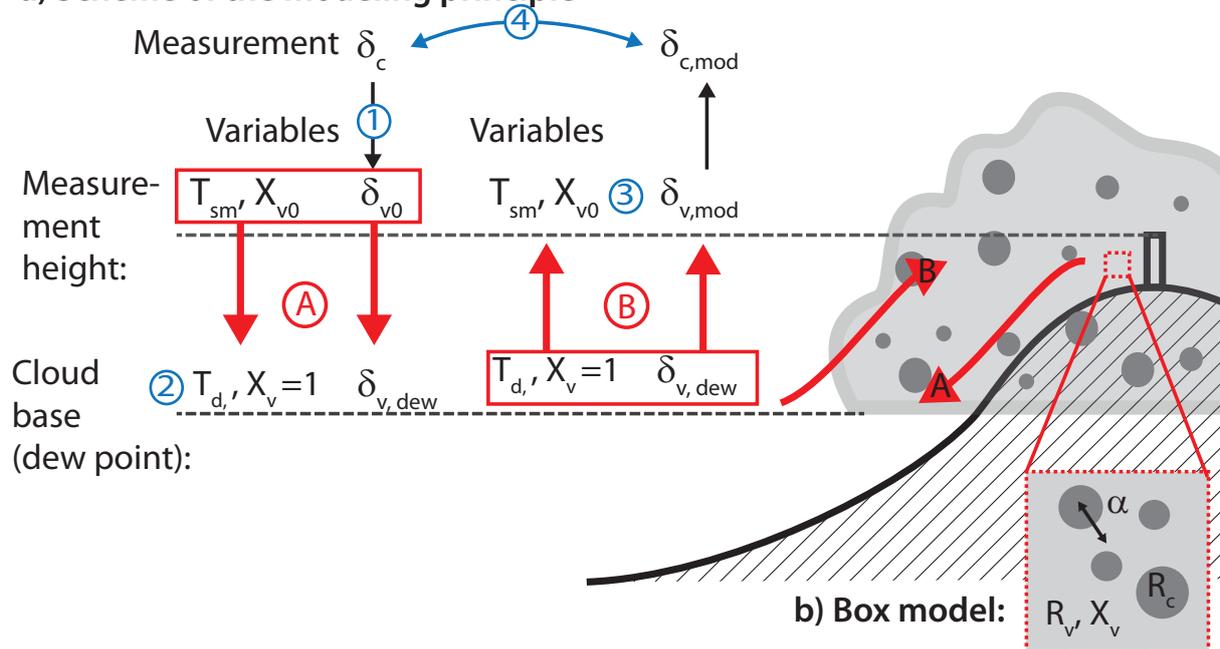




Figure 1: **Additional figure for the MS:** Location map including the sample collection site Schmücke (red square), the low mountain range Thüringer Wald (green area), Meiningen (red square, where the DWD launches its meteorological soundings), the closest GNIP station Wasserkuppe Rhön (red square) and Heidelberg (where Jacob and Sonntag (1990) collected the water vapor samples). The map is based on "Atlas der Schweiz" (Hurni, 2010).

a) Scheme of the modeling principle



c) Example of the modeling principle

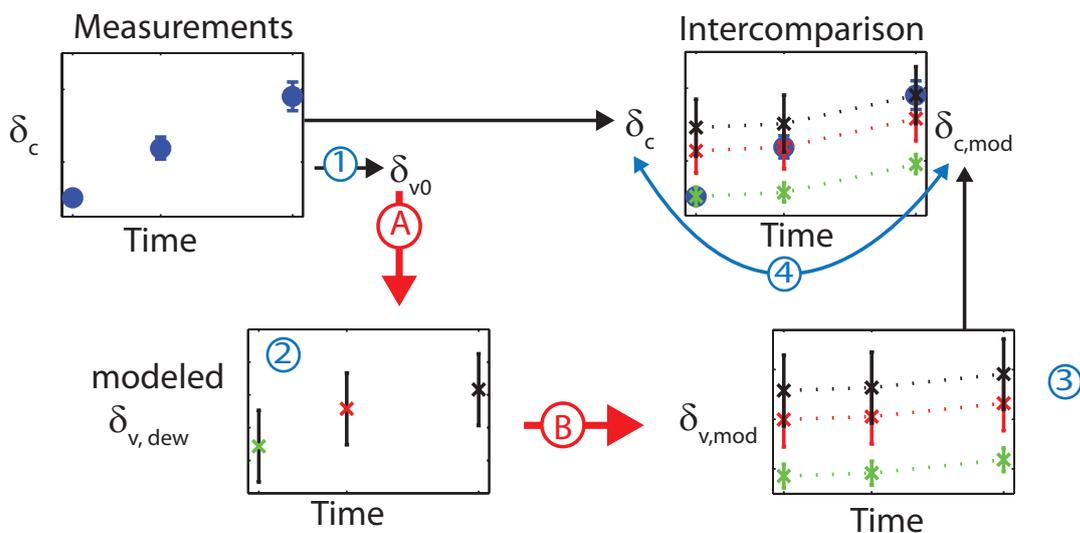


Figure 2: **Revised figures for the MS:** (a) Sketch of a cloud forming at Schmücke including the box model approach (b) consisting of the two model runs A and B. The initial values of each model run are framed in red. (c) An example of the modeling principle as described in Sect. 2.4 (variables are explained there as well): from the measured δ_c , δ_{v0} is derived (1) leading to $\delta_{v,dew}$ after model run A (2). Starting with each of the $\delta_{v,dew}$, model run B produces a series (three in total for the case shown here) of locally thermodynamically driven $\delta_{v,mod}$ (3), from which $\delta_{c,mod}$ were deduced and in a last step compared to the measured time series of δ_c (4). In this example, the transition between the last two measurement points meet the local condensation criterion, because both measured values δ_c are within the errors of modeled values $\delta_{c,mod}$ (cloud sample 2 is within the black error bar, which shows the uncertainty of the $\delta_{c,mod}$ based on $\delta_{v,dew}$ of cloud sample 3 and wise versa). In contrast, the error bar of $\delta_{c,mod}$ based on $\delta_{v,dew}$ of cloud sample 1 (green) does not overlap with cloud sample 2 (and the red line not with cloud sample 1). So, the transition from the first to the second measurement point is found to be caused by changes in the water vapor isotope composition feeding the cloud.

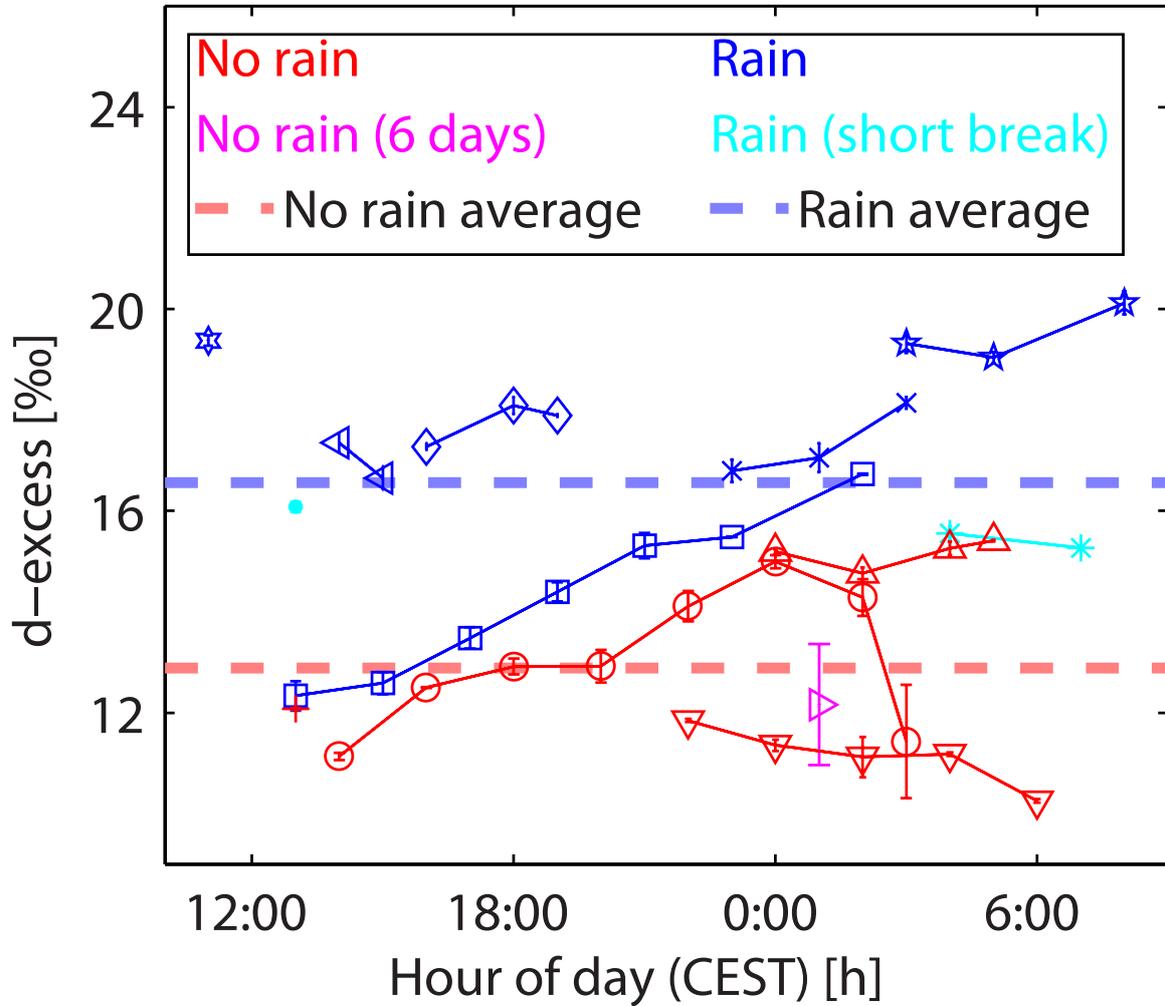


Figure 3: **Revised figures for the MS:** Temporal evolution of the d-excess ($d = \delta^2\text{H}_C - 8 \times \delta^{18}\text{O}_C$) including measurement errors for the cloud events during HCCT-2010. Different symbols are used for the different events (see Table 1). Different colors are linked to precipitation at Schmücke. Red symbols are used if there was no rain since the last cloud event and pink indicates that there was no rain within the last 6 days. The mean value of those values is indicated as a red dashed line. Blue is used for cloud events where precipitation did not stop one hour before the cloud event and cyan is used for cloud events when precipitation stopped within one day before the cloud event. The mean value of those cloud events is indicated as a blue dashed line.

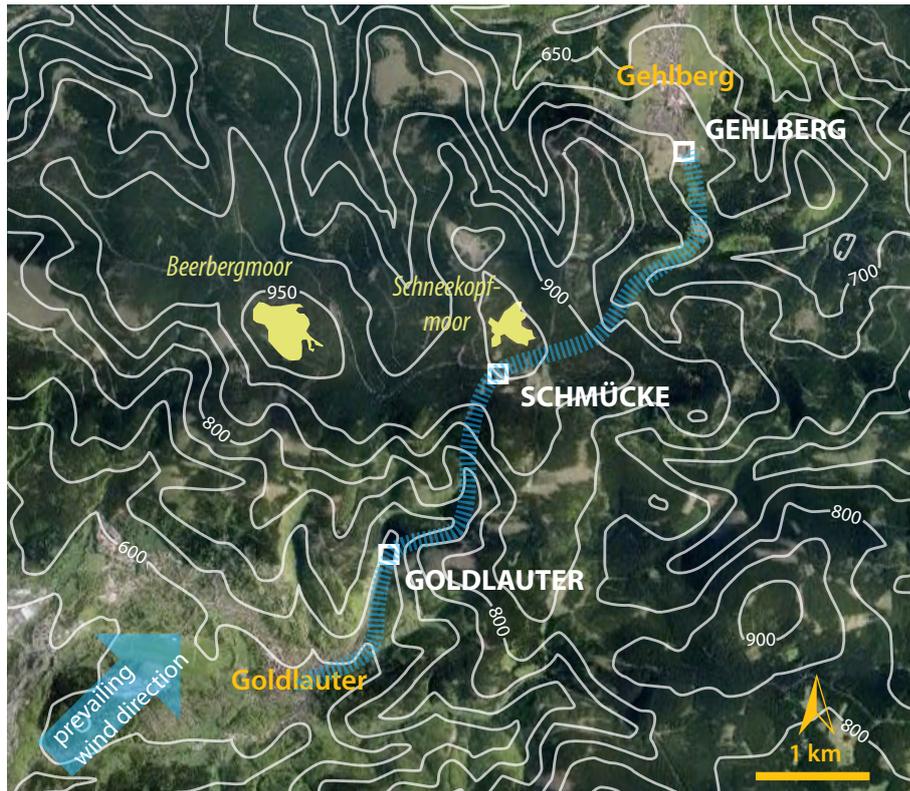


Figure 4: **Figure used in the final responses:** Map of the measurement site Schmücke indicated with a white square. Furthermore, the two sampling stations Goldlauter and Gehlberg used in the framework of HCCT-2010 are shown as well. The prevailing wind direction towards the site is shown and the resulting connected flow between the three stations as a consequence (a possible flow path based on the orography is indicated as a dashed line). Additionally, the two fens Beerbergmoor and Schneekopfmoor are shown. (Source: <http://www.openstreetmap.de> <http://opendatacommons.org/licenses/odbl/> and picture is taken from Google Earth 2009/2012 GeoBasis-DE/BKG).