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Prepared by NOAA
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# NOAA (STAR/NCDC) AEROSOL REMOTE SENSING RESEARCH

In response to CGMS Action 33.06

NOAA responded to CGMS XXXIII WMO-WP-25, to report on current efforts to establish and/or enhance aerosol products suitable for climate applications. CGMS was informed that NOAA is working to better understand the spatial and temporal distribution of aerosols in the atmosphere using current and future NOAA instruments. NOAA operates a real-time aerosol optical depth (AOD) environmental data record (EDR) for retrievals over the ocean which has historically been used for SST correction. Additionally, work has included retrieving AOD from the entire AVHRR record (e.g., the Pathfinder Atmosphere project which spans 1981-2000) toward creating an AOD climate data record (CDR). Current work is attempting to bridge the EDR/CDR gap to better understand differences and create CDRs in real time. New reprocessing capabilities also allow the improvement of AOD CDRs. Toward this end, NOAA is working to understand how the aerosol retrievals from these new sensors will affect our current understanding of aerosol climatology by using current satellites flown by NASA and Europe as a surrogate for future NOAA missions.

# NOAA (STAR/NCDC) Aerosol Remote Sensing Research

## 1 Introduction

The National Oceanic and Atmospheric Administration (NOAA) is working to better understand the spatial and temporal distribution of aerosols in the atmosphere using current and future NOAA instruments. NOAA operates a real-time aerosol optical depth (AOD) environmental data record (EDR) for retrievals over the ocean which has historically been used for SST correction. Additionally, work has included retrieving AOD from the entire AVHRR record (e.g., the Pathfinder Atmosphere project which spans 1981-2000) toward creating an AOD climate data record (CDR). Current work is attempting to bridge the EDR/CDR gap to better understand differences and create CDRs in real time. New reprocessing capabilities also allow the improvement of AOD CDRs. However, the work with AVHRR is limited to oceanic AOD. A new algorithm which retrieves AOD from the GOES sensors is in use by the air quality community, since this algorithm provides AOD over land; it is primarily used as an EDR. However, this resource is also being investigated for potential reprocessing for the GOES-8/12 period of record (1994-present) for a climate analysis of historical, health-affecting haze outbreaks.

NOAA is also striving to increase the capability of aerosol analysis with improved future sensors which include NPOESS VIIRS and GOES-R ABI. These new sensors will provide more accurate measurements of other aerosol properties such as aerosol size and type. Toward this end, NOAA is working to understand how the aerosol retrievals from these new sensors will affect our current understanding of aerosol climatology by using current satellites flown by NASA and Europe as a surrogate for future NOAA missions. This work will lead toward faster integration of new aerosol algorithms when NPP, NPOESS and GOES-R are launched. Thus, NOAA is striving to better understand aerosols using the current sensors and preparing for future capabilities as well.