

## Supplementary Materials:

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### Introduction

The supplemental figures presented here provide additional context to the results discussed in the manuscript. Figure S1 shows the aerosol type from NASA Suomi/NPP Deep Blue courtesy of NASA Worldview: <https://worldview.earthdata.nasa.gov/>: In Figs. S2 and S3, we show back trajectories of two points along the CATS profile shown in Figure 3. These figures were created using the NOAA HYSPLIT web interface: [https://www.ready.noaa.gov/HYSPLIT\\_traj.php](https://www.ready.noaa.gov/HYSPLIT_traj.php). Figure S3 shows the diurnal cycle of aerosol extinction weighted altitudes as observed by CATS and MPLNET for the region denoted in Figure 6.

### Suomi/NPP Deep Blue Aerosol Type on 06 August 2016

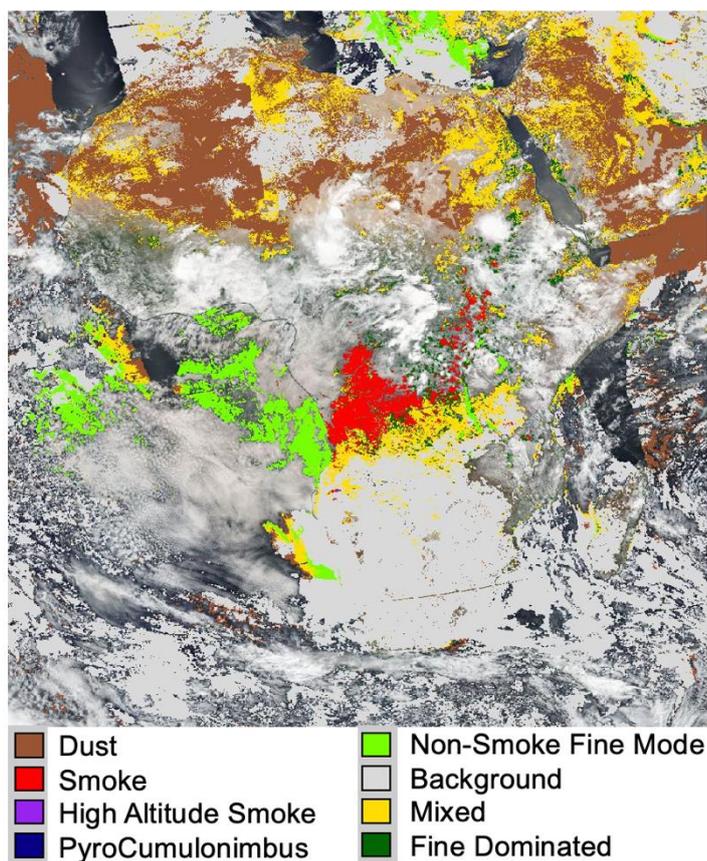
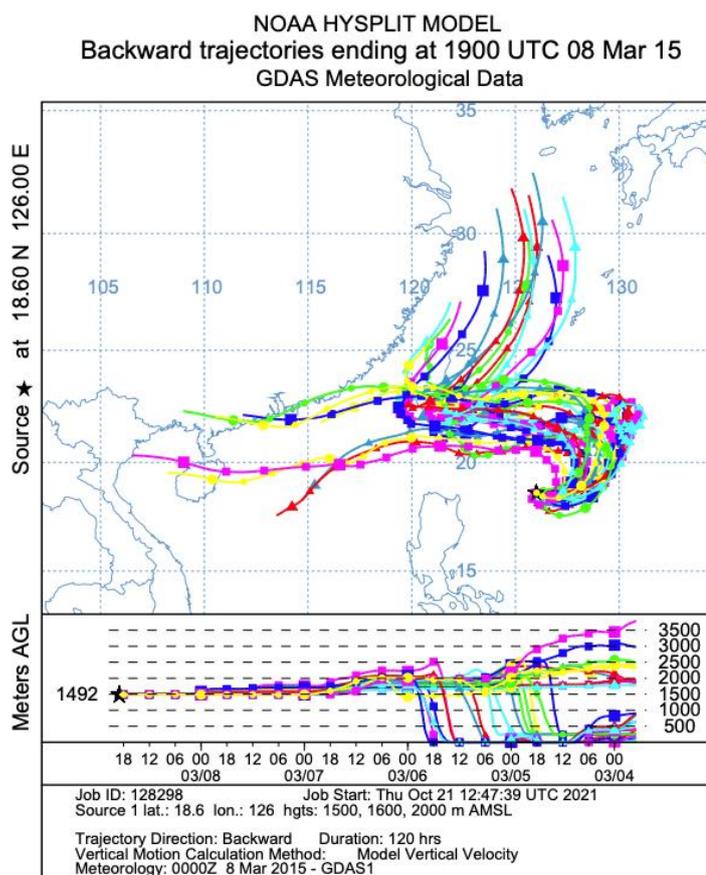
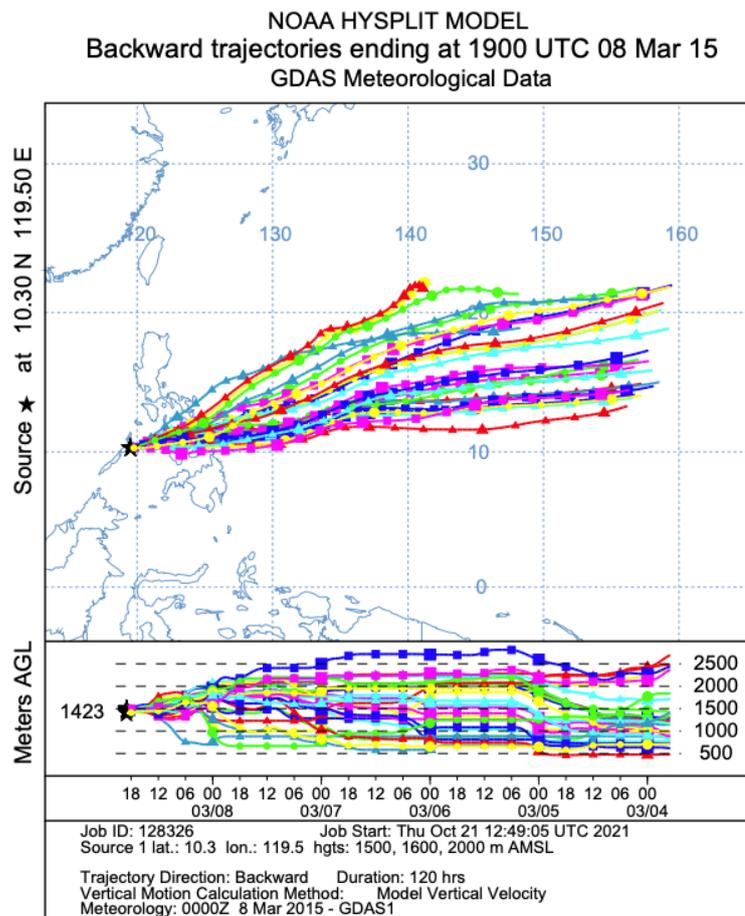


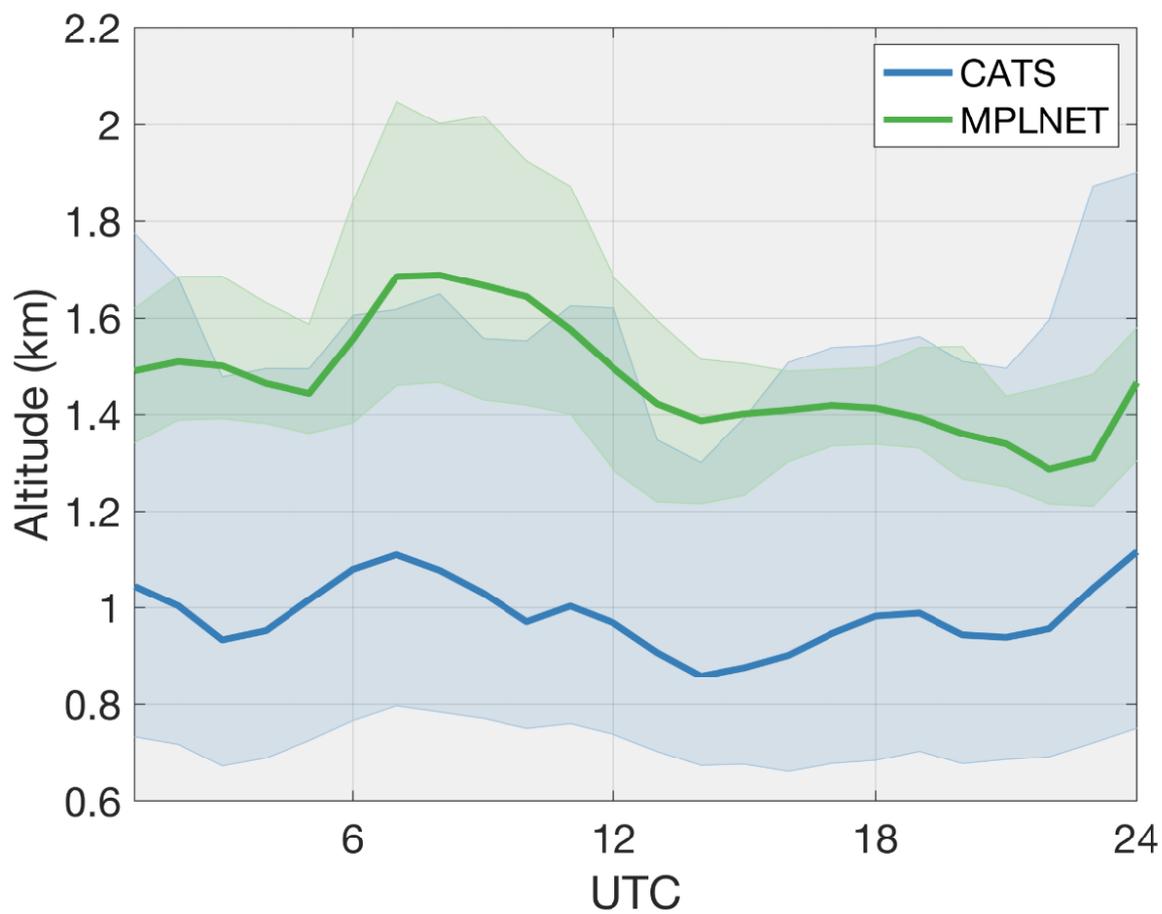
Figure S1. Suomi/NPP Deep Blue Aerosol Type on 06 August 2016.



**Figure S2.** HYSPLIT back trajectories for a northeastern point of the CATS profile featured in Figure 3.



**Figure S3.** HYSPLIT back trajectories for a southwestern point of the CATS profile featured in Figure 3.



**Figure S4.** Observed diurnal cycle in extinction weighted altitudes for CATS and MPLNET for July, August, September, October, and November for the Southeast Asian region denoted in Figure 6. Shaded region denotes  $\sim 1\sigma$ .