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## An Examination of ACCLIP (2022) Airborne Observations in the Context of their Trajectory-derived Convective Influence

**Warren Smith**<sup>1</sup>, Laura Pan<sup>1</sup>, Rei Ueyama<sup>2</sup>, and Shawn Honomichl<sup>1</sup>

<sup>1</sup>Atmospheric Chemistry Observations & Modeling Laboratory, National Center for Atmospheric Research, Boulder Colorado USA

<sup>2</sup>NASA Ames Research Center, Moffett Field California USA

The Asian summer monsoon (ASM) has long been known as a weather system, but only recently has its role in atmospheric composition come to be explored in detail. During boreal summer, an anticyclone forms in the upper troposphere and lower stratosphere (UTLS) over Asia which is associated with a pronounced enhancement of chemical and aerosol species lofted from the boundary layer (BL) by ASM deep convection. In this work, we explore the transport pathways and time scales associated with ASM anticyclone shedding events, which effectively redistribute air from the anticyclone into the global atmosphere. In particular, we launch a series of kinematic backward trajectories using ERA5 reanalysis from the western Pacific UTLS, emphasizing a novel set of airborne in situ observations taken during the summer 2022 Asian summer monsoon Chemical and Climate Impact Project (ACCLIP). Trajectories are integrated backward in time to their most recent encounters with a satellite-derived database of convective cloud top altitudes, as well as the top of the BL. We find that there is a consistent story between observed pollution concentrations and their associated trajectory-derived transport histories, with enhanced concentrations of BL pollutants preferentially found in air masses with shorter transport times from their convective or BL sources. We also find that air mass contributions from eastern Asia preferentially contain higher pollutant concentrations compared to those from southern Asia. The results provide valuable context for the measurements taken during ACCLIP and provide new insight into the role of ASM transport in global atmospheric composition.