

## **Investigation of Methodologies for Atmospheric Retrieval for the CPTEC operational System**

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### **ABSTRACT**

The Center for Weather Forecasting and Climate Studies (CPTEC) is responsible for producing weather maps for the numerical prediction in Brazil. One key issue for numerical prediction is related to provide good estimation of the initial conditions for the atmospheric simulation code. One procedure consists to retrieve vertical atmospheric profiles for temperature and moisture. The CPTEC operationally uses the Inversion Coupled with Imager (ICI-3) software in dynamic mode (CPTEC analysis) with the ATOVS/NOAA-16 system to supply such vertical profiles. However, CPTEC is also investigating new retrieval schemes that they have been developed by INPE. One of these schemes performs the profiles by means of a generalized least square problem, where a new regularization operator is employed. Such regularization operator is based on maximum entropy of second order [1, 2]. An artificial neural network (ANN) is another scheme for retrieving the atmospheric profiles. The ANN is the multi-layer perceptron, with back propagation learning strategy [3]. The goal of this paper is to compare these three different methods, focus on the operational procedures. The comparison is carried out using two databases: TIGR and NESDISPR. About of 500 profiles from TIGR and 400 profiles from NESDISPR, and associated radiances, are selected from these databases for testing the three strategies. The average over profiles is used to perform the comparison among the inversion methodologies, and these analyses will be shown here.

### References:

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