Supporting Information

Miller et al. 10.1073/pnas.1207034109

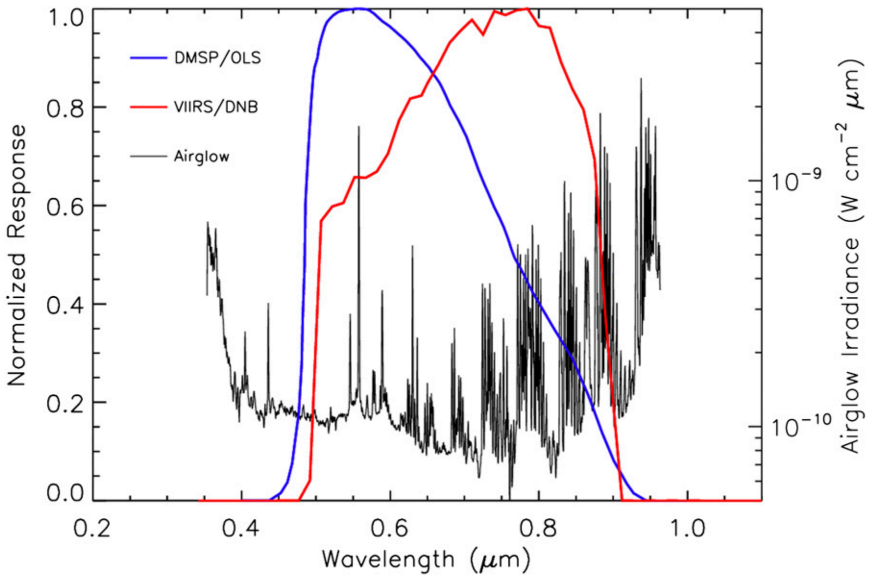

Fig. S1. Sensor spectral response functions for the VIIRS/DNB (red) and the DMSP/OLS (blue) plotted atop an example airglow irradiance spectra. The shift of the DNB response into the near infrared makes it more sensitive to the stronger Meinel hydroxyl (OH*) airglow emission bands.

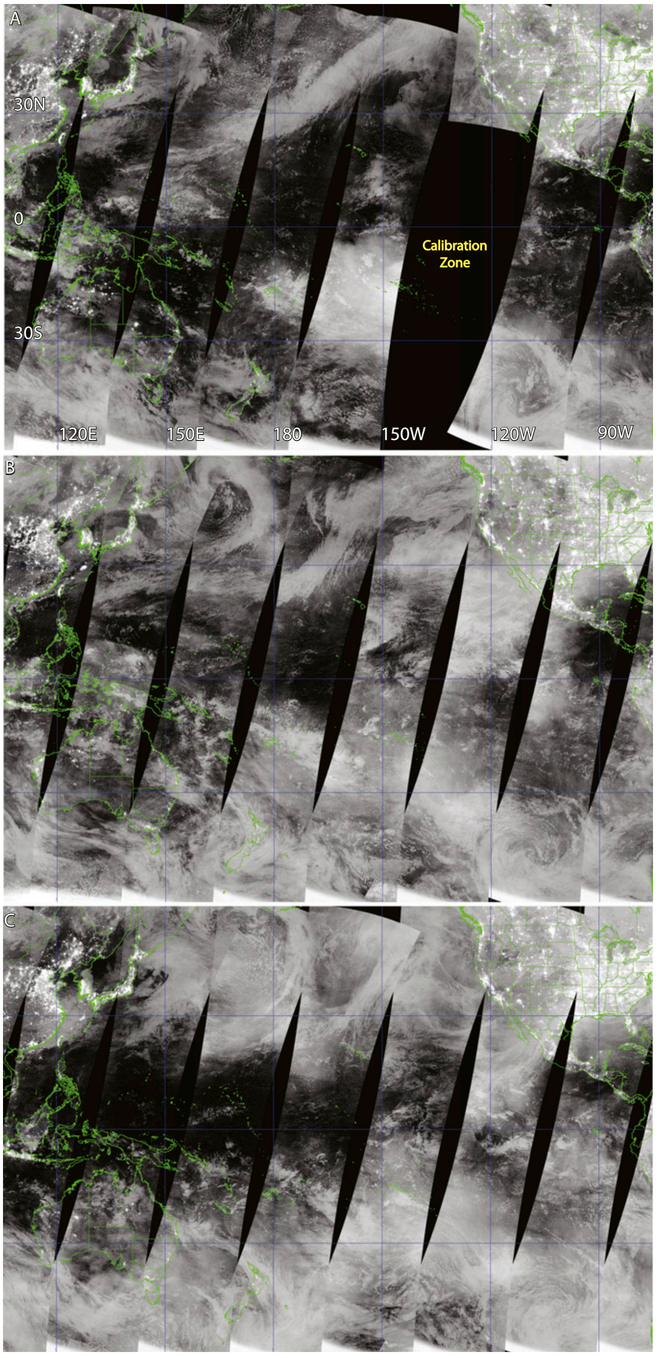

Fig. S2. Similar to Fig. 1 but for a sequence of nights on February 21–23, 2012 (*A*, *B*, and *C*, respectively). The data gap noted in the eastern Pacific corresponds to a routine calibration exercise done on the night of the new moon.

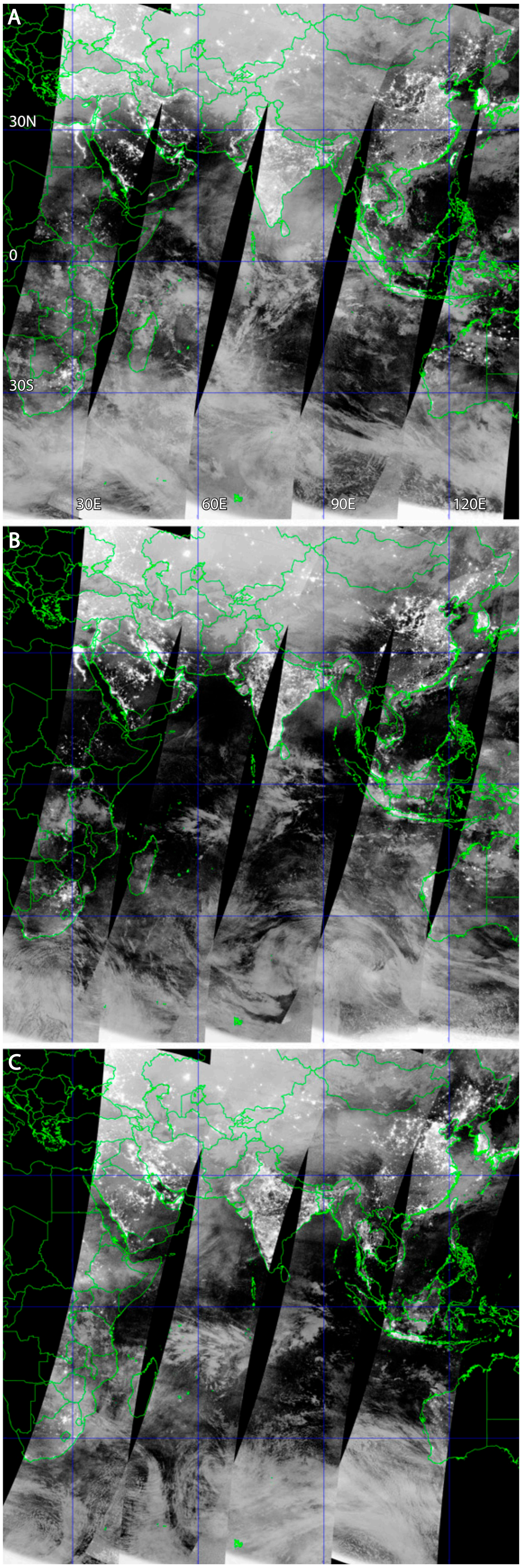

Fig. S3. Similar to Fig. 1 but for the Indian Ocean (coverage domain spans 13,750 km on a side) for a sequence of nights on February 21–23, 2012 (*A*, *B*, and *C*, respectively).

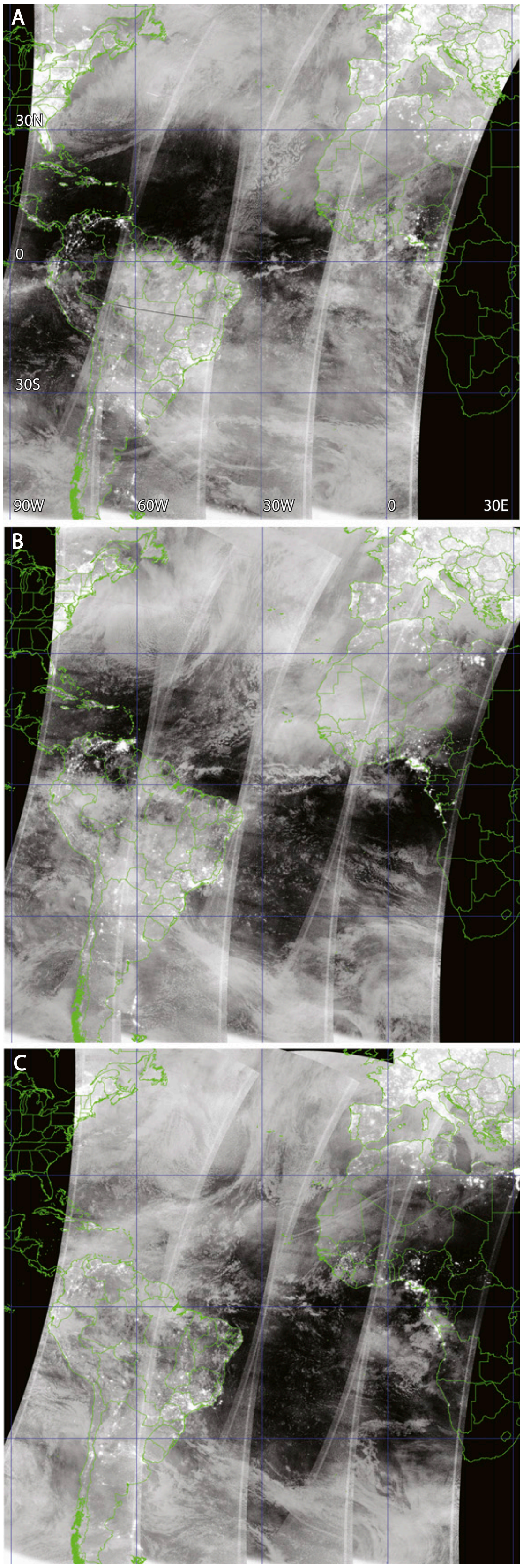

Fig. S4. Similar to Fig. 1 but for the Atlantic Ocean (coverage domain spans 13,750 km on a side) for a sequence of nights on February 21–23, 2012 (*A*, *B*, and *C*, respectively). Unlike Fig. 1 and Figs. S2 and S3, the full uncropped 3,000-km-wide VIIRS swath is shown. Whereas the wider swath provides unbroken coverage at low latitudes, noise from the outer aggregation modes is evident in a regular pattern near scan edge.

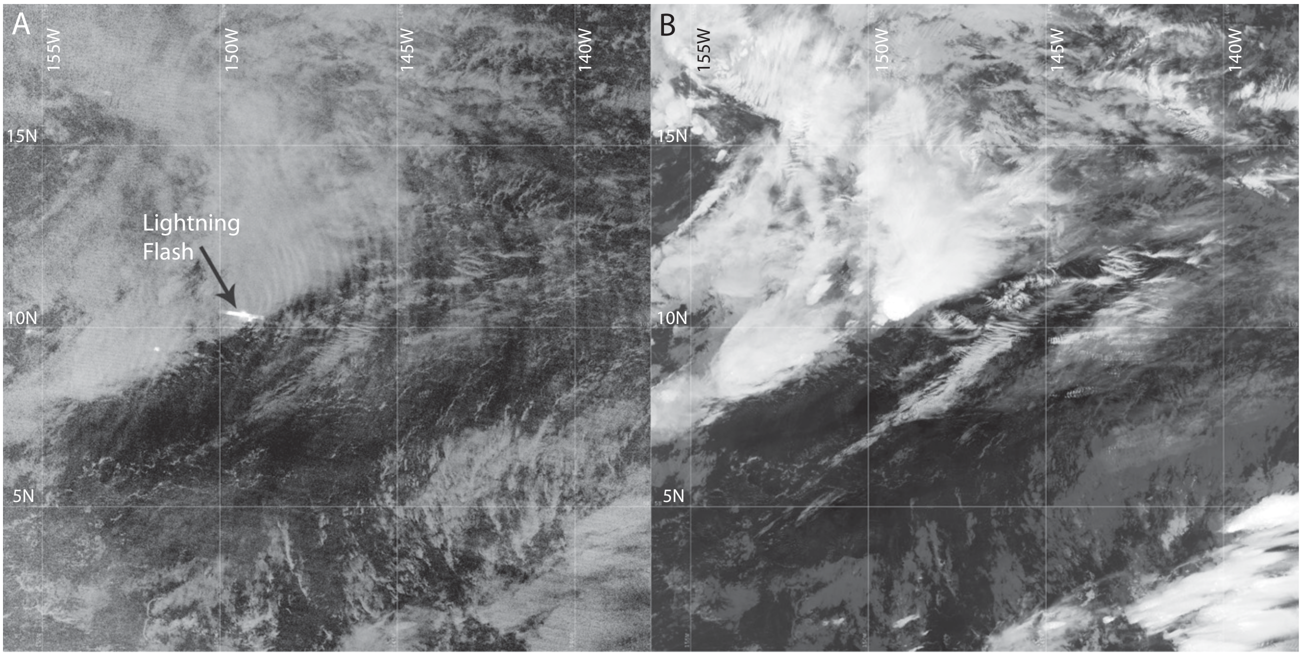

Fig. S5. (*A*) Reproduction of Fig. 5 showing a long train of airglow waves in the vicinity of the storms, which appears to radiate outward from a location near the noted lightning flash. (*B*) Space/time-matched thermal infrared imagery (from the VIIRS/M15 10.763-µm band), which shows strong convection near the location of the lightning flash but no indication of the features that together with their measured wavelength of ~33 km supports their classification as mesospheric airglow waves.

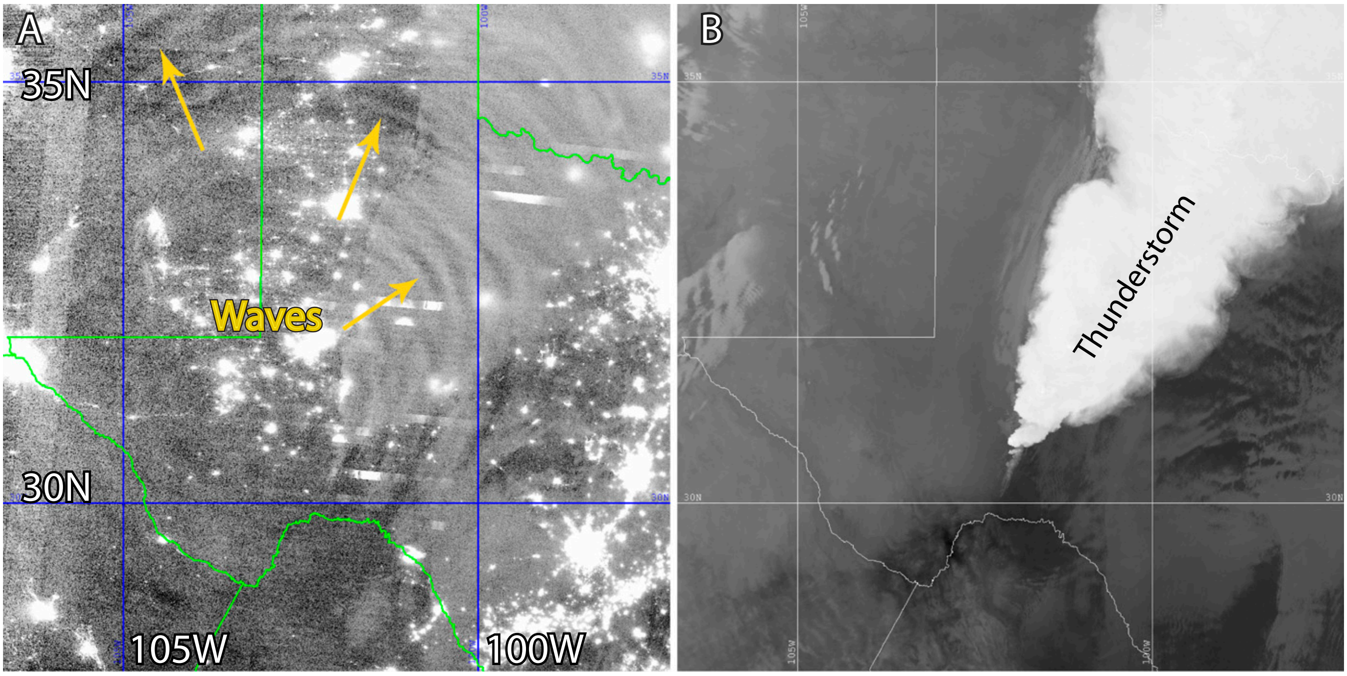

Fig. S6. (*A*) VIIRS/DNB imagery showing concentric mesospheric airglow waves emanating radially away from the vicinity of thunderstorm complex in west/central Texas on the evening of April 15, 2012 (746 UTC). The measured wavelength of these waves is ~30–35 km. Amorphous bright patches are light emissions from cities, whereas rectangular bright segments in the vicinity of the thunderstorm anvil are lightning flashes (as explained in association with Fig. 5). (*B*) Corresponding thermal infrared imagery from VIIRS/M15 (10.763 µm) showing the convection but no waves in the tropospheric meteorological cloud field.

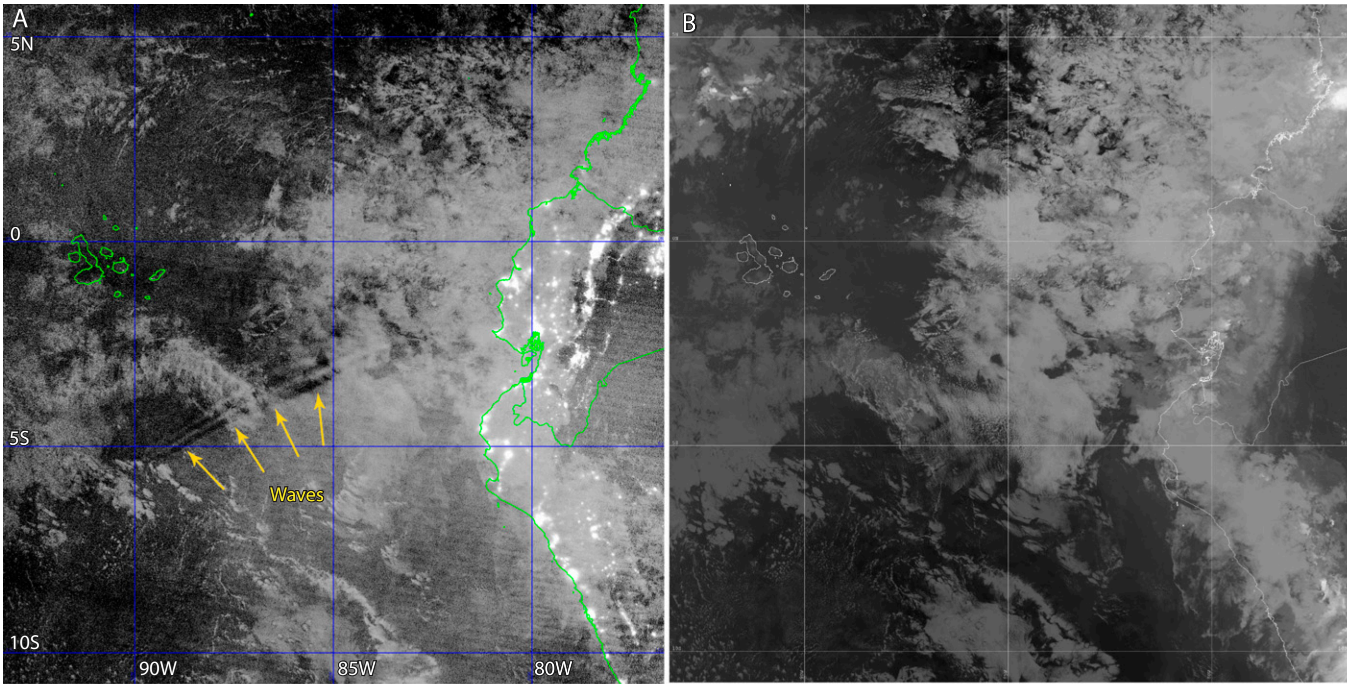

Fig. S7. Mesospheric airglow waves (measured wavelengths between 25 and 35 km) off the coast of Ecuador and Peru as observed by the Suomi NPP VIIRS Day/Night Band (*A*) and corresponding thermal infrared (10.763 μm) band imagery (*B*) on January 24, 2012, at 653 UTC. Stronger primary airglow emissions (diffuse brightness) reside to the south of this wave front. Unlike the examples shown in Fig. 5 and Figs. S5 and S6, the forcing for these linearly oriented waves does not appear to be directly associated with strong tropospheric convection.