**Supporting information:**

**Table S1.** Bivariate and multivariate linear regressions of leaf traits on climatic factors and soil nutrient proxies. MAP, mean annual precipitation; MAT, mean annual temperature; Soil N, Soil total N; Soil C:N, Soil total C: N ratio. Leaf traits were log10-transformed before analyses.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variables in the model | N |  | lg leaf N |  | lg leaf C:N |
| R2 | F | P | R2 | F | P |
| 1 MAT | 310 |  | 0.077 | 25.81 | <0.001 |  | 0.021 | 6.72 | 0.010 |
| 2 MAP | 310 |  | 0.140 | 50.31 | <0.001 |  | 0.086 | 29.06 | <0.001 |
| 3 MAT+MAP | 310 |  | 0.152 | 27.47 | <0.001 |  | 0.141 | 25.18 | <0.001 |
| 4 Soil N | 256 |  | 0.176 | 54.61 | <0.001 |  | 0.102 | 28.96 | <0.001 |
| 5 Soil C:N | 253 |  | 0.165 | 49.68 | <0.001 |  | 0.102 | 28.65 | <0.001 |
| 6 Soil N + Soil C:N | 253 |  | 0.177 | 26.98 | <0.001 |  | 0.106 | 14.78 | <0.001 |
| 7 MAT + MAP + Soil N + Soil C:N | 253 |  | 0.239 | 19.47 | <0.001 |  | 0.180  | 13.56 | <0.001 |

**Figure S1.** Latitudinal trends in leaf traits of deciduous trees (TD) vs. evergreen trees (TE). (a) leaf N; and (b) leaf C:N ratio. The latitudes were divided into seven bands: 20~25, 25~30, 30~35, 35~40, 40~45, 45~50 and >50 (°N). Mean and standard error bars were shown for deciduous trees and evergreen trees in each latitude band, respectively. The circle denoted the deciduous percentage in trees in each band.

