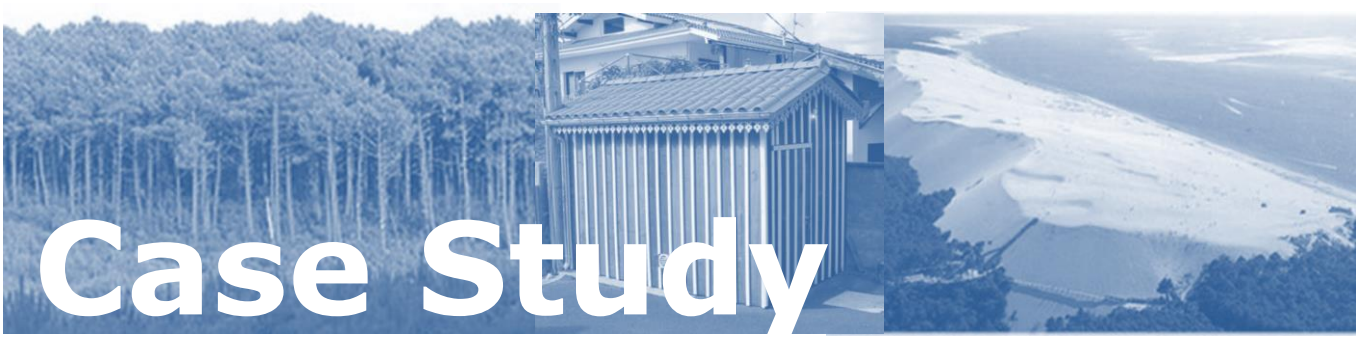


Ambient Air Monitoring Applications

Low level measurement of VOCs and Terpenes close to the sea and the Landes Forest

Context & Challenges

It has been established that organic aerosol (OA) makes up for a major fraction of fine particulate matter in all region of the atmosphere. This fraction accounts approximately for half of the total PM2.5 dry mass.[1,2]

Primary OA is directly emitted in the troposphere from anthropological and natural sources whereas secondary OA (SOA) is formed in-situ in the atmosphere from the oxidation of biogenic or anthropogenic gas-phase precursors and subsequent partitioning of the less volatile products into the particle phase.

The current number is that, on a global scale, SOA would represent around 60% of the overall OA.[3] However, recent global mass-balance estimations for the removal of volatile organic compounds (VOC) suggest that this number could under-predicts SOA production.[4] Recent field measurements in urban locations are also in support of a larger share, indicating that SOA is the dominant fraction of OA, with amounts considerably 20 greater than models predictions.

1. Kanakidou et al.
Atmos. Chem. Phys., 5 2005
2. Haddad et al.
Atmos. Chem. Phys. Discuss., 2010
3. Kanakidou et al.,
Atmos. Chem. Phys., 2005
4. Goldstein and Galbally,
Environ. Sci. Technol., 2007

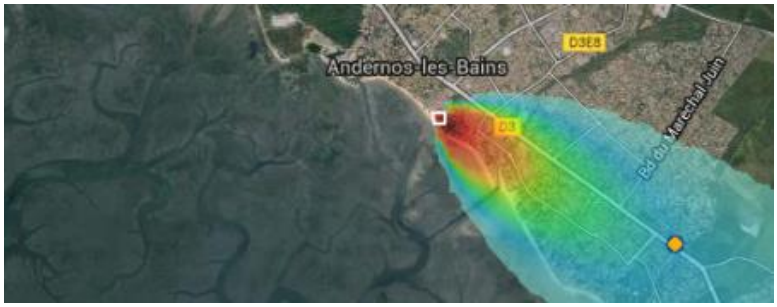
Chromatotec® Solutions

Chromatotec® proposes its airmoVOC C6-C12 analyzer dedicated to VOCs including **Terpenes** measurement (alpha-pinene / beta-pinene/ myrcene / 3-carene / limonene) at very low concentration (low ppt).

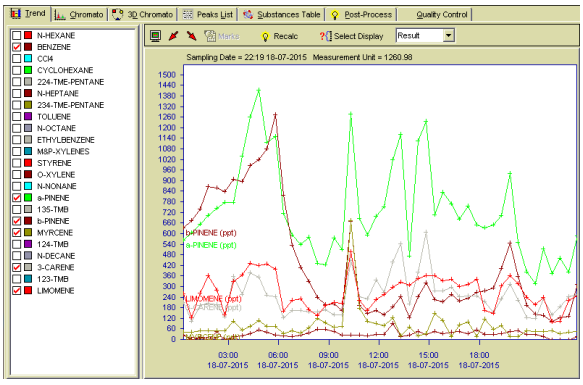
- airmoVOC C6-C12 in ppt configuration
- Trap configuration with thermodesorption
- Sampling volume: 400 mL can be increased for higher sensitivity
- Unbreakable metallic column with temperature gradient
- Flame Ionisation Detector (FID)
- Automatic results validation & calibration with embedded permeation tube.

On the above results, it can clearly be established that Benzene is not the main source of pollution near the Landes Forest. Terpenes concentrations are much higher. Therefore, it becomes interesting to monitor such compounds at low and very low concentration levels (ppb or ppt).

In opposition to other analytical technologies, our systems allow the speciation of each compound for a better accuracy. It is then possible to combine all the results to get a Total Terpenes concentration for example.



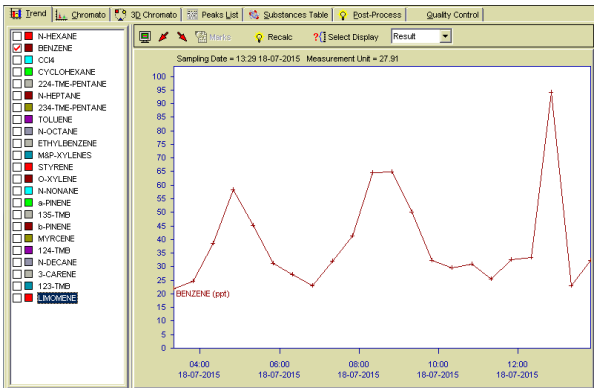
RESULTS FOR TERPENES AND BENZENE MEASUREMENT



Results in ppt

Trend of concentration for 24 hours measurement of benzene / myrcene / 3-carene / limonene / alpha and beta-pinene

ZOOM ON BENZENE



Trend of concentration for 14 hours measurement of benzene

Conclusion:

- This instrument was installed in front of the sea in Andernos-Les-Bains (France) and have shown its capabilities to measure VOCs and Terpenes in such conditions.
- Due to measure concentration's levels, it is important not to be focused only on BTEX measurement but to have a speciation of different VOCs and Terpenes.
- It exists different kind of application for such instrument such as: waste storage area, composting platforms, ambient air monitoring and more.
- In addition, a MEDOR analyzer can be used for the measurement of sulfur compounds in ambient air at ppt level.
- Dispersion modelling software will provide visual information on pollution impact coming from the different pollutants (odors, chemicals and more).