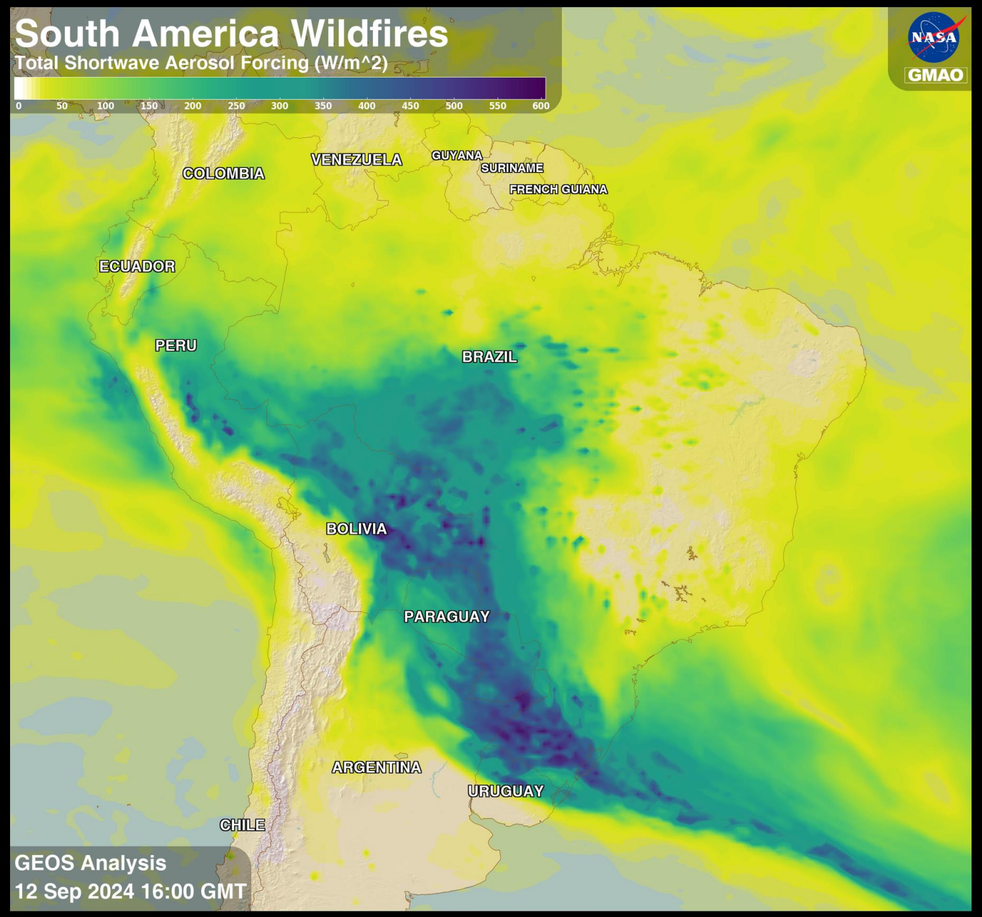
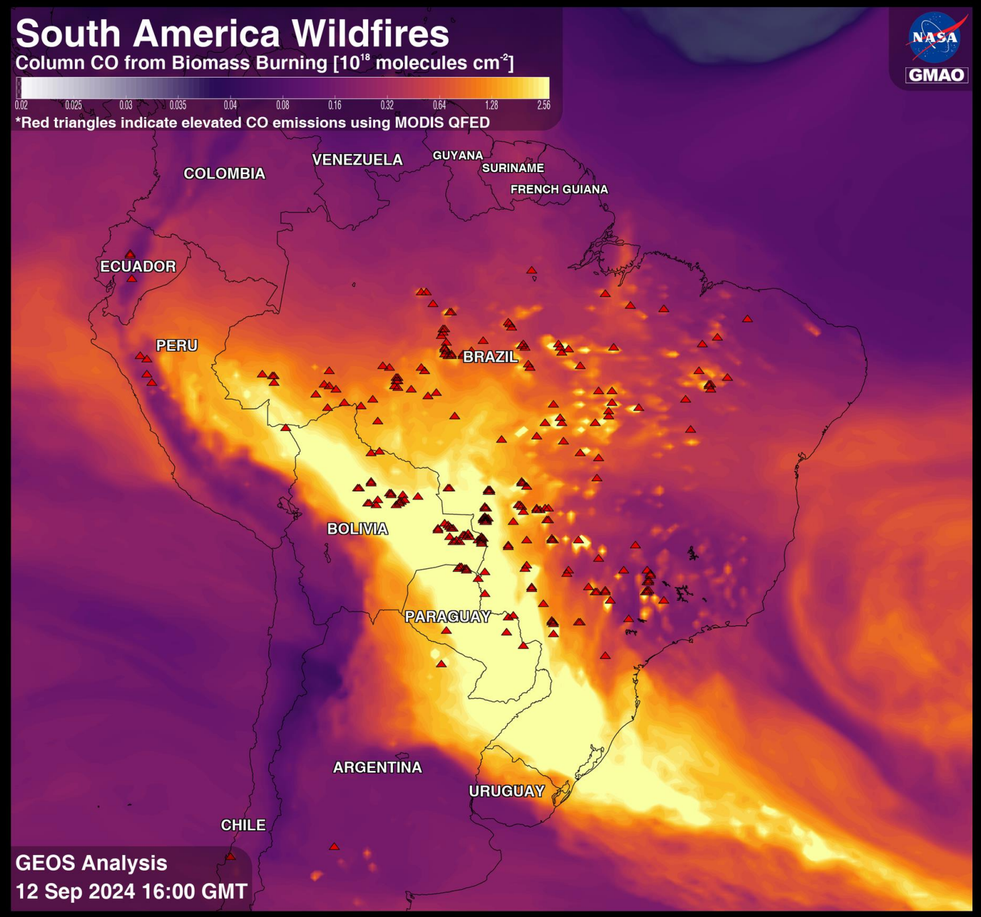
Historic Wildfires Rage In South America

South America has experienced widespread wildfires since mid-July, the highest concentration being in Bolivia and Brazil. Lasting over 2 months in some instances, these fires have expelled vast quantities of smoke into the atmosphere and, due to prevailing winds aloft, have led to “atmospheric aerosol rivers.” Visible below, these plumes of suspended particles exemplify how wildfire outbreaks can affect not just the areas immediately around the burned area, but downwind as well. Around the time of these figures – September 12, 2024, at 16 UTC – Sao Paulo, Brazil experienced the worst air quality in the world.





One consequence of wildfire smoke is aerosols suspended in the atmosphere trap more shortwave (solar) radiation which, in large enough quantities, increases temperatures. The figure’s left panel shows total shortwave forcing due to aerosols, measured in W/m^2, as captured by GEOS-FP Analysis. Areas of highest forcing are depicted in blue, with values exceeding 600 W/m^2 of additional solar radiation. The right panel shows carbon monoxide (CO) aloft as a result of biomass burning, depicted by GEOS Analysis, as well as surface locations with elevated CO, sourced from MODIS QFED. Column concentrations exceeding 10^{18} molecules per cm^2 are shown in orange and yellow.

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