

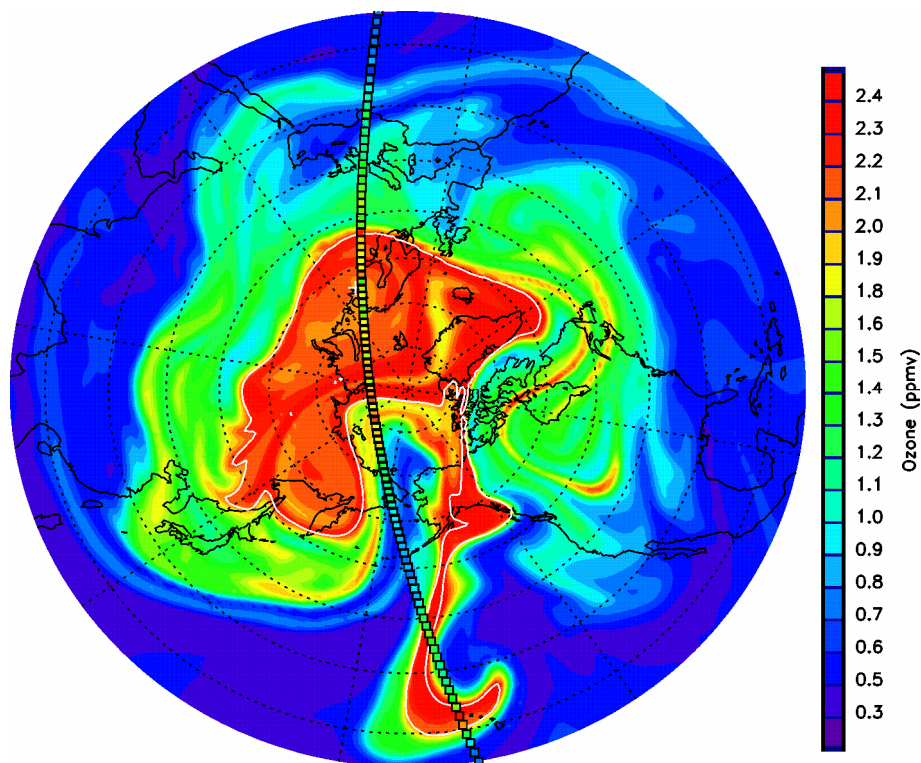
## High Resolution Simulation, and Aura-MLS and Lidar Observations of an Unprecedented Polar Ozone Filament Event over Mauna Loa Observatory, Hawaii

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A rare lower stratospheric filamentation event was forecasted using the high resolution advection model MIMOSA during a northern polar vortex severe stretching episode in mid-March 2005. The event was observed simultaneously by the JPL lidar at Mauna Loa Observatory, Hawaii, and by the EOS MLS instrument onboard the Aura satellite. On 16 March, the filament was observed by lidar centered at around 435 K isentropic level. It was seen on both the lidar and MLS profiles as a layer of enhanced ozone peaking at 1.7 ppmv. These measured values were compared to those obtained by the three-dimensional Chemistry-Transport Model MIMOSA-CHIM. Agreement between lidar, MLS and the model was excellent, particularly in the similar appearance of the ozone peak near 435 K (18.5 km) on 16 March, and the persistence of this layer at higher isentropic levels for the following three days. This agreement is excellent considering the difference in the sampling techniques. MLS was also able to identify the filament at another location north of Hawaii. A detailed history of the modeled chemistry inside the filament suggests that the air mass was still polar ozone-depleted when passing over Hawaii.



**Figure 1.** Stratospheric ozone filament observed over Hawaii by the JPL lidar at Mauna Loa Observatory, Hawaii, and by the EOS MLS instrument onboard the Aura satellite.