Vegetation change on the Tibetan Plateau (1982 to 2006): An attribution by the rainfall-runoff chain

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Employing ERA-Interim and suitably projected NDVI-vegetation data, the rainfall–runoff chain is applied to the Tibetan Plateau to (i) analyze the rainfall-runoff chain changing between the two periods of global temperature rise (1973 – 1993) and stagnation (1994 – 2008) and (ii) to attribute climate versus human effects. The rainfall runoff chain is based on a biased coinflip Ansatz, which provides an equilibrium stochastic watershed scale model of. The solution yields the empirically derived (and widely used Schreiber formula as an Arrhenius-type equation of state $W = exp(-D)$ which, associated with two thresholds, combines river runoff Q, precipitation P and potential evaporation N as flux ratios $W=Q/P$ and $D=N/P$. This approach, which has been successfully used to relate paleo climates with lake area estimates (e.g. Qinghai Lake) is now tested for attribution to climate and human induced change.

Key words: vegetation, rainfall, runoff, Tibetan Plateau