## Supplement

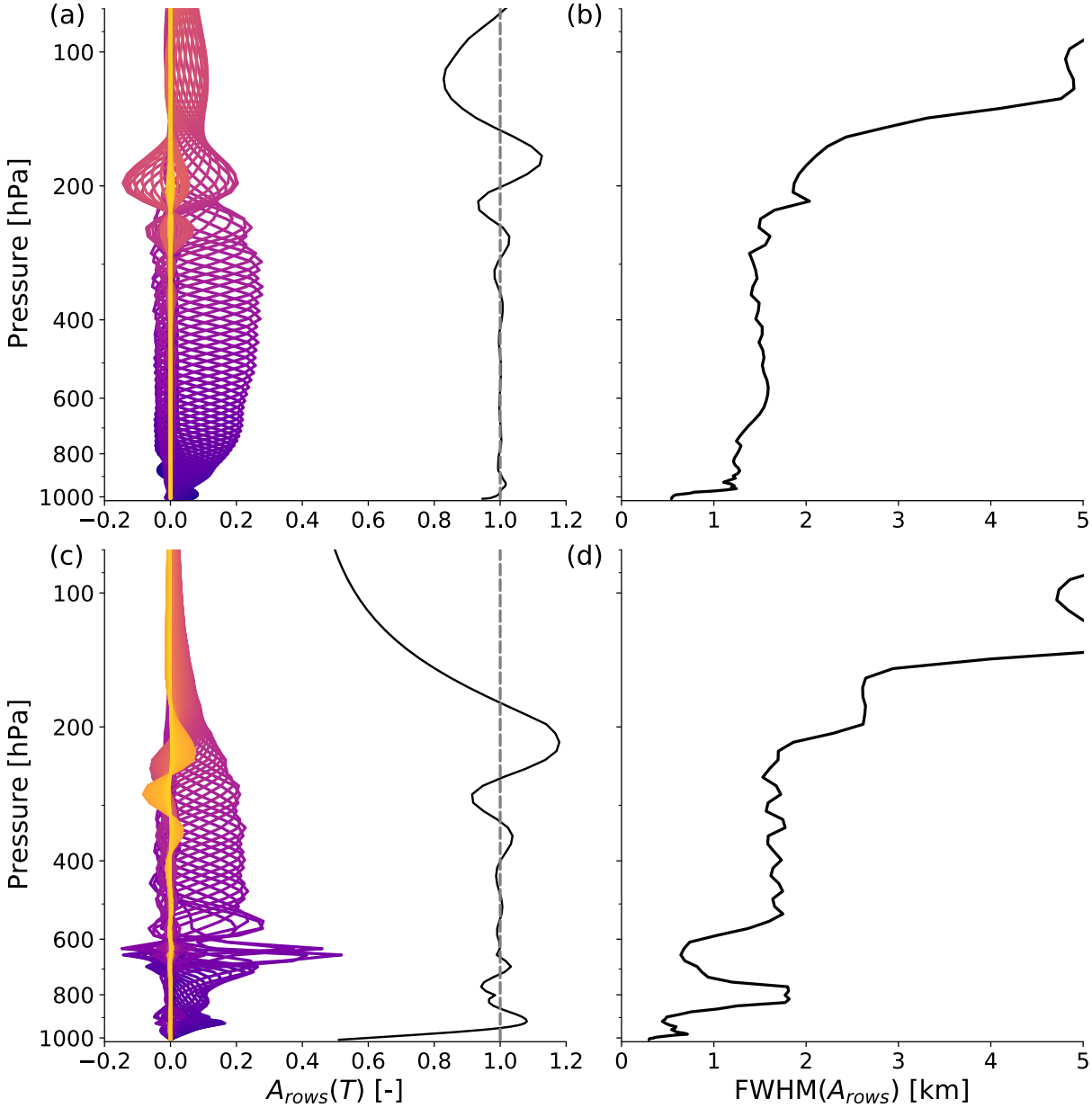


Figure 1: (a) and (c) show rows of the temperature averaging kernel matrix as colored lines and their sum as a black line, which denotes the measurement response. The rather blue lines correspond to kernels closer to the surface, the more yellow lines correspond to kernels in higher altitudes. (b) and (d) show the FWHM of the averaging kernel rows, which is a measure for the vertical resolution of the observing system. (a) and (b) are based on a mean tropical ocean atmosphere, specifically the tropical FASCOD atmosphere. The atmospheric setup used for (c) and (d) differs only by the introduction of EML features, as described in Sect. 3 of the manuscript.

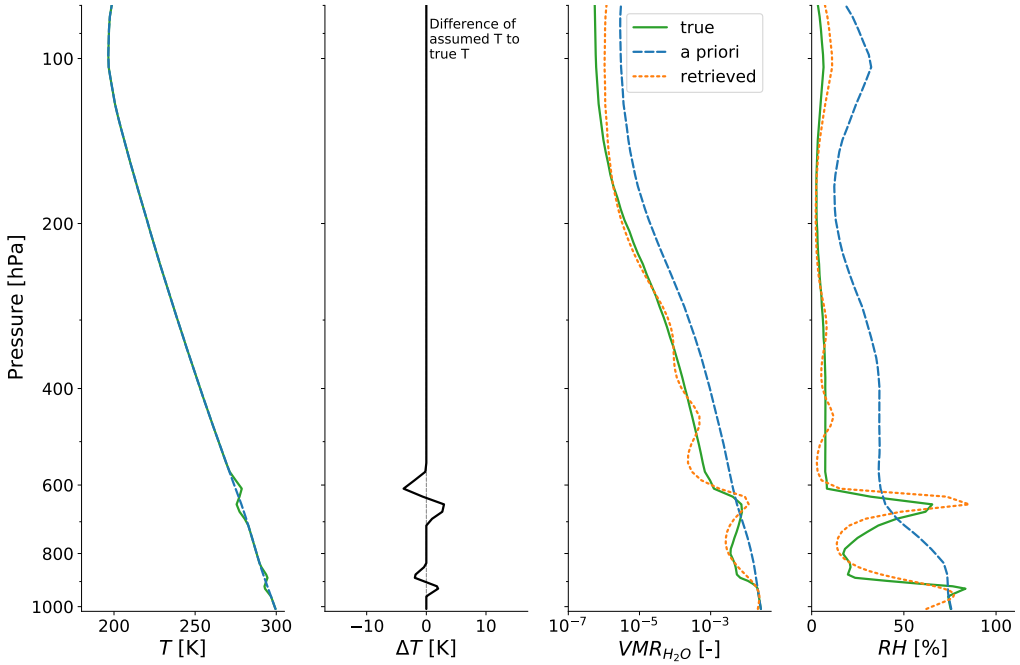


Figure 2: Profiles of EML retrieval testcase, where the temperature profile retrieval is omitted and the a priori temperature profile only misses the temperature inversion features around the EML. It is apparent that the EML is retrieved, but that the missed temperature inversions result in an overly pronounced retrieved EML and a slight increase in its altitude.

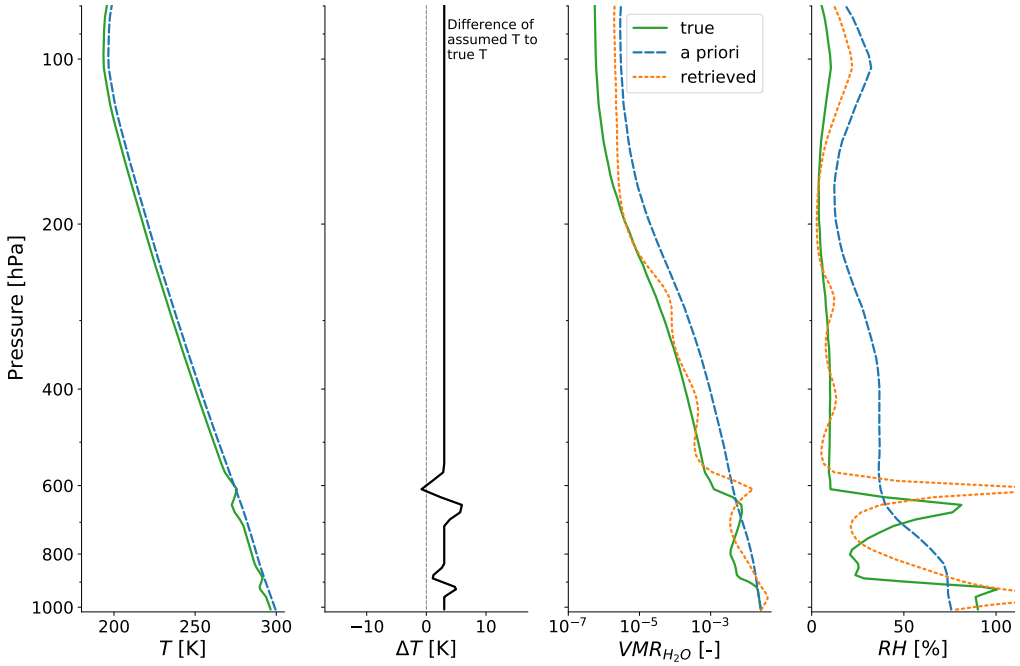


Figure 3: Same as Figure 2, but with added constant Temperature bias of 3 K between truth and a priori. The larger temperature error is compensated for by the water vapor retrieval, which does not converge after 20 iteration steps and runs into an unphysical solution (RH > 100 %).