

1 Manuscript number: 2014GL060555

2 Supporting Information for the paper:

3 **P-NEXFS Analysis of Aerosol Phosphorus Delivered to the Mediterranean Sea**

4 Amelia F. Longo¹, Ellery D. Ingall^{1*}, Julia M. Diaz^{1§}, Michelle Oakes^{1‡}, Laura E. King¹,
5 Athanasios Nenes^{1,2,3}, Nikolaos Mihalopoulos^{3,4}, Kaliopi Violaki⁴, Anna Avila⁵, Claudia R.
6 Benitez-Nelson⁶, Jay Brandes⁷, Ian McNulty⁸ and David J. Vine⁸

7 ¹School of Earth and Atmospheric Sciences, Georgia Institute of Technology, 311 Ferst Drive,
8 Atlanta, GA 30332-0340, USA.

9 ²School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, 311 Ferst
10 Drive, Atlanta, GA 30332-0340, USA.

11 ³Foundation for Research and Technology, Hellas, Patras, Greece.

12 ⁴University of Crete, Department of Chemistry, Iraklion 71003, Greece.

13 ⁵ CREAM, Universitat Autònoma de Barcelona, Bellaterra 08193, Spain.

14 ⁶Department of Earth & Ocean Sciences & Marine Science Program, University of South
15 Carolina, Columbia, SC 29208, USA.

16 ⁷Skidaway Institute of Oceanography, 10 Ocean Science Circle, Savannah, GA 31411, USA.

17 ⁸Advanced Photon Source, Argonne National Laboratory, 9700 S. Cass Avenue, Argonne, IL
18 60439, USA.

19 [§]Present address: Biology Department, Woods Hole Oceanographic Institution, Woods Hole,
20 MA 02543, USA.

21 [‡]Present Address: Environmental Protection Agency, National Center of Environmental
22 Assessment, Research Triangle Park, NC 27711, USA.

23 *Correspondence to: ingall@eas.gatech.edu

24 School of Earth and Atmospheric Sciences, Georgia Institute of Technology, 311 Ferst Drive,
25 Atlanta, GA 30332-0340, USA

26
27 Geophysical Research Letters, 2014

28 Introduction

29 Table S1 lists sample collection dates and supporting information for each sample.
30 HYSPLIT back trajectories calculated for each sample were used to determine air mass origin
31 (Figure S1). Several organic phosphorus compounds were examined with P-NEXFS as standard
32 material (Table S2). Samples were mounted onto cellulose acetate filters and prepared for
33 analysis by cutting a 0.5 cm x 0.5 cm portion of filter and mounting the sample across a hole on
34 an aluminum support stick. As shown in Figure S2, organic phosphorus compounds tended to
35 have a relatively featureless post-edge. The lack of distinguishing characteristics does not allow
36 for identification of a specific organic compound through P-NEXFS. Data for organic standards
37 is available in External Database S1.

38 1. External Database S1 Contains spectral data for all organic phosphorus standards

39 2. ts01.docx Ancillary data on samples

40 2.1 Column “Sample ID”, the sample names that correspond to the manuscript

41 2.2 Column “Collection Date”, starting date of sample collection

42 2.3 Column “Loading”, $\mu\text{g}/\text{m}^3$, the particulate loading on the filters

43 2.4 Column “Soluble P”, nmol/m^3 , the soluble phosphate on each sample normalized to the
44 volume of air drawn through the filter

45 2.5 Column “Total P”, $\mu\text{mol}/\text{m}^3$, the total phosphate on each sample normalized to the
46 volume of air drawn through the filter

47 2.6 Column “Air Mass Origin”, provides the designation of North African or European for
48 each sample

49 3. ts02.docx Organic Phosphorus CAS numbers

50 3.1 Column “Organic P compound”, provides the chemical name for the phosphorus
51 compounds analyzed with P-NEXFS

- 52 3.2 Column “CAS”, provides the CAS number for each compound
- 53 4. fs01.pdf HYSPLIT back trajectories for air masses originating in Europe and North
- 54 Africa.
- 55 5. fs02.pdf Spectra of organic phosphorus compounds listed in Table S2.