Supplement Material:

Supporting Fig. S1. CALIPSO pass over Myanmar region during OBB period.

Supporting Fig. S2. CALIPSO pass over Punjab region during OBB period.
**Supporting Fig. S3.** Domain average BC concentration and change in temperature over Myanmar and Punjab region.
Supporting Fig. S4. Precipitation rate during OBB period with control run and experiment run and difference in precipitation rate in respective months.
Supporting Fig. S5. Atmospheric loading of OC from OBB at the Surface, 850 hPa, 500 hPa, 300 hPa.

Supporting Fig. S6. Model domain with terrain height used for the simulation in this study.