

Supplementary Information for:

Differences in the Evolution of Pyrocumulonimbus and Volcanic Stratospheric Plumes as Observed by CATS and CALIOP Space-Based Lidars

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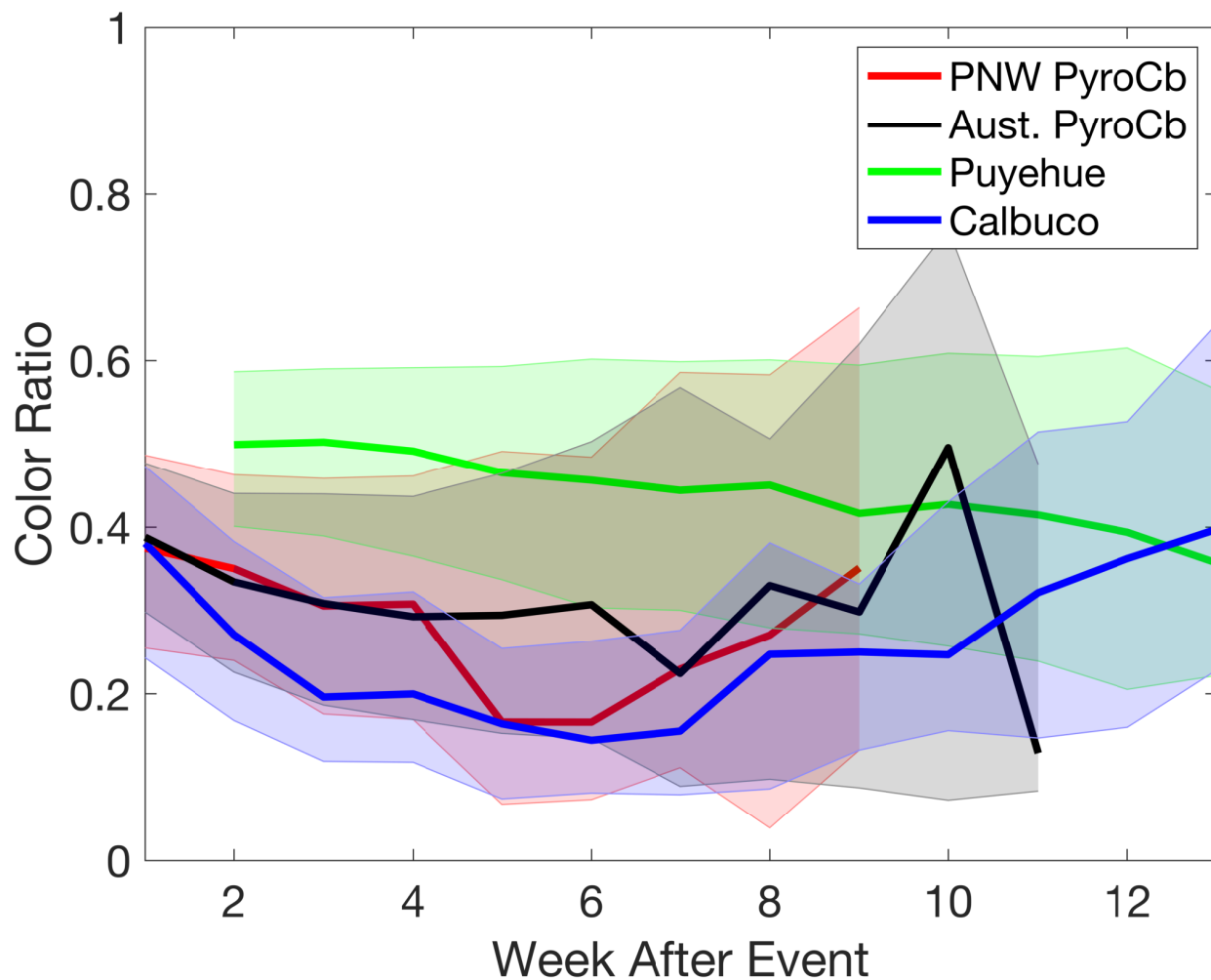
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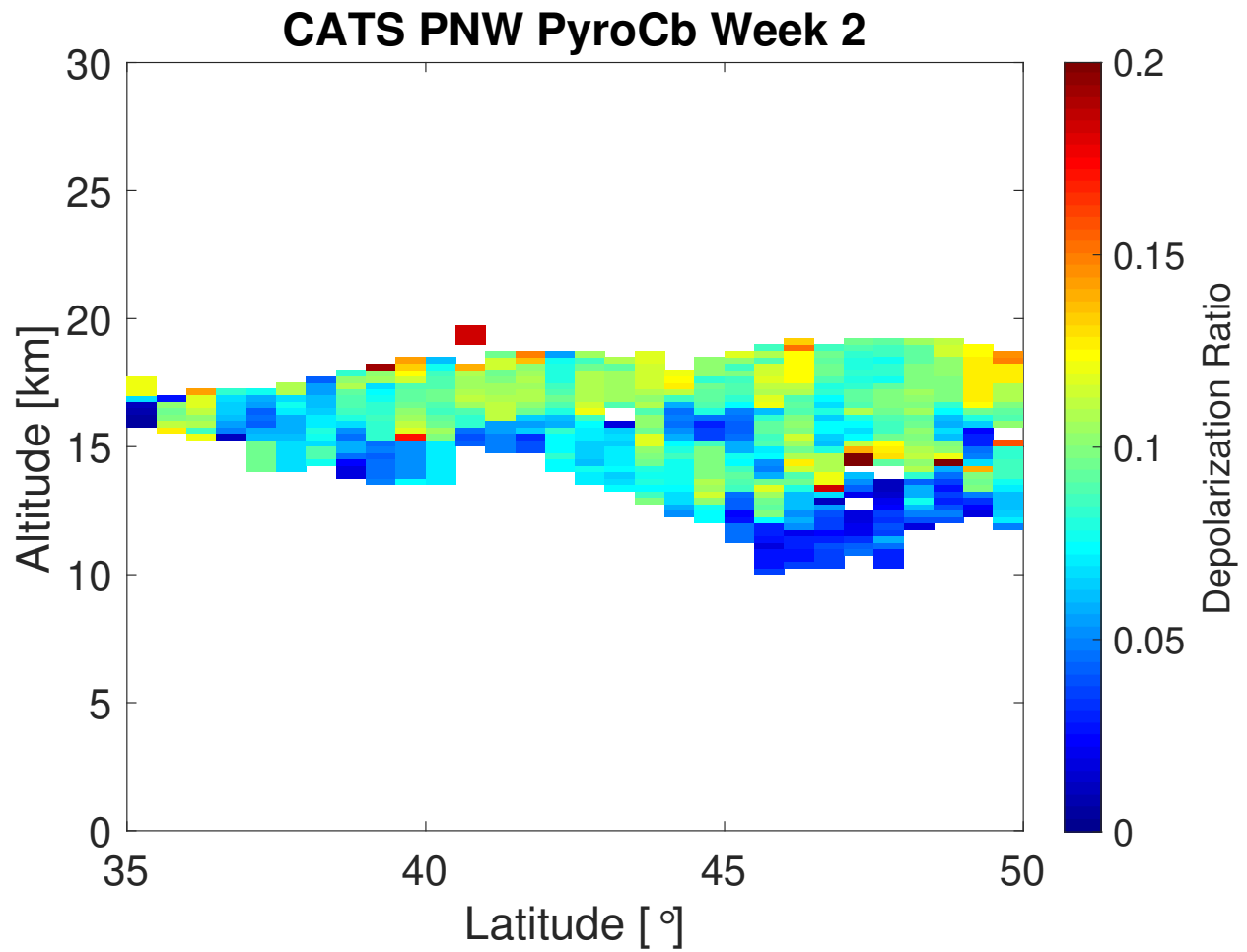
Figures S1 to S5

Introduction

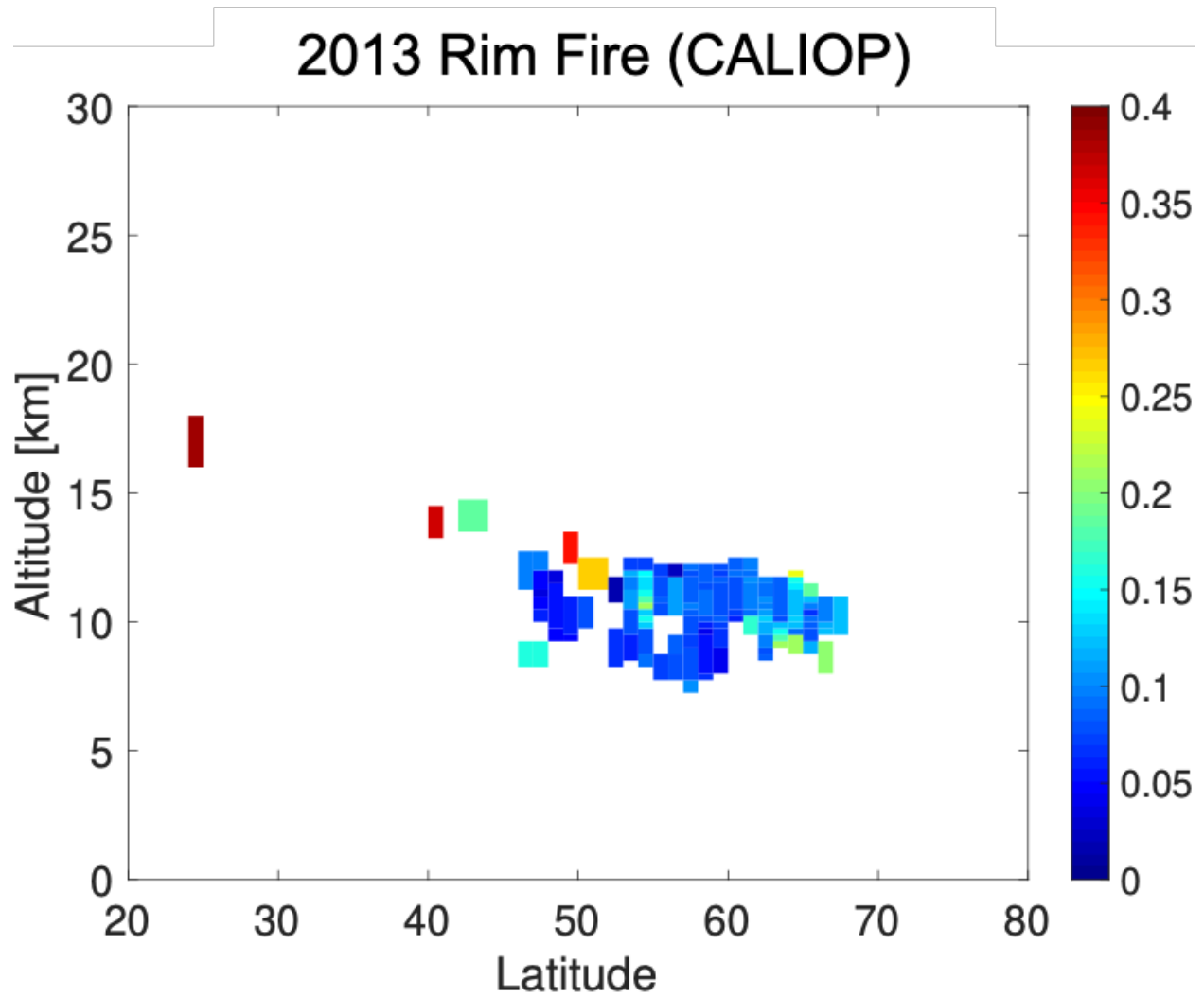
The supplementary figures presented here provide additional context to the results presented in the manuscript. Figure S1 shows the evolution of the median layer integrated color ratios (CALIOP). Figure S2 shows the zonal average of CATS identified aerosol layer depolarization ratios (1064 nm) in the second week after the PNW pyroCb event. Figures S3 and S4 show the zonal averages of depolarization ratios (CALIOP 532 nm) from two smaller pyroCb events. Figure S5 shows the evolution of CATS identified stratospheric aerosol layer depolarization ratios following the Calbuco volcanic eruption.



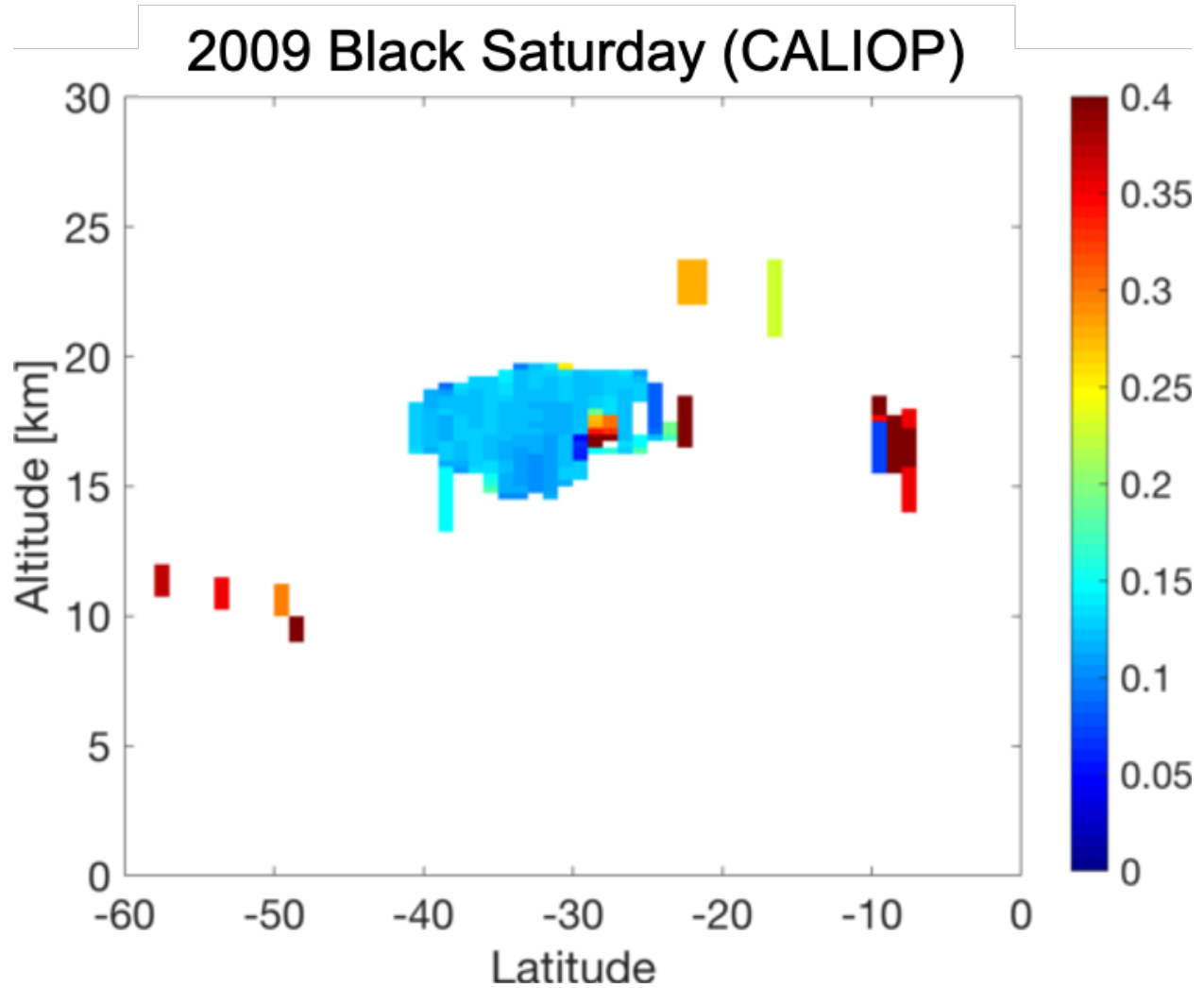
S1. Median CALIOP color ratio evolution for the stratospheric plumes from the PNW pyroCb (red), Australian bushfire pyroCb (black), Puyehue Volcano (green), and the Calbuco Volcano (blue) binned by week after the respective injections. Shaded region represents data within the 25-75 percentile range.



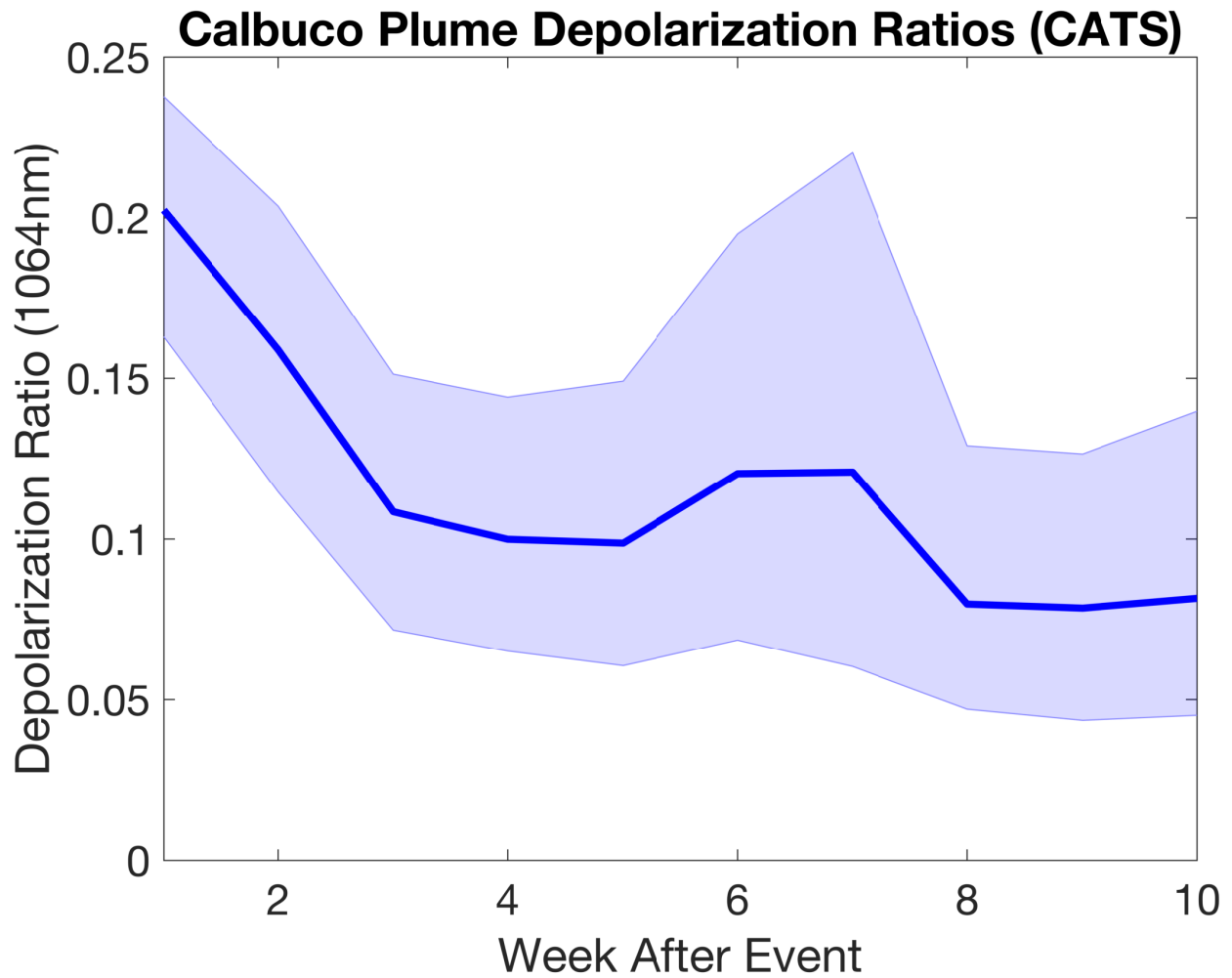
S2. Zonal averages of CATS layer-integrated depolarization ratios of the 2017 PNW pyroCb event between 7 and 14 days after the event.



S3. Zonal averages of CALIOP layer-integrated depolarization ratios of the 2013 Rim Fire pyroCb event in the first 7 days after the event as observed by CALIOP



S4. Zonal averages of CALIOP layer-integrated depolarization ratios in the first 7 days after the Black Saturday pyroCb event of 2009 as observed by CALIOP



S5. Median CATS depolarization ratio (1064nm) evolution for the Calbuco Volcanic eruption's stratospheric aerosol binned by week after the eruption. Shaded region represents data within the 25-75 percentile range.