

Source attribution of Bornean air masses by back trajectory analysis during the OP3 project: Supplementary Material

Robinson et al

Correspondence to: H. Coe
(hugh.coe@manchester.ac.uk)

This supporting material includes any figures that could not be included in the principal text but may be relevant for the interested reader. Figure S1 shows a scatter plot of organic vs sulphate aerosol, similar to the Figure 16 in Section 3.5 of the principal text. It is coloured by level of organic m/z 44:43 (a proxy for oxidation). Points at line A show a range of oxidation levels, points a line B show generally high levels of oxidation and points at line C show generally low levels of oxidation. This supports the assertion from the main text that the points at different lines are related to different sources:

- points indicated by line A are from periods dominated by natural sulphate emissions that are not necessarily related to organic emissions (for example from marine dimethyl sulphide production or volcanic emissions) meaning a range of oxidation levels is sampled
- points indicated by line B are representative of long range transport of organic aerosol which is highly oxidised. This is associated with sulphate which is either emitted simultaneously or coats the organic aerosol during transit.
- and points indicated by line C which are from periods of inland air that is dominated by comparatively local biogenic aerosol and biomass burning meaning the aerosol are less oxidised and less related to sulphate.

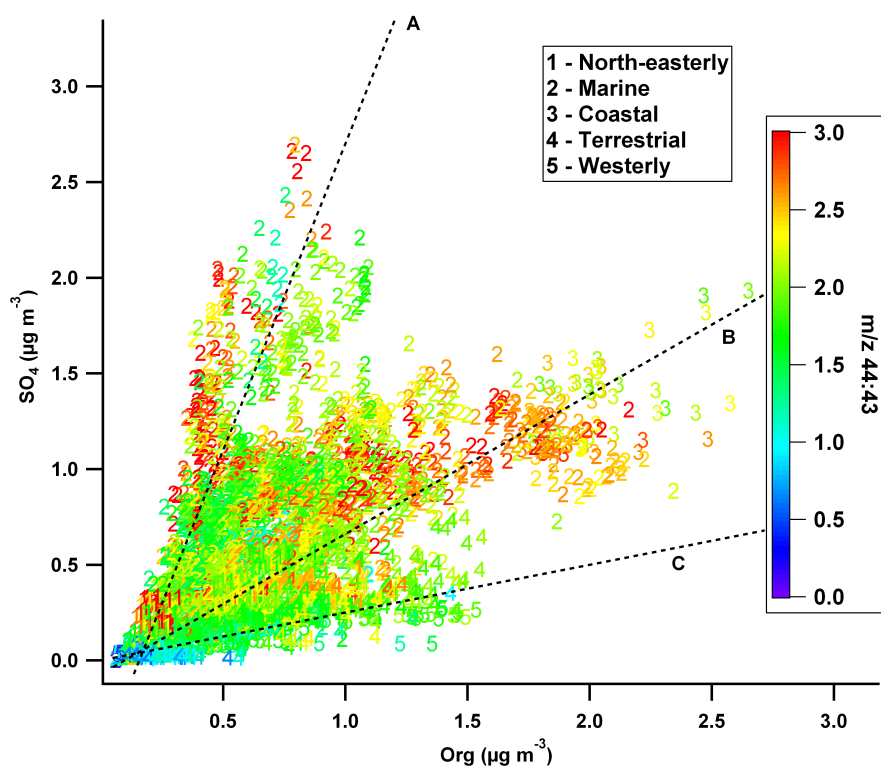


Fig. 1. SO_4 loading vs organic matter loading numbered by cluster. Point colour signifies m/z 44:43 magnitude, a proxy for oxidation. Lines, labelled with letters, indicate different proposed dependencies. Lines represent modes of the SO_4 :org ratio histogram of values.

Tables 1 and 2 detail the precise times of the cluster analysis period classifications of OP3-I and OP3-III respectively, and are included here for reference.

OP3-I					
		15/04/2008 20:00	4	27/04/2008 20:00	4
04/04/2008 08:00	1	16/04/2008 08:00	4	28/04/2008 08:00	4
04/04/2008 20:00	1	16/04/2008 20:00	4	28/04/2008 20:00	4
05/04/2008 08:00	1	17/04/2008 08:00	4	29/04/2008 08:00	4
05/04/2008 20:00	1	17/04/2008 20:00	2	29/04/2008 20:00	4
06/04/2008 08:00	1	18/04/2008 08:00	2	30/04/2008 08:00	4
06/04/2008 20:00	1	18/04/2008 20:00	2	30/04/2008 20:00	4
07/04/2008 08:00	1	19/04/2008 08:00	2	01/05/2008 08:00	4
07/04/2008 20:00	0	19/04/2008 20:00	2	01/05/2008 20:00	4
08/04/2008 08:00	2	20/04/2008 08:00	2	02/05/2008 08:00	4
08/04/2008 20:00	1	20/04/2008 20:00	2	02/05/2008 20:00	4
09/04/2008 08:00	1	21/04/2008 08:00	0	03/05/2008 08:00	0
09/04/2008 20:00	1	21/04/2008 20:00	1	03/05/2008 20:00	0
10/04/2008 08:00	1	22/04/2008 08:00	1	03/05/2008 20:00	0
10/04/2008 20:00	0	22/04/2008 20:00	1	03/05/2008 20:00	0
11/04/2008 08:00	0	23/04/2008 08:00	1	03/05/2008 20:00	0
11/04/2008 20:00	2	23/04/2008 20:00	0	03/05/2008 20:00	0
12/04/2008 08:00	2	24/04/2008 08:00	2	03/05/2008 20:00	0
12/04/2008 20:00	2	24/04/2008 20:00	2	03/05/2008 20:00	0
13/04/2008 08:00	2	25/04/2008 08:00	2	03/05/2008 20:00	0
13/04/2008 20:00	0	25/04/2008 20:00	0		
14/04/2008 08:00	4	26/04/2008 08:00	3		
14/04/2008 20:00	4	26/04/2008 20:00	3		
15/04/2008 08:00	4	27/04/2008 08:00	0		

Table 1. Cluster analysis period classifications for OP3-I. Times are start times of six hour periods in local time (UTC+8) where: 0 is unclassified; 1 is *Easterly*; 2 is *North-Easterly*; 3 is *Westerly*; and 4 is *Terrestrial* and defined in Section 2.2.2 of the principal text.

OP3-III		01/07/2008 20:00	3	13/07/2008 08:00	3
20/06/2008 20:00	5	02/07/2008 08:00	0	13/07/2008 20:00	3
21/06/2008 08:00	5	02/07/2008 20:00	1	14/07/2008 08:00	3
21/06/2008 20:00	0	03/07/2008 08:00	1	14/07/2008 20:00	3
22/06/2008 08:00	2	03/07/2008 20:00	1	15/07/2008 08:00	3
22/06/2008 20:00	2	04/07/2008 08:00	5	15/07/2008 20:00	3
23/06/2008 08:00	2	04/07/2008 20:00	5	16/07/2008 08:00	0
23/06/2008 20:00	2	05/07/2008 08:00	5	16/07/2008 20:00	0
24/06/2008 08:00	2	05/07/2008 20:00	5	17/07/2008 08:00	0
24/06/2008 20:00	0	06/07/2008 08:00	5	17/07/2008 20:00	0
25/06/2008 08:00	0	06/07/2008 20:00	5	18/07/2008 08:00	3
25/06/2008 20:00	3	07/07/2008 08:00	0	18/07/2008 20:00	3
26/06/2008 08:00	3	07/07/2008 20:00	3	19/07/2008 08:00	3
26/06/2008 20:00	3	08/07/2008 08:00	3	19/07/2008 20:00	0
27/06/2008 08:00	3	08/07/2008 20:00	3	20/07/2008 08:00	4
27/06/2008 20:00	3	09/07/2008 08:00	3	20/07/2008 20:00	4
28/06/2008 08:00	3	09/07/2008 20:00	3	21/07/2008 08:00	0
28/06/2008 20:00	3	10/07/2008 08:00	3	21/07/2008 20:00	0
29/06/2008 08:00	3	10/07/2008 20:00	3	22/07/2008 08:00	0
29/06/2008 20:00	3	11/07/2008 08:00	3	22/07/2008 20:00	5
30/06/2008 08:00	3	11/07/2008 20:00	3	23/07/2008 08:00	5
30/06/2008 20:00	3	12/07/2008 08:00	3	23/07/2008 20:00	0
01/07/2008 08:00	3	12/07/2008 20:00	3		

Table 2. Cluster analysis period classifications for OP3-III. Times are start times of six hour periods in local time (UTC+8) where: 0 is unclassified; 1 is *North-Easterly*, 2 is *Coastal*; 3 is *Marine*; 4 is *Westerly*; and 5 is *Terrestrial* as described in Section 2.2.2 of the principal text.