

Supplemental information for

Seasonal variations and chemical predictors of oxidative potential (OP) of particulate matter (PM), for 7 urban French sites.

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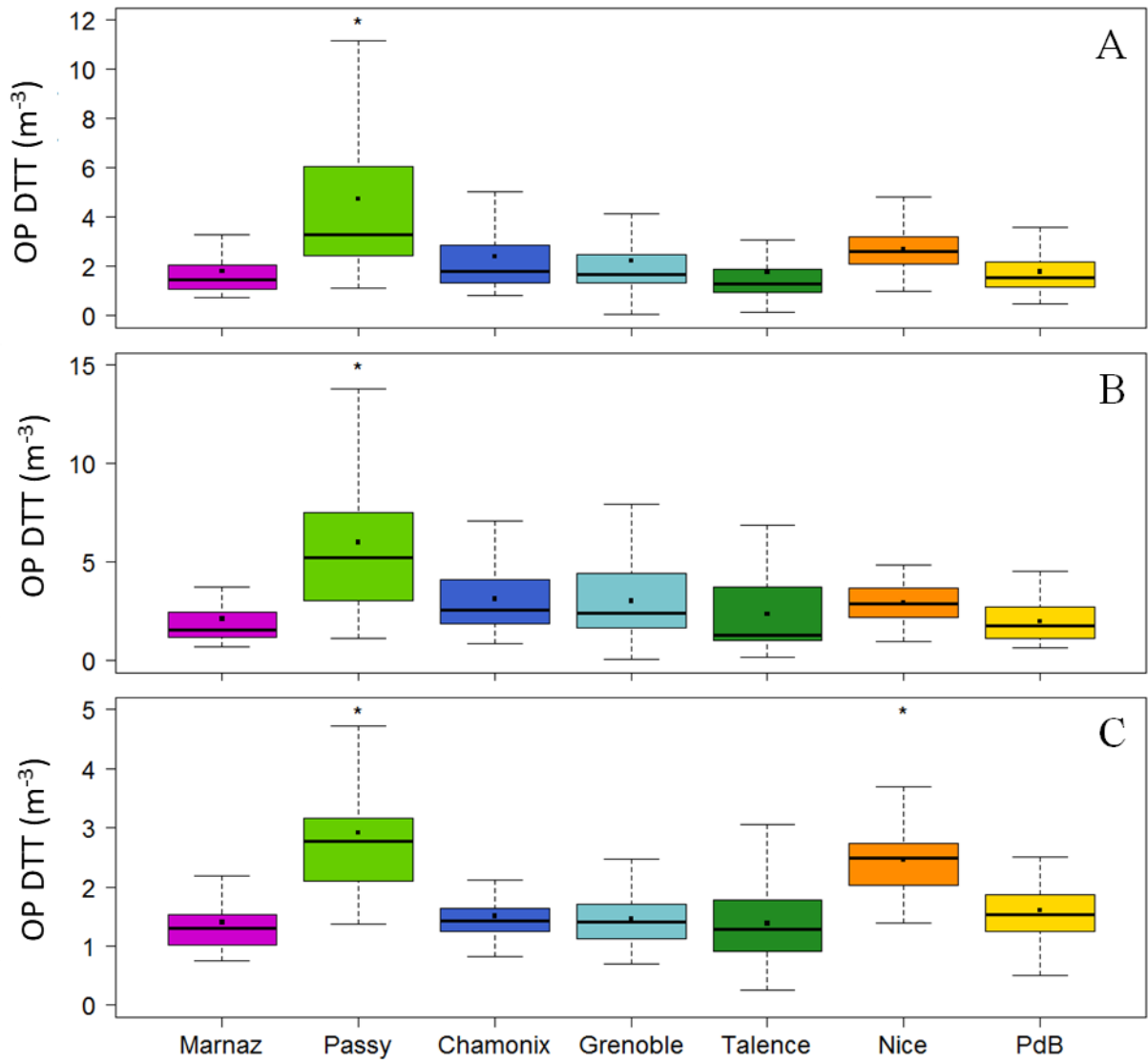


Figure S1: Comparison of the values of OP_{DTT} (m^{-3}) (representation in boxes to whiskers) of PM of 7 study sites. (A: Annual (n= 104, B: cold period (n=52), c= warm period (n=52)). Median (black line), medium (black square). *: P-value < 0.05 (t-test). N= Average number of samples by site.

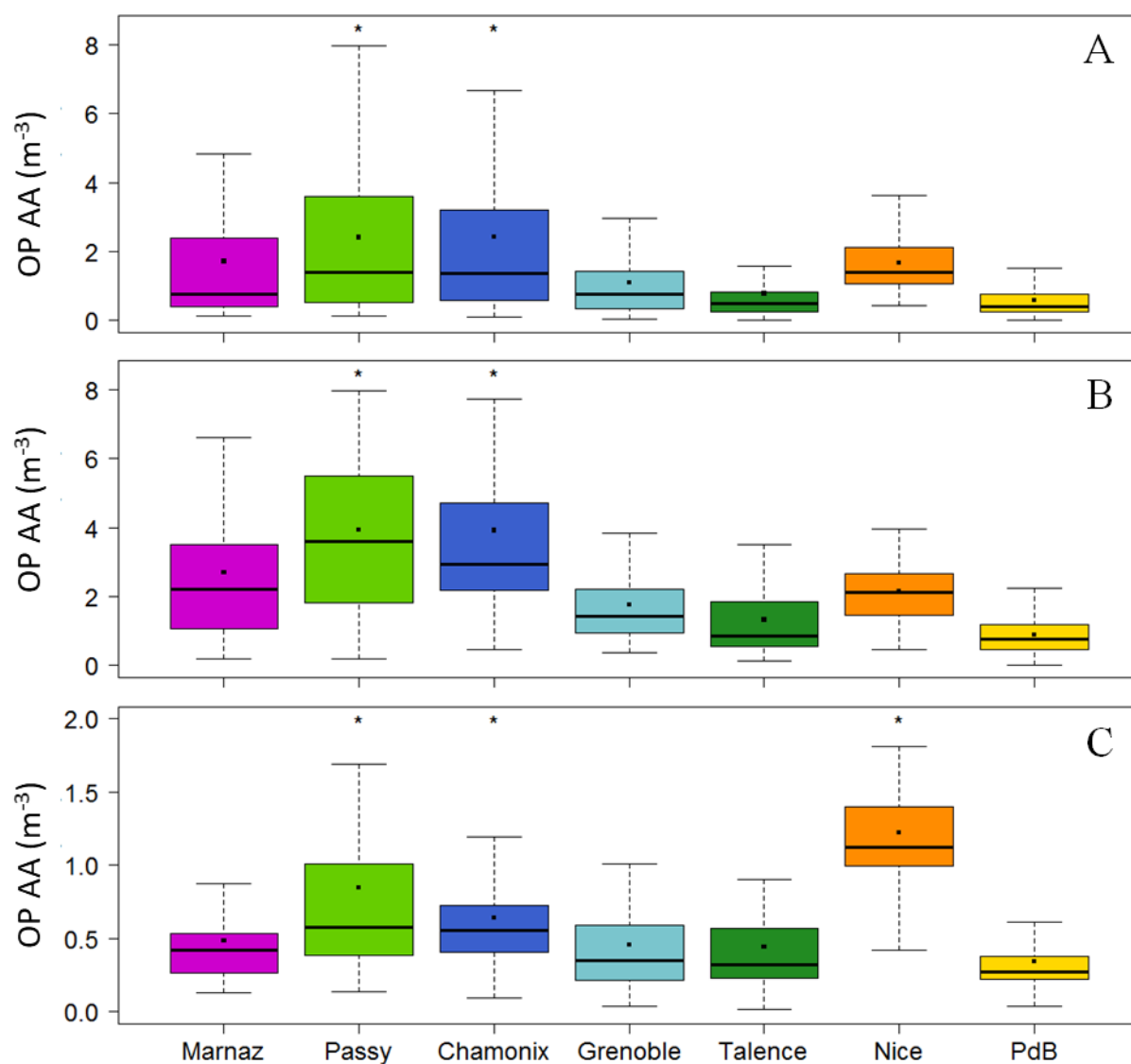


Figure S2: Comparison of the values of OP_{AA} (m^{-3}) (representation in a box to whiskers) of PM of 7 study sites. (A: Annual (n=101), B: cold period (n=49), C: warm period (n=52)). Median (black line), medium (black square). *: P- value < 0.05 (t-test). N= Average number of samples by site.

Table S1: Spearman correlation values (rs) between the OP_{DTT}, OP_{AA} and PM₁₀ and between both OP assay results for the sampling year period.

	OP _{DTT} - PM ₁₀	OP _{AA} - PM ₁₀	OP _{DTT} - OP _{AA}
Marnaz	0.81***	0.63***	0.55***
Passy	0.82***	0.84***	0.74***
Chamonix	0.87***	0.81***	0.82***
Grenoble	0.85***	0.72***	0.81***
Talence	0.69***	0.66***	0.54***
Nice	0.84***	0.52***	0.72***
Port-de-Bouc	0.75***	0.58***	0.66***

*** p value < 0.001

Table S2: Spearman correlations (rs) between PM species and OP (DTT & AA) observed considering the whole year data.

Espèces chimiques	Marnaz			Passy			Chamonix			Grenoble			Talence			Nice			Port-de-Bouc		
	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀
Cl ⁻	0.59***	0.60***	0.68***	0.66***	0.83***	0.85***	0.68***	0.73***	0.76***	0.43***	0.53***	0.53***	-0.38***	-0.23**	-0.22*						
NO ₃ ⁻	0.65***	0.59***	0.77***	0.71***	0.74***	0.84***	0.61***	0.59***	0.73***	0.55***	0.58***	0.74***	0.37***	0.45***	0.69***	0.43***		0.56***	0.34***	0.53***	0.61***
SO ₄ ²⁻	0.25*	-0.34***	0.19.	0.42***		0.30**	0.34***		0.37***	0.40***	0.19*	0.65***			0.27**	0.35***		0.55***	0.42***	0.16.	0.62***
Na ⁺	0.24*	0.26*		0.50***	0.45***	0.52***	0.47***	0.42***	0.55***			0.33***	-0.37***	-0.41***	-0.20.		-0.27**	0.19*		-0.17.	
NH ₄ ⁺	0.47***		0.48***	0.53***	0.24*	0.55***	0.38***	0.25*	0.48***	0.41***	0.26**	0.65***	0.31**	0.44***	0.46***	0.37***		0.58***	0.39***	0.35***	0.67***
K ⁺	0.60***	0.74***	0.74***	0.75***	0.84***	0.87***	0.83***	0.85***	0.85***	0.77***	0.79***	0.79***	0.49***	0.59***	0.79***	0.66***	0.65***	0.64***	0.32***	0.44***	0.49***
Mg ²⁺	0.32**		0.25*	0.39***		0.23*	0.56***	0.30**	0.57***	0.30***	0.24**	0.53***	-0.37***	-0.40***	-0.20.	0.26**		0.42***	0.16.		
Ca ²⁺	0.43***		0.25*	0.47***		0.25*	0.53***	0.24*	0.52***	0.48***	0.30***	0.70***	0.43***	0.31**	0.61***	0.68***	0.41***	0.52***	0.40***		0.39***
Al		-0.25*		0.19.			0.19.		0.18.	0.41***	0.24**	0.56***	0.34***		0.35***			0.31***			0.26***
As	0.62***	0.31**	0.54***	0.56***	0.46***	0.46***	0.62***	0.44***	0.62***	0.44***	0.50***	0.44***	0.61***	0.79***	0.79***	0.74***	0.43***	0.78***			0.16.
Ba	0.67***		0.40***	0.66***	0.23*	0.34***	0.68***	0.47***	0.63***	0.58***	0.51***	0.66***	0.60***	0.52***	0.80***	0.74***	0.79***	0.57***	0.67***	0.43***	0.64***
Cd	0.51***	0.68***	0.70***	0.54***	0.53***	0.51***	0.64***	0.64***	0.71***	0.71***	0.69***	0.73***	0.58***	0.81***	0.73***	0.65***	0.58***	0.61***	0.35***	0.45***	0.34***
Ce	0.56***		0.42***	0.56***		0.30**	0.50***	0.31*	0.51***	0.67***	0.56***	0.75***	0.47***	0.42***	0.52***	0.34***	0.20*	0.46***	0.38***	0.16.	0.48***
Cr	0.56***	0.29**	0.35***	0.45***		0.25*	0.55***	0.35***	0.46***	0.49***	0.55***	0.45***	0.63***	0.64***	0.83***	0.66***	0.54***	0.53***		0.25**	
Cu	0.80***	0.45***	0.58***	0.79***	0.47***	0.55***	0.87***	0.76***	0.78***	0.77***	0.73***	0.71***	0.68***	0.62***	0.73***	0.73***	0.89***	0.47***	0.74***	0.68***	0.50***
Fe	0.44***		0.24*	0.67***	0.19.	0.47***	0.71***	0.48***	0.69***	0.76***	0.61***	0.79***	0.57***	0.59***	0.76***	0.72***	0.65***	0.64***	0.42***		
La	0.27**		0.25*	0.41***		0.19.	0.44***	0.23*	0.45***	0.49***	0.34***	0.63***	0.32**	0.33**	0.43***	0.52***	0.18*	0.65***	0.22*		
Li	0.38***		0.32**	0.49***		0.24*	0.22*		0.21*	0.50***	0.29**	0.69***	0.50***	0.29**	0.69***	0.50***	0.27**	0.58***	0.21*		0.24*
Mn	0.59***		0.37***	0.60***		0.34***	0.53***	0.22*	0.49***	0.68***	0.56***	0.66***	0.61***	0.50***	0.71***	0.59***	0.34***	0.60***	0.43***		
Mo	0.47***		0.36***	0.53***		0.33**	0.65***	0.38***	0.51***	0.63***	0.51***	0.63***	0.67***	0.65***	0.78***	0.78***	0.53***	0.73***	0.47***	0.27**	0.25**
Ni	0.44***			0.44***			0.44***		0.39***	0.58***	0.44***	0.61***	0.55***	0.42***	0.60***	0.26**		0.40***	0.34***		0.33***
Pb	0.72***	0.34**	0.63***	0.67***	0.43***	0.53***	0.61***	0.42***	0.61***	0.68***	0.61***	0.68***	0.64***	0.76***	0.81***	0.64***	0.68***	0.59***	0.21*	0.28**	0.31***
Rb	0.71***	0.74***	0.85***	0.84***	0.81***	0.92***	0.84***	0.76***	0.87***	0.71***	0.59***	0.82***	0.40***	0.48***	0.51***	0.36***	0.34***	0.44***		0.23*	0.17.
Sb	0.66***	0.37***	0.49***	0.53***	0.22*	0.40***	0.79***	0.66***	0.71***	0.63***	0.59***	0.61***	0.63***	0.72***	0.62***	0.71***	0.82***	0.52***	0.72***	0.80***	0.68***
Sn	0.50***	0.22*	0.41***	0.68***	0.34**	0.47***	0.70***	0.70***	0.75***	0.77***	0.73***	0.76***	0.69***	0.71***	0.64***	0.76***	0.82***	0.57***	0.75***	0.58***	0.56***
Sr	0.45***		0.24*				0.55***	0.29**	0.52***	0.39***	0.24**	0.56***			0.35***	0.54***	0.32***	0.50***	0.43***		0.45***
Ti	0.37***	-0.27*		0.38***		0.18.	0.36***		0.27**	0.41***	0.43***	0.48***	0.34**		0.46***	0.59***	0.28**	0.55***	0.21*		0.23*
V		-0.30**			-0.28*			-0.28**		0.30***		0.47***	0.34***		0.30**	0.17.	-0.28**	0.35***	0.31***		0.29**
Zn	0.75***	0.51***	0.71***	0.79***	0.53***	0.73***	0.84***	0.66***	0.77***	0.62***	0.55***	0.59***	0.54***	0.59***	0.69***	0.74***	0.69***	0.68***	0.65***	0.49***	0.51***
EC	0.67***	0.89***	0.74***	0.84***	0.89***	0.91***	0.82***	0.93***	0.84***	0.82***	0.89***	0.74***	0.64***	0.74***	0.75***	0.66***	0.86***	0.47***	0.77***	0.78***	0.65***
OC	0.75***	0.82***	0.83***	0.76***	0.92***	0.94***	0.83***	0.87***	0.94***	0.86***	0.78***	0.93***	0.70***	0.75***	0.90***	0.71***	0.83***	0.63***	0.71***	0.79***	0.77***
MSA		-0.52***	-0.19.	-0.29**	-0.53***	-0.45***	0.27**	-0.53***	-0.32**		-0.35***		-0.23*	-0.42***	-0.33**		-0.37***	0.20*		-0.27**	
Oxalate		-0.31**								0.33***	0.26**	0.54***	0.20.		0.27*	0.37***		0.57***	0.32***	0.19*	0.29**
Σ3 Polyols	-0.28**	0.59***	-0.44***		-0.27*	-0.24*		-0.33***	-0.27**		-0.19*		0.37***	0.27**	0.20.	0.16.	0.32***		0.22*		
Σ3 Monosaccharides	0.48***	0.90***	0.65***	0.71***	0.91***	0.87***	0.74***	0.94***	0.82***	0.66***	0.80***	0.61***	0.41***	0.70***	0.60***	0.31***	0.62***	0.18.	0.26**	0.65***	0.33***
Σ16 PAHs	0.48***	0.82***	0.63***	0.70***	0.86***	0.83***	0.77***	0.92***	0.81***	0.64***	0.81***	0.54***	nd	nd	nd	0.47***	0.69***	0.30**	0.45***	0.67***	0.41***
Σ30 Alkanes	0.57***	0.32**	0.57***	0.70***	0.78***	0.86***	0.63***	0.61***	0.74***	nd	nd	nd	nd	nd	nd	0.50***	0.68***	0.28**	0.35***	0.53***	0.41***
Σ15 Methyl-PAHs	0.48***	0.85***	0.65***	0.69***	0.92***	0.86***	0.67***	0.87***	0.74***	nd	nd	nd	nd	nd	nd	0.43***	0.72***	0.24**	0.48***	0.68***	0.36***
Σ7 PASHs	0.44***	0.77***	0.62***	0.67***	0.82***	0.75***	0.61***	0.78***	0.71***	nd	nd	nd	nd	nd	nd	0.32**	0.55***		nd	nd	nd
Σ10 Hopanes	0.58***	0.62***	0.66***	0.73***	0.88***	0.85***	0.66***	0.67***	0.74***	nd	nd	nd	nd	nd	nd	0.47***	0.76***	0.22*	0.46***	0.60***	0.43***
Σ14 Methoxyphenols	0.48***	0.87***	0.62***	0.64***	0.89***	0.85***	0.72***	0.93***	0.79***	nd	nd	nd	nd	nd	nd	0.33***	0.65***	0.22*	0.34***	0.70***	0.42***

$r_s \geq 0.60$ in bold and red ; $r_s \geq 0.60$ in bold for PM species vs PM₁₀.

*** p < 0.001 level, ** p<0.01 level, * p<0.05 level, p<0.10 level; nd= Not determined (no data available).

Table S3 : Spearman correlations (rs) between PM species and OP (DTT & AA) observed considering the cold period.

Species	Marnaz			Passy			Chamonix			Grenoble			Talence			Nice			Port-de-Bouc		
	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀
Cl ⁻	0.67***	0.76***	0.76***	0.67***	0.82***	0.82***	0.71***	0.79***	0.77***	0.36**	0.53***	0.37**	-0.35*		-0.30.						
NO ₃ ⁻	0.69***	0.66***	0.88***	0.69***	0.77***	0.87***	0.66***	0.63***	0.76***	0.50***	0.51***	0.65***	0.31*	0.60***	0.82***	0.70***	0.51***	0.82***	0.37**	0.36**	0.76***
SO ₄ ²⁻	0.59***		0.48***	0.64***		0.61***	0.64***	0.48***	0.68***	0.44***		0.63***			0.49**	0.50***		0.65***			0.57***
Na ⁺				0.38**		0.36**	0.46***	0.46***	0.50***					-0.37*	-0.43*	-0.33.		0.34*	-0.27.	-0.38**	-0.34*
NH ₄ ⁺	0.73***	0.30*	0.73***	0.59***	0.36*	0.69***	0.48***	0.36**	0.62***	0.45***		0.65***	0.35*	0.54**	0.72***	0.46***	0.24.	0.63***	0.28*	0.27.	0.64***
K ⁺	0.82***	0.81***	0.90***	0.87***	0.88***	0.92***	0.86***	0.87***	0.94***	0.83***	0.80***	0.85***	0.60***	0.84***	0.89***	0.75***	0.70***	0.83***	0.55***	0.57***	0.65***
Mg ²⁺	0.26.			0.43**		0.24.	0.79***	0.66***	0.74***	0.28*	0.22.	0.39**	-0.44**	-0.38*	-0.30.	0.50***	0.27.	0.61***			
Ca ²⁺	0.43**		0.24.	0.52***		0.36**	0.70***	0.51***	0.58***	0.53***	0.38**	0.65***	0.29.	0.60***	0.73***	0.71***	0.42**	0.60***	0.60***	0.48***	0.52***
Al		-0.41**								0.35**	0.26.	0.40**							0.41**	0.30*	0.48***
As	0.64***	0.44**	0.58***	0.57***	0.50**	0.46***	0.64***	0.54***	0.61***	0.33*	0.36**	0.31*	0.52**	0.77***	0.78***	0.80***	0.57***	0.75***	0.32*	0.39**	0.34*
Ba	0.66***		0.32*	0.69***	0.29.	0.40**	0.77***	0.61***	0.69***	0.50***	0.50***	0.48***	0.49**	0.75***	0.87***	0.77***	0.70***	0.66***	0.70***	0.67***	0.72***
Cd	0.68***	0.74***	0.79***	0.49***	0.47**	0.47***	0.54***	0.59***	0.66***	0.66***	0.53***	0.70***	0.59***	0.84***	0.83***	0.59***	0.58***	0.60***	0.59***	0.65***	0.51***
Ce	0.53***		0.32*	0.71***	0.46**	0.48***	0.48***	0.36**	0.44***	0.59***	0.51***	0.63***	0.52**	0.51**	0.57***	0.26.		0.36**	0.53***	0.51***	0.64***
Cr	0.54***	0.25.	0.26.	0.52***		0.29*	0.50***	0.30*	0.41**	0.29*		0.72***	0.56***	0.69***	0.82***	0.80***	0.77***	0.68***	0.34*	0.43**	0.30*
Cu	0.82***	0.48***	0.60***	0.84***	0.52**	0.63***	0.85***	0.74***	0.76***	0.74***	0.71***	0.72***	0.59***	0.81***	0.86***	0.74***	0.84***	0.59***	0.85***	0.86***	0.53***
Fe	0.29*			0.68***		0.54***	0.74***	0.59***	0.73***	0.74***	0.61***	0.73***	0.48**	0.71***	0.82***	0.74***	0.62***	0.66***	0.68***	0.60***	0.37**
La				0.55***	0.38*	0.35**	0.52***	0.36**	0.44***	0.45***	0.33*	0.50***			0.32.	0.37*	0.53***	0.37**	0.60***	0.38**	0.37**
Li	0.25.		0.23.	0.57***	0.35*	0.31*	0.30*			0.54***	0.32*	0.64***	0.33.	0.33.	0.63***	0.44***	0.48***	0.48***	0.39**	0.40**	0.38**
Mn	0.62***		0.35*	0.73***	0.32.	0.55***	0.65***	0.42**	0.53***	0.56***	0.44***	0.49***	0.40*	0.62***	0.76***	0.58***	0.41**	0.56***	0.67***	0.61***	0.40**
Mo	0.42**		0.26.	0.58***		0.35*	0.62***	0.39**	0.52***	0.61***	0.44***	0.56***	0.61***	0.71***	0.79***	0.86***	0.71***	0.82***	0.69***	0.70***	0.55***
Ni	0.45**			0.47***		0.33*	0.56***	0.37**	0.56***	0.51**	0.56***	0.57***	0.53**	0.56***	0.69***	0.77***	0.47***	0.77***	0.24.	0.24.	0.25.
Pb	0.74***	0.35*	0.63***	0.69***	0.45**	0.58***	0.64***	0.48***	0.67***	0.54***	0.43***	0.56***	0.53**	0.71***	0.87***	0.64***	0.60***	0.65***	0.44**	0.46***	0.57***
Rb	0.76***	0.82***	0.88***	0.89***	0.83***	0.92***	0.81***	0.79***	0.87***	0.77***	0.69***	0.84***	0.55***	0.47**	0.61***	0.39**	0.48***	0.34*	0.42**	0.38**	
Sb	0.71***	0.30*	0.53***	0.66***	0.33*	0.52***	0.77***	0.58***	0.69***	0.62***	0.52***	0.63***	0.66***	0.86***	0.86***	0.75***	0.84***	0.61***	0.92***	0.90***	0.72***
Sn	0.51***	0.25.	0.51***	0.68***		0.35**	0.84***	0.90***	0.87***	0.74***	0.66***	0.72***	0.65***	0.78***	0.74***	0.84***	0.85***	0.70***	0.94***	0.87***	0.67***
Sr	0.47***						0.74***	0.55***	0.61***	0.45***	0.39**	0.53***				0.31.	0.34*	0.57***	0.41**	0.30*	0.46***
Ti	0.37**			0.42**		0.27*	0.47***		0.29*	0.24.	0.25.	0.32*	0.29.	0.53**	0.75***	0.60***	0.27*	0.54***	0.56***	0.46***	0.52***
V			-0.25.	0.31*						0.30*		0.43***	0.41*	0.34*	0.49**	0.56***		0.65***			0.31*
Zn	0.77***	0.46***	0.67***	0.84***	0.58***	0.83***	0.87***	0.74***	0.85***	0.52***	0.43***	0.47***	0.40*	0.65***	0.79***	0.75***	0.72***	0.70***	0.80***	0.78***	0.63***
EC	0.79***	0.86***	0.87***	0.87***	0.84***	0.93***	0.85***	0.87***	0.90***	0.83***	0.86***	0.80***	0.67***	0.87***	0.83***	0.76***	0.89***	0.68***	0.88***	0.88***	0.70***
OC	0.82***	0.89***	0.95***	0.81***	0.92***	0.96***	0.84***	0.91***	0.97***	0.89***	0.86***	0.94***	0.64***	0.88***	0.96***	0.81***	0.88***	0.87***	0.89***	0.91***	0.84***
MSA	0.39**		0.43**	0.24.			0.36**	0.24.	0.32*	0.55***	0.36**	0.64***				0.31.	0.57***	0.25.	0.62***	0.24.	0.50***
Oxalate	0.32*			0.49***		0.55***	0.35**	0.26.	0.36**	0.42**	0.32*	0.55***				0.34*	0.50***	0.30*	0.64***	0.35*	0.37**
Σ3 Polyols		0.54***	-0.41**	0.33*						0.33*		0.32*				-0.31.			0.46***	0.33*	
Σ3 Monosaccharides	0.62***	0.95***	0.80***	0.81***	0.86***	0.93***	0.79***	0.92***	0.90***	0.68***	0.82***	0.60***	0.58***	0.85***	0.73***	0.37**	0.67***	0.42**	0.66***	0.79***	0.59***
Σ16 PAHs	0.53***	0.82***	0.70***	0.78***	0.79***	0.84***	0.77***	0.87***	0.86***	0.48***	0.67***	0.38**	nd	nd	nd	0.46***	0.69***	0.47***	0.55***	0.62***	0.51***
Σ30 Alkanes	0.76***	0.77***	0.86***	0.73***	0.76***	0.88***	0.63***	0.72***	0.73***	nd	nd	nd	nd	nd	nd	0.59***	0.68***	0.47***	0.48***	0.67***	0.44**
Σ15 Methyl-PAHs	0.58***	0.87***	0.78***	0.72***	0.85***	0.88***	0.56***	0.66***	0.68***	nd	nd	nd	nd	nd	nd	0.41**	0.71***	0.37**	0.63***	0.75***	0.49***
Σ7 PASHs	0.47***	0.69***	0.65***	0.59***	0.68***	0.59***	0.49***	0.54***	0.64***	nd	nd	nd	nd	nd	nd	0.31*	0.51***	0.25.	nd	nd	nd
Σ10 Hopanes	0.58***	0.55***	0.61***	0.71***	0.72***	0.85***	0.67***	0.67***	0.70***	nd	nd	nd	nd	nd	nd	0.46***	0.69***	0.31*	0.48***	0.61***	0.36**
Σ14 Methoxyphenols	0.53***	0.91***	0.70***	0.72***	0.87***	0.86***	0.71***	0.89***	0.84***	nd	nd	nd	nd	nd	nd	0.34*	0.63***	0.31*	0.51***	0.65***	0.52***

$r_s \geq 0.60$ in bold and red ; $r_s \geq 0.60$ in bold for PM species vs PM₁₀.

*** p < 0.001 level, ** p<0.01 level, * p<0.05 level, p<0.10 level; nd= Not determined (no data available).

Table S4 : Spearman correlations (rs) between PM species and OP (DTT & AA) observed considering the warm period.

Species	Marnaz			Passy			Chamonix			Grenoble			Talence			Nice			Port-de-Bouc		
	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀	OP DTT	OP AA	PM ₁₀
Cl ⁻	0.41**		0.50***	0.46**	0.55***	0.75***	0.28.		0.53***			0.46***	-0.44***	-0.54***	-0.26*		-0.22.				
NO ₃ ⁻	0.60***	0.43**	0.60***	0.54***	0.52***	0.75***	0.34*		0.60***	0.38**		0.72***	0.31*	0.23.	0.51***			0.31*	0.30*	0.25*	0.37**
SO ₄ ²⁻			0.31*					-0.29.	0.31*	0.55***	0.30*	0.81***	0.29*		0.34*	0.72***	0.24.	0.81***	0.65***	0.39**	0.81***
Na ⁺	0.32*		0.44**	0.37*	0.39*	0.41*	0.39**		0.53***			0.48***	-0.32*	-0.45***				0.25.	0.31*		0.27*
NH ₄ ⁺						0.40*			0.27.	0.54***	0.37**	0.77***	0.29*	0.43***	0.28*	0.57***		0.71***	0.50***	0.30*	0.70***
K ⁺	0.30.		0.33*		0.44**	0.46**	0.57***	0.40**	0.46**	0.43***	0.40**	0.58***	0.45***		0.67***	0.53***		0.62***			
Mg ²⁺	0.66***		0.68***	0.54***		0.39*	0.58***		0.71***	0.39**	0.21.	0.68***	-0.29*	-0.47***		0.42***		0.49***	0.44***		0.40**
Ca ²⁺	0.76***	0.31*	0.69***	0.74***		0.53***	0.58***		0.70***	0.72***	0.49***	0.89***	0.59***	0.34**	0.71***	0.60***	0.52***	0.39**	0.23.		0.47***
Al	0.46**		0.66***	0.38*		0.49**	0.56***		0.65***	0.65***	0.38**	0.84***	0.41**		0.47***			0.52***		-0.25.	
As	0.52***		0.51***	0.32.			0.49***		0.68***				0.69***	0.65***	0.70***	0.68***	0.31*	0.77***			
Ba	0.81***	0.44**	0.66***	0.74***		0.33*	0.79***	0.45**	0.70***	0.45***	0.24.	0.67***	0.70***	0.40**	0.79***	0.62***	0.68***	0.46***	0.61***	0.42***	0.64***
Cd		0.36*	0.30.				0.29.		0.46**	0.50***	0.54***	0.56***	0.65***	0.65***	0.57***	0.63***	0.22.	0.64***			
Ce	0.75***	0.33*	0.77***	0.59***		0.43**	0.67***	0.35*	0.75***	0.73***	0.54***	0.80***	0.47***	0.47***	0.56***	0.43***	0.27*	0.60***	0.22.		0.46***
Cr	0.53***	0.39*	0.46**	0.47**		0.34*	0.71***	0.58***	0.51***	0.24.	0.22.	0.23.	0.72***	0.54***	0.77***	0.54***	0.47***	0.37**			
Cu	0.79***	0.69***	0.60***	0.68***	0.31.		0.77***	0.34*	0.57***	0.81***	0.80***	0.58***	0.75***	0.51***	0.63***	0.59***	0.83***	0.27*	0.55***	0.68***	0.46***
Fe	0.81***	0.45**	0.68***	0.76***		0.54***	0.70***		0.65***	0.84***	0.64***	0.80***	0.65***	0.59***	0.77***	0.63***	0.46***	0.58***	0.23.		
La	0.57***		0.67***	0.56***		0.45**	0.39**		0.58***	0.68***	0.45***	0.82***	0.36**	0.41**	0.50***	0.69***	0.27*	0.79***	0.23.		
Li	0.79***	0.36*	0.71***	0.67***		0.51***	0.55***		0.66***	0.73***	0.50***	0.86***	0.66***	0.38**	0.81***	0.53***	0.26*	0.67***			
Mn	0.80***	0.37*	0.69***	0.73***		0.56***	0.69***		0.76***	0.69***	0.57***	0.65***	0.75***	0.53***	0.78***	0.56***		0.63***	0.29*		
Mo	0.63***	0.63***	0.60***	0.61***		0.37*	0.76***	0.35*	0.54***	0.62***	0.52***	0.59***	0.72***	0.56***	0.72***	0.71***	0.43***	0.62***	0.41***	0.38**	
Ni	0.67**		0.52***	nd	-0.28.		0.63***		0.73***	0.63***	0.46***	0.59***	0.58***	0.43***	0.62***	0.34**		0.40**	0.54***	0.41**	0.55***
Pb	0.71***	0.56***	0.70***	0.56***	0.28*	0.32.	0.59***	0.27.	0.55***	0.65***	0.61***	0.61***	0.72***	0.69***	0.67***	0.57***	0.34**	0.59***			
Rb	0.72***	0.44**	0.82***	0.63***	0.39*	0.78***	0.74***	0.39**	0.76***	0.60***	0.40**	0.74***		0.24.	0.29*		0.22.	0.38***			
Sb	0.60***	0.70***	0.48**				0.61***	0.58***	0.52***	0.57***	0.59***	0.44***	0.64***	0.61***	0.41**	0.49***	0.70***	0.33**	0.47***	0.55***	0.54***
Sn	0.60***	0.73***	0.42**	0.48**			0.37*		0.37*	0.70***	0.66***	0.63***	0.71***	0.55***	0.48***	0.58***	0.72***	0.40**	0.48***	0.46***	0.46***
Sr	0.74***	0.26.	0.66***	0.33*			0.59***		0.67***	0.56***	0.34**	0.75***	0.28*		0.56***	0.45***	0.32*	0.38**	0.45***		0.50***
Ti	0.79***	0.30.	0.69***	0.63***		0.54***	0.74***	0.28.	0.73***				0.44***		0.50***	0.59***	0.35**	0.53***		-0.27*	
V	0.45**		0.39*	0.49**			0.46**		0.51***	0.67***	0.43***	0.73***	0.37**		0.38**	0.39**		0.47***	0.57***	0.46***	0.52***
Zn	0.71***	0.61***	0.75***	0.55***		0.48**	0.72***	0.43**	0.57***	0.53***	0.40**	0.53***	0.62***	0.55***	0.60***	0.68***	0.37**	0.68***	0.48***	0.38**	0.42***
EC	0.64***	0.72***	0.55***	0.67***	0.65***	0.65***	0.44**	0.66***	0.38***	0.68***	0.82***	0.51***	0.66***	0.53***	0.59***	0.51***	0.65***	0.31*	0.65***	0.55***	0.47***
OC	0.75***	0.52***	0.65***	0.42*	0.65***	0.79***	0.54***	0.49***	0.82***	0.77***	0.60***	0.90***	0.80***	0.59***	0.83***	0.54***	0.53***	0.51***	0.54***	0.42***	0.64***
MSA				-0.40.	-0.30.			-0.36*			-0.25*	0.31*	-0.28*		-0.40**	0.38**		0.37**	0.40***		0.28*
Oxalate				0.37*		0.36*		-0.28.		0.32*	0.22.	0.58***	0.23.		0.27	0.33*		0.59***	0.34**	0.22.	0.28*
Σ3 Polyols						-0.34*				0.39**		0.34**	0.39**	0.33*	0.35**		0.32*				
Σ3 Monosaccharides		0.50***	0.28.		0.73***	0.47**		0.64***	0.39**		0.28*								-0.25*		-0.31*
Σ16 PAHs		0.40**	0.30.		0.63***	0.47**	0.31*	0.59***	0.40***	0.26*	0.39**	0.26*	nd	nd	nd	0.36**			0.35**	0.45***	0.28
Σ30 Alkanes	0.46**		0.44**			0.56***	0.37*		0.64***	nd	nd	nd	nd	nd	nd	0.23.	0.45***		0.28*		0.28*
Σ15 Methyl-PAHs	0.27.	0.50**	0.31.	0.34*	0.79***	0.51**		0.64***	0.37*	nd	nd	nd	nd	nd	nd	0.36**	0.45***	0.22.	0.41**	0.44***	
Σ7 PASHs		0.37*	0.30.	0.35*	0.63***	0.41*		0.49***	0.32*	nd	nd	nd	nd	nd	nd	0.22.	0.42***		nd	nd	nd
Σ10 Hopanes	0.51**	0.50**	0.55***	0.49**	0.68***	0.38*	0.38*	0.34*	0.63***	nd	nd	nd	nd	nd	nd	0.28*	0.51***		0.50***	0.27*	0.27*
Σ14 Methoxyphenols		0.41*	0.28.	0.29.	0.73***	0.55***		0.62***	0.37*	nd	nd	nd	nd	nd	nd				0.23.	0.27*	

$r_s \geq 0.60$ in bold and red ; $r_s \geq 0.60$ in bold for PM species vs PM₁₀.

*** p < 0.001 level, ** p<0.01 level, * p<0.05 level, p<0.10 level; nd= Not determined (no data available).

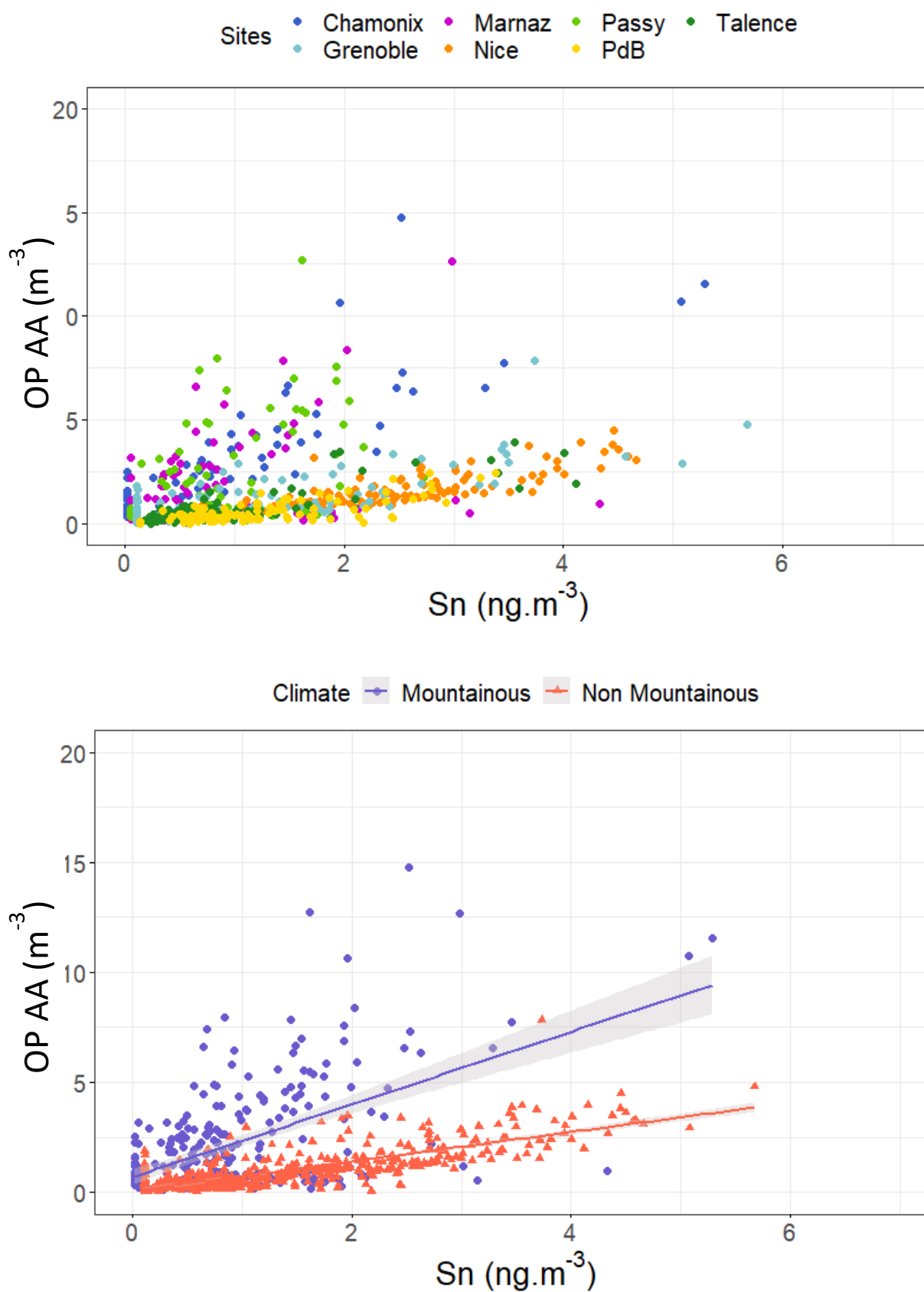


Figure S3: Observed correlations between particulate tin concentrations and OP_{AA} (m⁻³) according the site typology (mountainous vs non-mountainous).

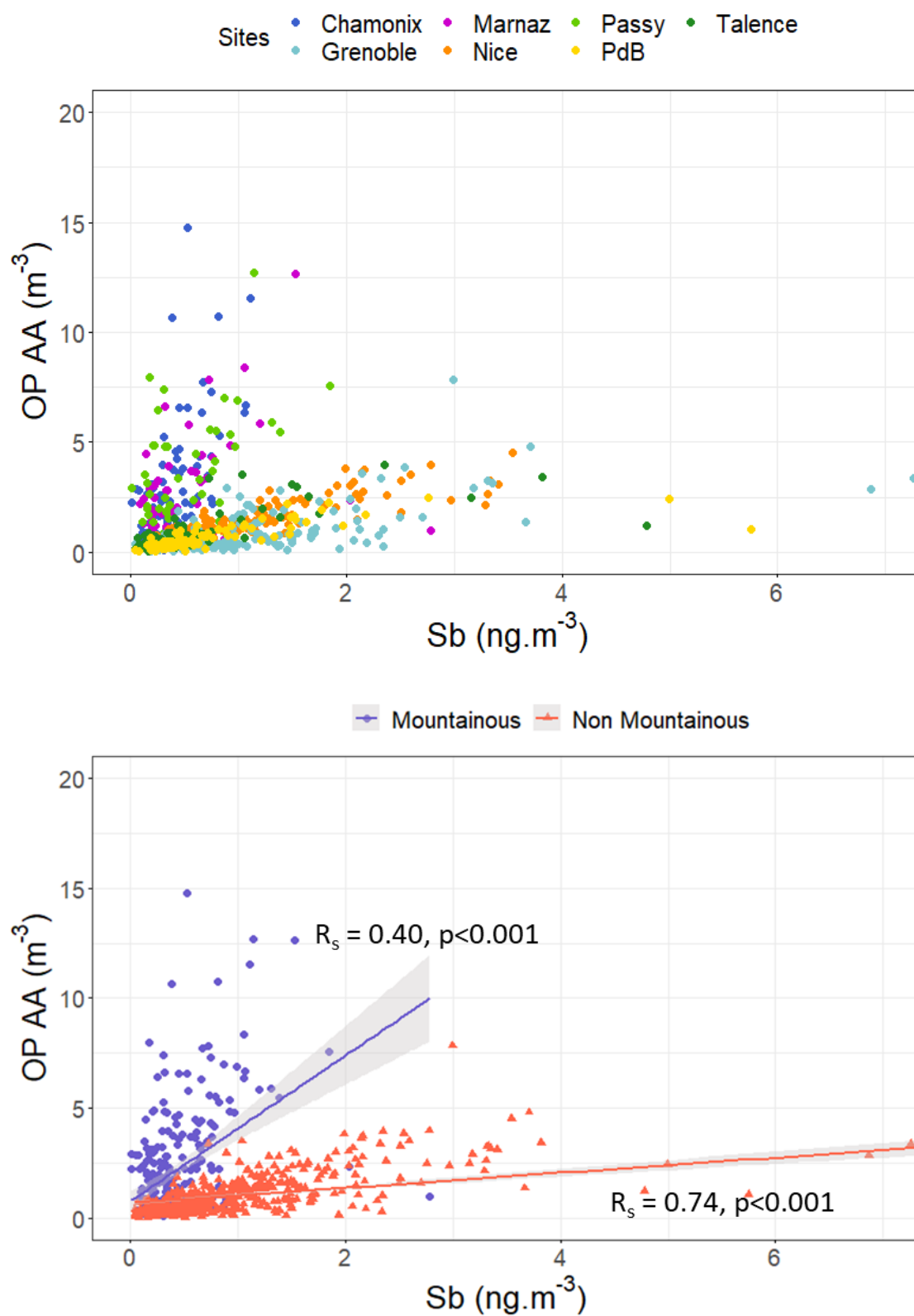


Figure S4: Observed correlations between particulate antimony concentrations and OP_{AA} (m^{-3}) according the site typology (mountainous vs non-mountainous).