

The Global Atmosphere Watch World Data Centre for Aerosols: Progress in Integrating Regional Surface Observations of *In Situ* Aerosol Physical and Chemical Properties into a Global Network

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The purpose and long-term goal of the WMO Global Atmosphere Watch (GAW) is to provide data, scientific assessments, and other information on the atmospheric composition and related physical characteristics of the background atmosphere from *all* parts of the globe. The atmospheric aerosol burden is a key atmospheric component, however characterizing the relevant aerosol properties involves a wide range of aerosol observations both extensive and intensive. The GAW Scientific Advisory Group for Aerosols has identified 5 *core continuous aerosol parameters* that need to be measured at global and regional stations (multiwavelength optical depth, mass in two size fractions, major chemical components in two size fractions, light scattering coefficient, light absorption coefficient) as well as additional continuous and intermittent measurements that are desirable for global and key regional stations. As well as individual stations, two collaborative efforts, the ESRL network of Baseline Regional and Cooperative stations and the EUSAAR (European Supersites for Atmospheric Aerosol Research) network provide the backbone of the GAW aerosol program worldwide. Both networks are actively reducing the uncertainties in observations, by promoting the use of consistent techniques, characterizing the precision and accuracy of the techniques through instrument inter-comparisons and working to harmonise meta-data descriptions. Both networks submit data to the GAW World Data Centre for Aerosols. EUSAAR data are collected centrally by the EMEP Chemical Coordinating centre in Norway and copied en-masse to the GAW World Data Centre for Aerosols (WDCA), using the NARSTO data exchange standard. A similar procedure is followed for the ESRL baseline and regional sites, the data are received by WDCA and then converted into the NARSTO data exchange standard for dissemination. This has several advantages, multiple data submissions are avoided, the resulting ‘global’ data sets are made available to the community in a consistent format and very importantly this format (the NARSTO data exchange standard) requires the co-provision of sufficient meta-data to allow informed use of the data sets. This last point is of great importance, where in the absence of a single harmonised global aerosol monitoring network, the characterization of the differences in techniques used to produce individual measurement datasets of the same parameter is crucial to understanding their comparability.

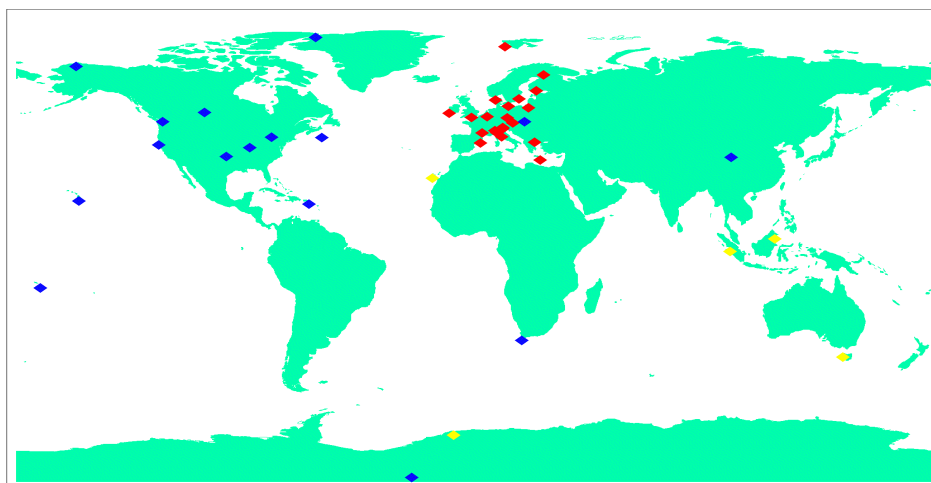


Figure 1. Map of combined EUSAAR (Red), ESRL and ESRL Collaborators (Blue) and Independent (Yellow) sites contributing to GAW.