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Impacts of Tibetan Plateau uplift on atmospheric dynamics and associated precipitation $\delta^{18}O$

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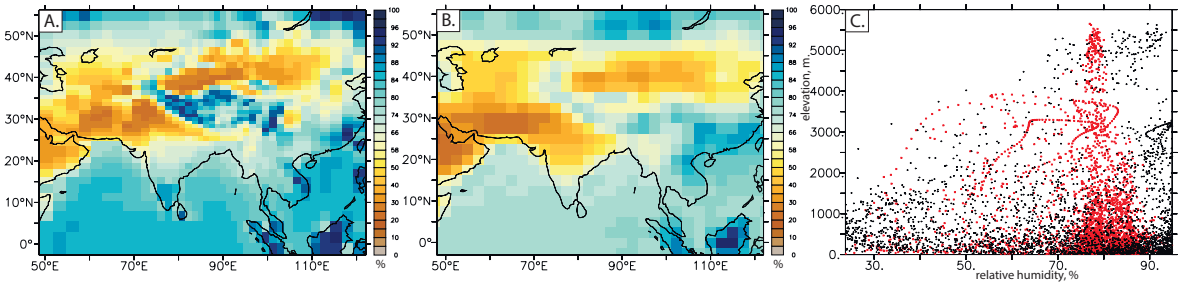

Figure S1. Mean annual relative humidity for A) LMDZ-iso simulated for the MOD experiment and B) NCEP-DOE Reanalysis. C) Scatter plot of global mean annual relative humidity versus elevation.

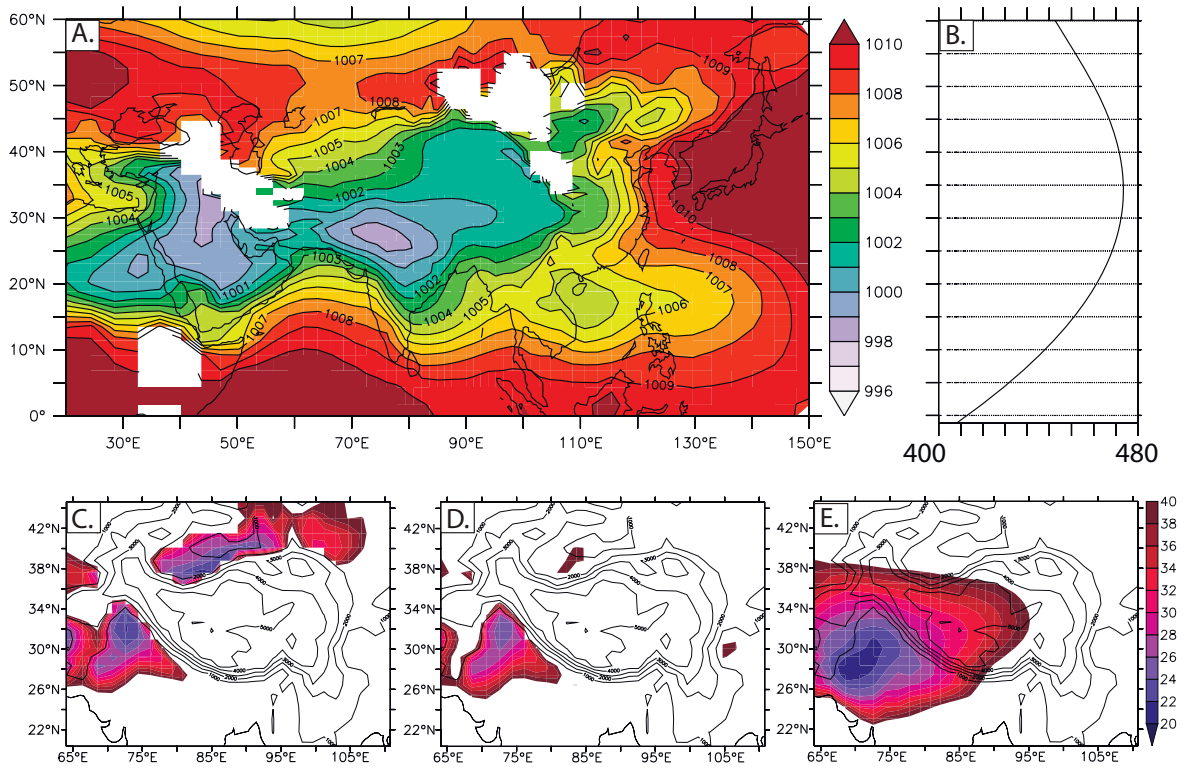

Figure S2. (A) Mean annual sea level pressure (hPa) for the LOW simulation, (B) Meridional transect of the insolation an the top of atmosphere (W m^{-2}), averaged for 90 °E, (C, D, E) Regions where relative humidity is under 40% for (C) MOD, (D) INT and (E) LOW experiment.

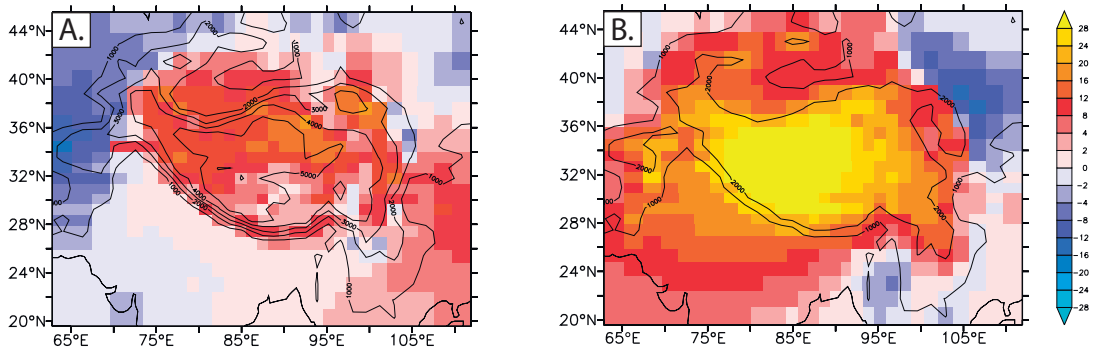

Figure S3. Total cloudiness change for A) MOD-INT B) INT-LOW cases.

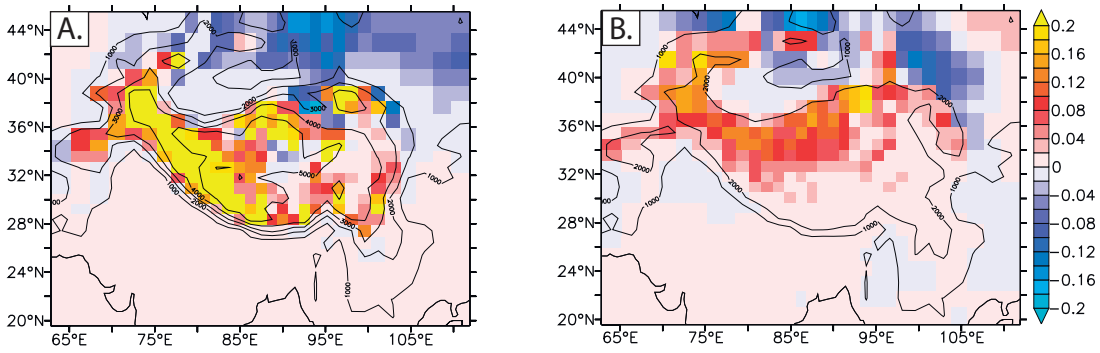

Figure S4. Surface albedo change for (A) MOD-INT (B) INT-LOW cases

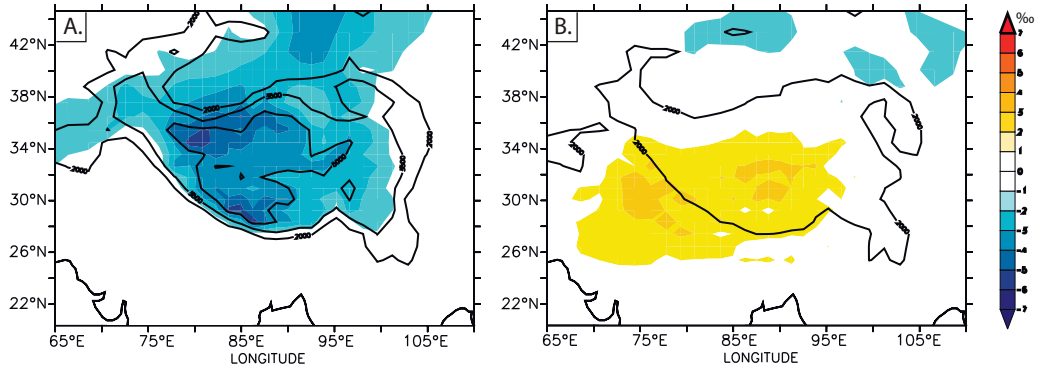

Figure S5. Spatial isotopic variations related to the change of spatial humidity for A) MOD-INT and B) INT-LOW cases.

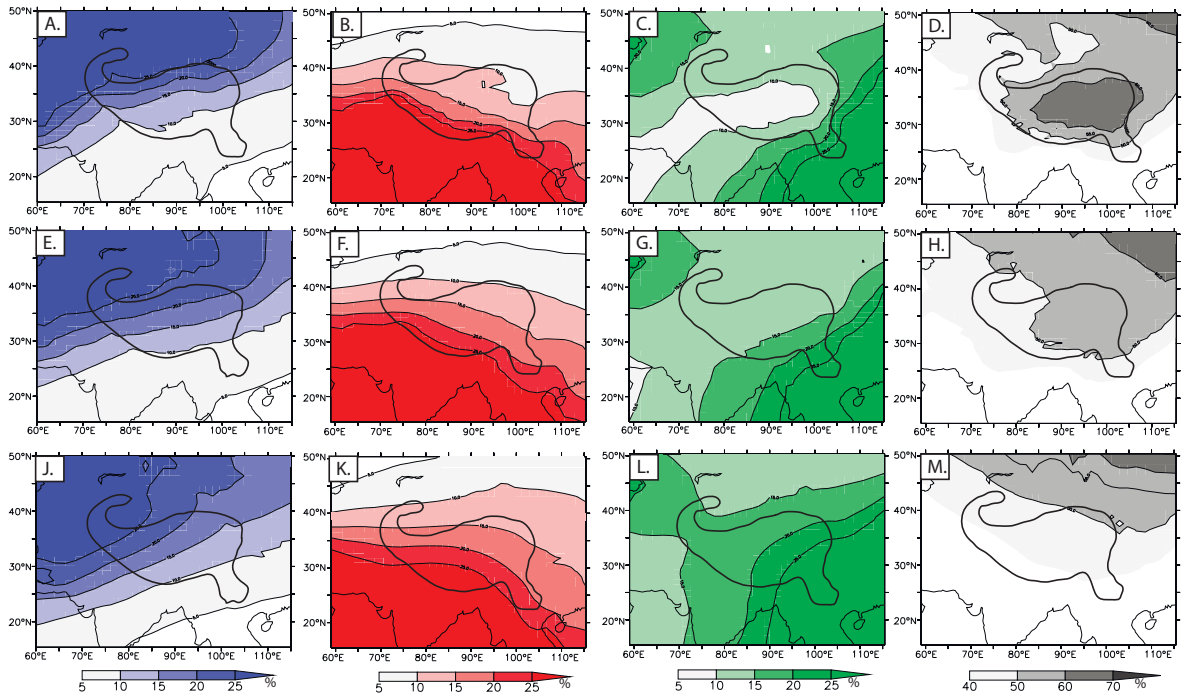

Figure S6. Moisture sources changes, illustrated by vertically integrated portion of vapour having evaporated over different regions. Blue shade - the Atlantic Ocean and Mediterranean sea source, red - the Indian Ocean moisture source, green - the Pacific Ocean source, grey - continental recycling source . (A, B, C, D) - MOD case, (E, F, G, H) - INT case, (J, K, L, M) - LOW case.

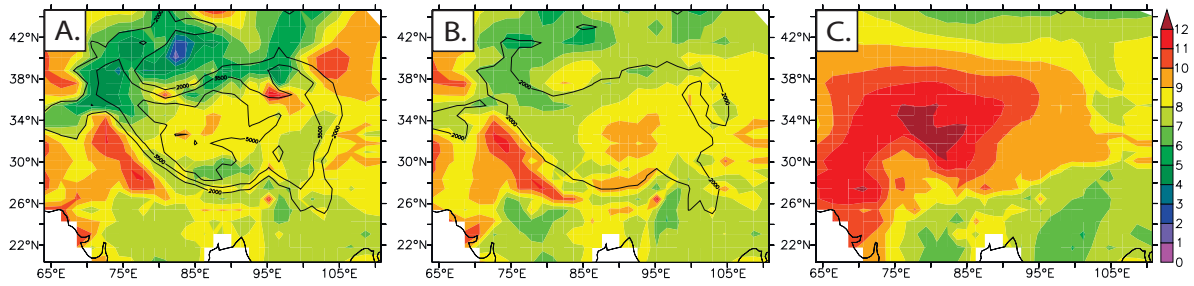

Figure S7. Deviations of precipitation $\delta^{18}O$ from the vapour composition, $\varepsilon = Rp - Rv$ for (A) MOD, (B) INT and (C) LOW cases

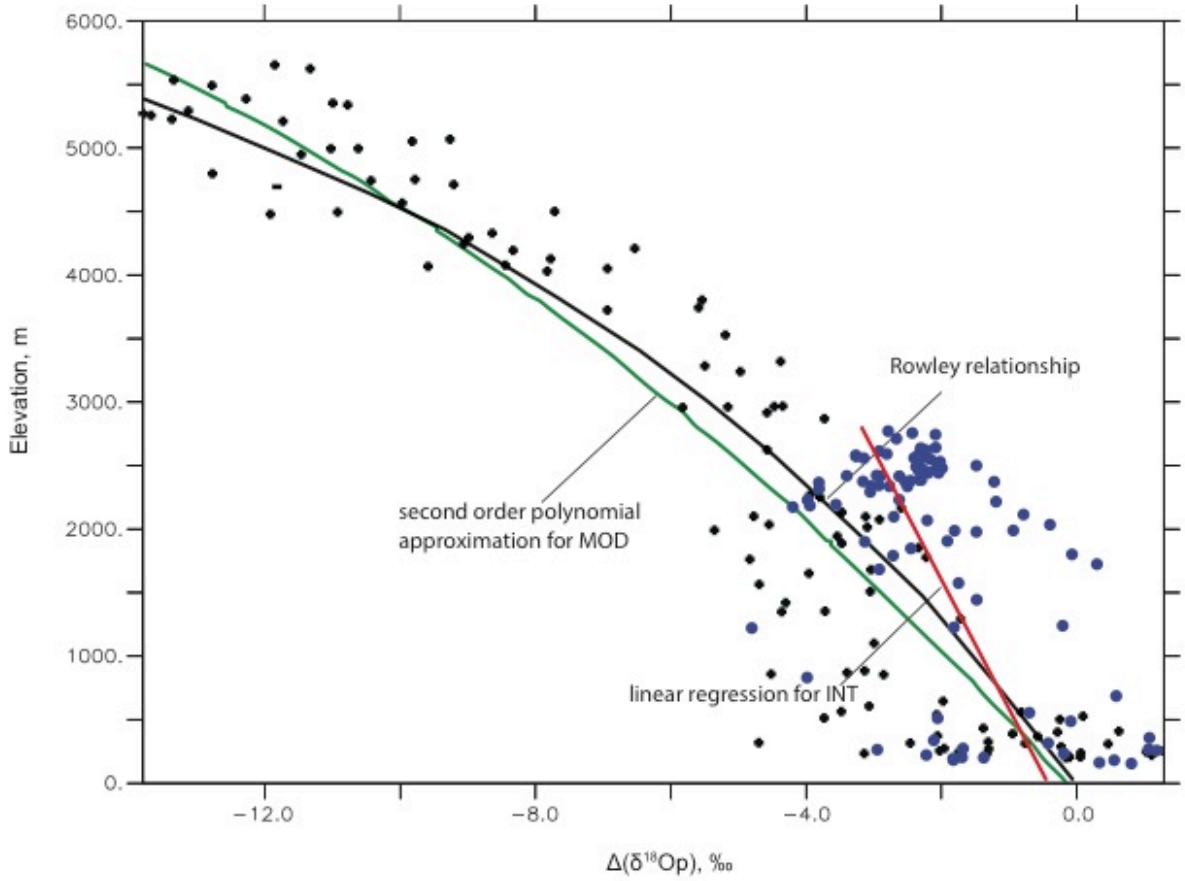

Fig. S8. $\Delta(\delta^{18}O)$ vs. elevation for MOD (black points) and INT (blue points) cases. The isotopic gradients are shown for the southern region (between 25°N and 30°N). Black line shows relationship from the empirical model (Rowley, 2001; Rowley and Garzione, 2007). Green line shows second order polynomial approximation of simulated MOD $\delta^{18}O$ values. Red line shows a linear regression for the INT $\delta^{18}O$ values.