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Asian summer monsoon Chemical and Climate Impact Project (ACCLIP): Highlights of multi-model pre-mission study

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This presentation reports the findings of a multi-model pre-mission study in preparation for an airborne field campaign to investigate the upper troposphere and lower stratosphere (UTLS) composition under the influence of the Asian summer monsoon (ASM). The NSF/NASA supported airborne study is planned for the western Pacific atmosphere during July-August 2020 using a base in Okinawa, Japan. The pre-mission study uses three chemistry-transport models (i.e., NASA GSFC GEOS5, NCAR WACCM, and ECMWF CAMS) to investigate transport patterns and gas and aerosol chemical composition in the campaign region UTLS during the 2019 ASM period. In addition, artificial surface tracers from the WRF model helped identify the locations and evolution of rapid convective uplifting from regional sources. The impact of one typhoon occurrence during this 2019 ASM period will be discussed. Together, the multi-model results support the hypotheses of the ACCLIP campaign which identifies the western Pacific as a significant pathway for reactive chemical pollutants and climate relevant emissions from the ASM to enter the global UTLS.