

Science questions and measurement strategies within the European research project StratoClim

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The overall goals of StratoClim are to quantitatively assess the role of the Upper Troposphere and Stratosphere (UTS) in climate change, and to improve climate projections by developing and including within Earth System Models (ESMs) new, interactive modules for stratospheric ozone and aerosol and by improving our understanding of UTS water vapour variations and the representation of upper tropospheric clouds in ESMs.

In NH summer, the Asian Monsoon plays a key role for the composition of the UTS and will be a focus point of field activities within StratoClim. In summer 2016 a large scale campaign with the high altitude research aircraft Geophysica will be carried out to analyse the composition of air that is transported by the monsoon system to the upper troposphere and into the stratosphere, as well as to study in detail the processes that affect the composition of air in the Asian Monsoon Anticyclone (AMA), with a focus on aerosol properties in the AMA.

In NH winter, the tropical West Pacific is the major source of air that ascends into the stratosphere. The composition of the troposphere and the TTL in this region is a second focus of field activities in StratoClim. A new measurement station will be set up on Palau Island and will initially operate during 2015 – 2018 with a potential longer term operation depending on additional funding.

The measurements will be combined with satellite data analysis including development of new satellite data products, process and regional modelling and global modelling with Chemical Climate Models and ESMs. The presentation will give an overview of the StratoClim science questions and tropical field activities.