The use 1D-VAR as pre-processor of the NWP Data Assimilation system: CPTEC Pre-operational results

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Hyperspectral infrared sounders and Microwave sounders have a dominant impact on forecast accuracy, and therefore their assimilation is top priority. This is mainly true on the radiance assimilation. In this context, the Center for Weather Forecast and Climate Studies (CPTEC) of the National Institute for Space and research is planning to substitute the actual assimilation systems PSAS (Physical-space Statistical Analysis System) to LETKF (Local Ensemble Transform Kalman Filter). This last one allows assimilates geophysical and radiances observations, while the first only assimilates geophysical parameters. The implementation of the new assimilation system will make CPTEC the first meteorological center to use LETKF as the operational assimilation system for the global weather forecast. Following the experience of the ECMWF and UK-MetOffice, CPTEC is going to use the One-Dimensional Variational Analysis Package (1D-VAR) from NWP-SAF for evaluate the observations. Initial tests on the use of 1DVar have been performed based on the background information from CPTEC global NWP model and observation from ATOVS. The 1D-VAR is going to be used as pre-processor in order to exclude those observations that unlikely to converge rapidly in the assimilation system. Also 1D-VAR is going to be used for analyze quantities need to the radiance assimilation and that they are not provided by LETKF (for example surface temperature, surface emissivity, temperatures above model top, cloud variables, etc). Pre-operational results on the use of 1 DVAR are presented.