Airglow Temperature Photometers Using Cooled-CCD Detectors 2: Comparison with a Sodium Lidar

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We have developed three airglow temperature photometers using cooled-CCD detectors. The photometers measure rotational temperatures through the airglow emissions of OH (emission altitudes: 80-90 km) and O2 (90-100 km) near the mesopause region. The CCD detectors are used to distinguish the rotational lines of these airglow bands, like those used by the Spectral Airglow Temperature Imagers (SATI) [Wiens et al., Adv. Space Sci., p.677, 1997]. From September to November 2003, we made a campaign observation of the mesospheric temperature using the three photometers and a sodium lidar of the Colorado State University (operated by Dr. C.-Y. She and Dr. B. Williams) at Platteville, Colorado (40.2N, 255.3E). The correspondence of the temperatures obtained by two instruments is fairly good with differences of less than 10-20 K.