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Recent developments in chemical weather analysis and forecasting at the Max Planck institute for chemistry

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For nearly ten years, the Max Planck Institute for Chemistry in Mainz has provided analyses and forecasts of the global chemical weather using the model MATCH-MPIC (Model of Atmospheric Transport and CHemistry - Max Planck Institute for Chemistry version). During this time our system has been used in the early planning stages of field measurement campaigns in order to help formulate overall measurement strategies, during field measurement campaigns in order to direct the measurement of specific chemical weather features, and is also a valuable tool in the post- campaign analysis of field measurement data. We have recently upgraded our chemical weather forecasting information system, including improvements to the MATCH-MPIC model code, the emission datasets used to drive the model, the systems controlling the collection of meteorological input data and the running of the model, and the underlying computer hardware on which these systems run. These upgrades have increased the flexibility of our system, including the ability to readily perform parallel sensitivity forecasts (e.g., neglecting or perturbing certain emissions or processes), and have allowed us to increase the resolution at which we run our model. We present an evaluation of an eight year reanalysis performed with our updated system, in which we compare our model results with field measurement campaign data and various long term measurement data, along with a summary of the ways in which our chemical weather analysis and forecast system has been used in the planning, support and analysis of various field measurement campaigns. We conclude with a brief note on envisioned future developments in chemical weather forecasting at the MPIC.