

Overview and Selected Results from the NOAA Federated Aerosol Network

P. Sheridan¹, D. Hageman^{2,1}, J. Wendell¹, and B. Andrews^{2,1}

¹NOAA Earth System Research Laboratory, Global Monitoring Division (GMD), Boulder, CO 80305; 303-497-6672, E-mail: patrick.sheridan@noaa.gov

²Cooperative Institute for Research in Environmental Sciences (CIRES), University of Colorado, Boulder, CO 80309

The NOAA Earth System Research Laboratory (ESRL) maintains Atmospheric Baseline Observatories to monitor the atmospheric background levels of trace gases and aerosols. Measurements at these remote sites permit us to determine to what extent the global backgrounds are changing over time. Since aerosols are perturbed near the sources, these Observatories are in prime locations to assess baseline changes to the atmospheric aerosol. In order to better understand anthropogenic aerosol radiative forcing and its effects on climate, and to reduce the uncertainties associated with extrapolating relatively few discrete observations up to regional or global scales, many more stations in different climatological regions were needed. To accomplish this ESRL has over the past two decades significantly expanded its network of stations to include locations that are at times influenced by anthropogenic emissions. This long-term strategy permits estimates of how much of the aerosol radiative forcing at these locations is caused by human activities and sheds light on whether changes in policy can influence the effects of these aerosols. It is not realistic for NOAA to fund the operation of monitoring stations all over the world. The primary way we have been able to expand the network to include another major anthropogenic aerosol source region (Southeast Asia), the region considered the bellwether of global climate change (the Arctic), and other perturbed areas is to foster collaborations with interested science organizations and universities in the U.S. and around the world. The collaborations we have developed present advantages for all parties and the aerosol data collected are directly comparable with those from other stations in the network. This presentation describes the growth of this collaborative global surface aerosol-monitoring network (the NOAA Federated Aerosol Network) and shows some recent results from these collaborations.

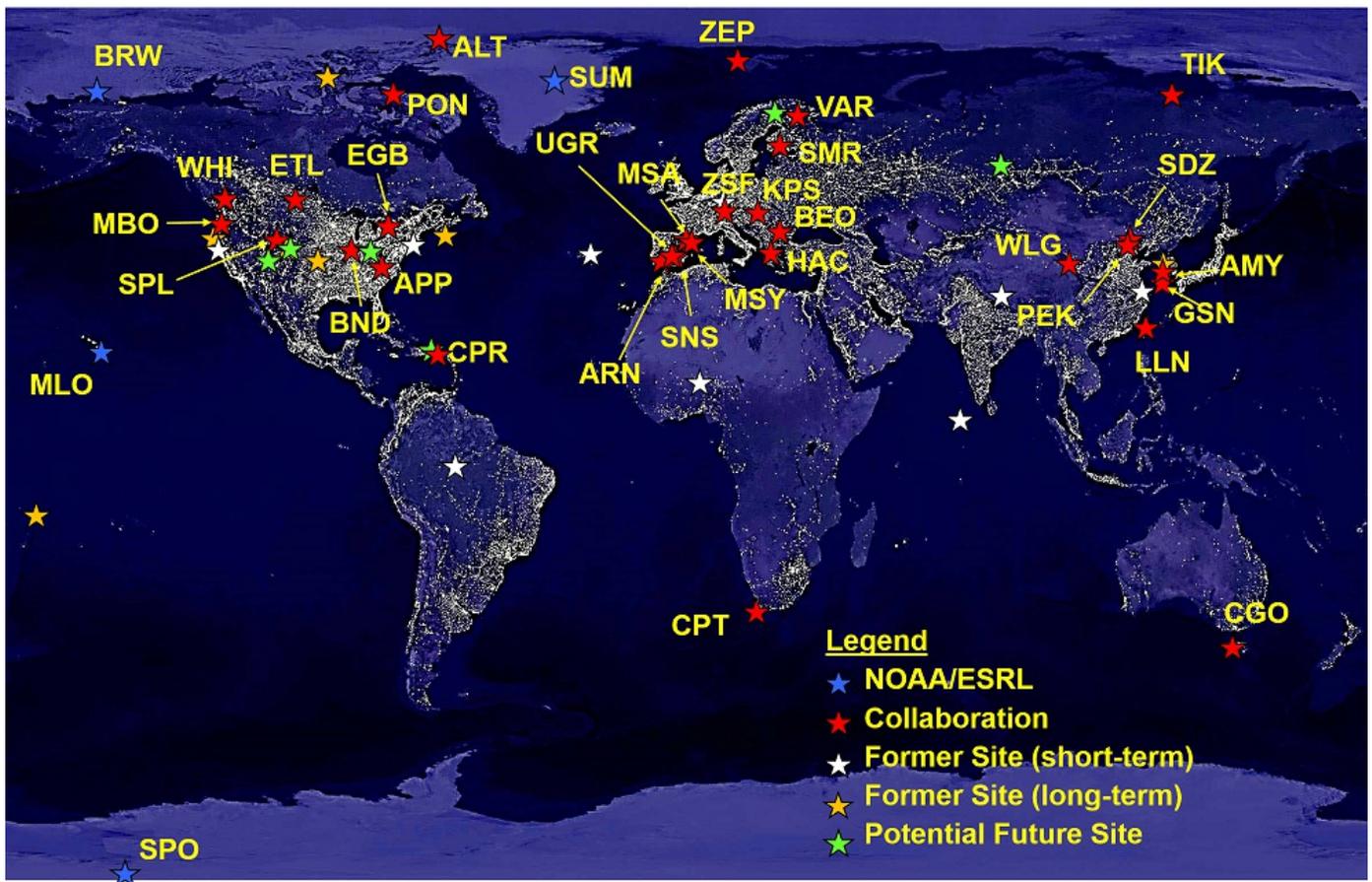


Figure 1. The NOAA Federated Aerosol Network in April 2019.