

The iDirac: Isoprene Measurements from Tropical Forests

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Isoprene is a highly important biogenic VOC emitted by certain species of plants into the atmosphere. Rapidly oxidised in the air, its subsequent chemistry plays a significant part in determining atmospheric composition, aerosol formation and the oxidising capacity of the troposphere. The iDirac, a novel portable gas chromatography instrument developed in our lab has allowed the possibility of field measurements from various remote and challenging sites. Emission from trees is the greatest source of isoprene and particularly in the tropics, where temperatures are higher and the growing season is longer. Quantifying this emission is a challenge and for Southeast Asia it has been poorly represented in global models. An additional challenge is that extensive land use change is predicted to alter ambient isoprene levels and hence the atmospheric chemistry.

Results from a measurement campaign in Sabah, Malaysian Borneo are presented here along with field measurements from a Malaysian oil palm site. With new chamber studies, it allows an in depth interpretation of these Malaysian results.

Measurements in Sabah examine isoprene from individual trees of certain species and relate this to observed environmental factors and ambient isoprene levels. With upcoming field-measurements the aim is to get a more accurate estimation of isoprene fluxes from the canopy by combining measurements with the FORCAsT model, which uses meteorological dynamics to calculate upward transport.

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