

Estimation of atmospheric total organic carbon (TOC) – paving the path for carbon budget closure

Mingxi Yang^{1*}, Zoë L. Fleming^{2&}

5

¹ Plymouth Marine Laboratory, Plymouth, United Kingdom

² National Centre for Atmospheric Science (NCAS), Department of Chemistry, University of Leicester, UK, United Kingdom

* Correspondence to M. Yang (miya@pml.ac.uk)

& Now at Center for Climate and Resilience Research (CR2), Departamento de Geofísica, Universidad de Chile, Santiago, Chile

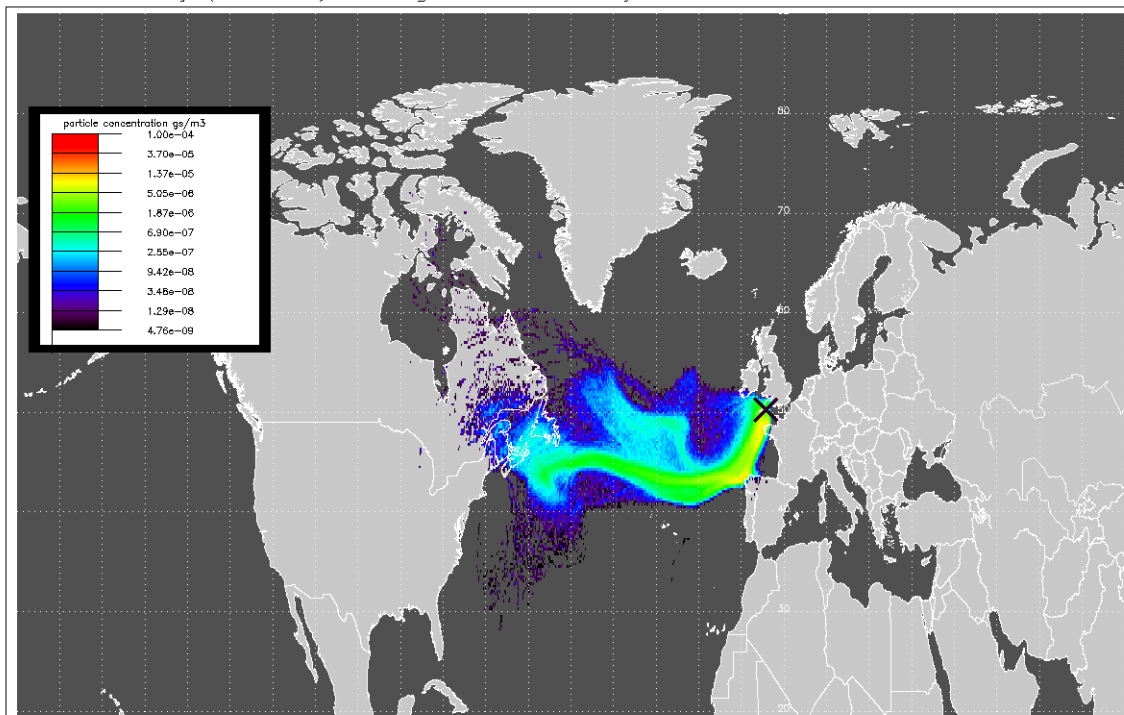
10

Supplementary Materials

The UK Met Office's NAME dispersion model (Jones et al., 2007) was used to produce a footprint of the air arriving at the station every 3 hours. The residence time over the 5-day journey of airmasses over a series of geographical regions were calculated, and then converted into % relative residence times out of the whole domain. Examples of these two types of airmasses as well as the regional map used for the airmass classification are shown below.

15

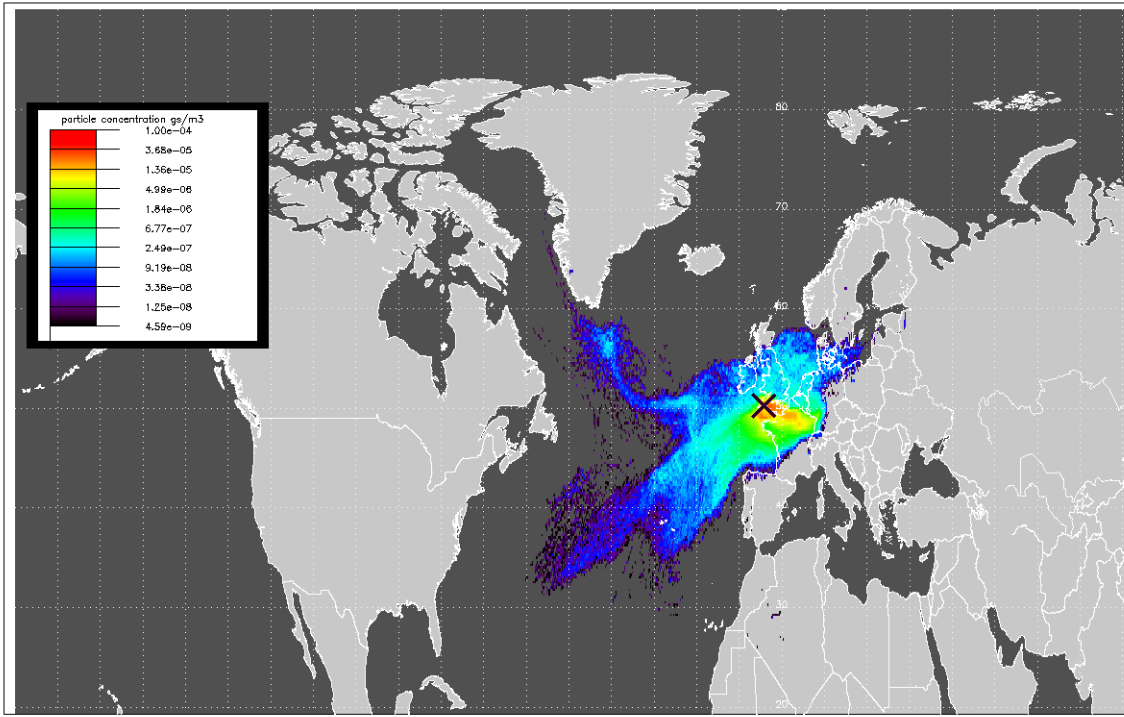
5 day (0–100m) arriving at PML 3 Hourly release from: 20160909_2100



20

Figure S1. An example of an Atlantic-dominated airmass, which arrived at PML at 21:00 UTC on 9th September, 2016.

5 day (0–100m) arriving at PML 3 Hourly release from: 20160907_2100



25 Figure S2. An example of a mainland Europe/English Channel-dominated airmass, which arrived at PML at 21:00 UTC on 7th September, 2016.

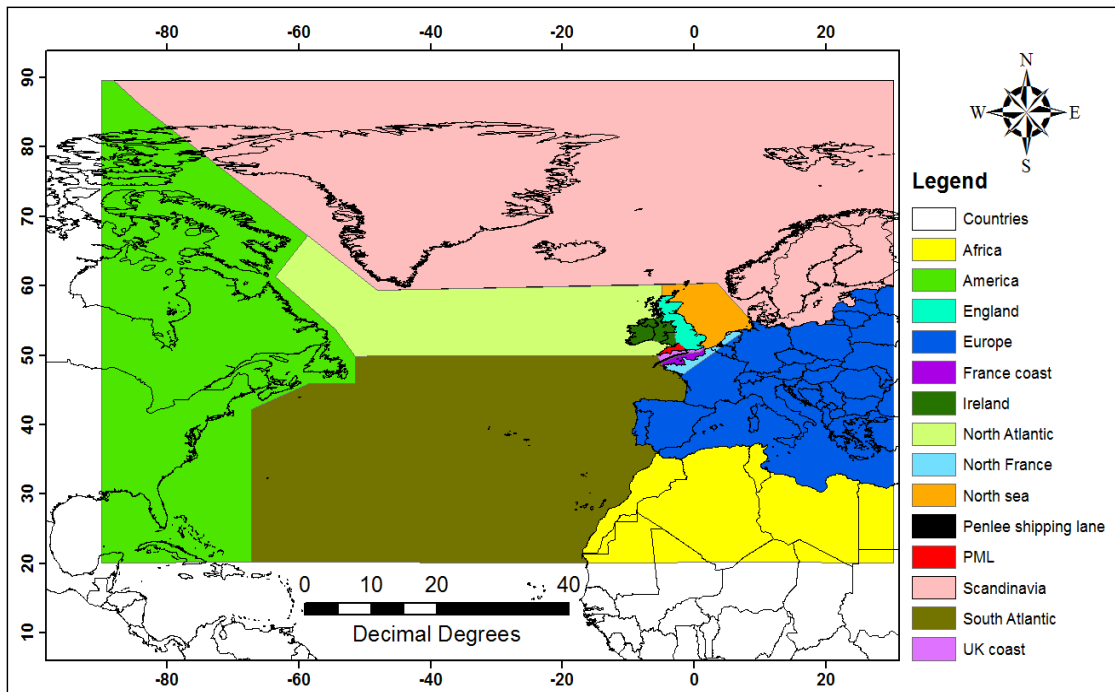


Figure S3. Regional map used for the NAME model airmass classification. Mainland Europe/English Channel is computed as the sum of 'Europe', 'France Coast', 'Penlee shipping lane', and 'UK coast.'

30