

Stratosphere and Troposphere Exchange experiment over Asian summer Monsoon Project (STEAM)

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During Northern Hemisphere summer, the Asian summer monsoon (ASM) anticyclone plays an important role to effectively transport tropospheric air into the lower stratosphere. The stratosphere and troposphere exchange experiment over Asian summer monsoon (STEAM) is a five-year field campaign project sponsored by Chinese Academy of Science (CAS) to improve the understanding of the chemical and dynamical processes in the upper troposphere and lower stratosphere (UTLS). Ground based lidar system--APSOS (Atmospheric Profiling Synthetic Observation System), will provide profile data continuously, which includes wind, temperature, aerosol and trace gases. Research soundings and AirCore systems, will be launched to measure the vertical distribution aerosol, ozone, water vapor, CH₄, CO, CO₂ and stratospheric turbulence in Tibetan Plateau, Inner Mongolia. The stratospheric balloons will drift around UTLS regions and UAV will fly across the anticyclone to measure the distribution of trace gases, aerosol and its precursors. Total column of trace gases mixing ratio will also be measured using coincident ground-based spectrometers, such as EM27, Pandora etc. The STEAM project will launch more than 50 soundings each summer. The in-situ and remote sensing observation dataset from STEAM will be interpreted with several kinds of model simulations.

Key words: STE, Asian summer monsoon, Trace gas, Tibetan Plateau