



Supplement of

Modelling of atmospheric concentrations of fungal spores: a 2-year simulation over France using CHIMERE

Matthieu Vida et al.

Correspondence to: Gilles Foret (gilles.foret@lisa.ipsl.fr) and Gaelle Uzu (gaelle.uzu@ird.fr)

The copyright of individual parts of the supplement might differ from the article licence.

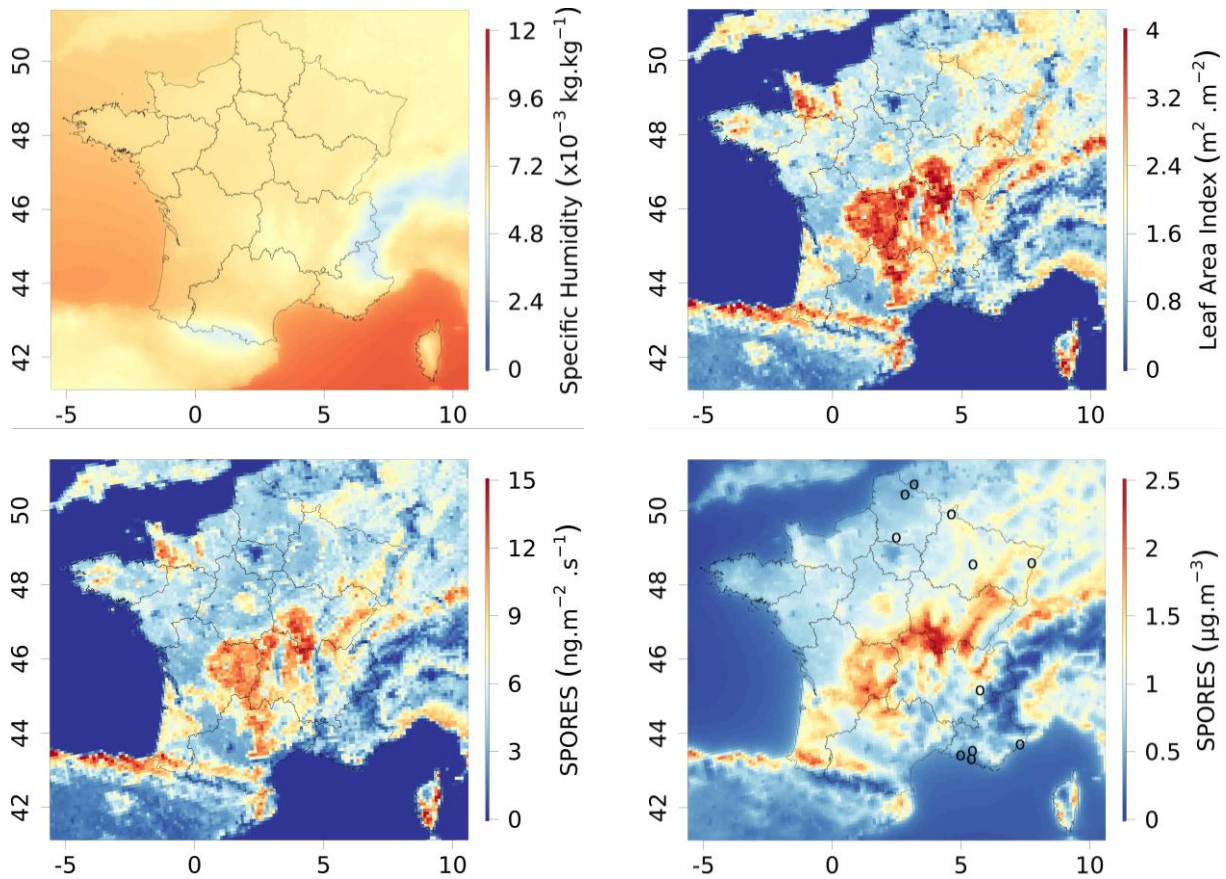


Figure S1 : Biannual mean of specific humidity, leaf area index (LAI), as well as emissions and concentrations of fungal spores modelled with CHIMERE for 2013 and 2014 in France, respectively from top left to bottom right. The circles represent the location of the measurement sites.

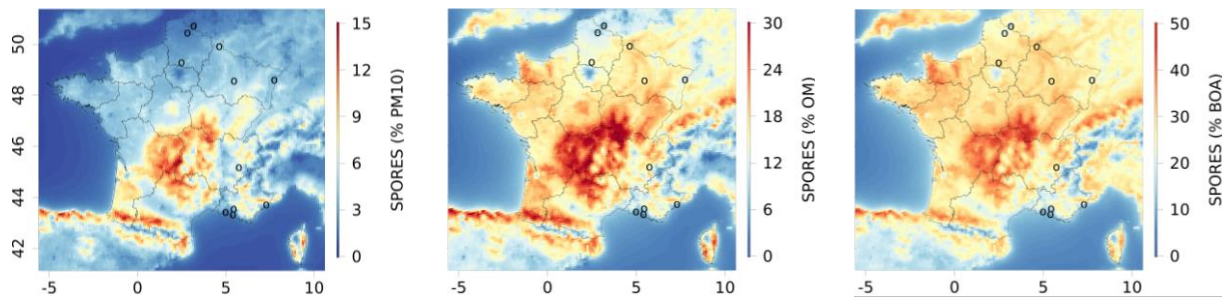


Figure S2 : Biannual contribution of fungal spores organic aerosols to PM₁₀, OM and biogenic organic aerosols (BOA) modelled with CHIMERE for 2013 and 2014 in France, respectively from left to right. The circles represent the location of the measurement sites.

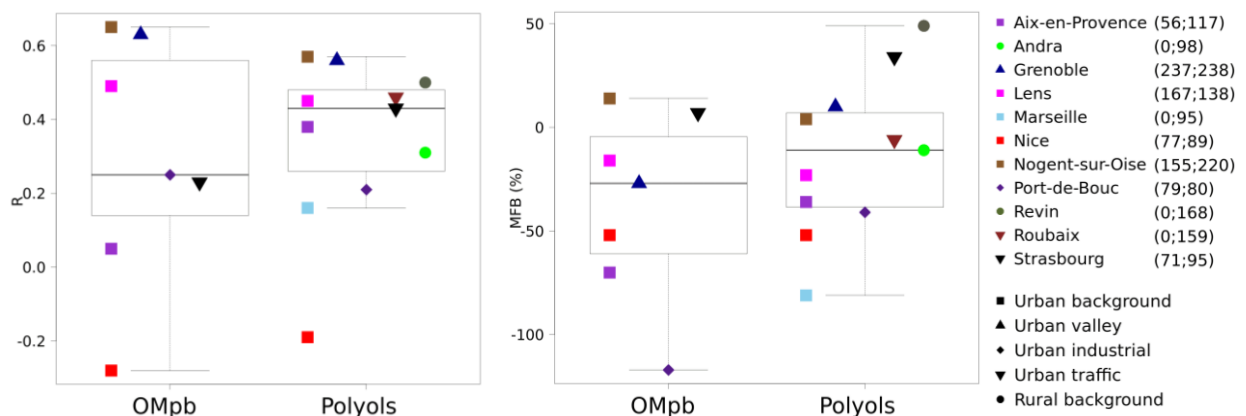


Figure S3 : Comparisons of simulated daily mean concentrations of fungal spore OA to OM from PMF primary biogenic factor (OMpb) and polyols measurements (sum of mannitol and arabitol). Correlations and mean fractional bias (MFB) boxplots are obtained using the scores for each site (1 point per site) and are illustrated respectively at left and right side. The points corresponding to the sites represent the scores obtained on all the data for the site. The simulated polyols values have been obtained by multiplying spore concentrations from CHIMERE by 4.5 %. Ranges between minimal and maximal values, and medians for respectively 7 and 11 sites. The number of daily data for OMpb and polyols are noted next to the station list out of a total of respectively 842 and 1,497 monthly data.

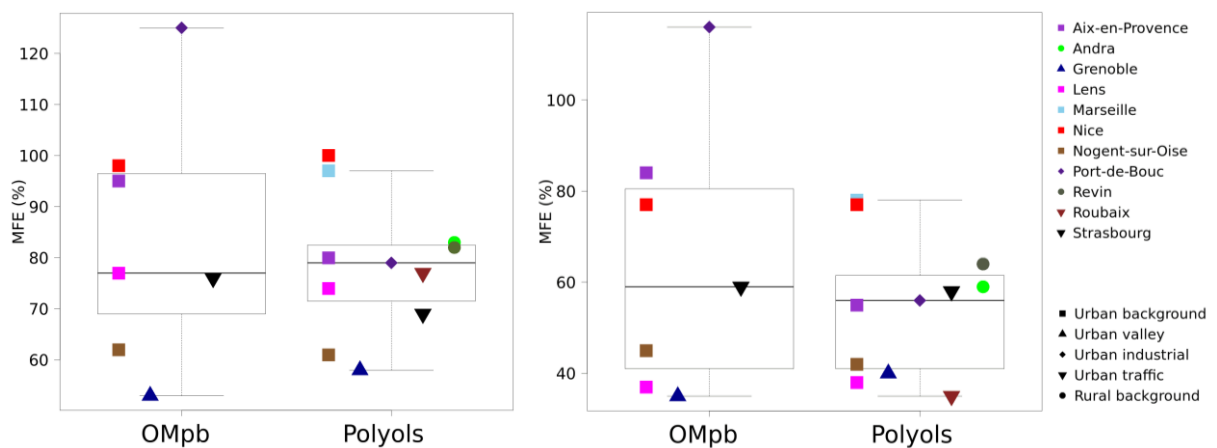


Figure S4 : Comparisons of simulated concentrations of fungal spore OA to OM from PMF primary biogenic factor (OMpb) and polyols measurements (sum of mannitol and arabitol). Mean fractional error (MFE) on daily and monthly data are obtained using the scores for each site (1 point per site) and illustrated at left and right side. The points corresponding to the sites represent the scores obtained on all the data for the site. The simulated polyols values have been obtained by multiplying spore concentrations from CHIMERE by 4.5 %. Ranges between minimal and maximal values, and medians for respectively 7 and 11 sites.

Table S1 : Correlations (Pearson R), Mean fractional bias (MFB), Mean fractional error (MFE) and Root mean square error (RMSE) of biannual comparisons between modelling and measurements using daily and monthly mean data for polyols and OM. The scores concern all the stations, only the stations in the north and east of France + Grenoble (NE French sites) and the Mediterranean stations (Med. French sites).

Stat	Species	All sites	NE French sites	Med. French sites
Pearson R	Polyols daily	+0.43 (-0.19, +0.57) [11]	+0.46 (+0.31, +0.57) [7]	+0.19 (-0.19, +0.38) [4]
	Polyols monthly	+0.60 (-0.51, +0.81) [11]	+0.78 (+0.52, +0.81) [7]	+0.12 (-0.51, +0.53) [4]
	OMpb daily	+0.25 (-0.28, +0.65) [7]	+0.56 (+0.23, +0.65) [4]	+0.05 (-0.28, +0.25) [3]
	OMpb monthly	+0.47 (-0.62, +0.83) [7]	+0.80 (+0.47, +0.83) [4]	-0.26 (-0.62, +0.24) [3]
MFB (%)	Polyols daily	-11 (-81, +49) [11]	+4 (-23, +49) [7]	-47 (-81, -36) [4]
	Polyols monthly	-11 (-78, +53) [11]	+5 (-23, +53) [7]	-46 (-78, -31) [4]
	OMpb daily	-27 (-17, +14) [7]	-5 (-27, +14) [4]	-70 (-117, -52) [3]
	OMpb monthly	-28 (-116, +22) [7]	-2 (-28, +22) [4]	-72 (-116, -72) [3]
MFE (%)	Polyols daily	79 (58, 100) [11]	74 (58, 83) [7]	88 (79, 100) [4]
	Polyols monthly	56 (35, 78) [11]	42 (35, 64) [7]	67 (55, 78) [4]
	OMpb daily	77 (53, 125) [7]	69 (53, 77) [4]	98 (95, 125) [3]
	OMpb monthly	59 (35, 116) [7]	41 (35, 59) [4]	84 (77, 116) [3]
RMSE (µg/m3)	Polyols daily	0.04 (0.02, 0.06) [11]	0.04 (0.02, 0.06) [7]	0.02 (0.02, 0.05) [4]
	Polyols monthly	0.03 (0.01, 0.04) [11]	0.03 (0.01, 0.04) [7]	0.02 (0.02, 0.04) [4]
	OMpb daily	1.01 (0.63, 1.58) [7]	0.85 (0.63, 1.23) [4]	1.16 (1.00, 1.58) [3]
	OMpb monthly	0.77 (0.26, 1.33) [7]	0.55 (0.26, 0.77) [4]	0.91 (0.87, 1.33) [3]

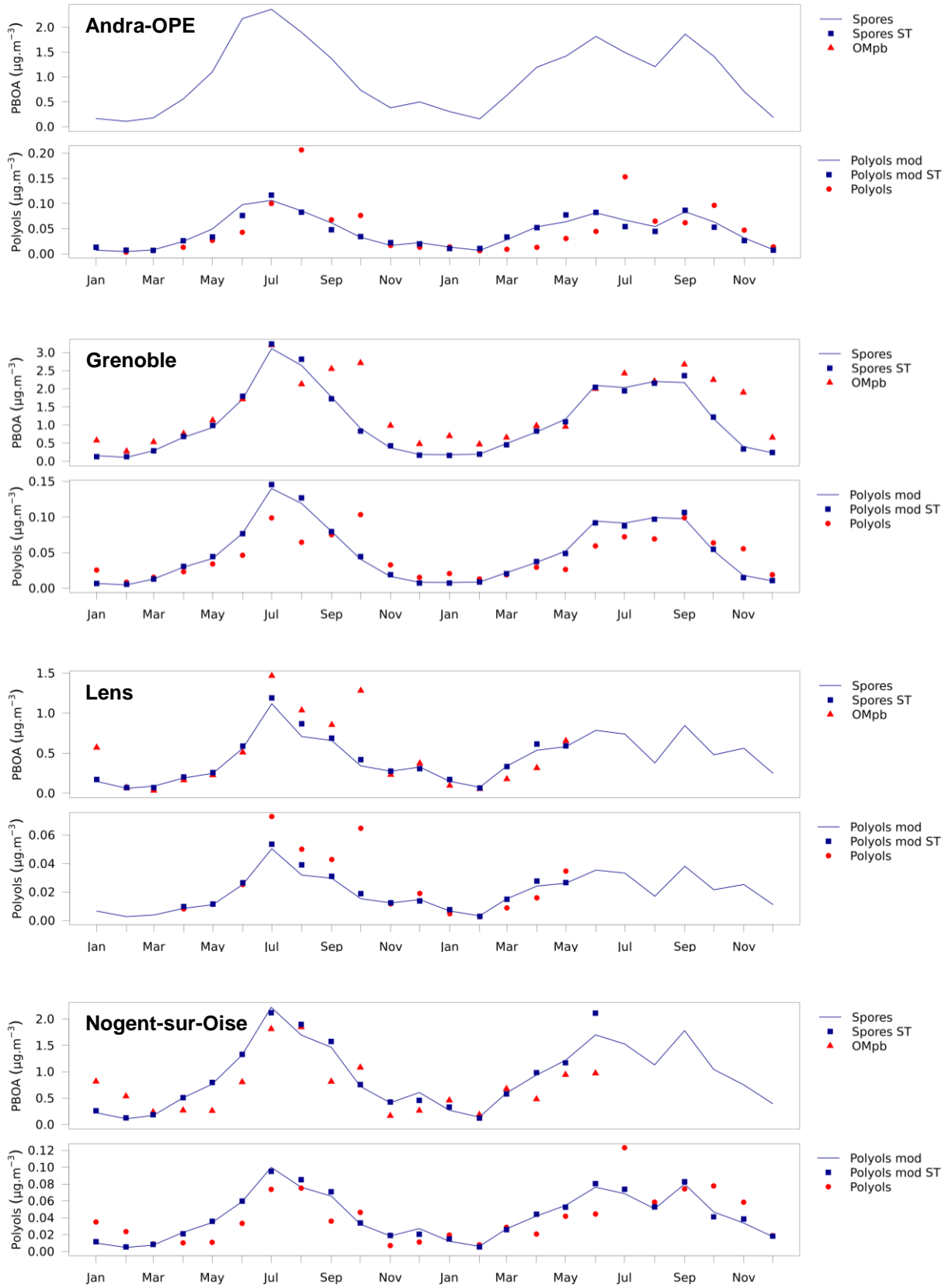


Figure S5 : Monthly PBOA and polyol concentrations over 2013 and 2014 modelled by CHIMERE (blue line), measured at the sites (red dots) and modelled by CHIMERE using the same timebase as the measurements (blue squares). The simulated polyols values have been obtained by multiplying spore concentrations from CHIMERE by 4.5 %. Only the first 4 sites in Northern and Eastern France (NE), along with Grenoble (Andra-OPE, Grenoble, Lens, Nogent-sur-Oise).

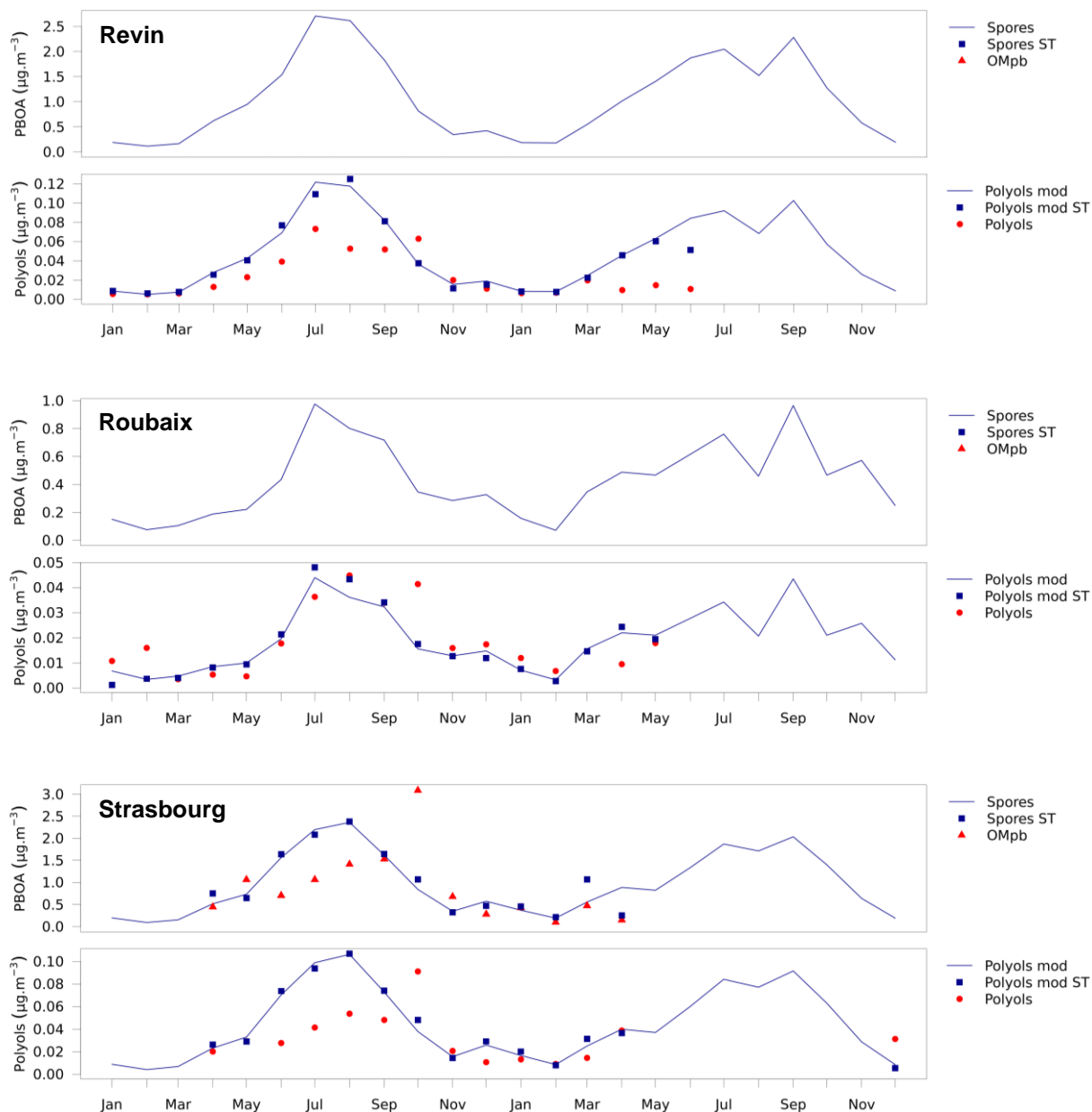


Figure S6 : Monthly PBOA and polyol concentrations over 2013 and 2014 modelled by CHIMERE (blue line), measured at the sites (red dots) and modelled by CHIMERE using the same timebase as the measurements (blue squares). The simulated polyols values have been obtained by multiplying spore concentrations from CHIMERE by 4.5 %. Only the last sites in Northern and Eastern France (NE) (Revin, Roubaix, Strasbourg).

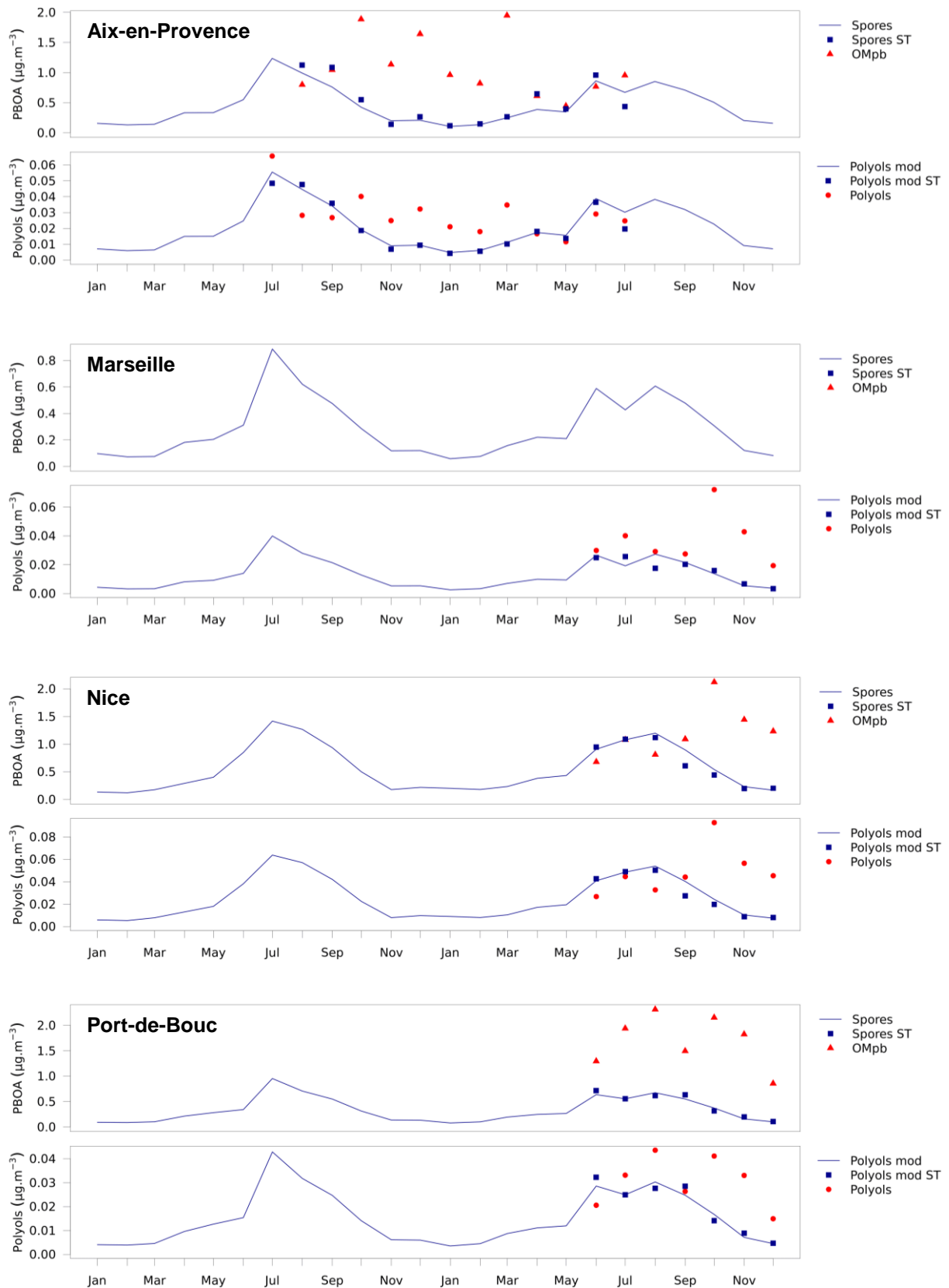


Figure S7 : Monthly PBOA and polyol concentrations over 2013 and 2014 modelled by CHIMERE (blue line), measured at the sites (red dots) and modelled by CHIMERE using the same timebase as the measurements (blue squares). The simulated polyols values have been obtained by multiplying spore concentrations from CHIMERE by 4.5 %. Only the 4 Mediterranean sites (Med.) (Aix-en-Provence, Marseille, Nice, Port-de-Bouc).