

# Séminaire de Joseph Galewsky au LATMOS

**Nom :** Séminaire de Joseph Galewsky au LATMOS

**Titre :** The Drunkard's Search: Constraining lower-tropospheric mixing with stable isotopologues of water vapor

**Laboratoire :**

**Nom du conférencier :**

**Son affiliation :**

**Date et heure :** 28-05-2019 11h00

**Lieu :** Amphi Gérard Mégie au LATMOS à Guyancourt

**Résumé :**

The stable isotopic composition of atmospheric water vapor is a sensitive recorder of mixing processes, and to the extent that quantitative, observational constraints on lower-tropospheric mixing are important for improved understanding of the links between clouds, precipitation and circulation systems, the analysis of water vapor isotopic composition can provide an independent means for generating such constraints. Recent field studies from the subtropical North Pacific (Mauna Loa, Hawaii) and from the subtropical Southeast Pacific (Chajnantor Plateau, northern Chile) illustrate the utility of such measurements. In both sites, in-situ measurements of water vapor isotopic composition are merged with soundings and with satellite measurements to show an inverse relationship between the estimated inversion strength (EIS) and water vapor export from the marine boundary layer into the free troposphere. The relationship between EIS and water vapor transport is found to be exponential across EIS values ranging from 0 to 15.6 K. The extension of this analysis to isotopically-enabled GCMs may provide a useful framework for evaluating the representation of lower-tropospheric mixing in climate models, and how those mixing processes may change as the climate warms.

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