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Estimation of surface pressure and wind observation errors from ERA-20C observation feedback

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The ERA-20C reanalysis assimilates observations of atmospheric surface pressure and wind in an ensemble of four-dimensional variational (4D-Var) analyses. From the assimilation statistics, one can derive, under some hypotheses, estimates of the observation errors using the method of Desroziers et al (2005). However, because of the underlying hypotheses, the quantification of error that is obtained by this method may not necessarily be completely correct or optimal without further interpretation. Yet, the results can still prove extremely valuable, within a given assimilation system, to understand the evolution of observing systems over time, or to realize large differences between observation types. In this talk we will discuss our findings regarding surface pressure and wind observations from the ERA-20C century-long assimilation. With this paper we intend to motivate comments from other participants with experience with those observations so as to better specify observation errors in the next century-long reanalysis.