

### **3.041 How regional to global biogenic isoprene emission responses to changes in vegetation from 2000 to 2015 .**

Presenting Author:

**Xuemei Wang**, Institute for Environmental and Climate Research, Jinan University, China, [eciwxm@jnu.edu.cn](mailto:eciwxm@jnu.edu.cn)

Abstract:

Isoprene, a dominant biogenic volatile organic compound that is mainly emitted by trees, has a significant impact on the atmospheric chemistry. Regional to global changes in biogenic isoprene emission associated with vegetation variations between 2000 and 2015 were estimated using the MEGAN model with satellite land cover data for inputs in this study. The satellite data estimates of land cover changes were compared to results from previous investigators that have either conducted regional studies or have used lower resolution land cover data. The analysis indicates that tree coverage increases of >5% occurred in 13% of locations including in central China and Europe. In contrast, a decrease of >5% was observed in about 5% of locations, especially in tropical regions. The trends in global tree coverage from 2000 to 2015 resulted in a global isoprene emission decrease of only 1.5%, but there were significant regional variations. Obvious decreases in tree coverage in some tropical areas (e.g. Amazon Basin, Western Africa, Southeast Asia) resulted in a ~10% reduction of regional isoprene emission due to agricultural expansion. Distinct increments of isoprene emission (5~10%) were mainly found in Northeast China and India and were associated with afforestation efforts. Deforestation and afforestation associated with managed plantations does not only affect the total forest coverage, but also impacts average isoprene emission capacity, which can result in accelerated isoprene emission variations. Consequently, isoprene variation assessments are needed that not only account for changes in vegetation fractions, but also consider the changes in plant species compositions of forests and other landscapes.