

## Breakout group

### GEWEX Upper Tropospheric Clouds and Convection Process Evaluation Study (UTCC PROES)

The Global Energy and Exchanges Process Evaluation Studies (GEWEX PROES) intend to provide observational based metrics for a better understanding of climate related physical processes and thus to advance their representation in research, weather and climate models.

The GEWEX UTCC PROES working group aims to gain a better understanding of the interconnection between the convection and the properties of the outflowing anvils.

Large-scale modelling is necessary to identify the most influential feedback mechanisms.

Goals:

- understand relation between convection, cirrus anvils & radiative heating
- provide observational metrics to probe process understanding

The WG links communities from observations, radiative transfer and transport modelling, as well as small scale process and climate modelling. Three meetings since 2015 led to the first collaborations.

UTCC PROES aims to develop new diagnostic methods using existing observations to examine the processes that detrain UT clouds from convection and the interconnection between convection and the anvil radiative heating, which affects the large-scale atmospheric circulation.

UTCC PROES introduces a new data base of UT cloud systems, based on cloud properties from IR sounders (AIRS and IASI): It provides the horizontal emissivity structure within these systems and is being complemented by precipitation, vertical structure and radiative heating rates from CloudSat-CALIPSO radar-lidar track information (NASA GEOPROF, PRECIP-COLUMN and FLXHR) which has been expanded by machine learning techniques based on artificial neural networks, as well as latent heating rates from TRMM SLH expanded by similar techniques. In addition, information on the life cycle stage is given by the TOOCAN dataset (<https://toocan.ipsl.fr/>).

During the breakout meeting we will discuss how these data may be used and what is further needed.

More information can be found at <https://gewex-utcc-proes.aeris-data.fr/>