

Supporting informations

Figure S1. Rain exclusion devices in the three forests studied: a) *Quercus pubescens* forest at O₃HP, b) *Quercus ilex* at Puechabon and c) *Pinus halepensis* at Fontblanche (according [19]).

a)



b)



c)



Figure S2. Ombrothermic diagrams at a) *Quercus pubescens* forest, b) *Quercus ilex* forest and c) *Pinus halepensis* forest study sites between December 2014 to December 2016. Dotted line and black triangle represent mean monthly temperature (°C) and lines represent mean monthly precipitation (mm) with black circle for ND plots and open circle for AD plots. ND: natural drought and AD: Amplified Drought (according [19])

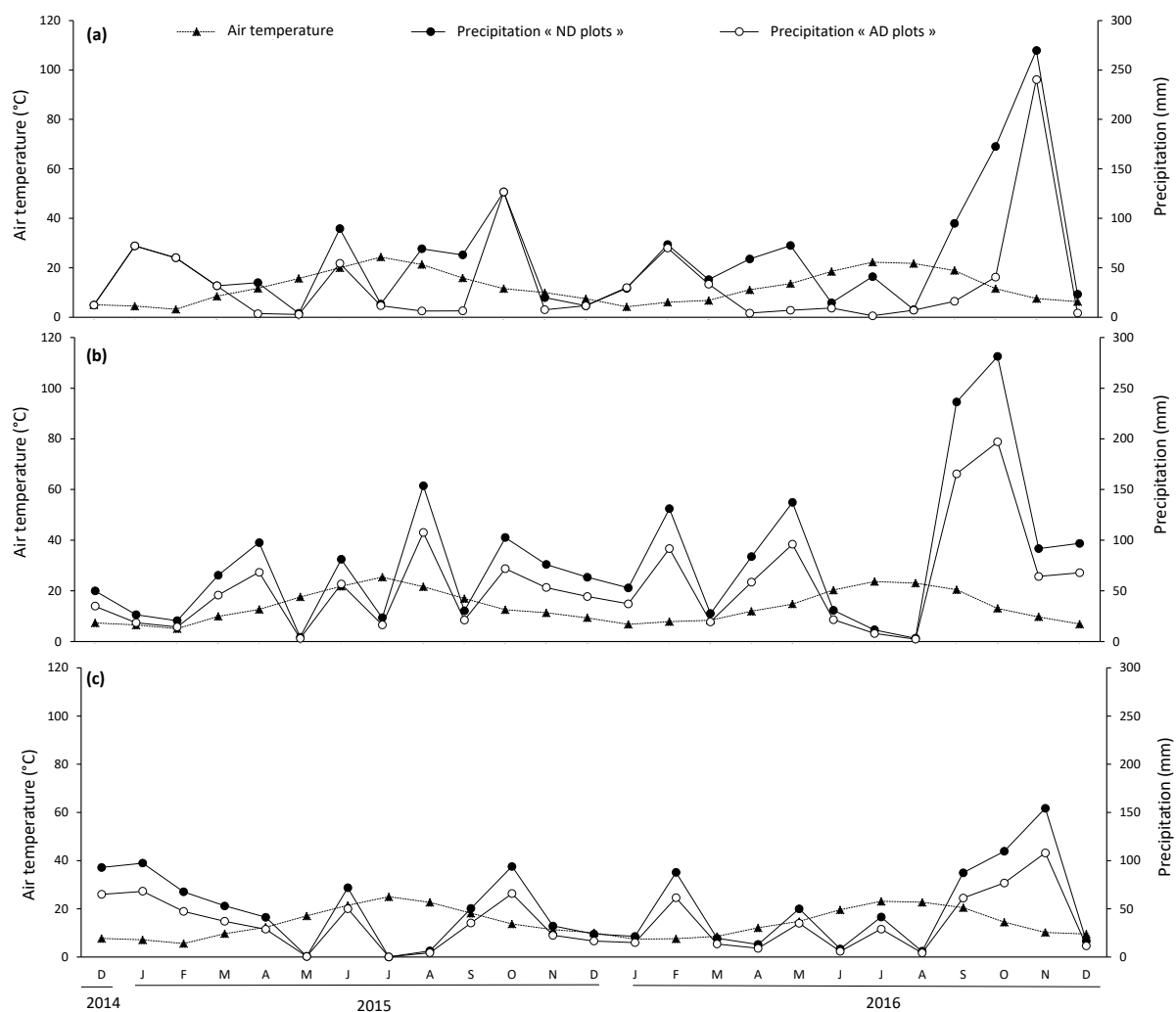


Figure S3. Location of the three forests studied: *Quercus ilex* forest (Puéchabon), *Quercus pubescens* forest (O3HP), and *Pinus halepensis* forest (Font blanche).

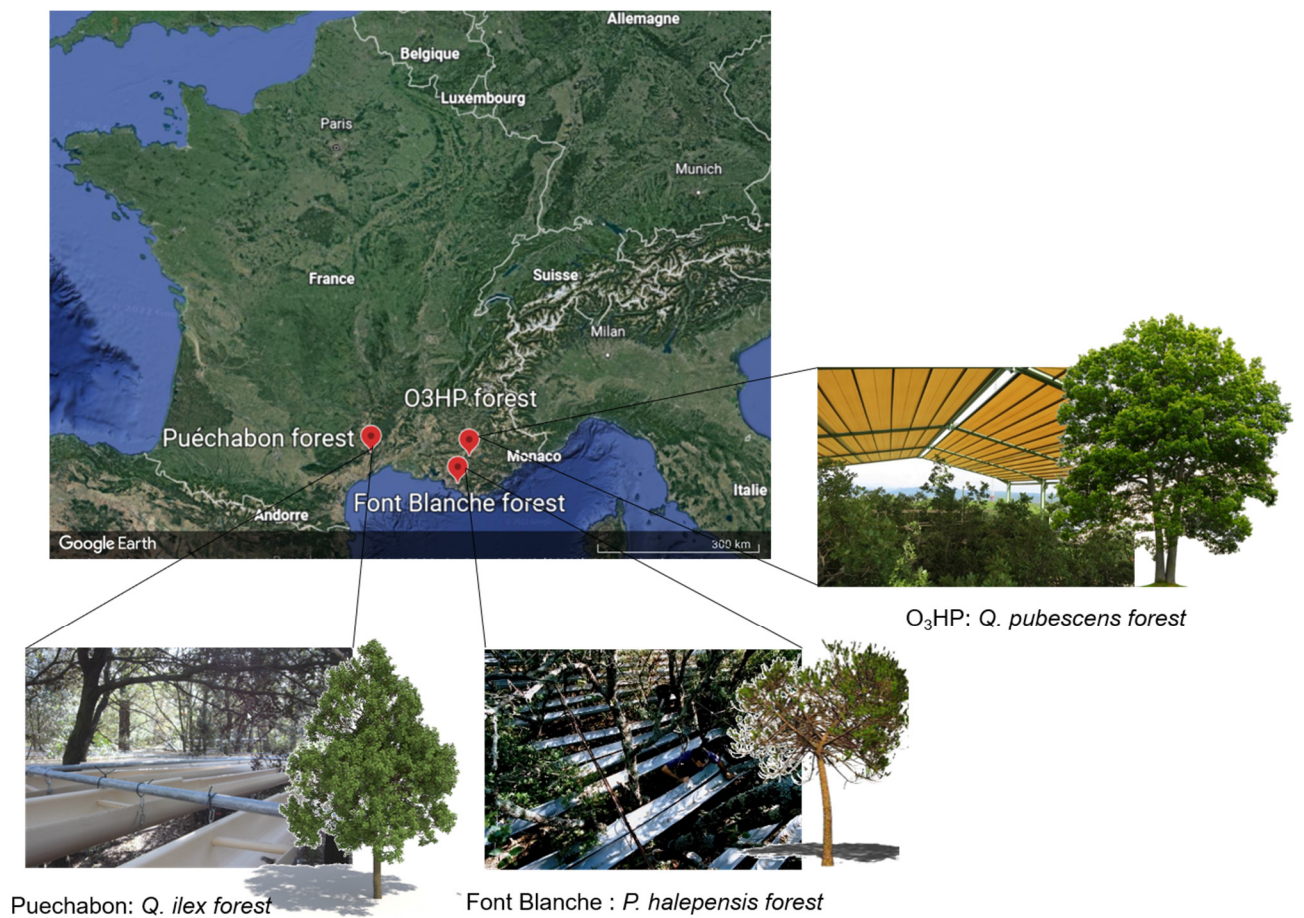


Table S1. Metabolites putatively identified from litter extracts of *Q. ilex* according to litter types (senescent leaves collected in Natural Drought (ND) and Amplified Drought (AD) plots). RT: Retention Time in minutes, VIP: Variable Important in Projection. mSigma is a constructor quality value of the formula determination. The closer the value is to zero, the more accurate the result.

Litter types	VIP	RT (min)	Measured m/z [M+H] ⁺	Measured m/z [M-H] ⁻	Measured molecular formula [M-H] ⁻	Error (PPM)	mSigma	MS/MS, m/z (ESI-)	Putative identification	Ref.
AD	M345T430	7.17	369.1903 [M+Na] ⁺	345.1553	C ₁₆ H ₂₅ O ₈	1.1	9.9	326.9775 270.9846 215.2774 161.0462 101.0239	Unknown glycoside 1	
ND	M373T51	0.85	/	373.1349	C ₁₃ H ₂₅ O ₁₂	0.4	21	NA	Unknown 1	
AD	M615T468	7.8	617.114	615.0987	C ₂₈ H ₂₅ O ₁₆	0.9	9.1	463.0872 301.0348 300.0270	Quercetin-3-O-(6''-O-galloyl)-b-D-glucopyranoside	[44]
AD	M629T496	8.26	631.129	629.1144	C ₂₉ H ₂₅ O ₁₆	1.1	28	477.1025 315.0505 313.0567 169.0141	Isorhamnetin 3-(6''-galloylglucoside)	[44]
AD	M452T367	6.12	/	451.2183 [M+HCOO] ⁻	C ₂₀ H ₃₅ O ₁₁			405.2131 167.1074	Unknown 2	
				405.2131	C ₁₉ H ₃₃ O ₉	-0.3	6.7	167.1074		
AD	M340T388 (isotope)	6.47	341.086	339.0717	C ₁₅ H ₁₅ O ₉	1.5	2.3	177.0192	Aesculin	[45]
ND	M387T49	0.81	/	387.1143 [M+HCOO] ⁻	C ₁₃ H ₂₃ O ₁₃	0.5	11	341.1089 207.0511 179.0550	Disaccharide	
				341.1086	C ₁₂ H ₂₁ O ₁₁	0.9	13.8	161.0459 119.0444 101.0235		

AD	M391T466	7.77	/	391.1037 [M+HCOO] ⁻	C ₁₇ H ₂₇ O ₁₀	2.2	27.5	183.1025	Unknown glycoside 2	
				345.1557	C ₁₆ H ₂₅ O ₈	-0.7	17.0			
AD	M330T66 (isotope)	1.09	/	331.0671	C ₁₃ H ₁₅ O ₁₀	-0.5	21.6	169.0138	galloyl-β-D-glucose	[44]
AD	M619T544	9.07	633.275 [M+Na] ⁺	619.2602	C ₂₈ H ₄₃ O ₁₅	3.6	31.6	399.1301 339.1084 225.0770 195.0663	Unknown 3	
AD	M463T416	6.92	/	463.1822	C ₂₀ H ₃₁ O ₁₂	4.2	25.2	180.9354 166.0657	Unknown (low intensity)	
AD	M399T407	6.78	355.101	399.0934	C ₁₆ H ₁₇ O ₉	-3.9	NA	176.0104	Chlorogenic acid	[46]
				353.0875	C ₁₇ H ₁₉ O ₁	-3.3	23.0	191.0356		[47] [48]
AD	M345T464	7.74	/	345.1554	C ₁₆ H ₂₅ O ₈	0.9	14	183.1022 161.0450 165.0917 119.0350 113.0229 101.0240 85.0293	Unknown glycoside 3	
AD	M429T51	0.85	/	429.1252	C ₁₅ H ₂₅ O ₁₄	1	22.3	NA	Unknown 4	
AD	M391T459	7.64	/	391.1607 [M+HCOO] ⁻	C ₁₇ H ₂₇ O ₁₀	2.2	27.5	183.1025	Unknown glycoside 4	
				345.1554	C ₁₆ H ₂₅ O ₈	0.8	12.3	183.1024 (C ₁₀ H ₁₅ O ₃)		

Table S2. Metabolites putatively identified from litter extracts of *Q. pubescens* according to litter types (se-nescent leaves collected in Natural Drought (ND) and Amplified Drought (AD) plots). RT: Re-tention Time in minutes, VIP: Variable Important in Projection. mSigma is a constructor quality value of the formula determination. The closer the value is to zero, the more accurate the result.

Litter types	VIP	RT (min)	Measured m/z [M+H] ⁺	Measured m/z [M-H] ⁻	Measured molecular formula [M-H] ⁻	Error (PPM)	mSigma	MS/MS, m/z (ESI-)	Putative identification	Ref.
<i>AD</i>	M711T533	8.88	/	711.3964 [M+HCOO] ⁻	C ₃₇ H ₅₉ O ₁₃	-0.5	25.8	503.3385	Arjungenin glycoside isomer 1	[49]
				665.3906	C ₃₆ H ₅₇ O ₁₁	4.6	na			
<i>AD</i>	M243T473	7.87	/	243.1601	C ₁₃ H ₂₃ O ₄	0	11.7	183.1391 117.0379	Unknown 1	
<i>AD</i>	M461T368	6.13	485.1279 [M+Na] ⁺	461.1302	C ₁₉ H ₂₅ O ₁₃	-0.7	11.5	152.0113 108.0215	Unknown 2	
<i>AD</i>	M711T496	8.26	/	711.3965 [M+HCOO] ⁻	C ₃₇ H ₅₉ O ₁₃	-0.9	14.9	/	Arjungenin glycoside isomer 2	[49]
				665.3906	C ₃₆ H ₅₇ O ₁₁	-5.5	425.9			
<i>AD</i>	M427T396	6.59	/	427.1820 [M+HCOO] ⁻	C ₁₇ H ₃₁ O ₁₂	-0.3	8.2	381.1782 299.0799	Unknown Glycoside	
				381.1774	C ₁₆ H ₂₉ O ₁₀	1.9	77.7	235.1193 187.0974 181.0524 144.0465		
<i>AD</i>	M503T633	10.55	/	503.3382	C ₃₀ H ₄₇ O ₆	-0.5	3.9	455.3178 304.9155 174.9552	Oleane triterpene	[50]
<i>AD</i>	M491T429	7.15	515.1897 [M+Na] ⁺	491.1408	C ₂₀ H ₂₇ O ₁₄	-1.6	1.6	293.0887 151.0403	Unknown 3	
<i>AD</i>	M695T600	10.00	/	695.4018 [M+HCOO] ⁻	C ₃₇ H ₅₉ O ₁₂	-1.4	6.9	487.3449	Arjunglucoside II or arjunetin	[49]
				649.3957	C ₃₆ H ₅₇ O ₁₀	-2.7	NA			[51]
<i>AD</i>	M431T383	6.38	/	431.1196	C ₁₈ H ₂₃ O ₁₂	-0.1	11.3	137.0250 93.0346	Unknown 4	
<i>ND</i>	M387T49	0.81	/	387.1144	C ₁₃ H ₂₃ O ₁₃	0.5	11	341.1086 179.0559 119.0349	Disaccharide	[48]
<i>AD</i>	M415T631	10.51	/	415.1320	C ₂₂ H ₂₃ O ₈	0.8	27.6	400.1188 385.9936 341.1028 301.0361	Unknown 5	
<i>ND</i>	M702T383	6.38	/	701.5749	C ₅₇ H ₄₆ O ₄₂	0.9	220.4	679.0745	Ellagitannin	[52]

	(isotope)			[M-H] ²⁻				617.0666 300.9991 249.0400 275.0191 231.0293 123.0083		
<i>AD</i>	M593T520	8.66	/	593.1591 [M-H] ²⁻	C ₆₀ H ₅₀ O ₂₆	-1.6	24.7	285.0408	Proanthocyanidin (Cat-Cat-GalCat-GalCat)	[53]
<i>AD</i>	M343T637	10.61	/	343.0460	C ₁₇ H ₁₁ O ₈	0.3	4.8	328.0216 312.9923 297.9722 286.9462 269.9814	Galloylquinic acid isomer	
<i>AD</i>	M289T405	6.74	291.086	289.0716	C ₁₅ H ₁₄ O ₆	1.6	11.4	245.0823 221.0835 203.0720 151.0401 137.0246 123.0453 109.0293 97.0298	(epi)catechin	[54]