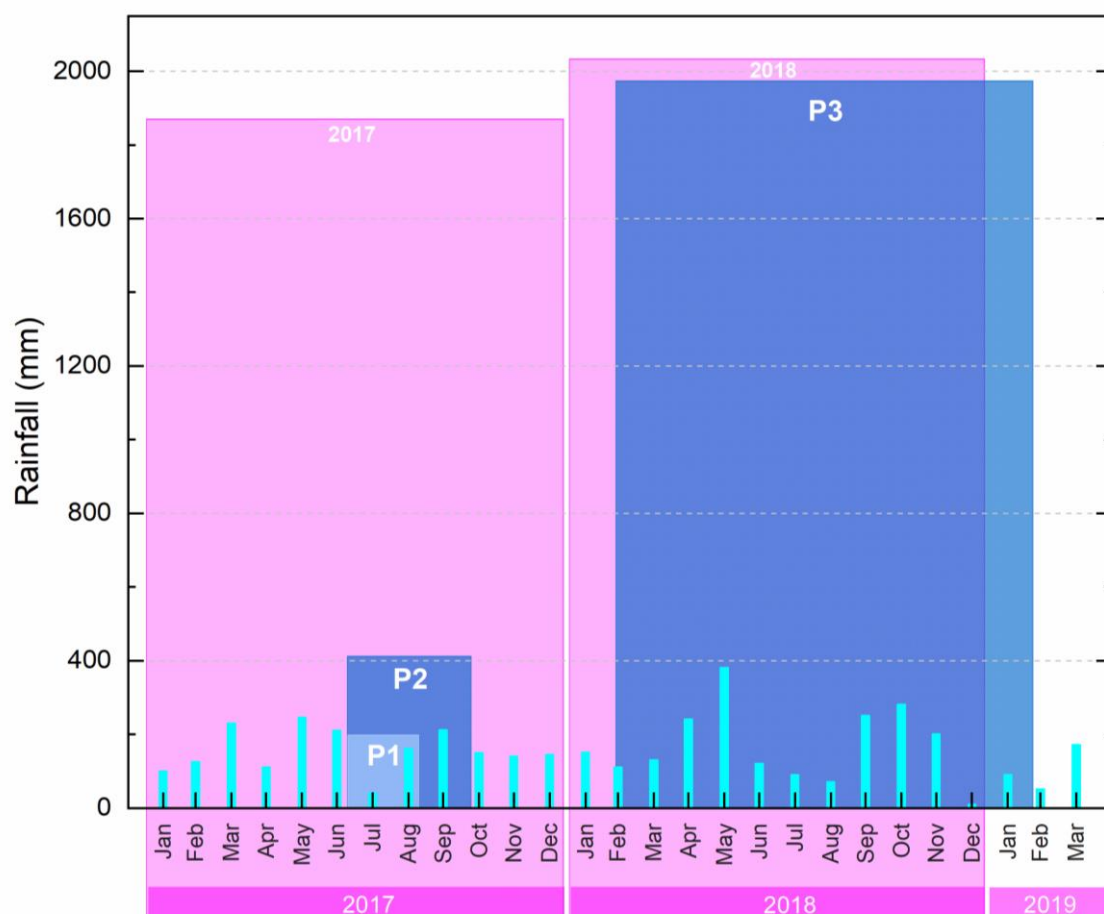


# Supplementary Materials: Magnetic assessment of transplanted *Tillandsia spp.*: biomonitors of air particulate matter for high rainfall environments

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**Figure S1.** Monthly rainfall during exposure periods. Data provided by IDEAM [30]. Rainfall of 200 mm, 411 mm, and 1970 mm were recorded for periods P1, P2, and P3, respectively. Annual rainfall is 1864 and 2030 mm for 2017 and 2018, respectively.

**Table S1.** Measurements of magnetic susceptibility  $\chi$  of *Tillandsia recurvata* and *Tillandsia usneoides* for exposure periods. Cover (C) and uncover (UC) exposure conditions.

	<i>Exposure condition</i>	<i>n</i>	$\chi$ ( $10^{-8} \text{ m}^3\text{kg}^{-1}$ )			
			Median	Mean (s.d.)	<i>min _ max</i>	<i>Increase (of mean)</i>
<b>Control</b>	--	21	-5.1	-5.8 (3.9)	-13.3 _ 0.0	0
<b>P1</b>	C+UC	36	4.7	6.1 (6.4)	-2.5 _ 25.9	2.1
<b>P2</b>	C+UC	36	9.0	13.4 (13.9)	1.2 _ 65.4	3.3
<b>P3</b>	C+UC	46	36.0	47.9 (37.6)	8.0 _ 164.2	9.2

**Table S2.** Magnetic susceptibility  $\chi$  for species *Tillandsia recurvata* and *Tillandsia usneoides*. Cover (C) and uncover (UC) exposure conditions.

		$\chi$ ( $10^{-8} \text{ m}^3\text{kg}^{-1}$ )									
		<i>T.recurvata</i>					<i>T.usneoides</i>				
	<i>Exposure condition</i>	<i>n</i>	Median	Mean (s.d.)	<i>min _ max</i>	<i>Increase (of mean)</i>	<i>n</i>	Median	Mean (s.d.)	<i>min _ max</i>	<i>Increase (of mean)</i>
<b>Control</b>	--	21	-5.1	-5.8 (3.9)	-13.3 _ 0.0	0					
<b>P1</b>	C + UC	18	3.9	5.8 (7.4)	-2.5 _ 25.9	2.0	18	5.1	6.4 (5.5)	0.4 _ 17.7	2.1
<b>P2</b>	C + UC	18	10.0	14.0 (17.3)	1.2 _ 65.4	3.4	18	8.9	12.8 (9.7)	3.4 _ 34.2	3.2
<b>P3</b>	C + UC	46	36.0	47.9 (37.6)	8.0 _ 164.2	9.2	--	--	--	--	--

**Table S3.** Descriptive statistics and Kruskal-Wallis test for transplanted samples (Campus, this study) and native samples (Industrial, Residential and Vehicular, [33]). Statistical differences in median values of  $H_{cr}$  are indicated. YES indicates that differences are significant at the 0.05 level.

Groups	Variable	N	Median	min _ max
Campus	$H_{cr}$ (mT)	111	37.1	27.7 _ 40.7
Industrial	$H_{cr}$ (mT)	22	36.5	32.5 _ 42.7
Residential	$H_{cr}$ (mT)	93	34.8	26.2 _ 40.5
Vehicular	$H_{cr}$ (mT)	67	35.8	23.8 _ 42.1
Kruskal-Wallis Test				
	Chi-Square	DF	Prob>Chi-Square	Differences at the 0.05 level
$H_{cr}$				
All	32.457	3	4.19E-07	YES
Campus - Industrial	0.397	1	5.29E-01	NO
Campus - Residential	32.785	1	1.03E-08	YES
Campus - Vehicular	1.773	1	1.83E-01	NO

**Table S4.** Kruskal-Wallis test for transplanted samples exposed over periods P1, P2, and P3. Statistical differences in median values of  $\chi$  are indicated. YES indicates that differences are significant at the 0.05 level.

Kruskal-Wallis Test				
Groups	Chi-Square	DF	Prob>Chi-Square	Differences at the 0.05 level
$\chi$				
P1 -P2	9.044	1	2.64E-03	YES
P1 -P3	52.510	1	4.28E-13	YES
P2 - P3	35.428	1	2.65E-09	YES

**Table S5.** Description of study zones and magnetic susceptibility  $\chi$  of transplants for each Air Exposure Station.

Zone	Site	n	$\chi$ ( $10^{-8} \text{ m}^3\text{kg}^{-1}$ )				
			Mean	s.d.	Minimum	Median	Maximum
<b>Regional avenue:</b> west, one of the main roads in Aburrá Valley, metro tracks, Medellin river, industrial zone, and regular traffic of big trucks.	AES3	8	16.8	5.3	13.1	15.5	29.7
	AES6	16	25.6	16.2	6.2	23.9	53.9
	AES9	16	76.6	50.3	12.5	80.7	164.1
<b>Parking:</b> Vehicular activity inside the campus, near Las Vegas Avenue.	AES1	8	7.4	5.7	0.1	5.5	17.8
	AES8	16	24.7	22.3	-0.6	20.2	66.3
<b>Gardens:</b> Internal green areas within the campus with some shielding but near vehicle passage	AES2	8	3.6	4.2	-0.6	1.9	12.6
	AES5	16	10.0	8.2	-2.4	10.2	24.6
<b>Las Vegas Avenue:</b> east, vehicular traffic of private cars and public buses, residential area.	AES4	14	7.9	8.8	-0.4	3.6	27.8
	AES7	16	23.6	17.3	3.0	21.9	48.8

**Table S6.** Kruskal-Wallis test for transplanted species exposed over periods P1, P2, and P3. Statistical differences in median values of  $\chi$  are indicated. YES indicates that differences are significant at the 0.05 level. Cover (C) and uncover (UC) exposure conditions; T.r: *Tillandsia recurvata*; T.u: *Tillandsia usneoides*.

Kruskal-Wallis Test				
Groups	Chi-Square	DF	Prob>Chi-Square	Differences at the 0.05 level
$\chi$ (P1)				
T.r - T.u	0.872	1	3.51E-01	NO
C_T.r - UC_T.r	0.195	1	6.59E-01	NO
C_T.u - UC_T.u	0.330	1	5.66E-01	NO
C_T.r - C_T.u	0.860	1	3.54E-01	NO
UC_T.r - UC_T.u	0.049	1	8.25E-01	NO
$\chi$ (P2)				
T.r - T.u	0.289	1	5.91E-01	NO
C_T.r - UC_T.r	0.049	1	8.25E-01	NO
C_T.u - UC_T.u	0.008	1	9.30E-01	NO
C_T.r - C_T.u	0.329	1	5.66E-01	NO
UC_T.r - UC_T.u	0.002	1	9.65E-01	NO
$\chi$ (P3)				
C_T.r - UC_T.r	0.559	1	4.55E-01	NO