

Supplementary

# Air quality assessment in the central Mediterranean Sea (Tyrrhenian Sea): anthropic impact and miscellaneous natural sources, including volcanic contribution, on the budget of volatile organic compounds (VOCs)

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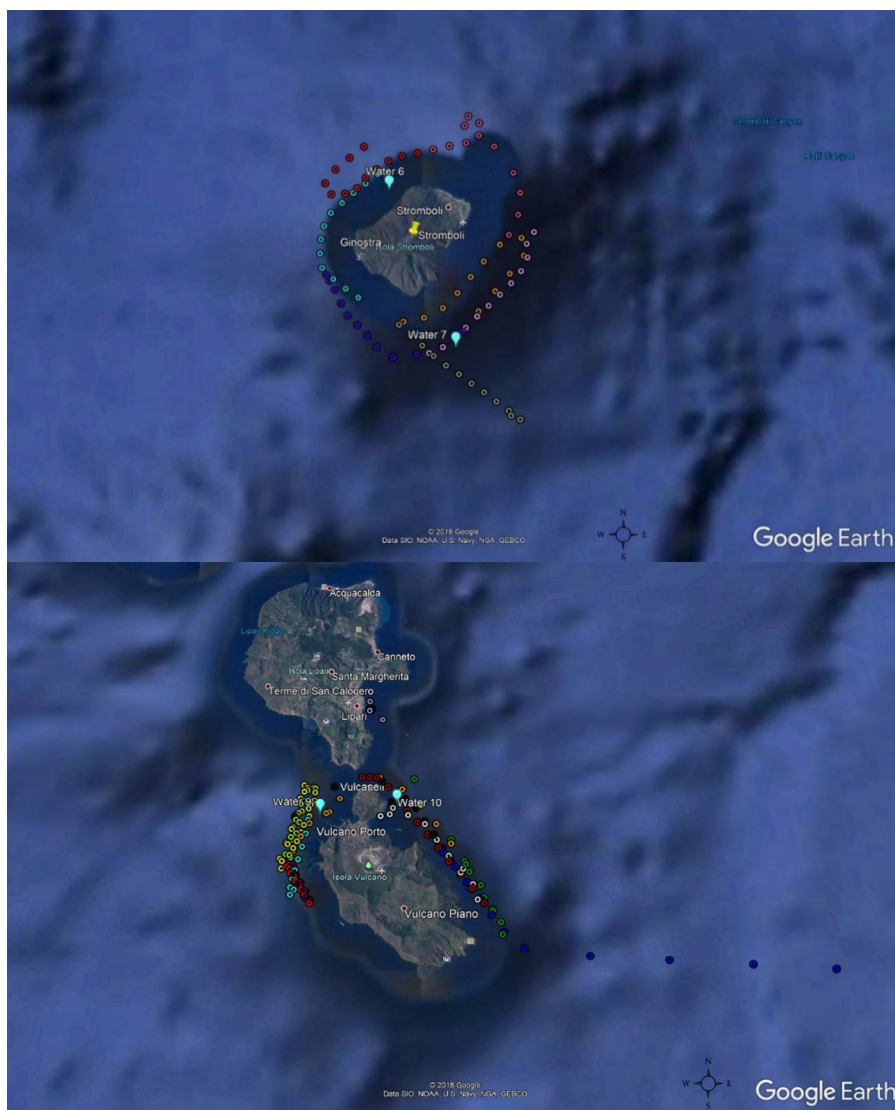
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**Figure S1.** Water sampling points during 2017 cruise.



Blue 29 Aug 20.58-22.58  
 Orange 29 Aug 20.58-22.58  
 Lilac 30 Aug 09.08-11.08  
 Grey 30 Aug 18.37-20.37  
 Light blue 30 Aug 20.55-22.55  
 Red 31 Aug 09.00-11.00  
 Pink 31 Aug 11.00-13.00  
  
 Green 02 Sept 00.00-02.00  
 Yellow 02 Sept 02.00-06.30  
 Light blue 02 Sept 06.30-08.30  
 Purple 02 Sept 09.00-11.00  
 Red 02 Sept 11.04-13.04  
 Orange 02 Sept 13.06-15.06  
 Dark green 02 Sept 15.08-17.08  
 Lilac 02 Sept 17.10-19.00  
 White 04 Sept 10.58-12.58  
 Black 04 Sept 16.57-18.57  
 Dark red 04 Sept 20.59-22.59  
 Blue 05 Sept 11.01-13.01

**Figure S2.** Details of sampling points in the Aeolian area during the 2017 cruise.

**Table S1.** OVOCs sampling periods.

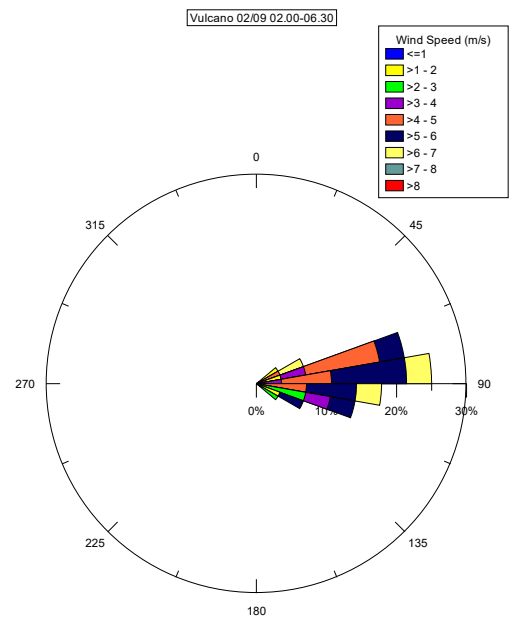
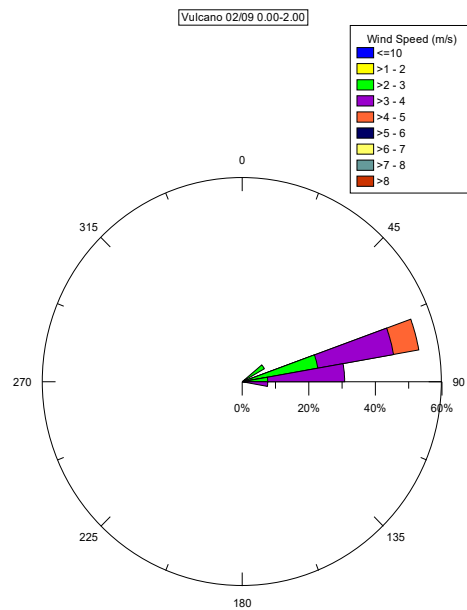
OVOC Sample	Sampling area	Start Date	Stop Date
1	Route to Acitrezza	8/20/17 9:00	8/20/17 17:00
2	Acireale (water 1)	8/20/17 23:00	8/21/17 7:00
3	Aci Trezza-Acireale	8/21/17 9:00	8/21/17 17:00
4	Acicastello (water 2)	8/21/17 23:00	8/22/17 7:00
5	Acicastello (water 2)	8/22/17 9:00	8/22/17 17:00
6	Route to Marsili	8/22/17 23:00	8/23/17 7:00
7	South of Marsili	8/23/17 9:00	8/23/17 17:00
8	North of Marsili	8/23/17 17:00	8/23/17 23:00
9	North of Marsili (water 3)	8/23/17 23:00	8/24/17 8:20
10	Marsili	8/24/17 9:00	8/24/17 17:00
11	Route to Ischia	8/24/17 23:00	8/25/17 7:00
12	Ischia (water 4)	8/25/17 9:00	8/25/17 17:00
13	Phlegraean Fields	Pozzuoli Gulf (water 5)	8/25/17 23:00 8/26/17 7:00
14	Phlegraean Fields	Pozzuoli Gulf (water 5)	8/26/17 9:00 8/26/17 17:00
15	Phlegraean Fields	Pozzuoli Gulf (water 5)	8/26/17 23:00 8/27/17 7:00

16	Phlegraeen Fields Pozzuoli Gulf (water 5)	8/27/17 9:00	8/27/17 17:00
17	Backward Route from Phlegraeen Fields	8/27/17 23:00	8/28/17 7:00
18	Route southwards to Stromboli	8/28/17 9:00	8/28/17 17:00
19	Stromboli (water 6)	8/29/17 9:00	8/29/17 17:00
20	Stromboli	8/29/17 23:00	8/30/17 7:00
21	Stromboli (water 7)	8/30/17 9:00	8/30/17 17:00
22	Stromboli 1	8/30/17 23:00	8/31/17 7:00
23	Stromboli-Route to Panarea	8/31/17 9:00	8/31/17 17:00
24	Panarea (between Dattilo and Lisca Bianca)	8/31/17 23:00	9/1/17 7:00
25	Panarea (between Dattilo and Lisca Bianca) (water 8)	9/1/17 9:00	9/1/17 17:00
26	Vulcano (water 9)	9/2/17 9:00	9/2/17 17:00
27	Lipari	9/2/17 17:00	9/2/17 23:00
28	Lipari	9/2/17 23:00	9/3/17 7:00
29	Lipari	9/3/17 9:00	9/3/17 17:00
30	Lipari	9/3/17 23:00	9/4/17 7:00
31	Vulcano	9/4/17 9:00	9/4/17 17:00
32	Vulcano (water10)	9/4/17 23:00	9/5/17 7:00
33	Vulcano - Route to Messina	9/5/17 9:00	9/5/17 23:00

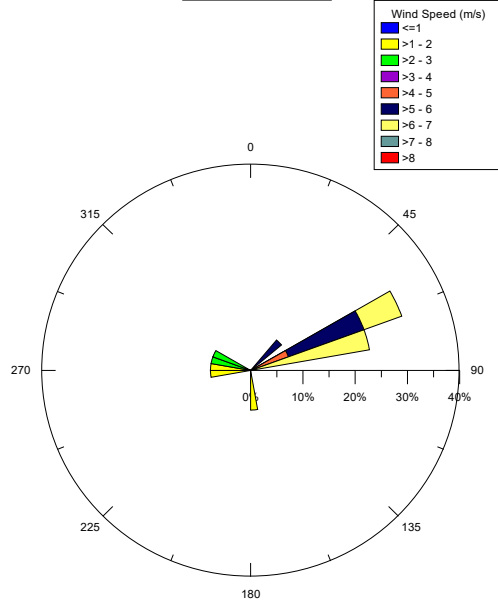
**Table S2.** VOCs sampling periods.

VOC Sample	Sampling area	Start Date	Stop Date
1	Acitrezza	8/20/17 20:48	8/20/17 22:48
2	Acitrezza	8/21/17 10:59	8/22/17 12:59
3	Acicastello	8/21/17 20:59	8/21/17 22:59
4	Acicastello	8/22/17 10:59	8/22/17 12:59
5	Heading to Messina Strait	8/22/17 20:55	8/22/17 22:55
6	Marsili	8/23/17 9:00	8/23/17 11:00
7	Marsili	8/23/17 11:02	8/23/17 13:02
8	Marsili	8/23/17 13:05	8/23/17 15:05
9	Marsili	8/23/17 15:07	8/23/17 17:07
10	Marsili	8/23/17 17:09	8/23/17 19:09
11	Marsili	8/23/17 19:09	8/23/17 21:09
12	Marsili	8/23/17 22:40	8/23/17 0:40
13	Route to Ischia	8/24/17 11:00	8/24/17 13:00
14	Ischia	8/24/17 21:00	8/24/17 23:00
15	Ischia	8/25/17 11:28	8/25/17 13:28
16	Route to Phlegraeen Fields	8/25/17 21:00	8/25/17 23:00
17	Phlegraeen Fields	8/26/17 10:56	8/26/17 12:56
18	Phlegraeen Fields	8/26/17 21:01	8/26/17 23:01
19	Phlegraeen Fields	8/27/17 11:00	8/27/17 13:00
20	Phlegraeen Fields - Gulf of Naples	8/27/17 21:03	8/27/17 23:03
21	Route to Stromboli	8/28/17 11:40	8/28/17 13:40
22	Stromboli	8/28/17 20:57	8/28/17 22:57
23	Stromboli	8/29/17 10:59	8/29/17 12:59
24	Stromboli	8/29/17 16:58	8/29/17 18:55
25	Stromboli	8/29/17 20:58	8/29/17 22:58
26	Stromboli	8/29/17 22:58	8/29/17 0:58
27	Stromboli	8/30/17 9:08	8/30/17 11:08
28	Stromboli	8/30/17 18:37	8/30/17 20:37

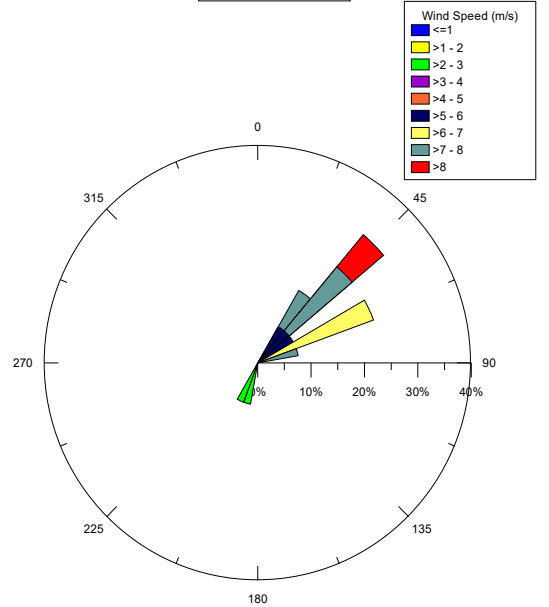
29	Stromboli	8/30/17 20:55	8/30/17 22:55
30	Stromboli	8/31/17 9:00	8/31/17 11:00
31	Stromboli	8/31/17 11:00	8/31/17 13:00
32	Panarea	8/31/17 20:56	8/31/17 22:56
33	Panarea	9/1/17 11:46	9/1/17 13:46
34	Panarea - Route to Vulcano	9/1/17 21:17	9/1/17 23:17
35	Vulcano	9/2/17 0:00	9/2/17 2:00
36	Vulcano	9/2/17 2:00	9/2/17 6:30
37	Vulcano	9/2/17 6:30	9/2/17 8:30
38	Vulcano	9/2/17 9:00	9/2/17 11:00
39	Vulcano	9/2/17 11:04	9/2/17 13:04
40	Vulcano	9/2/17 13:06	9/2/17 15:06
41	Vulcano	9/2/17 15:08	9/2/17 17:08
42	Lipari	9/2/17 17:10	9/2/17 19:00
43	Lipari	9/3/17 11:01	9/3/17 13:01
44	Lipari	9/3/17 20:58	9/3/17 22:58
45	Vulcano	9/4/17 10:58	9/4/17 12:58
46	Vulcano	9/4/17 16:57	9/4/17 18:57
47	Vulcano	9/4/17 20:59	9/4/17 22:59
48	Vulcano	9/5/17 11:01	9/5/17 13:01



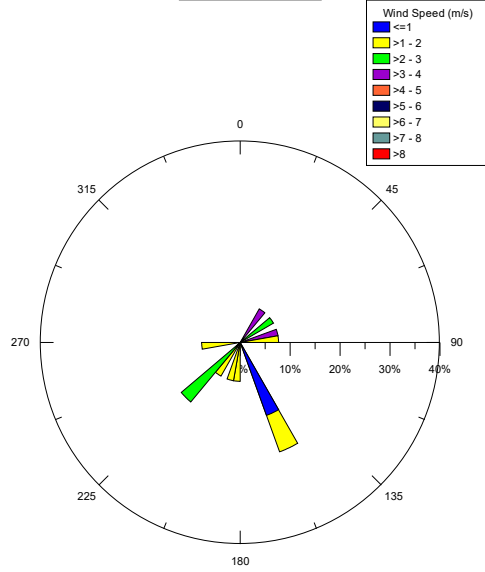
Vulcano 02/09 06.30-08.30



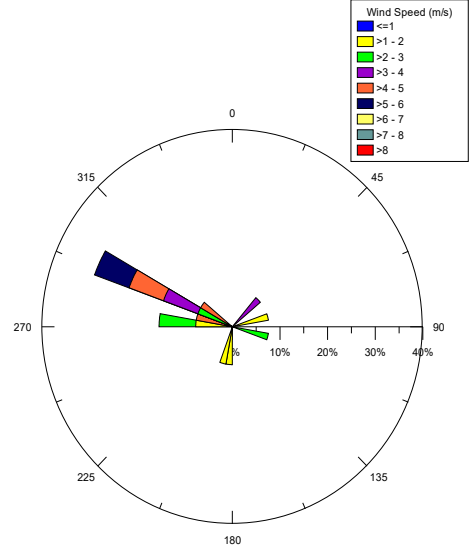
Vulcano 02/09 09.00-11.00



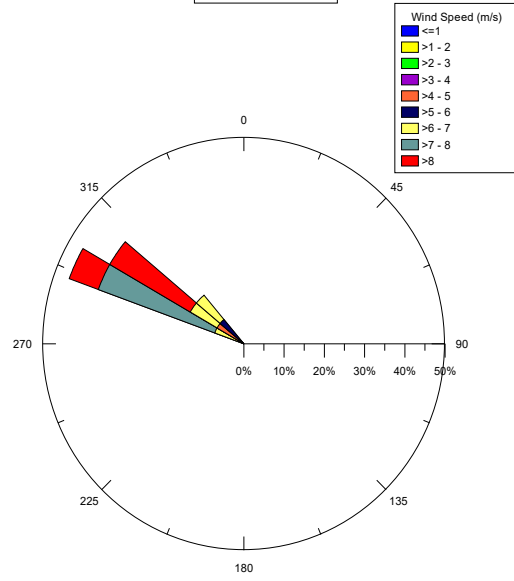
Vulcano 02/09 11.00-13.00



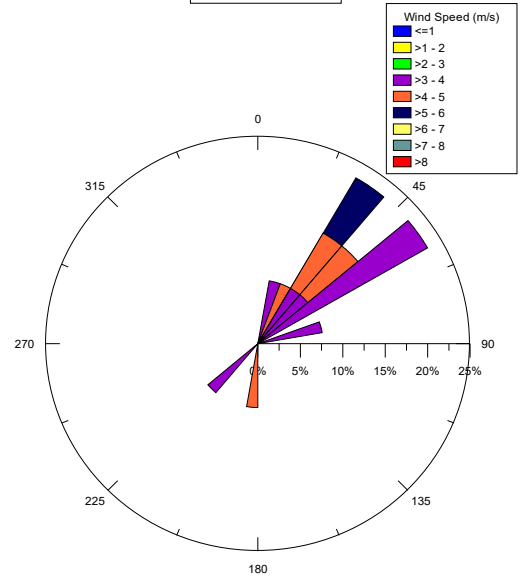
Vulcano 02/09 13.00-15.00



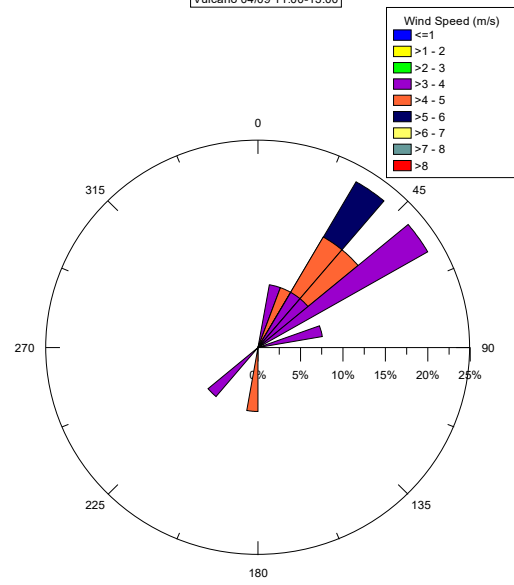
Vulcano 02/09 15.00-17.00



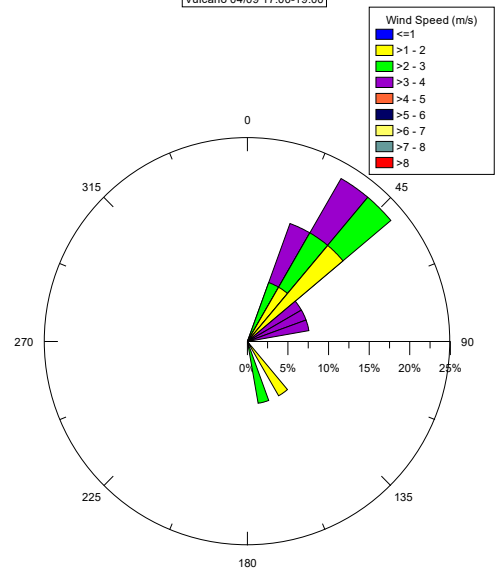
Vulcano 04/09 11.00-13.00



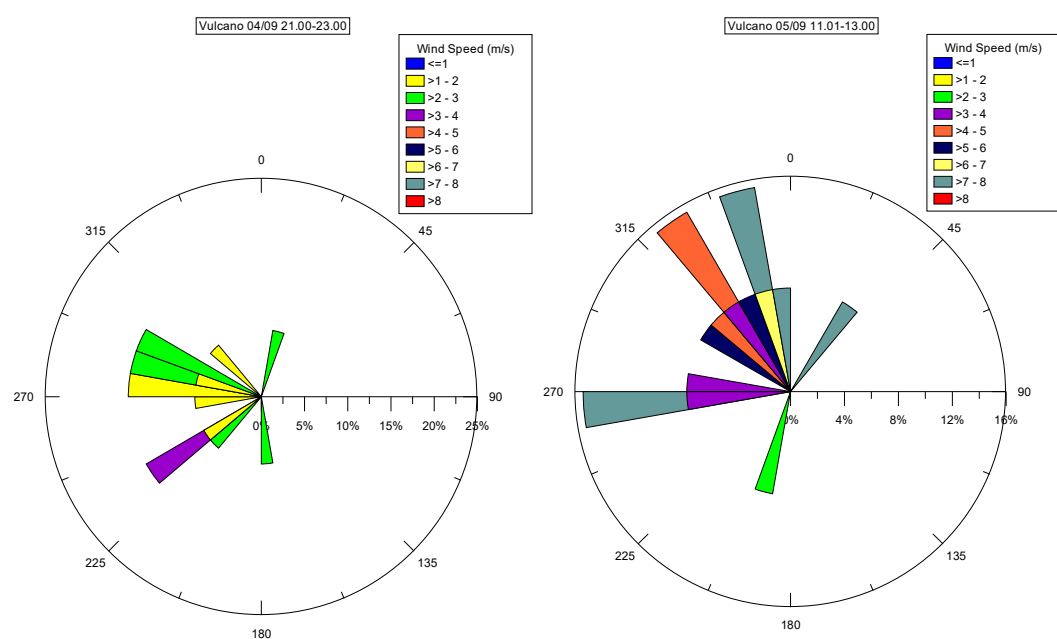
Vulcano 04/09 11.00-13.00



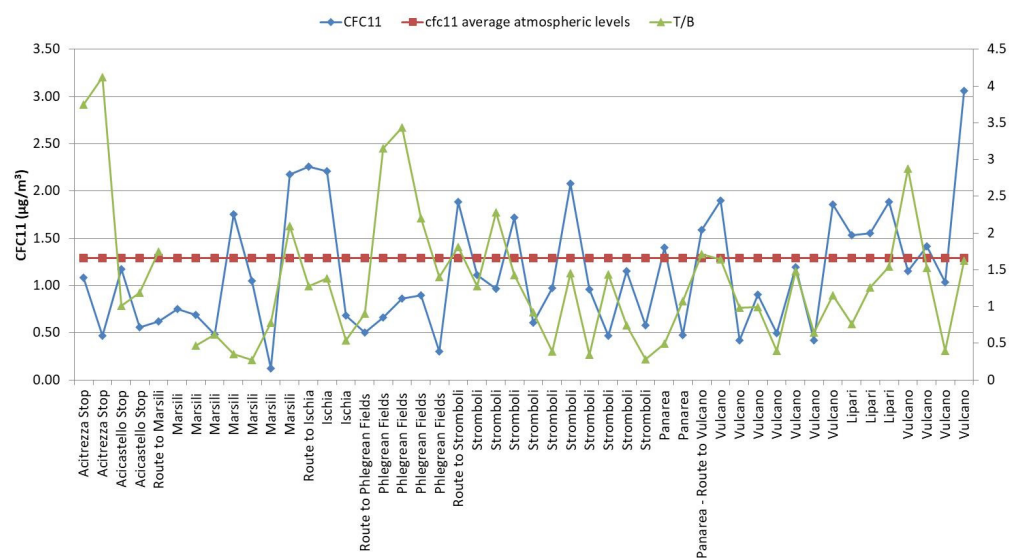
Vulcano 04/09 17.00-19.00







**Figure S3.** Windroses relative to Vulcano samplings.



**Figure S4.** Plot of CFC11 concentrations against the average atmospheric levels and the toluene to benzene ratio.

**Table S3.** Date and location of water samplings.

Sample	Site	Date	Lat	Lon
water 1	Acireale	08/20/2017	37.58397	15.23754
water 2	Acicastello	08/20/2017	37.53935	15.17406
water 3	Marsili	08/23/2017	39.40166	14.42142

water 4	Ischia	08/25/2017	40.68779	13.90354
water 5	PhlegraeanFields	08/27/2017	40.80389	14.13871
water 6	Stromboli 1	08/29/2017	38.80958	15.20523
water 7	Stromboli 2	08/30/2017	38.75193	15.2343
water 8	Panarea	09/01/2017	38.64092	15.07369
water 9	Vulcano	09/02/2017	38.42119	14.93886
water 10	Vulcano	09/05/2017	38.42438	14.97336

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