CONCLUSIONS

Airflow from the U.S. often impact the PICO-NARE site [See poster X018 session AS0 for information on transport mechanisms]. During most of the summer 2004 U.S. impacts were overwhelmed by forest fires emissions. Background levels occur during these periods. NOy-CO and O3-CO also show significant correlation [Fig. 10], suggesting potential O3 formation in the air masses during transport to the Azores. Arriving at the station. MODIS true-color image for July 24, 2004 [11] shows smoke from fires in Canada; red dots indicate active fires [12]. The top 95th percentile AIRS CO ... The trajectory arrives at the measurement site during a period of high CO level [July 31, at noon; Fig. 6 (bottom)].

- d[O3]-d[CO] slopes are higher than those reported previously over the North Atlantic region [Table 2], suggesting that a larger amount of O3 is exported to the site, relative to 1990s [1].

- Significant increases in NOx and O3 levels suggest that additional potential O3 formation may occur in the air masses during transport from the U.S. to the Azores. d(O3/CO) during U.S. airflow was much larger than expected from previous observations. Thus, a more significant O3 production during transport to the measurement site (6 days travel) must have occurred.

- European pollen did not significantly impact the PICO-NARE site during the ICARTT study (other European events have been observed during the spring and fall). Significant increases in NOx, O3, and BC levels above background occurred in one apparent transport event.

- Boreal forest fires emissions highly impacted the levels of NOx, NOy, CO, BC, and O3 at the measurement site.

Maximum levels of NOx (>100 pptv), NOy (> 1.1 ppbv), and CO (> 250 ppbv) were recorded during these periods.

- NOy/CO ratios were similar to those reported near fires. Thus, NOy removal during transport must have been small, and remaining high NOy and NOx levels imply continuing O3 formation in these well-aged boreal plumes.

- Oy/CO ratios were higher than those reported for most prior aged boreal plumes, suggesting continued O3 formation in the plumes as they travel to the PICO-NARE site.

FUTURE WORK

- Further analyses on nitrogen oxides and O3 observations during U.S. airflow will be performed to assess the magnitude of nitrogen oxides export and their potential for O3 formation downwind.

- Analyses of the overall nitrogen oxides "climatology" (~3 years) will be conducted to assess the magnitude of nitrogen oxides export and their potential for O3 formation downwind.

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