

1 **Supplement of:**

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3 **Determining the hierarchical order by which the variables of sampling season, dust**
4 **outbreaks occurrence, and sampling location, can shape the airborne bacterial**
5 **communities in the Mediterranean basin**

6
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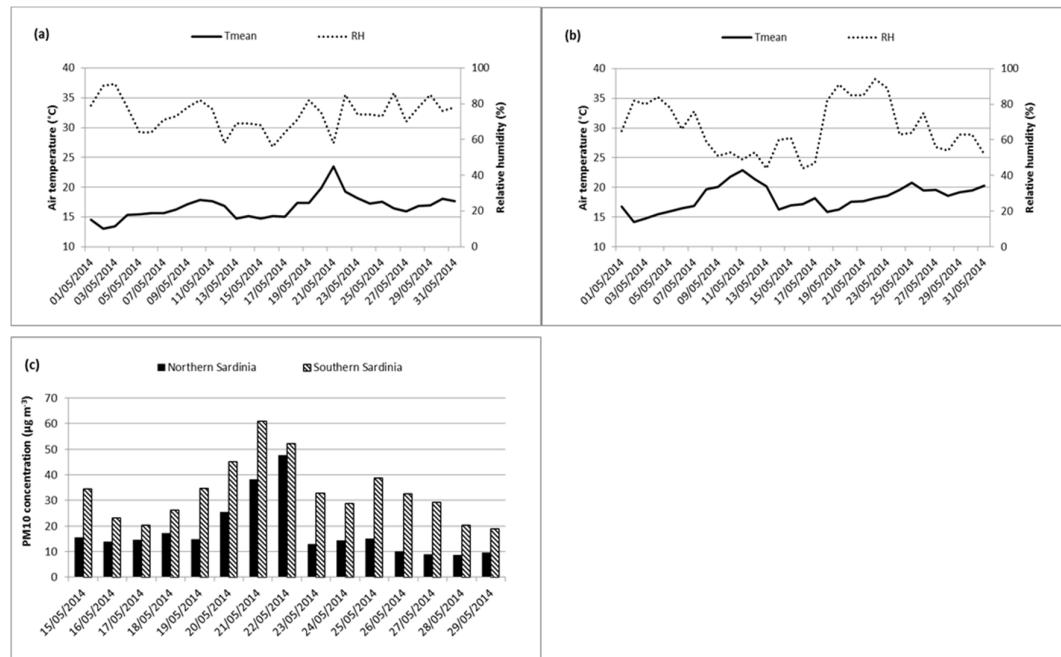
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20 **Fig. S1.** Daily mean air temperature and mean relative humidity of May 2014 in (a) Sassari
21 (Northern Sardinia) and (b), Cagliari/Domus de Maria (Southern Sardinia). (c): daily PM10
22 values at monitoring stations in Northern Sardinia (40.72°N, 8.55°E) and southern Sardinia
23 (39.24°N, 9.12°E)

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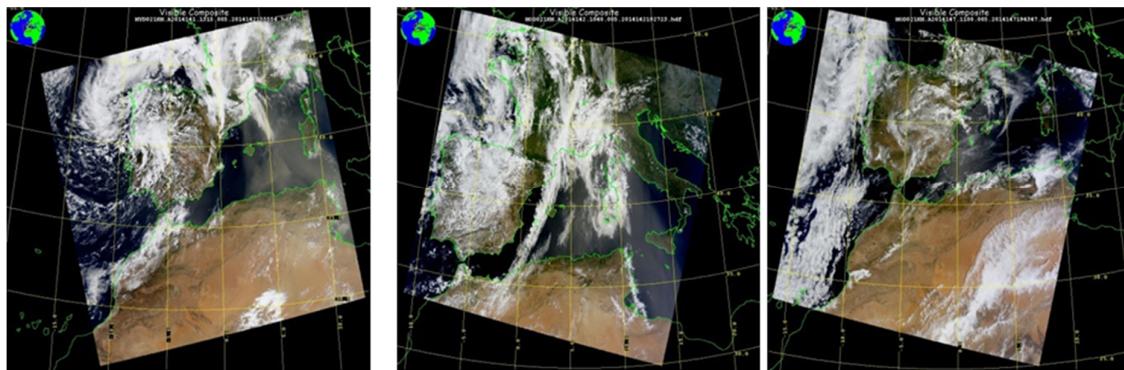
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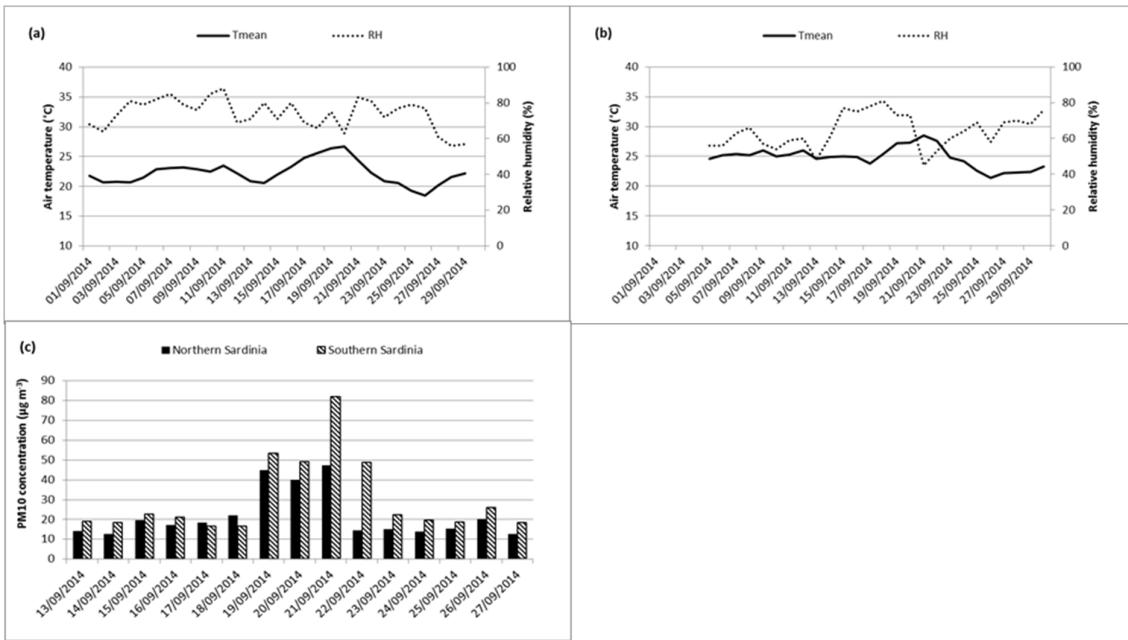
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30 **Fig. S2.** Synoptic charts showing surface pressure and wind fronts for the dates of May 21st,
31 22nd and 27th 2014 (credit to: www.metoffice.gov.uk).
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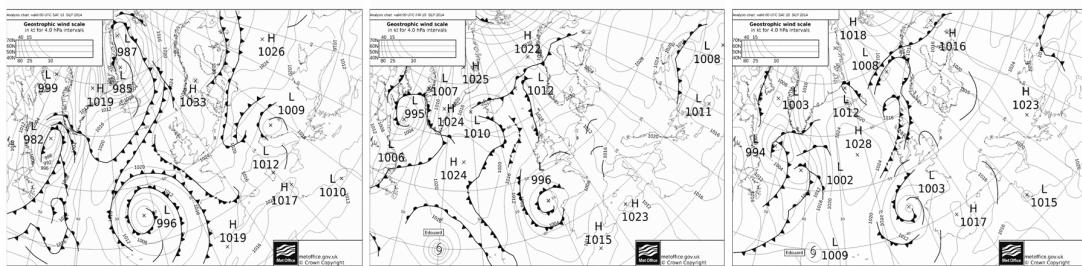


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37 **Fig. S3.** Satellite images (MODIS) – May 21st, 22nd and 27th 2014 (credit to:
38 ladsweb.nascom.nasa.gov).
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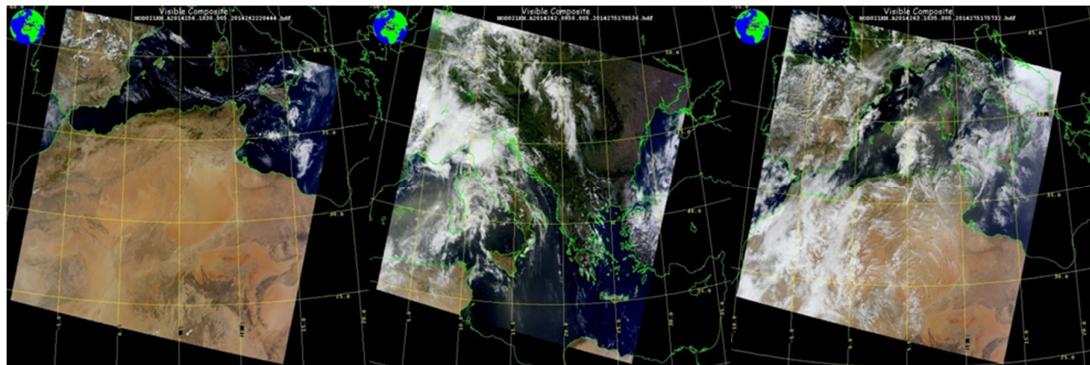


46 **Fig. S4.** Daily mean air temperature and mean relative humidity of September 2014 in (a)
47 Sassari (Northern-Sardinia) and (b), Cagliari/Domus de Maria (Southern Sardinia). (c): daily
48 PM10 values at monitoring stations in northern Sardinia (40.72°N , 8.55°E) and southern
49 Sardinia (39.24°N , 9.12°E)

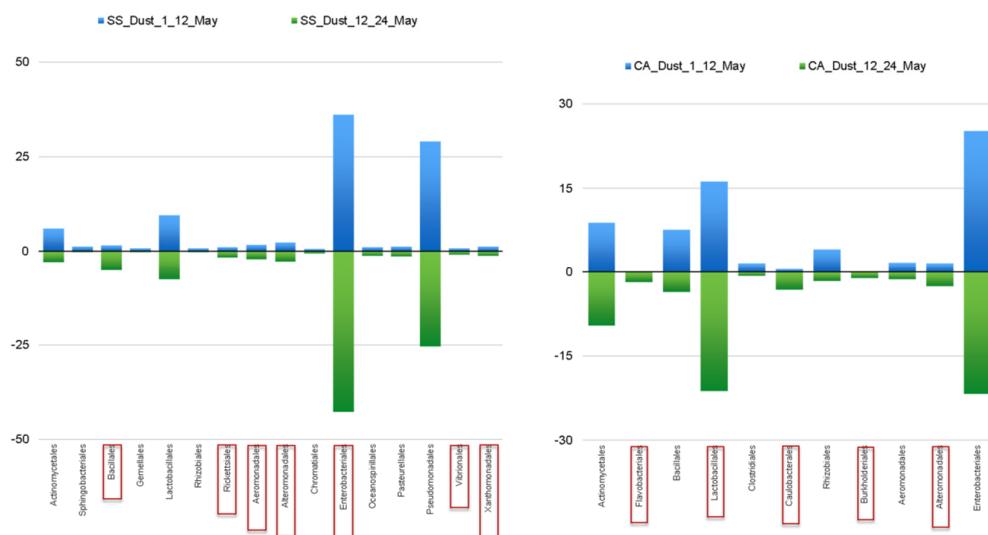


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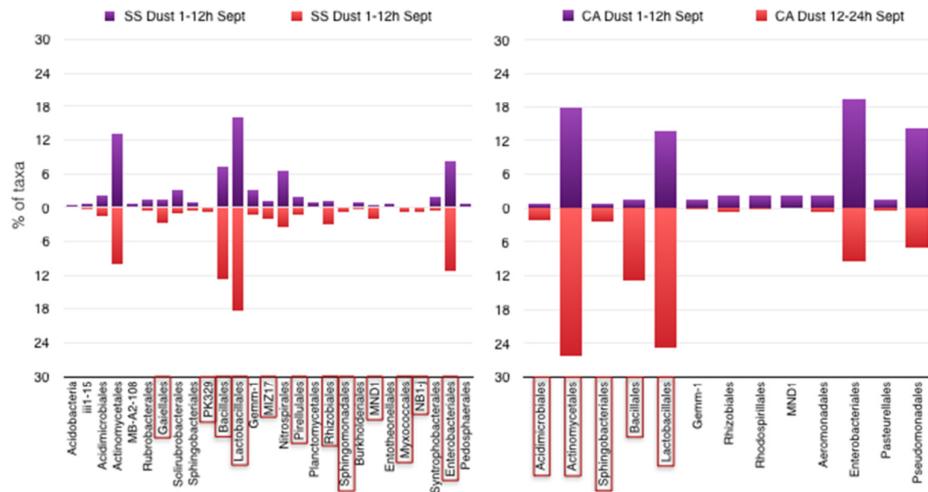
61 **Fig. S5.** Synoptic charts showing surface pressure and wind fronts for the dates of September
62 13th, 19th and 20th 2014 (credit to: www.metoffice.gov.uk).



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68 **Fig. S6.** Satellite images (MODIS) – September 13th, 19th and 20th 2014 (credit to:
69 ladsweb.nascom.nasa.gov).
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74 **Fig. S7.** Percent of sequences belonging to orders observed in May samples in the first 12h
75 (above baseline) or in the second 12h sampling period (below baseline) during the dust-
76 carrying events in the two sites (Sassari: left; Cagliari: right). Boxes encage taxa which increase
77 along with the dust storm.
78



79
80 **Fig. S8.** Percent of sequences belonging to orders observed in September samples in the first
81 12h (above baseline) or in the second 12h sampling period (below baseline) during the dust-
82 carrying events in the two sites (Sassari: left; Cagliari: right). Boxes encage taxa which increase
83 along with the dust storm.
84
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Taxa	P (Anova)	Adjusted P (Bonferroni)	FDR	May mean	Sep. mean	May median	Sep. median
o_Oceanospirillales	0.000019	0.0057	0.004	0.88	-0.88	0.79	-0.81
s_Pseudomonas viridiflava	0.000027	0.0081	0.004	0.88	-0.88	0.94	-0.82
f_Coxiellaceae	0.000042	0.013	0.0042	0.9	-0.9	0.97	-0.94
s_Pseudomonas alcaligenes	0.000066	0.02	0.0048	0.86	-0.86	0.77	-0.84
s_Pseudomonas nitroreducens	0.00008	0.024	0.0048	0.86	-0.86	0.86	-0.84
o_Thiohalorhabdales	0.00011	0.033	0.0055	0.86	-0.86	0.94	-1.1
f_Rhodospirillaceae	0.00033	0.099	0.014	-0.86	0.86	-1	0.86
g_Providencia	0.00042	0.13	0.015	0.82	-0.82	0.76	-1.1
o_iii115	0.00045	0.14	0.015	-0.83	0.83	-1	0.96
g_Vibrio	0.0011	0.33	0.032	0.79	-0.79	0.75	-0.99
f_Oceanospirillaceae	0.0013	0.39	0.032	0.78	-0.78	0.74	-1.2
f_Syntrophobacteraceae	0.0013	0.39	0.032	-0.86	0.86	-0.86	0.86
f_Methyloccococcaceae	0.0015	0.45	0.033	0.78	-0.78	0.96	-0.72

Taxa	P (Anova)	Adjusted P (Bonferroni)	FDR	May mean	Sep. mean	May median	Sep. median
f_Gaiellaceae	0.0016	0.48	0.033	-0.85	0.85	-0.85	0.72
c_Mollicutes	0.0017	0.51	0.033	0.81	-0.81	0.88	-0.94
f_Vibrionaceae	0.0019	0.57	0.033	0.8	-0.79	0.72	-1.3
g_Geobacter	0.0021	0.63	0.033	-0.78	0.78	-1.2	0.93
s_Plesiomonas shigelloides	0.0023	0.69	0.033	0.79	-0.79	0.63	-0.84
f_Endozoicimonaceae	0.0025	0.75	0.033	0.81	-0.81	0.82	-0.45
f_Colwelliaceae	0.0025	0.75	0.033	0.77	-0.77	0.71	-0.81
g_Shewanella	0.0026	0.78	0.033	0.77	-0.77	0.7	-0.97
s_Xenorhabdus japonica	0.0026	0.78	0.033	0.79	-0.79	0.76	-0.8
g_Aggregatibacter	0.0026	0.78	0.033	0.8	-0.8	0.8	-0.86
s_Serratia proteamaculans	0.0028	0.84	0.033	0.76	-0.75	0.74	-1
g_Nitrincola	0.003	0.9	0.033	0.77	-0.77	0.72	-0.78
g_Haemophilus	0.003	0.9	0.033	0.76	-0.76	0.84	-0.84
s_Enterobacter pyrinus	0.003	0.9	0.033	0.76	-0.76	0.71	-0.82
c_Gemm1	0.0032	0.96	0.033	-0.82	0.82	-0.82	0.88
g_Dickeya	0.0032	0.96	0.033	0.77	-0.77	0.66	-0.75
o_Acidimicrobiales	0.0039	1	0.038	-0.8	0.81	-0.85	1.15
g_Ferrimonas	0.0039	1	0.038	0.76	-0.76	0.68	-0.77
g_Citrobacter	0.0041	1	0.038	0.76	-0.75	0.61	-0.72
g_Actinobacillus	0.0044	1	0.039	0.74	-0.74	0.72	-0.36
s_Citrobacter freundii	0.0045	1	0.039	0.74	-0.74	0.66	-1.2
s_Pantoea ananatis	0.0046	1	0.039	0.78	-0.78	0.77	-0.88
g_Morganella	0.0048	1	0.04	0.78	-0.78	0.74	-0.9
s_Serratia marcescens	0.0051	1	0.041	0.75	-0.75	0.63	-0.72
g_Plesiomonas	0.0054	1	0.043	0.73	-0.73	0.4	-0.8
f_Conexibacteraceae	0.0056	1	0.043	-0.79	0.79	-0.79	0.88
g_Pantoeaagglomerans	0.0057	1	0.043	0.74	-0.74	0.59	-0.72
o_Rhodospirillales	0.0063	1	0.046	-0.78	0.79	-0.78	0.87
c_Betaproteobacteria	0.0066	1	0.047	-0.78	0.78	-0.78	0.85
o_Ellin329	0.0067	1	0.047	-0.78	0.78	-0.78	0.98
o_Kiloniellales	0.0075	1	0.049	-0.77	0.78	-0.77	0.94
o_MIZ17	0.0076	1	0.049	-0.77	0.78	-0.77	0.92
g_429	0.0076	1	0.049	-0.77	0.77	-0.77	0.96
c_wb1A12	0.0077	1	0.049	-0.77	0.77	-0.77	1.01
o_wb1_H11	0.0088	1	0.054	-0.76	0.76	-0.76	0.72
c_GittGS136	0.0089	1	0.054	-0.76	0.76	-0.76	0.8
s_Pseudomonas mendocina	0.0097	1	0.058	0.72	-0.72	0.62	-0.94

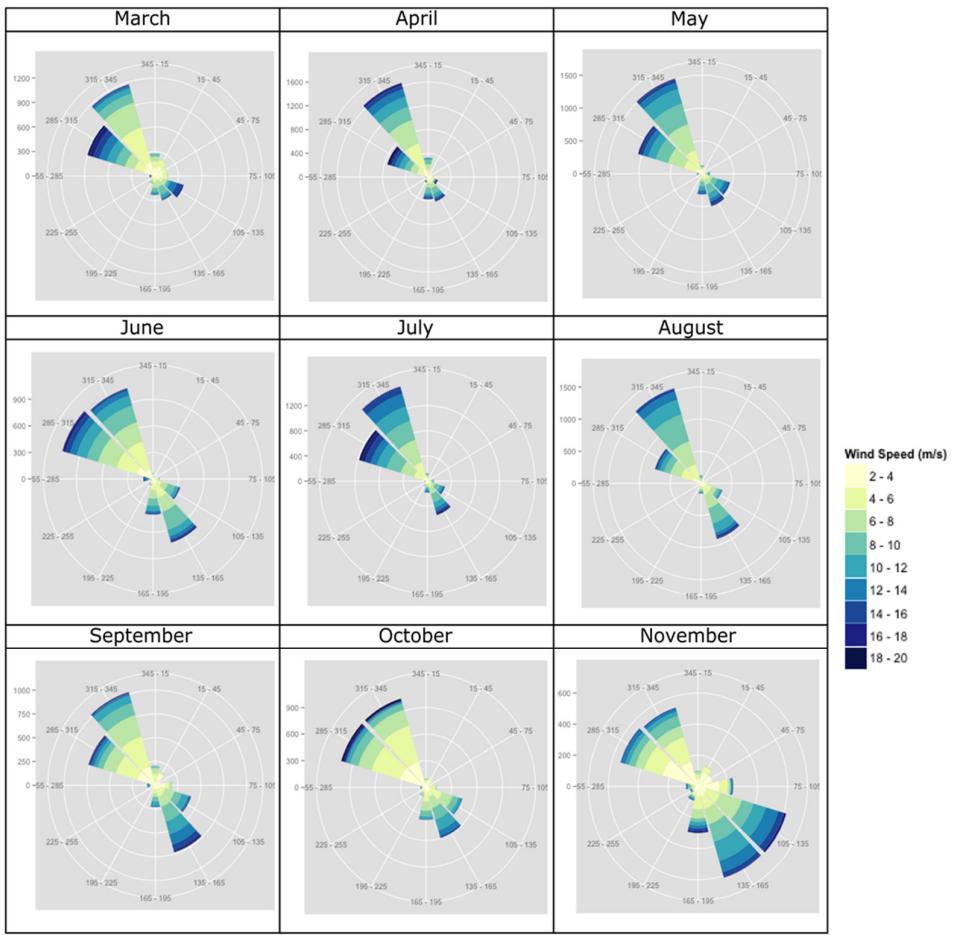
Taxa	P (Anova)	Adjusted P (Bonferroni)	FDR	May mean	Sep. mean	May median	Sep. median
g__ <i>Mycobacterium</i>	0.01	1	0.059	-0.75	0.75	-0.75	0.85
f__EB1017	0.011	1	0.062	-0.74	0.74	-0.74	1.26
p__Gemmatimonadetes	0.011	1	0.062	-0.75	0.75	-0.75	0.79
f__Moraxellaceae	0.013	1	0.072	0.68	-0.68	0.87	-0.77
g__ <i>Afifella</i>	0.015	1	0.082	-0.72	0.73	-0.72	0.66
o__03197L14	0.016	1	0.086	-0.72	0.72	-0.72	0.56
f__Rubrobacteraceae	0.018	1	0.092	-0.71	0.71	-0.71	0.96
f__03196A21	0.018	1	0.092	-0.71	0.71	-0.71	0.84
f__Chromatiaceae	0.018	1	0.092	0.69	-0.69	0.52	-0.79
c__Ellin6529	0.019	1	0.092	-0.7	0.7	-0.7	0.62
f__Propionibacteriaceae	0.019	1	0.092	-0.63	0.63	-0.59	0.52
g__ <i>Corynebacteriumlubricantis</i>	0.019	1	0.092	-0.65	0.65	-0.8	0.58
c__Alphaproteobacteria	0.021	1	0.1	-0.68	0.68	-0.72	1.03
g__ <i>Propionibacterium</i>	0.022	1	0.1	-0.63	0.63	-0.86	0.49
o__Entomoplasmatales	0.024	1	0.11	0.62	-0.62	0.83	-1.1
g__ <i>Kaistobacter</i>	0.024	1	0.11	-0.64	0.64	-0.97	0.9
f__Entotheonellaceae	0.029	1	0.13	-0.66	0.66	-0.66	0.42
g__ <i>Inquilinus</i>	0.029	1	0.13	-0.66	0.66	-0.66	1.01
f__C111	0.031	1	0.13	-0.61	0.61	-0.83	0.97
g__ <i>Planctomyces</i>	0.032	1	0.14	-0.65	0.65	-0.65	0.54
o__Sva0725	0.042	1	0.18	-0.62	0.63	-0.62	0.74
g__ <i>Rubrobacter</i>	0.043	1	0.18	-0.62	0.62	-0.62	0.8
f__koll13	0.043	1	0.18	-0.62	0.62	-0.62	0.46
g__ <i>Salmonella enterica</i>	0.044	1	0.18	-0.61	0.61	-0.76	0.33
f__Piscirickettsiaceae	0.046	1	0.18	-0.61	0.61	-0.6	0.8
g__ <i>Hydrogenophaga</i>	0.049	1	0.19	-0.55	0.56	-0.94	0.85

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88 **Table S1. List of the taxa resulting differentially expressed with a significant p value (<
89 0.05) according to the sampling time factor (May or September) irrespective of event or
90 site.** Source data: square root of total sum of squares taxa abundance transformation. FDR:
91 False Discovery Rate

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Fig. S9. Detailed wind rose graph (wind speed and direction) for March-November 2014 in Cagliari. Values in monitoring station at 39.21°N , 9.11°E (credit to:

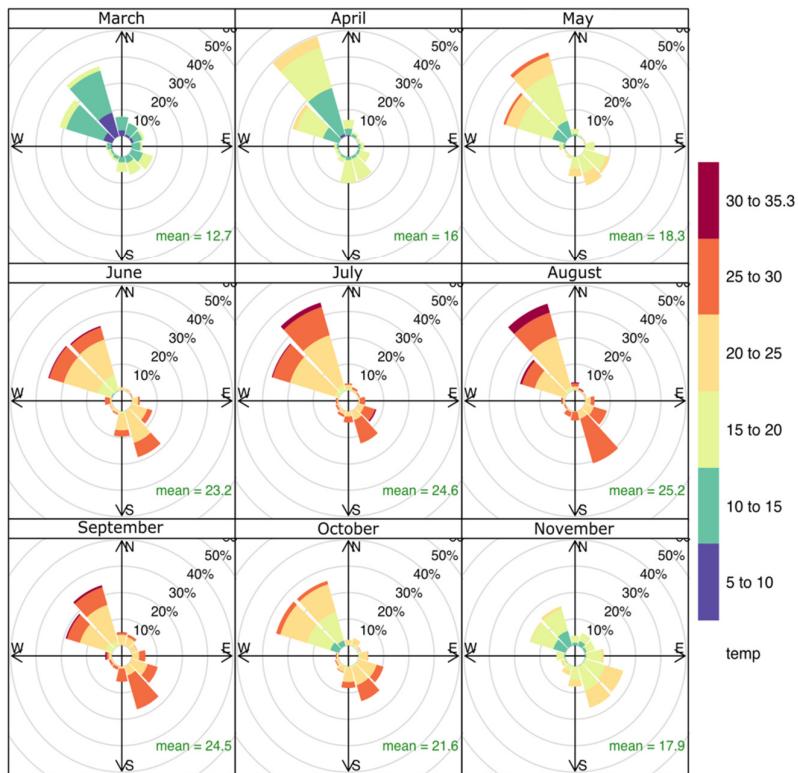
<http://www.mareografico.it/>)

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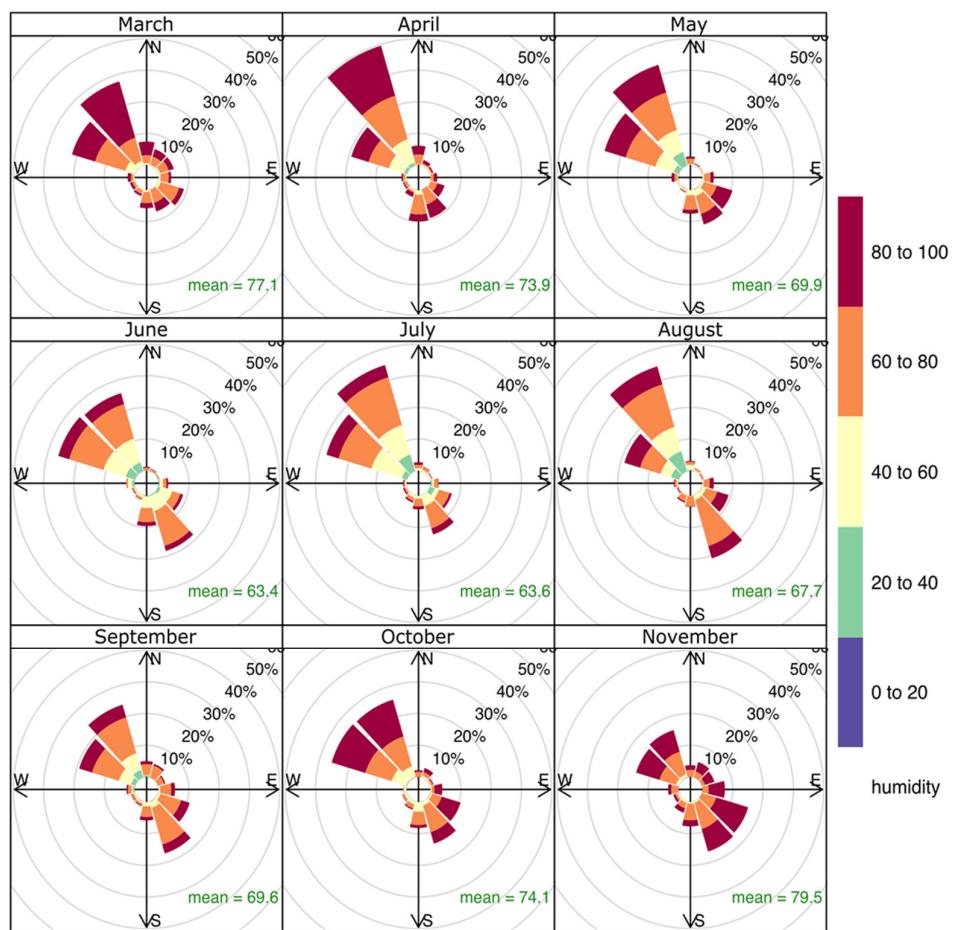
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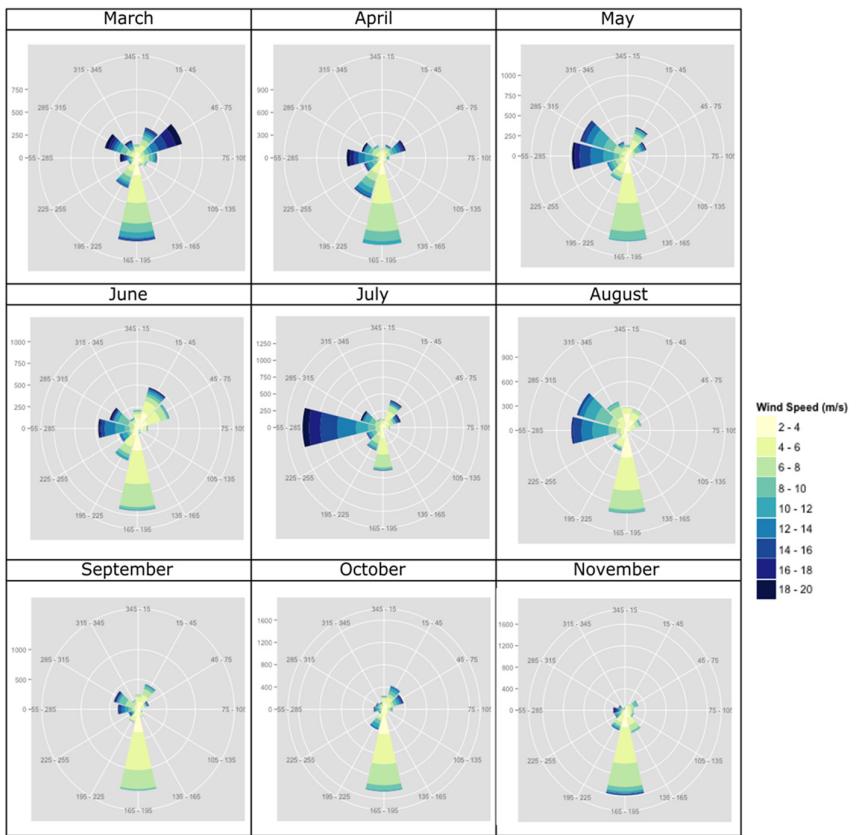
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101 **Fig. S10.** Synopsis of wind direction and temperature for March-November 2014 in Cagliari.
102 Values in monitoring station at 39.21°N, 9.11°E (credit to: <http://www.mareografico.it/>)
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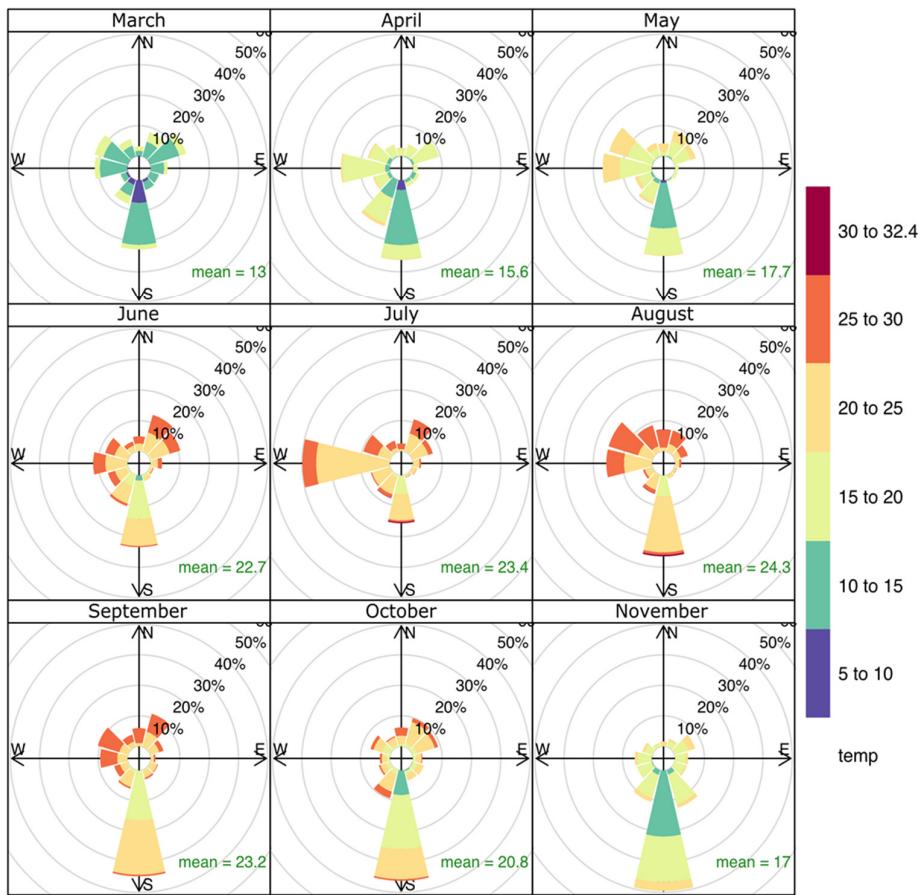
107 **Fig. S11.** Synopsis of wind direction and humidity for March-November 2014 in Cagliari.
108 Values in monitoring station at 39.21°N, 9.11°E (credit to: <http://www.mareografico.it/>)
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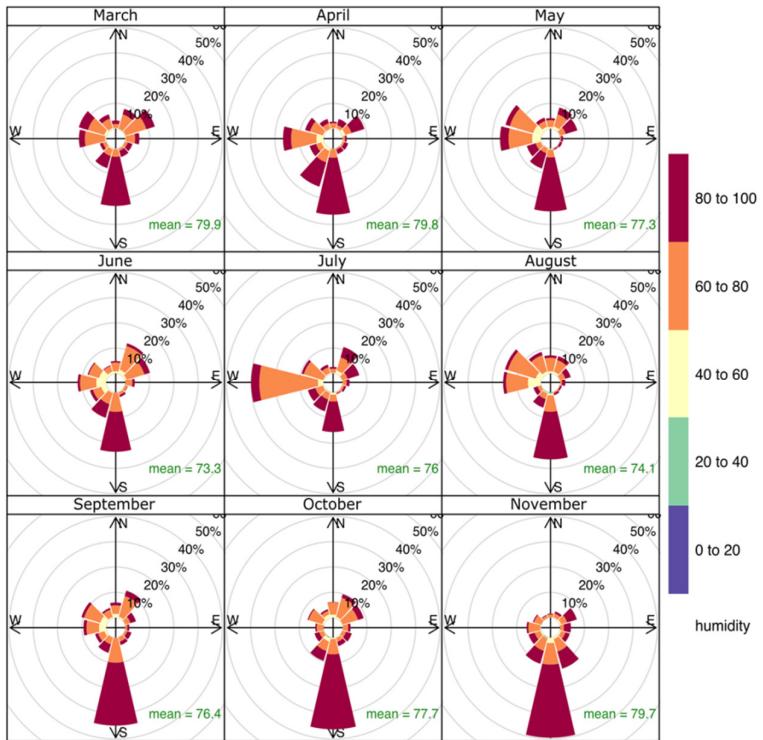
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112 **Fig. S12.** Detailed wind rose graph (wind speed and direction) for March-November 2014 in
113 Sassari. Values in monitoring station at 40.84°N, 8.40°E (credit to:
114 <http://www.mareografico.it/>)
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117

118 **Fig. S13.:** Synopsis of wind direction and temperature for March-November 2014 in Sassari.
119 Values in monitoring station at 40.84°N, 8.40°E (credit to: <http://www.mareografico.it/>)
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122

123 **Fig. S14.**: Synopsis of wind direction and humidity for March-November 2014 in Sassari.
124 Values in monitoring station at 40.84°N, 8.40°E (credit to: <http://www.mareografico.it/>)

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