Supplementary information

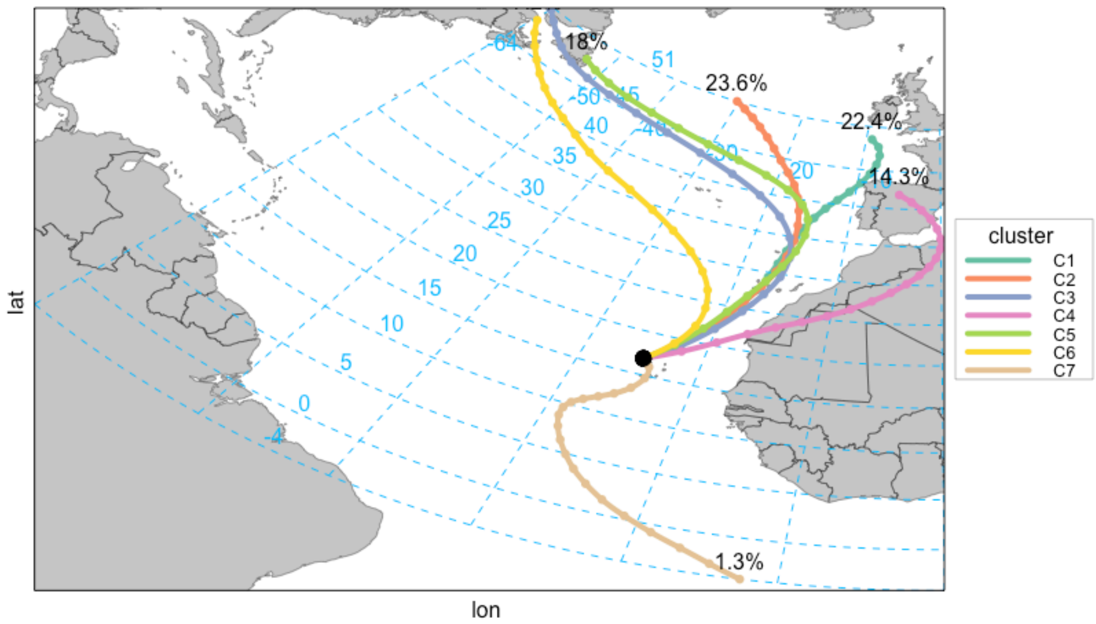


Figure 1: Cluster analysis of data collected between December 2011- December 2015 into 7 clusters using the trajCluster function in Openair (Carlaw et al., 2012).

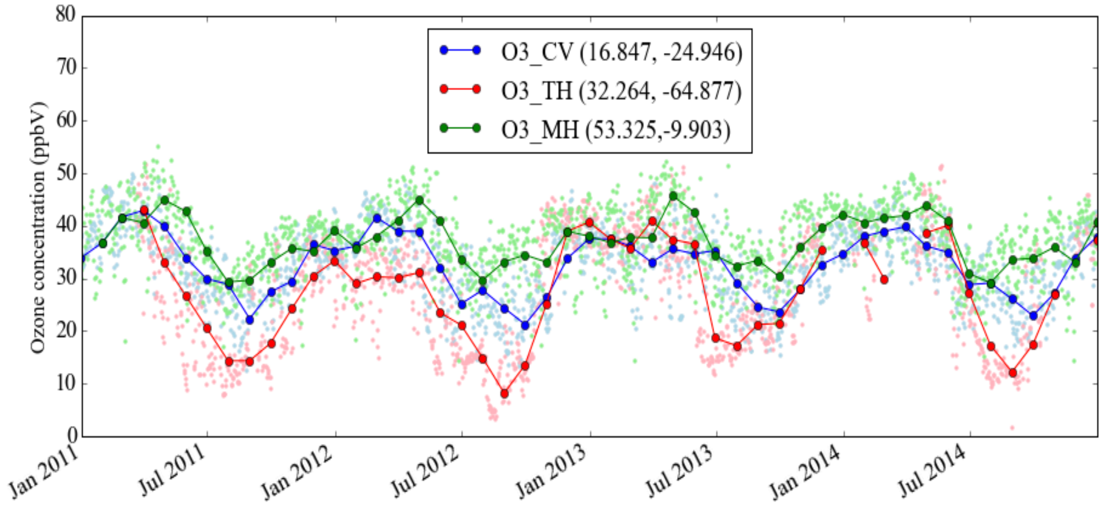


Figure 2: Ozone measurements from the CVO plotted with those from Mace Head, Ireland and Tudor's Hill, Bermuda for the same period.

The seasonal cycle of ozone at CVO and at Mace Head are similar except in Summer when the site is more influenced by southern air and the concentrations at the CVO are lower.

Month	**2011-2012**	**2012-2013**	**2013-2014**	**2014-2015**
December	510	0	714	1
January	634	203	695	307
February	690	541	673	625
March	721	744	744	628
April	717	133	372	96
May	514	411	0	591
June	0	721	109	493
July	257	607	726	643
August	35	250	596	313
September	0	538	718	217
October	0	714	212	609
November	0	653	588	717

Table 1: Number of points used for median calculation.

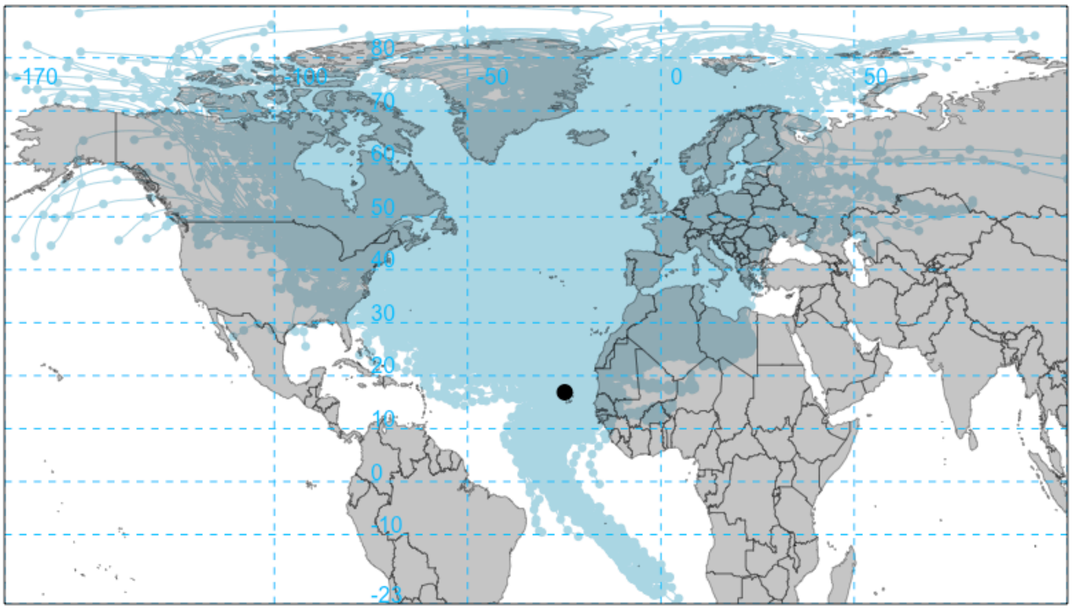
T-test results	**AFR**
AM	1.128E-14
AAC	2.2E-16
NAA	0.02458
NCA	0.003387
EUR	2.69E-12
EUR/AFR	0.03947

Table 2: Results of T-test with Afr.

Airmass / Season	AM	AAC	NAA	NCA	EUR	AFR	EUR/AFR
Winter 11	**0**	**8** (1.26 +/- 0.01)	**4** (1.32 +/- 0.01)	**6** (1.36+/- 0.04)	**59** (1.33 +/- 0.06)	**350** (1.21 +/- 0.12)	**184** (1.3 +/- 0.07)
Spring 12	**69** (1.23 +/- 0.035	**142** (1.26 +/- 0.05)	**77** (1.28 +/- 0.035)	**138** (1.31 +/- 0.063)	**83** (1.29 +/- 0.06)	**110** (1.26 +/- 0.07)	**33** (1.26 +/-0.11)
Summer 12	**11** (1.19 +/- 0.03)	**66** (1.21 +/- 0.04)	**0**	**6** (1.27 +/-0.04)	**14** (1.21 +/- 0.04)	**0**	**0**
Autumn 12	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Winter 12	**0**	**19** (1.17 +/- 0.05)	**13** (1.23 +/- 0.09)	**54** (1.24 +/- 0.05)	**35** (1.17 +/-0.04)	**120** (1.19 +/- 0.09)	**3** (1.21 +/-0.07)
Spring 13	**67** (1.20 +/- 0.06)	**95** (1.19 +/- 0.09)	**86** (1.20+/- 0.06)	**109** (1.21 +/- 0.06)	**28** (1.13 +/- 0.1)	**45** (1.19 +/- 0.08)	**0**
Summer 13	**218** (1.25 +/- 0.05)	**10** (1.26 +/- 0.09)	**17** (1.12+/- 0.09)	**58** (1.24 +/- 0.06)	**217** (1.25 +/- 0.1)	**0**	**4** (1.31 +/- 0.03)
Autumn 13	**53** (1.13 +/- 0.14)	**205** (1.14 +/- 0.08)	**9** (1.16 +/- 0.05)	**24** (1.09 +/- 0.07)	**121** (1.2 +/- 0.08)	**106** (1.17+/- 0.11)	**118** (1.17 +/-0.06)
Winter 13	**41** (1.17 +/- 0.06)	**22** (1.19 +/- 0.06)	**51** (1.27 +/- 0.03)	**186** (1.25 +/-0.06)	**13** (1.33 +/- 0.13)	**328** (1.29 +/- 0.2)	**56** (1.31 +/-1.27)
Spring 14	**37** (1.2 +/- 0.04)	**51** (1.17 +/- 0.04)	**81** (1.22 +/- 0.04)	**75** (1.22 +/- 0.04)	**39** (1.21 +/- 0.04)	**32** (1.21 +/- 0.05)	**57** (1.22 +/- 0.05)
Summer 14	**0**	**192** (1.15 +/- 0.05)	**10** (1.18 +/- 0.03)	**36** (1.16 +/- 0.05)	**91** (1.17 +/-0.07)	**0**	**0**
Autumn 14	**20** (1.10 +/- 0.15)	**191** (1.12 +/-0.05)	**37** (1.21 +/- 0.04)	**102** (1.17 +/- 0.05)	**42** (1.14 +/- 0.06)	**80** (1.15 +/- 0.06)	**36** (1.2 +/- 0.08)
Winter 14	**26** (1.11 +/- 0.09)	**79** (1.22 +/- 0.16)	**16** (1.13 +/- 0.04)	**24** (1.07 +/- 0.07)	**126** (1.09 +/- 0.1)	**15** (1.06+/- 0.04)	**25** (1.05 +/- 0.03)
Spring 15	**38** (1.03 +/- 0.05)	**95** (1.04 +/- 0.08)	**20** (1.04 +/- 0.02)	**76** (1.03 +/- 0.09)	**174** (1.02 +/- 0.14)	**3** (1.05 +/- 0.04)	**32** (1.04 +/- 0.03)
Summer 15	**48** (0.967 +/- 0.14)	**280** (0.983 +/- 0.1)	**14** (1.03 +/- 0.04)	**49** (1.01 +/- 0.05)	**96** (1.03 +/- 0.11)	**2** (1.25 +/-0.03)	**0**
Autumn 15	**15** (1.18 +/- 0.08)	**84** (1.16 +/-0.11)	**15** (1.21 +/- 0.03)	**37** (1.16 +/- 0.06)	**56** (1.16 +/- 0.06)	**269** (1.19+/- 0.16)	**39** (1.18 +/- 0.05)

Table 3: The number of points that have been used for the median calculation used in Figure 10. The median and standard deviation is included in brackets (ng m^{-3}).

a)



b)

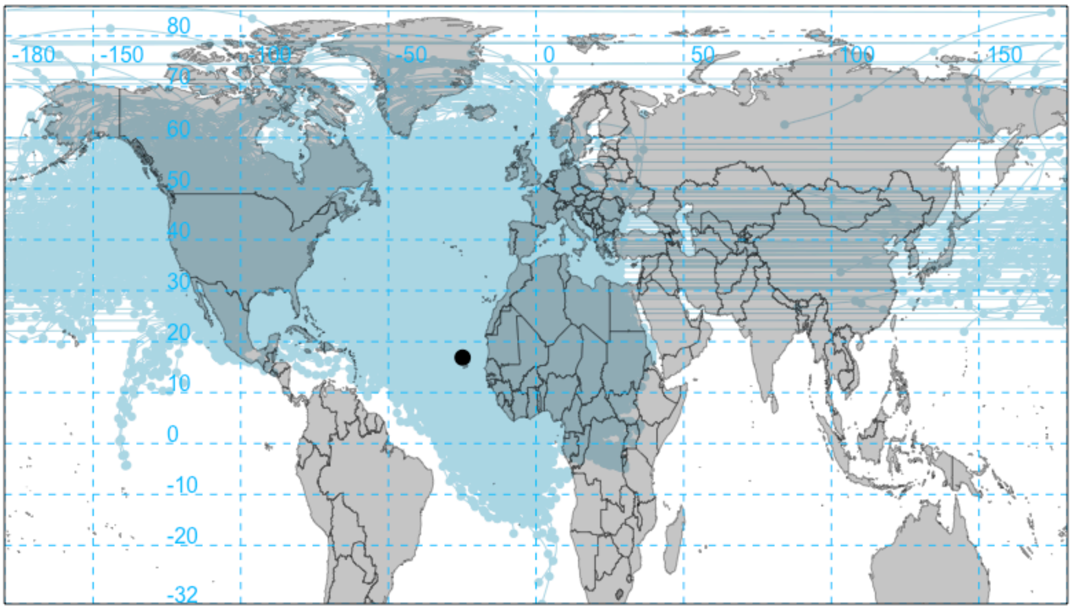


Figure 3a) 10-day back trajectories for the measurement period arriving at ground level to the CVAO run using Hysplit (Carslaw et al., 2012), b) All 10-day back trajectories to the CVAO arriving at 1.5 km.

Carslaw, D.C. and K. Ropkins, (2012). openair — an R package for air quality data analysis. *Environmental Modelling & Software*. Volume 27-28, 52-61.