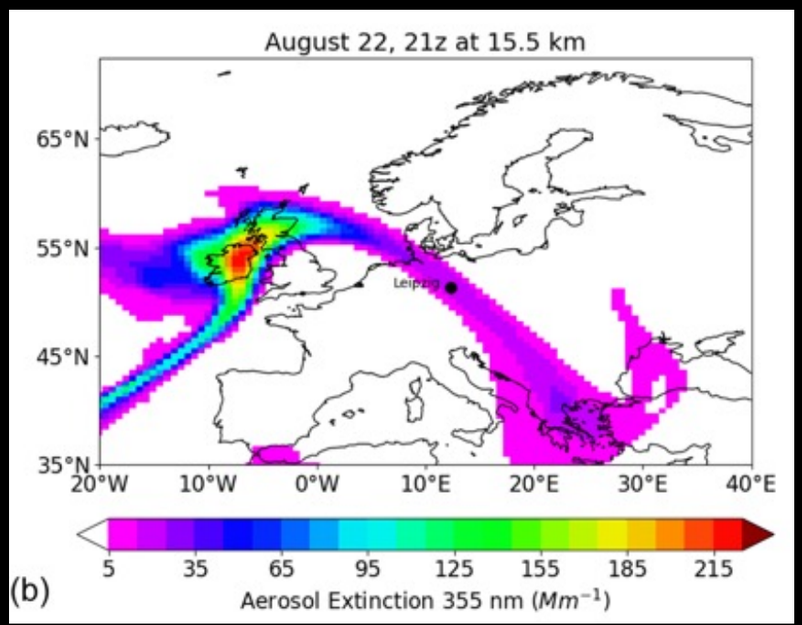
Pyrocumulonimbus Events: Projecting Scope and Impacts

Pyrocumulonimbus (pyroCb) clouds sometimes appear when severe weather interacts with intense wildfires.

PyroCBs act like giant chimneys, injecting massive amounts of smoke to **near-stratospheric heights**



- GSFC scientists demonstrated that **Goddard's GEOS model accurately simulated** the movement and life cycle of pyroCb aerosols.
- Smoke plumes from a Canadian pyroCB event extended all the way to Europe and spread over the entire Northern Hemisphere within a month.
- The pyroCb smoke caused a **significant additional warming of the stratosphere and a comparable cooling of the Earth's surface**.

Das, S., Colarco, P. R., Oman, L. D., Taha, G., and Torres, O.: The Long-term Transport and Radiative Impacts of the 2017 British Columbia Pyrocumulonimbus Smoke Aerosols in the Stratosphere, Atmos. Chem. Phys., 21, 12069–12090, https://doi.org/10.5194/acp-21-12069-2021, 2021.