Exploring chiral BVOCs in Amazon and Atlantic forest by TENAX® and Carbograph® sorbent

NUCLEAR AND ENERGY RESEARCH INSTITUTE

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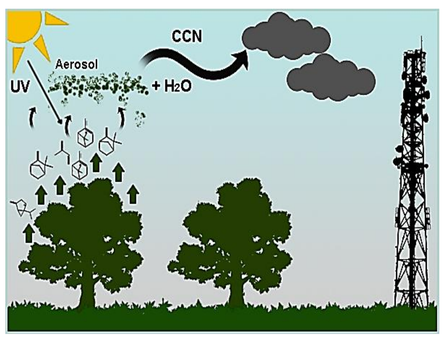
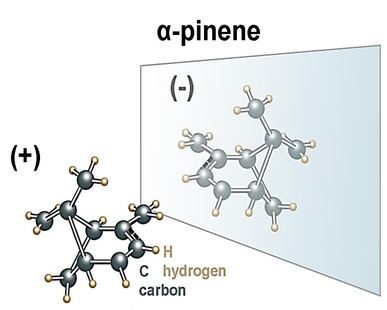
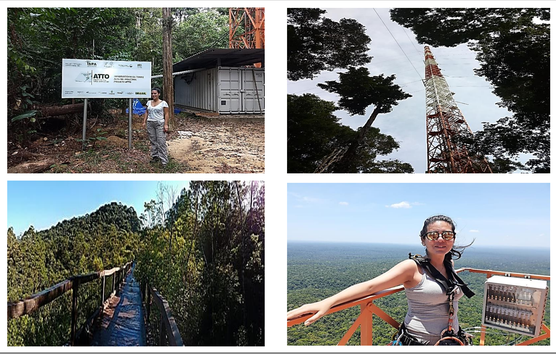
INTRODUCTION

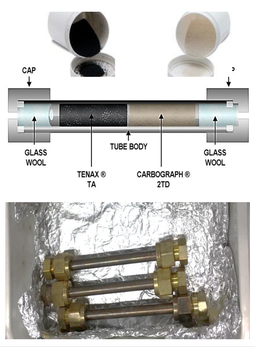


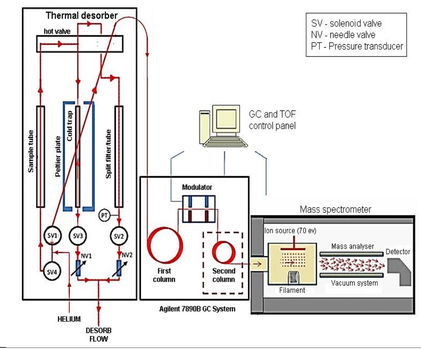


Adapted from Williams **[1]**



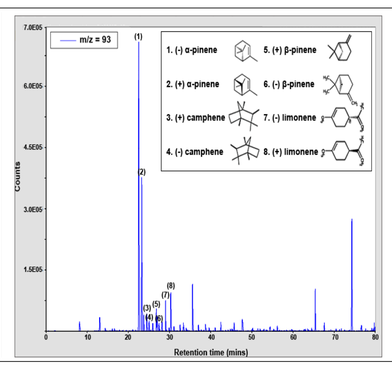
METHOD



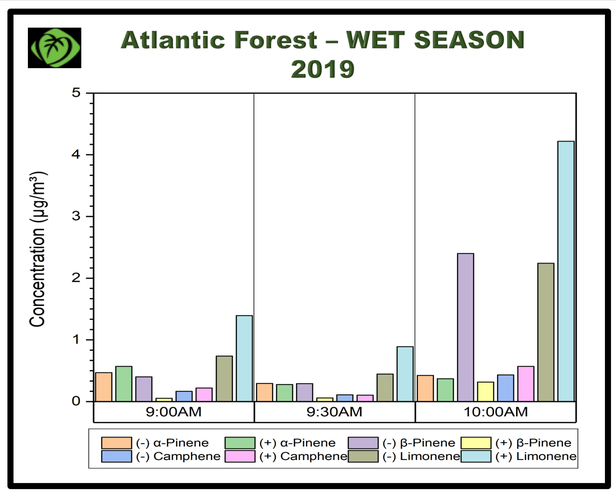


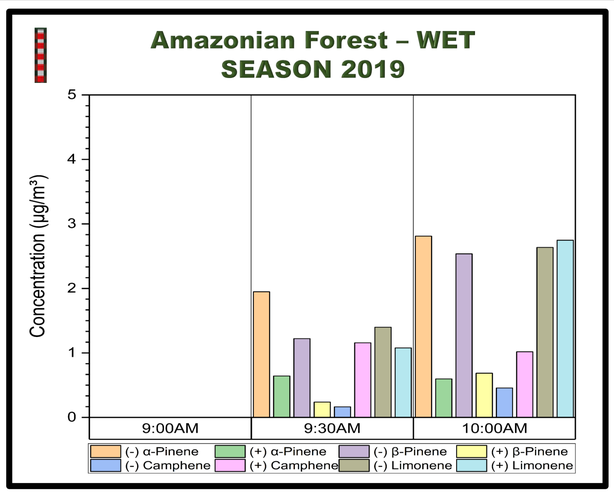
Thermo-desorption: [2]
Primary desorption (cartridge):
Time: 10 min
Temperature: 250 °C
Secondary desorption (trap):
Time: 10 min
Temperature: 250 °C

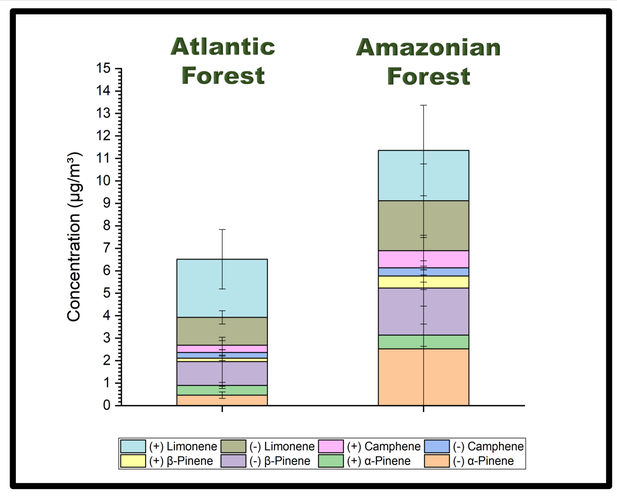
Gas Chromatography: Column:
Dimethyl TBS Cyclodextrin based
(0.15 µm, 0.15 mm ID, 25 m L)
Oven program: 5 min @40 °C
1.5 °C/min 40 °C-150 °C, 30 °C/min
150 °C - 200 °C

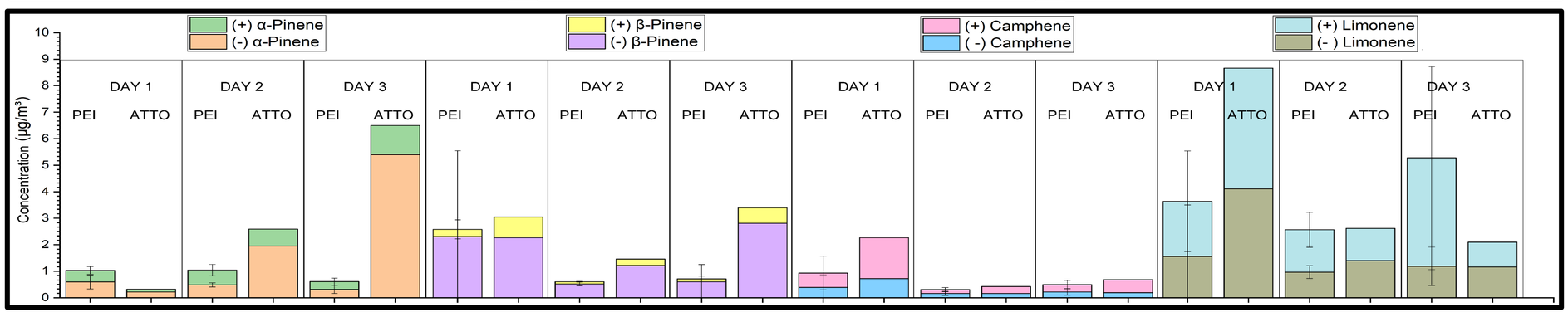


RESULTS









CONCLUSION

Atlantic forest

- It is observed smaller BVOCs concentration above the cannopy compared to the Amazonian forest.
- The BVOCs concentration were (in decreasing order):

(+) Limonene;
(-) β – Pinene;
(-) Limonene;
(-) α – Pinene;
(+) Camphene;
(+) α – Pinene;
(-) Camphene;
(-) β – Pinene;

- We can notice that from 9:00AM to 10:00AM, in all days of the campaing, the magnitudes of BVOCs concentration were in their total lower than the Amazonian forest.

Amazonian forest

- It is observed a larger BVOCs concentration above the cannopy compared to Atlantic forest.
- The BVOCs concentration were (in decreasing order):

(-) α – Pinene;
(-) β – Pinene;
(-/+) Limonene;
(+) Camphene;
(+) α – Pinene;
(+) β – Pinene;
(-) Camphene.

- We can notice that from 9:00AM to 10:00AM, in all days of campaing, the BVOCs concentration were in their total higher than the Atlantic forest.

DISCUSSION

- First measurements chiral VOCs above a rainforest
- The ratio of the enantiomeric pairs show temporal and spatial variability.
- Surprisingly the enantiomeric ratio changes significantly with height.
- Is 40 m more representative of the understory?
- Can one chiral deposit into surfaces better than the other (i.e. on aerosols)?
- Is there an unknown chiral oxidant?

ACKNOWLEDGMENTS

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ATTO AMAZON TALL TOWER OBSERVATORY

PARQUE ECOLÓGICO IMIGRANTES O CORAÇÃO DA MATA ATLÂNTICA

FUNDAÇÃO KUNITO MIYASAKA

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