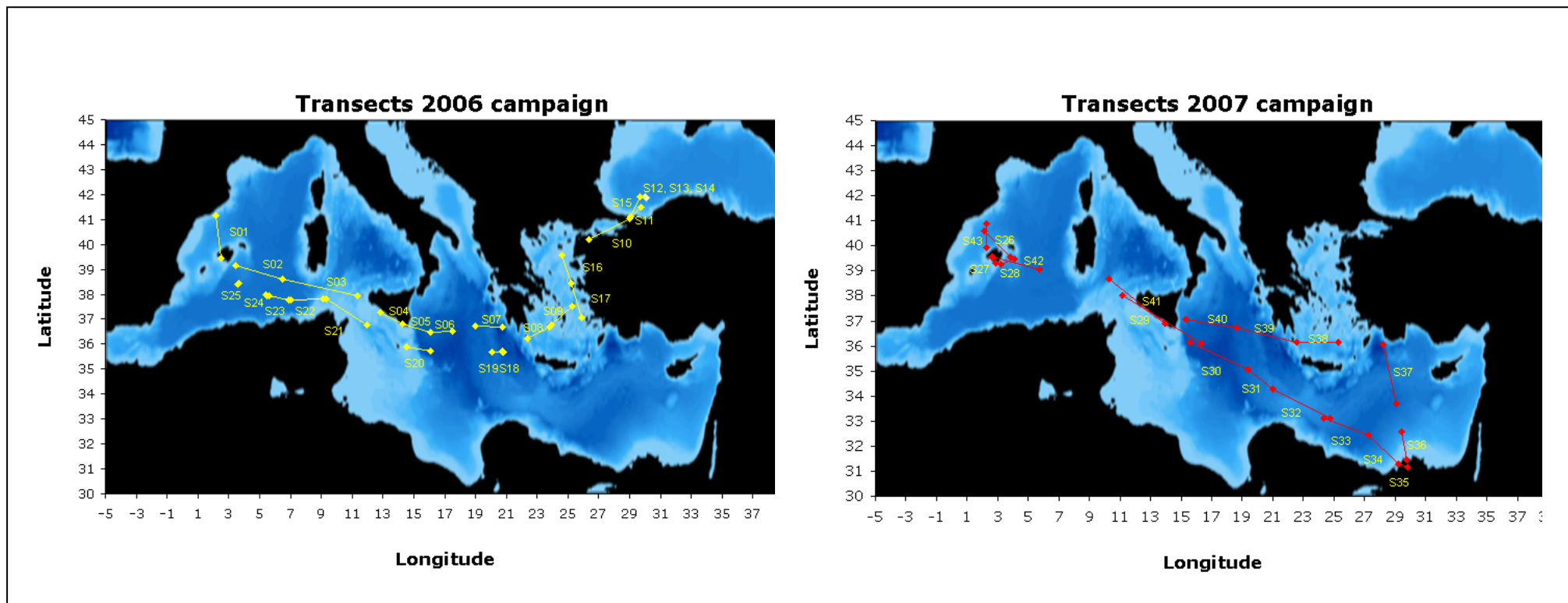


Figure S1. Schematic transects and subsequent samples taken during 2006 and 2007 campaigns.

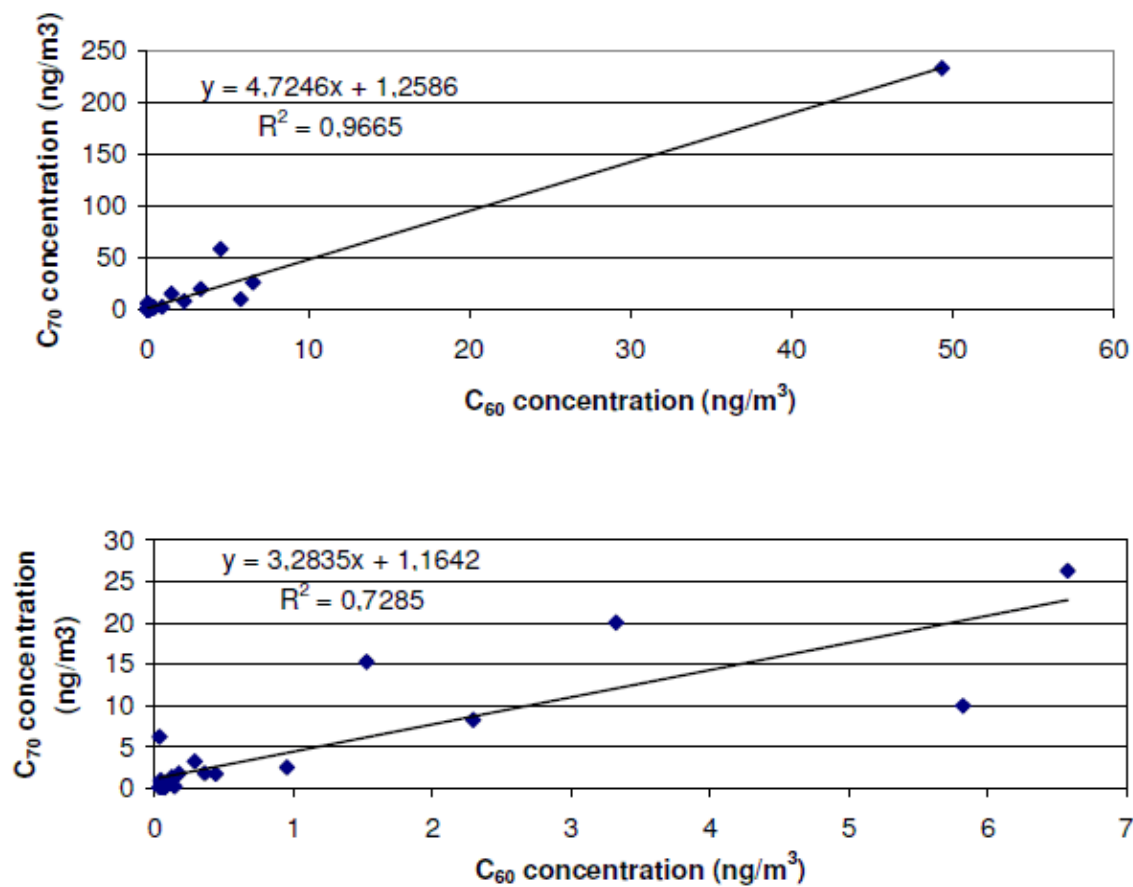


Figure S3. Relationship between volumetric concentrations of fullerenes C₆₀ and C₇₀. Upper: linear regression between volumetric concentrations of C₆₀ and C₇₀. Below: linear regression excluding the extreme sample S2 and the outlier sample S5.