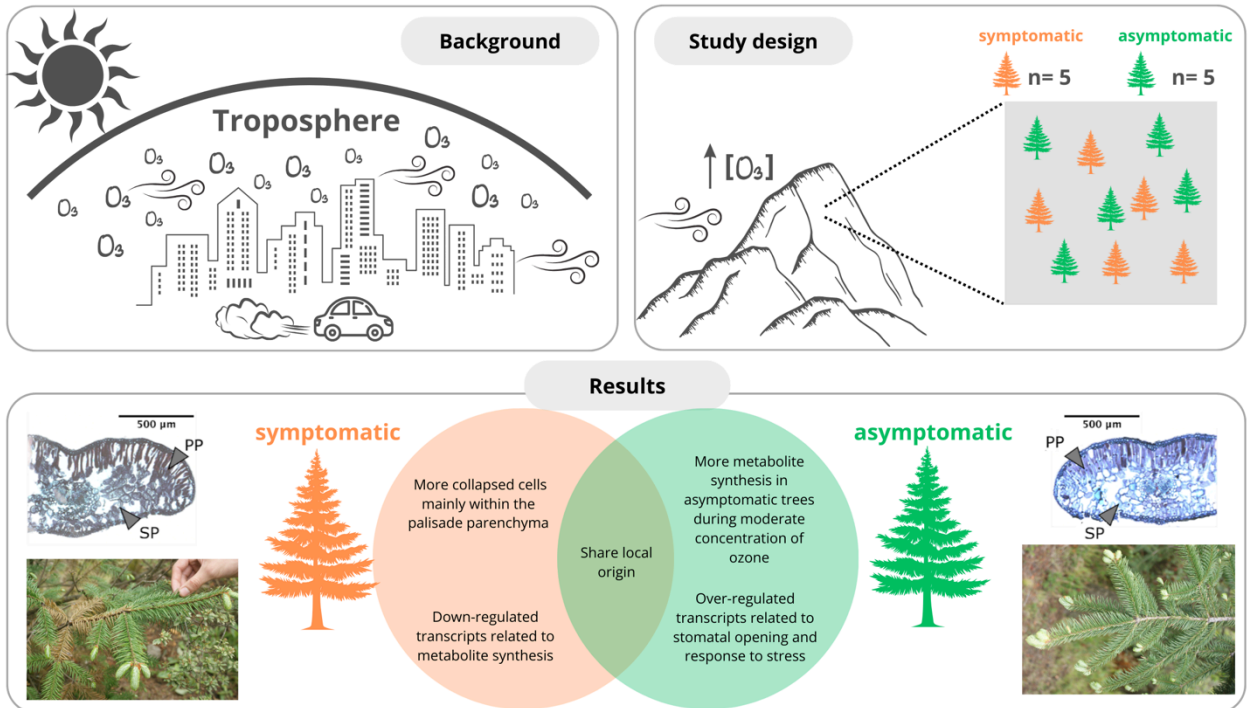
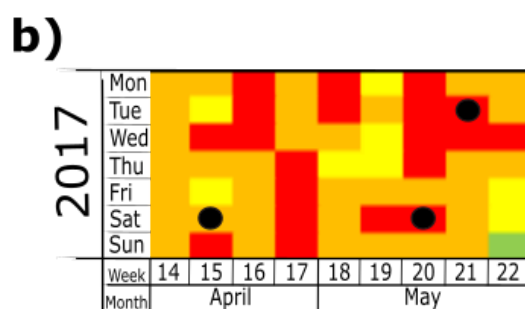
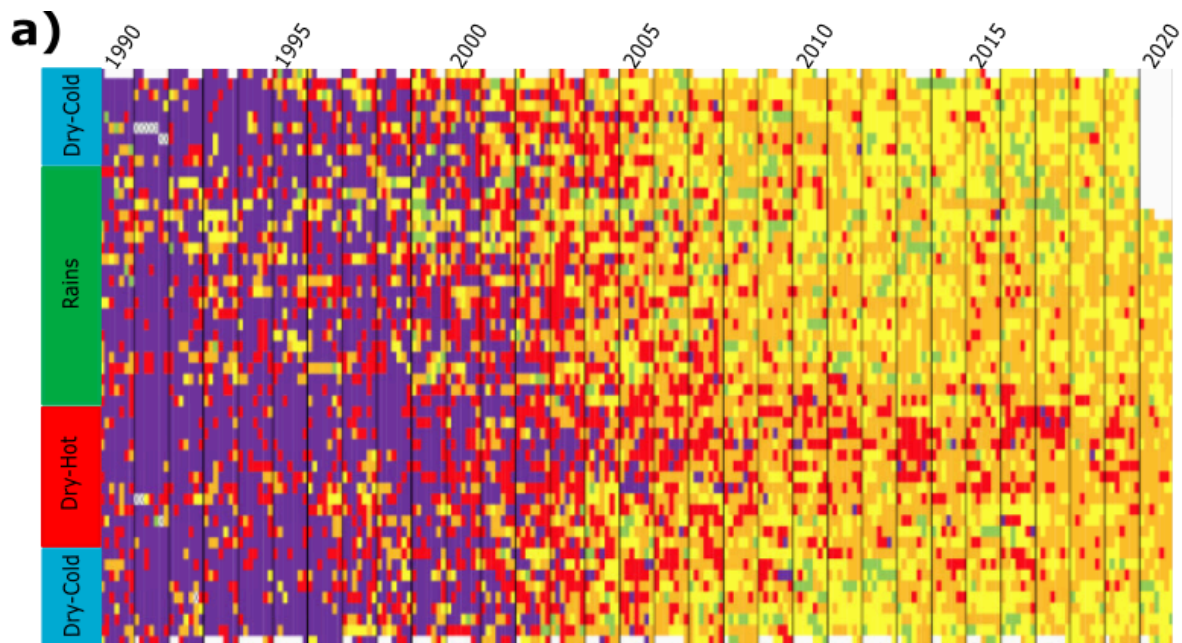


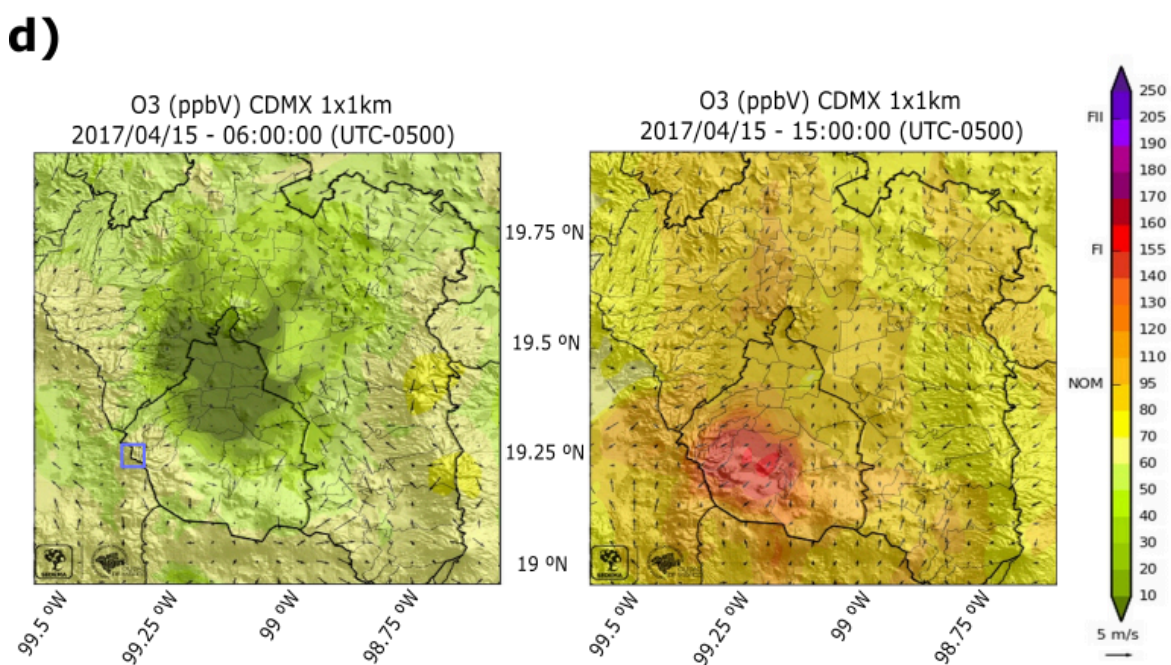
## Visual abstract:





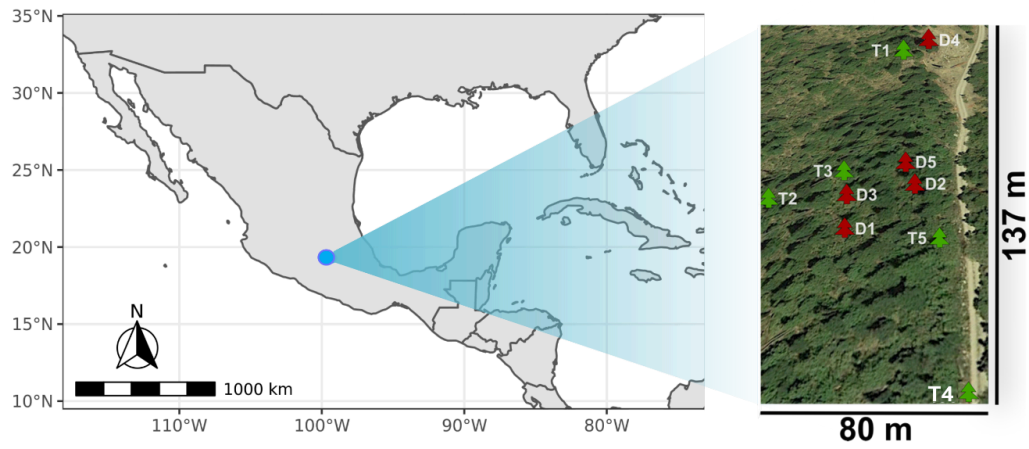
**c)**

Hour	15 April	13-14 May	17 May
13:00	70 ppb	105-96 ppb	132 ppb
14:00	81 ppb	109-94 ppb	158 ppb
15:00	87 ppb	125-95 ppb	170 ppb

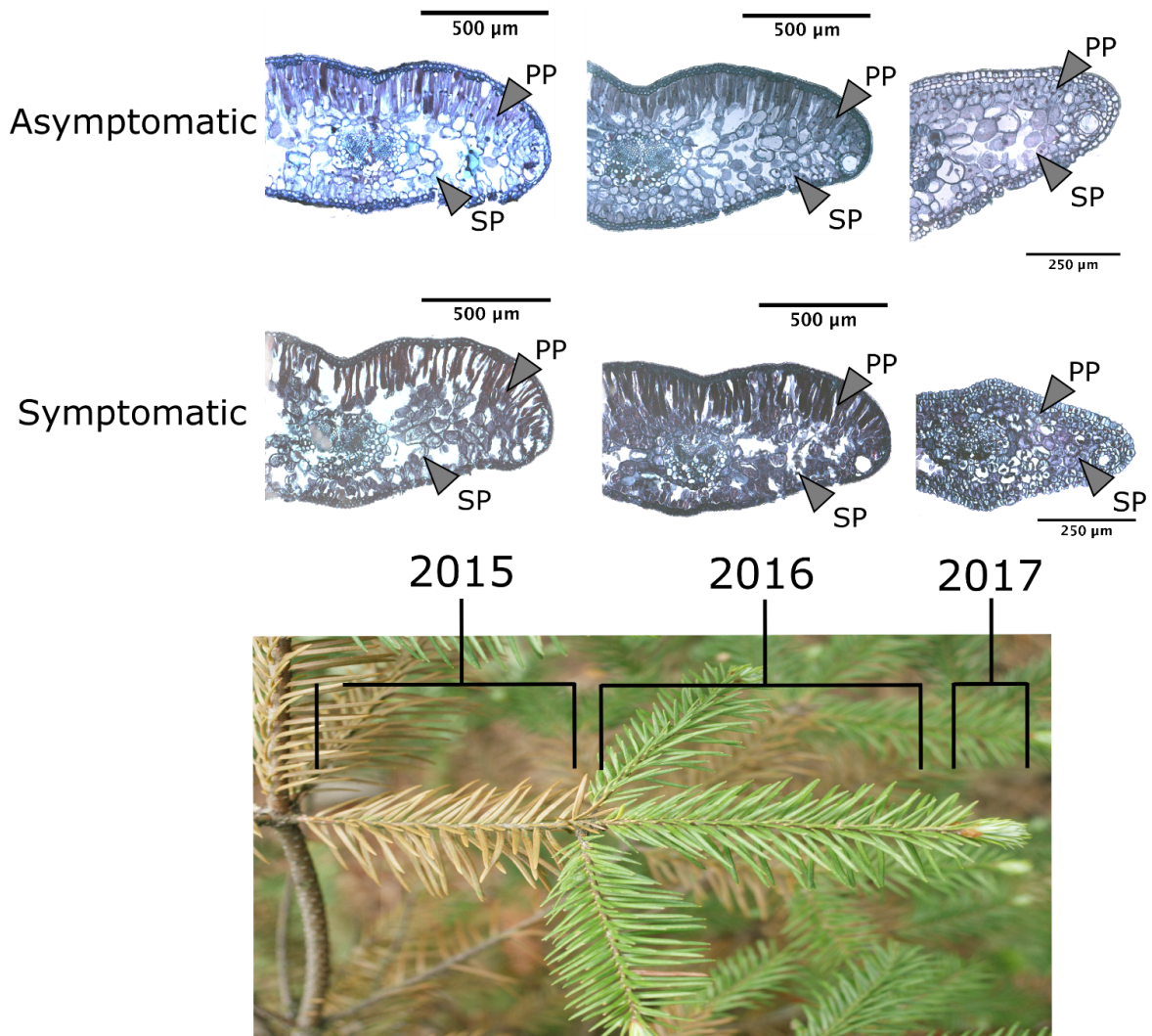


**Figure 1** Change of O<sub>3</sub> concentration in the Mexico City (CDMX) metropolitan area since 1990 (a) Air quality is represented by colors: green, good (0-70ppb); yellow, regular (71-95ppb); orange, bad (96-154ppb); red, very bad (155-204ppb) and purple, extremely bad ( $\geq 205$ ). Modified of SEDEMA (2020) (b) average O<sub>3</sub> concentration during the study period (April and May, 2017). Black circles show collection days. (c) O<sub>3</sub> concentration as measured at the nearby station to the sampling site (PEDREGAL) during the sampling period. Modified of SEDEMA (2018) (d) wind direction and O<sub>3</sub> concentration in CDMX at 6:00 am ( $\sim 50$  ppb; left) and at 15:00 pm ( $\sim 130$  ppb; middle; see colorimetric scale at right) on a regular day between April and May. Blue boxes indicate the location of the study site. Arrow size indicates wind speed; vector at right (below colored bar) shows 5 m / s.

**a)**



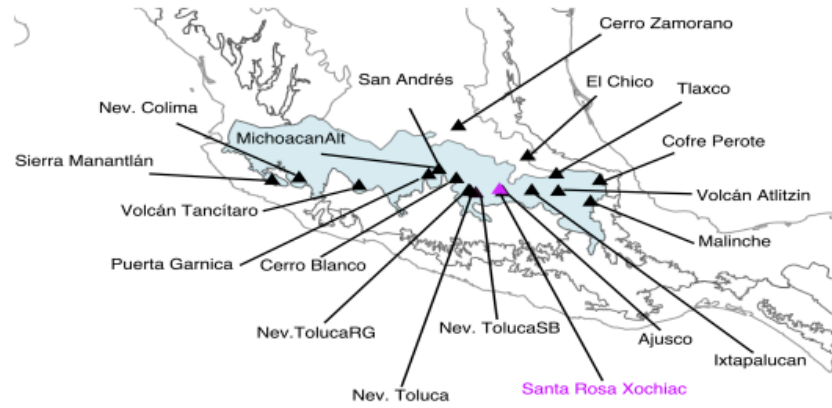
**b)**





**Figure 2** Distribution of focus trees (asymptomatic in green, T1-5; symptomatic in red, D1-5) within the study site, and location of the study site within Mexico City metropolitan area and Mexico (a) Transverse histological sections of needles from asymptomatic (left) and symptomatic (right) sacred fir individuals (*Abies religiosa*) for three growth periods (2015, 2016, 2017) (b) All bars = 10µm. PP, palisade parenchyma; SP, spongy parenchyma.

a)

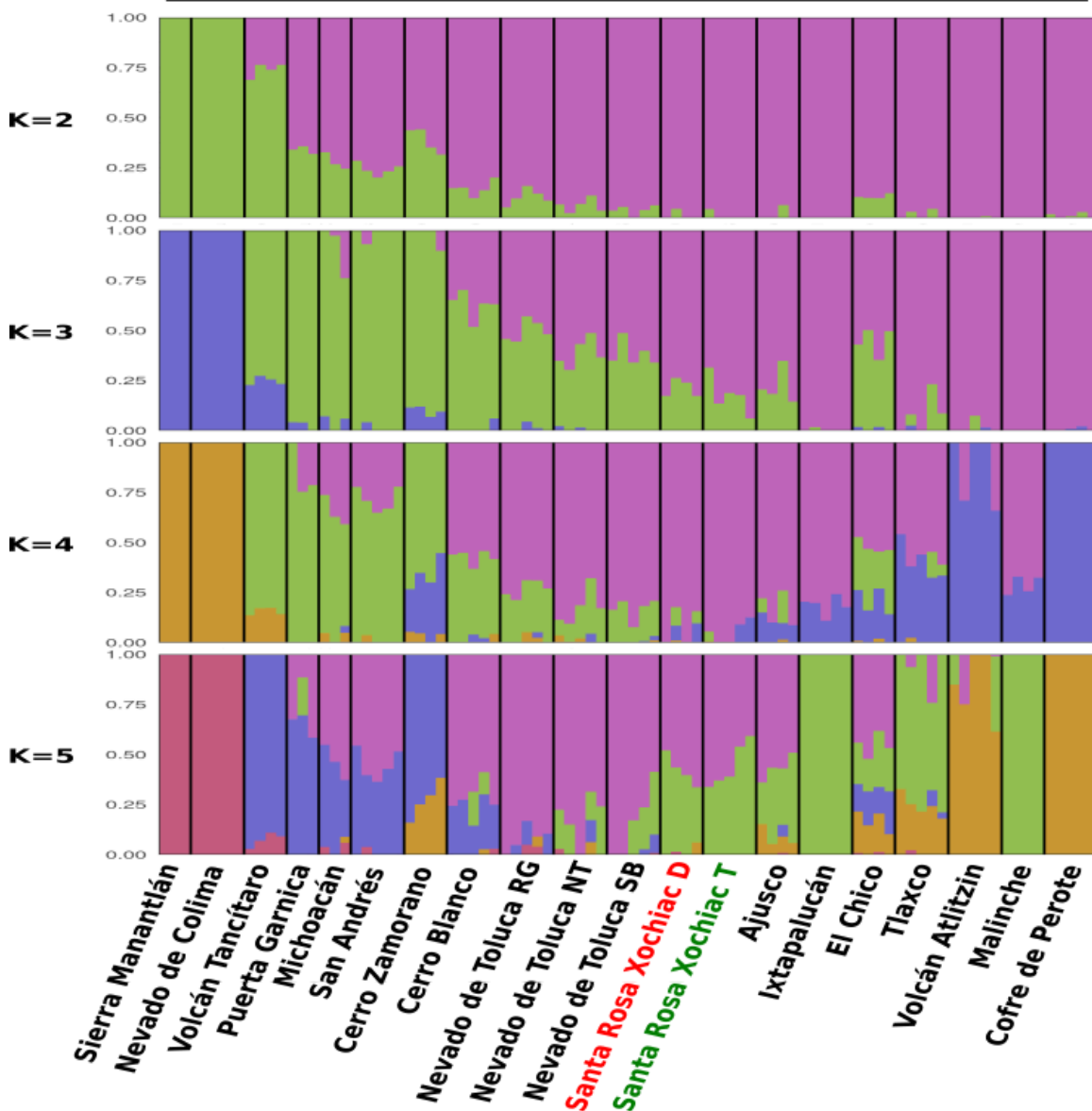


0 500 Km.

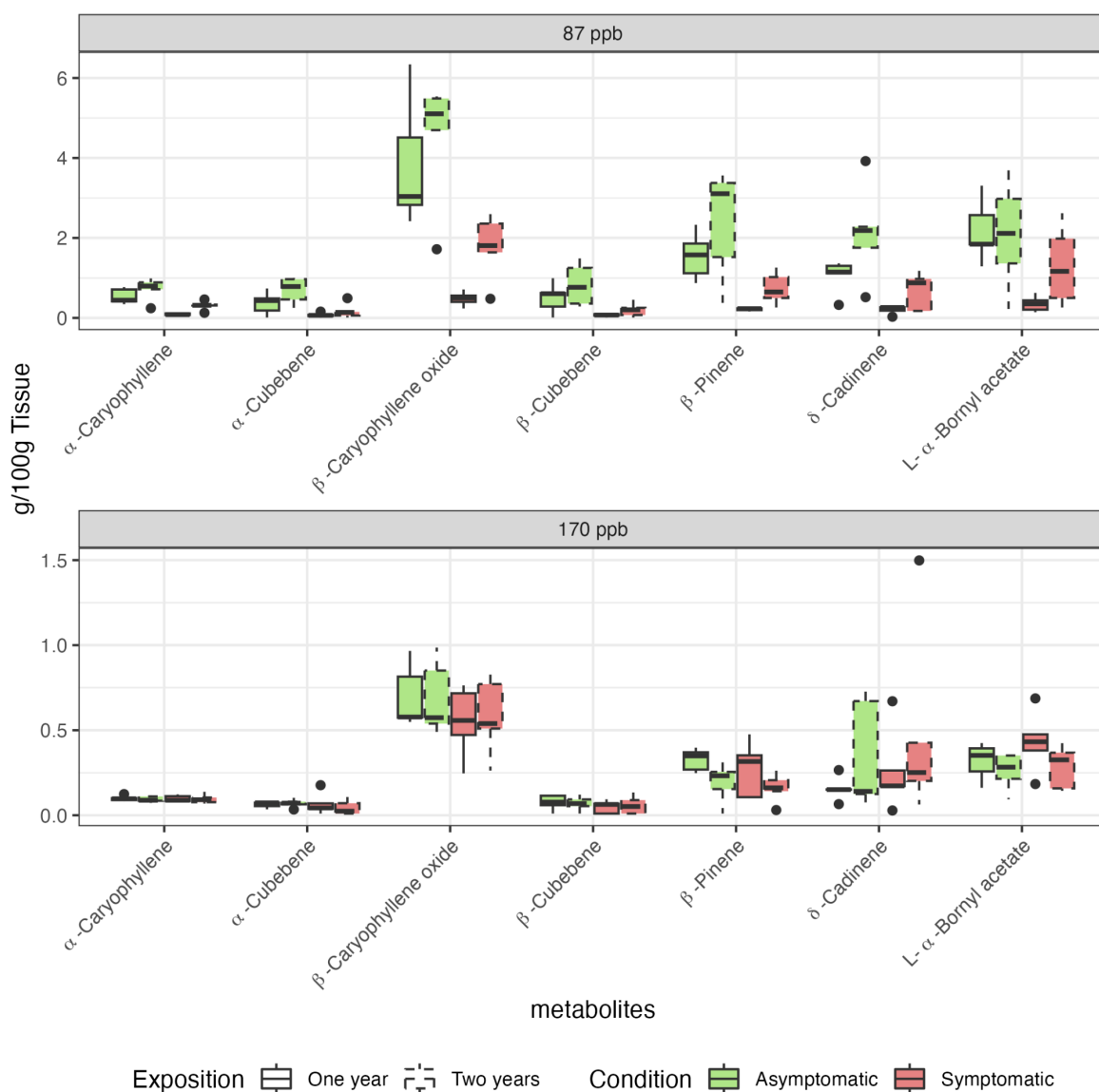
b)

West

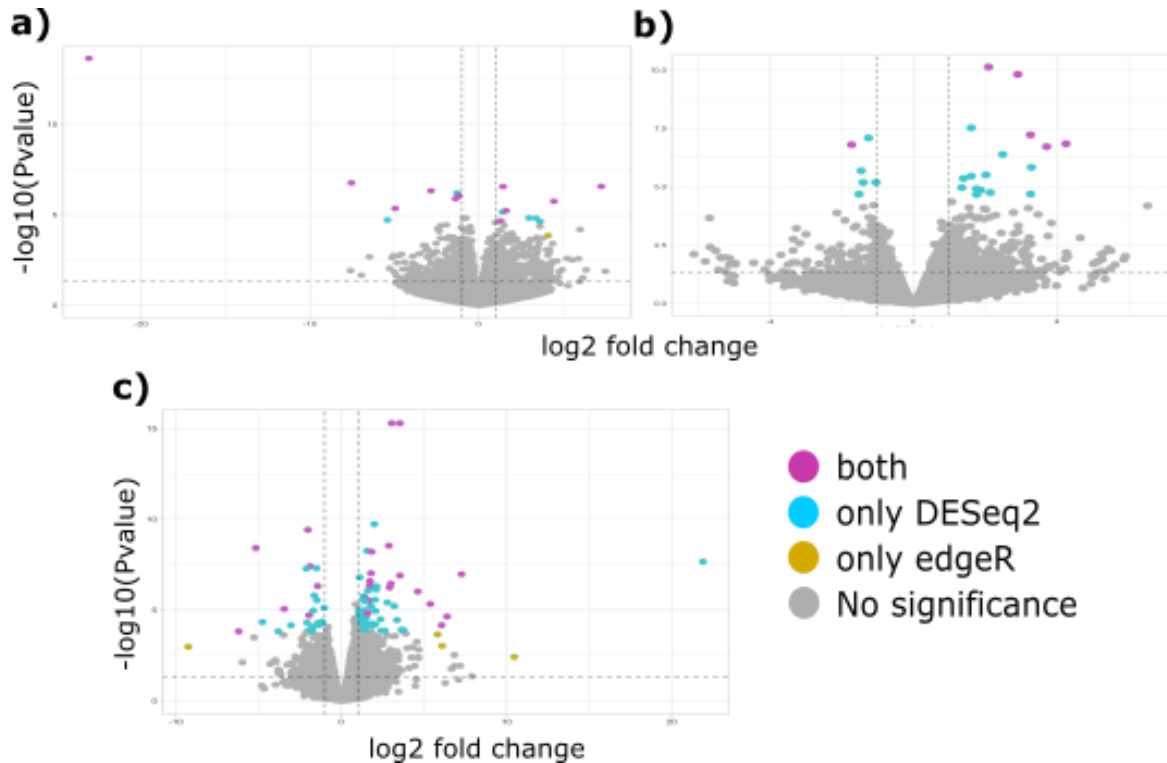
East



**Figure 3.** Assignment of studied individuals to the species genetic clusters based on admixture results (derived from 1,550 SNPs). Symptomatic trees indicated in red below figure; asymptomatic trees in green. Plots are shown for  $k = 2$  to  $k = 5$ , all of which denote identical cluster assignments for both types of trees. Individuals ( $n = 88$ ) are shown as vertical bars colored in proportion to their estimated ancestry for each cluster. Black lines separate populations listed from West to East along the species distribution.



**Figure 4** Relative sesquiterpene concentrations (mg / 100g dry weight) in needles from symptomatic (red) and asymptomatic (green) sacred fir (*Abies religiosa*) individuals during two periods with contrasting O<sub>3</sub> concentration (87ppb and 170 ppb). Measures taken from one- (continuous line) and two-year old (dashed line) needles. Bars show variability in comparison to the IQR. See table S4 to consult the statistical analyzes of interactions.

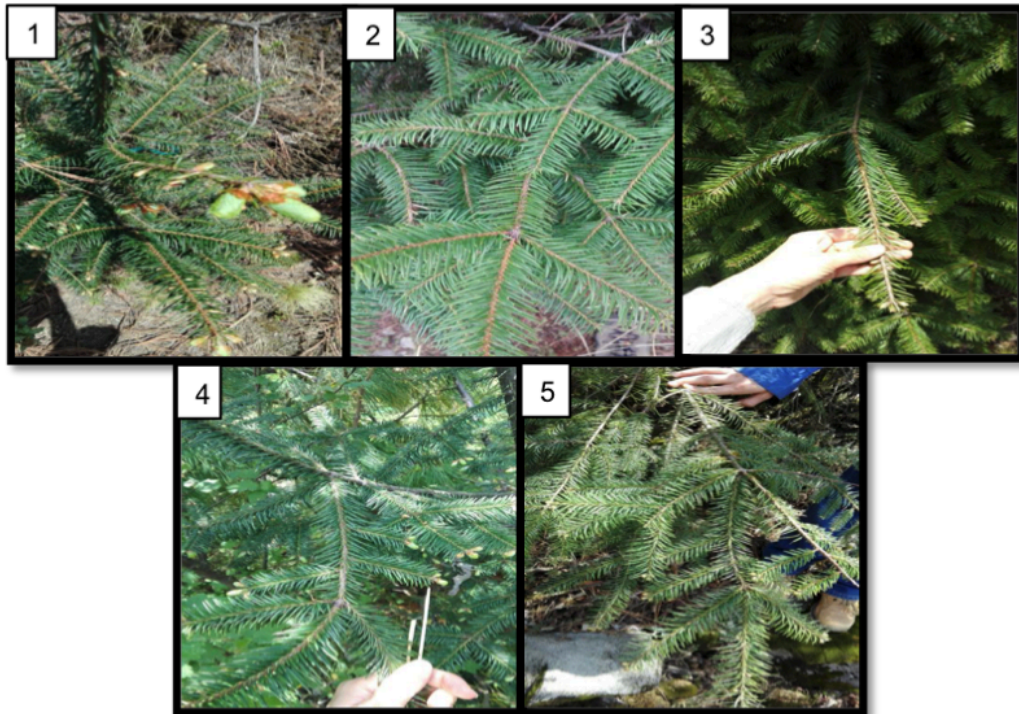


**Figure 5** Differential Expression Analysis of RNA transcripts with two methods (DESeq2 in blue; edgeR in yellow; retained transcripts were those detected by both methods, in purple;  $p < 0.005$ ). Volcano plots for asymptomatic vs. symptomatic trees during the high O<sub>3</sub> period (a); high vs. moderate O<sub>3</sub> concentration periods for symptomatic individuals (b); and high vs moderate O<sub>3</sub> concentration periods for asymptomatic trees (c). Differentially expressed transcripts were selected with thresholds of fold change  $> 2$  (represented by two dotted black vertical lines) and  $p < 0.005$  (represented by dotted black horizontal lines).

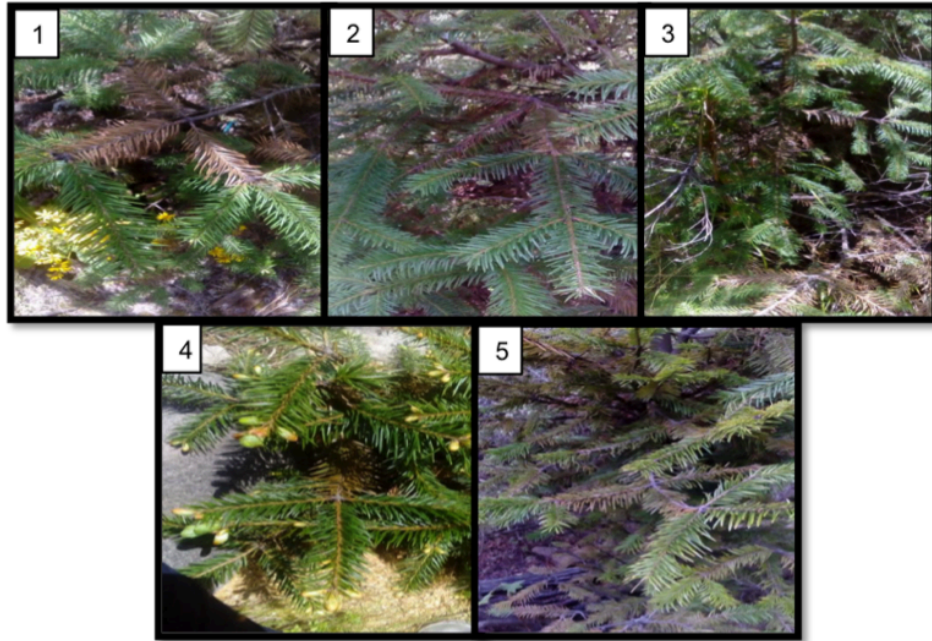


## Supplementary Images

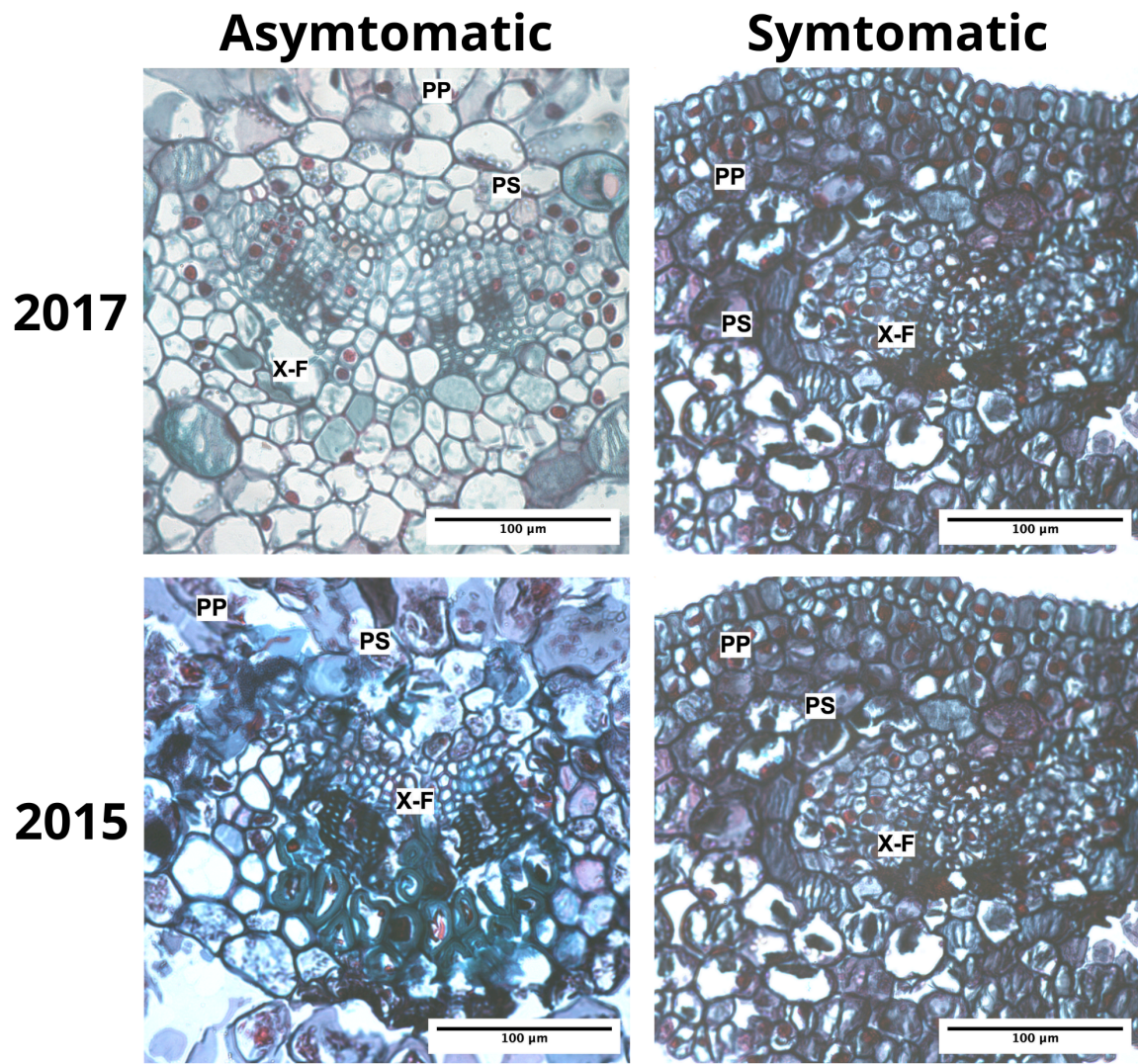
(a)



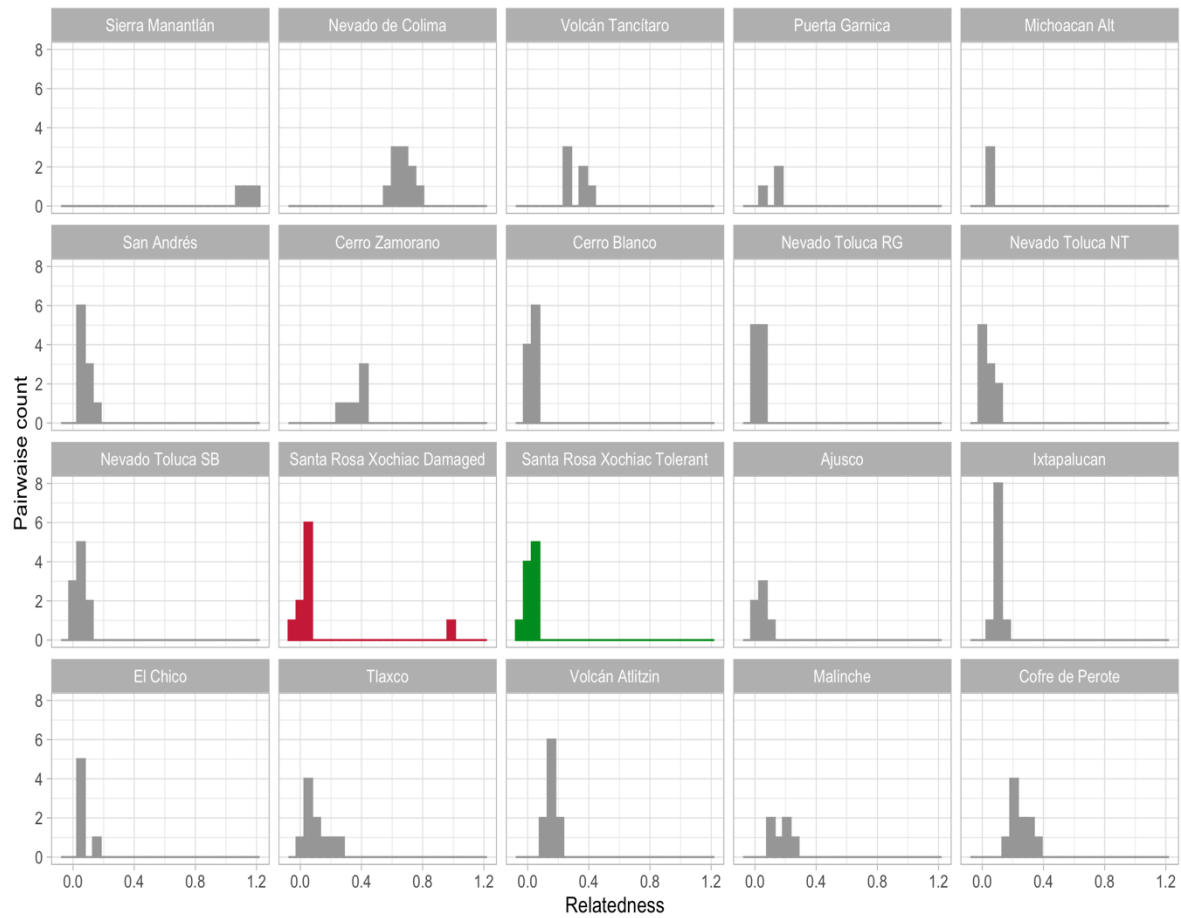
**(b)**



**Figure S1** Photographs of the branches for each sampled sacred fir tree. **(a)** asymptomatic trees **(b)** symptomatic trees.



**Figure S2** Histological sections of needles from asymptomatic (left) and symptomatic (right) sacred fir (*Abies religiosa*) individuals from two growing seasons (2017 top; 2015 bottom). All bars = 10μm. PP, palisade parenchyma; SP, spongy parenchyma; X-P, xylem and phloem.



**Figure S3** Relatedness between sacred fir (*Abies religiosa*) individuals used for genetic assignment analyses. Asymptomatic individuals from study sites in green, symptomatic trees in red.