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Aerosol remote sensing in the next decade at the US National Oceanic and Atmospheric Administration (NOAA)

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Operational aerosol remote sensing will have new instruments available to use in the next decade. Satellites in the US National Polar-orbiting Operational Environmental Satellite System will carry the Visible/Infrared Imager Radiometer Suite (VIIRS), and will offer capabilities for aerosol remote sensing similar to those currently provided by the Moderate Resolution Imaging Spectroradiometer (MODIS) flown on the NASA Earth Observing System (EOS) satellites. In addition, with the launch of the Geostationary Operational Environmental Satellite, GOES-R, in 2012, NOAA will begin a new era of geostationary remote sensing. The Advanced Baseline Imager (ABI) on GOES-R will expand NOAA's frequency and coverage of multispectral remote sensing that can support a wide range of weather and environmental applications including the determination of aerosol properties. This paper describes some of the current and planned work at the NOAA Center for Satellite Applications and Research (ORA/STAR) that will use the new capabilities offered by these sensors for aerosol remote sensing, as well as work that addresses the transition from past aerosol retrievals to those obtained from the new instruments.

There is a rich heritage of aerosol research at NOAA/ORA/STAR. Routine aerosol remote sensing from the Advanced Very High Resolution Radiometer (AVHRR) over ocean began in the late 1980's. Recently, real time monitoring of aerosol over the U.S., including both land and water, has begun from the Geostationary Operational Environmental Satellite (GOES) data. The ABI on GOES-R, being a multi-channel, visible through infrared, passive imaging radiometer will further improve our capabil-

ity to retrieve aerosol properties operationally from a geostationary platform. The ABI will have increased spatial resolution (0.5 km at nadir for visible, 1.0 km for near IR and 2.0 km for IR), faster scanning (full disk in approximately 5 minutes), more spectral bands (6 visible to near-IR bands: 0.47, 0.64, 0.86, 1.38, 1.61, and 2.26 μm, and 10 infrared, IR bands: 3.90 μm to 13.3 μm) and, most importantly, onboard calibration that also include the solar reflectance channels. The GOES-R aerosol algorithm is going to use approaches similar to those used in the MODIS and VIIRS aerosol algorithms, and provide information on aerosol size and type.