Contributing Efforts to DAURE using the Proton Transfer Reaction Technique for VOC Analysis

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Environmental Physics & Ion-Molecule-Reactions

PTR-MS:

Reaction: $\text{H}_3\text{O}^+ + \text{VOC} \rightarrow \text{VOCH}^+ + \text{H}_2\text{O}$
What do we detect:

- Most hydro carbons and derivates
  - Terpenes
  - Aromatics

- Photo oxidation products and other oxyVOCs
  - Ketones
  - Aldehydes
  - Alcohols

- Aerosol precursors
  - DMS and oxidation products (DMSO)
  - High molecular species (semi volatile)

Performance Summary PTR-MS:

**Advantages:**
- Compact organic trace gas analyser
- Mostly non dissociative ionization
- Excellent sensitivity
- Low limit of detection ~10 pptv

**Disadvantage:**
- Poor selectivity
Performance Summary HR PTR-TOF:

- Detects all ions in one instant
- Separation of isobars is possible
- Identification of the elemental composition
- Low pptv range LOD @ 1 min
  - Aromatics (7ppt)
  - Acetonitrile (5ppt)
  - a-Pinene (5ppt)
- High sensitivity
What do we have till now?

**Biogenic emissions**

![Graph showing biogenic emissions over time.]

**Biomass burning?**

![Graph showing biomass burning emissions over time.]

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To discuss: Inlet @ the right place?

THANK YOU