



HYPI Assessment of Isoprene emission by HYperSpectral data

Programme
STEREO III

Contract
SR/00/322

Start - End
1 December 2015 - 31 July 2017

Project type
Exploration

<https://eo.belspo.be/HYPI>

Context and objectives

Isoprenoids represent an important class of Biogenic Volatile Organic Compounds (BVOCs). Among plant BVOCs, isoprenoids form the most abundant class, with isoprene representing about half of the total BVOCs emitted globally. The presence of BVOCs – and in particular of isoprene – alters the cycle $\text{NO}-\text{NO}_2-\text{O}_3$ responsible for O_3 formation & degradation leading to the formation of other secondary pollutants such as peroxyacyl nitrates (PAN's) and particulate matter.

In the HYPI project we linked isoprene flux measurements at the leaf and canopy levels to hyperspectral vegetation indices. We aimed to demonstrate whether hyperspectral vegetation indices offer the possibility for an improved estimation of the spatial and temporal variability of isoprene emissions of ecosystems.

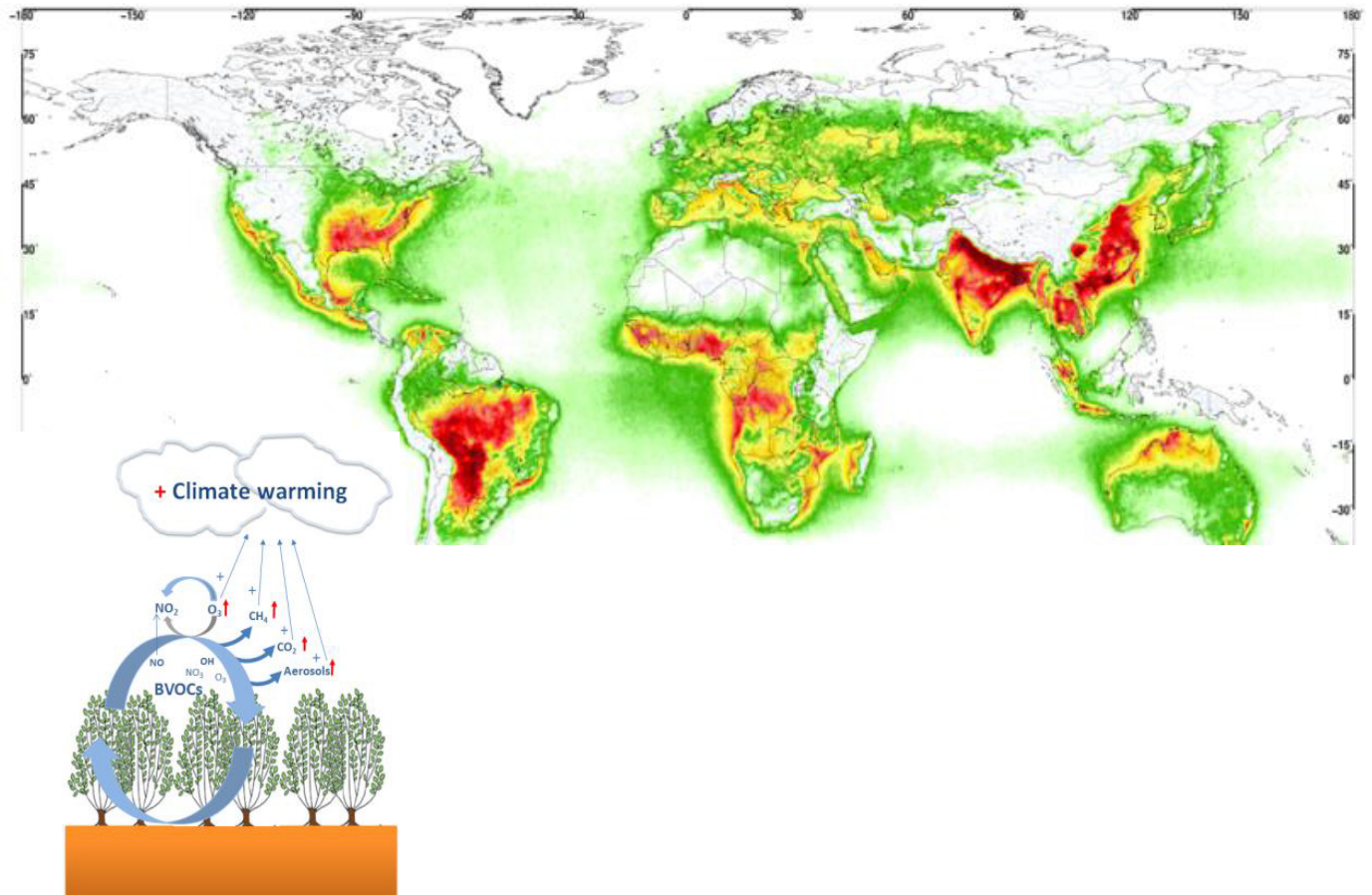
Project outcome

Results

The project examined the relation between isoprene emission and Photochemical Reflectance Index (PRI). There was a slightly significant correlation between isoprene emissions for mature leaves at the top of the canopy.

However, environmental conditions affected this relation and a good relationship was only found for sunny days. Indices related to pigment pool (e.g. carotenoids) are promising vegetation indices for remotely based estimation of isoprene emission.





Project leader(s)

CEULEMANS Reinhart | UA - Plants and Ecosystems (PLECO)
Reinhart.Ceulemans@ua.ac.be

Belgian partner(s)

MULLER Jean-François | BIRA - IASB - Royal Belgian Institute for Space Aeronomy

BERTELS Luc | VITO - Remote Sensing - Teledetectie en aardobservatieprocessen
luc.bertels@vito.be

Location

BELGIUM : Lochristi – ICOS ecosystem station (East-Flanders)

Website

<https://www.uantwerpen.be/en/rg/pleco/research/research-projects/HYPI>