



The Global Aerosol Synthesis and Science Project (GASSP)

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GASSP aims to improve the robustness of global aerosol models by assembling the largest ever dataset of global aerosol microphysics measurements and by developing statistical methodologies for using the data to constrain models. Although several measurement networks provide access to high quality well-documented data, like AC-TRIS, a project like GASSP is still needed because vast amounts of data exist outside major measurement networks, mostly held by individual investigators. In collaboration with observation scientists, GASSP has assembled over 4000 datafiles going back to the 1990s. The datasets cover particle concentrations (CPC), size distributions, black carbon concentrations (SP2), CCN concentrations at several supersaturations, aerosol composition (AMS) and PM_{2.5}. The data cover more than 100 field campaigns from ships, aircraft and ground stations plus data from more than 200 monitoring sites. All datasets have been processed from about ten different initial formats into a single well-documented NetCDF format that is easily used by modellers. The presentation shows the global extent of these highly valuable datasets and assesses the distribution of measurements in relation to key uncertainties in model processes. These comparisons reveal important gaps in available global data, most notably in remote regions, which limits our ability to evaluate natural aerosol processes in models. The presentation discusses the challenges of using extensive but spatially and temporally sparse situ measurements to evaluate global models and makes recommendations for improved progress in future.