Supplementary material

Geographical distribution of sites

Figure S1 shows that the measurements represent sites distributed across all continents, although like other global databases (e.g. UNSODA), there is a distinct bias towards North America and Europe. As most of the available data was measured on temperate soils in Europe and North America, caution should be exercised in applying pedotransfer functions developed from this database to soils that are rather poorly represented (e.g. tropical soils). One distinguishing feature of the database, however, is the large number of studies originating from Australia and New Zealand, probably because several of the researchers who first developed this measurement technique worked in these countries.

Figure S1. Locations of the sites in the database

Precipitation estimates

Figure S2 shows a good agreement between reported precipitation totals and those estimated from the FAO NewLocClim interpolator. Together with figure S3, it also demonstrates that a wide range of precipitation climates are represented in the database, although most sites have moderate precipitation between ca. 400 and 1200 mm/year, as they are predominantly located on arable land (see Table 1).
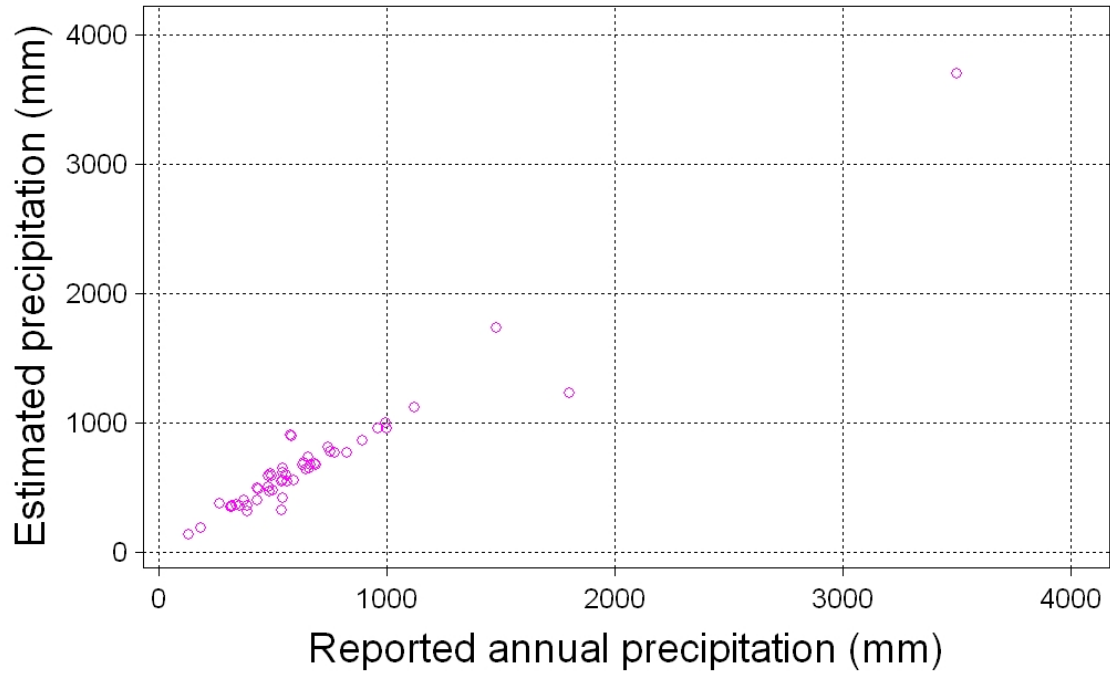
Figure S2. Comparison of reported annual precipitation totals with those estimated from FAO's new LocClim model
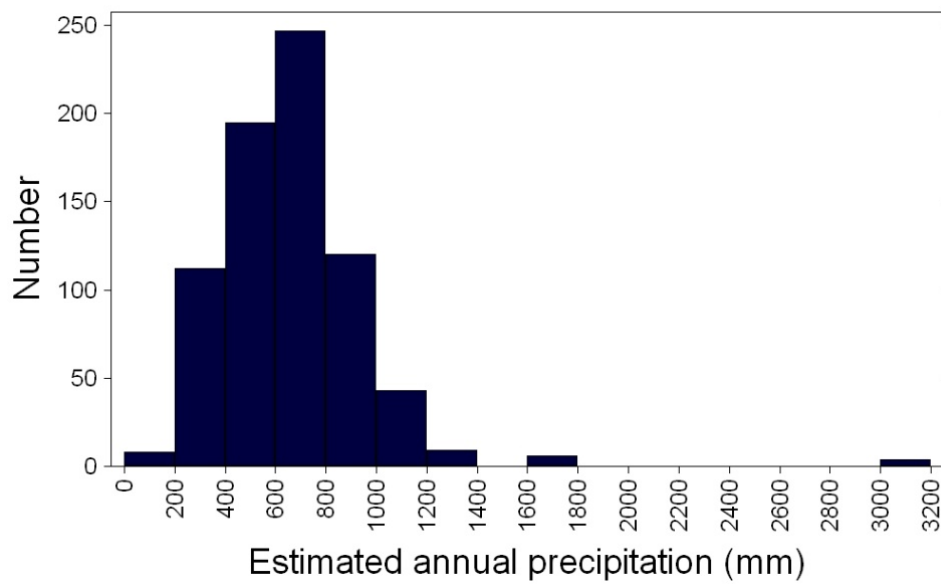

Figure S3. Histogram of estimated annual precipitation.

Model performance

Figures S4 and S5 illustrate the performance of the MLR models for K_{10} and $K_{s(ma)}$ listed in Table 7.
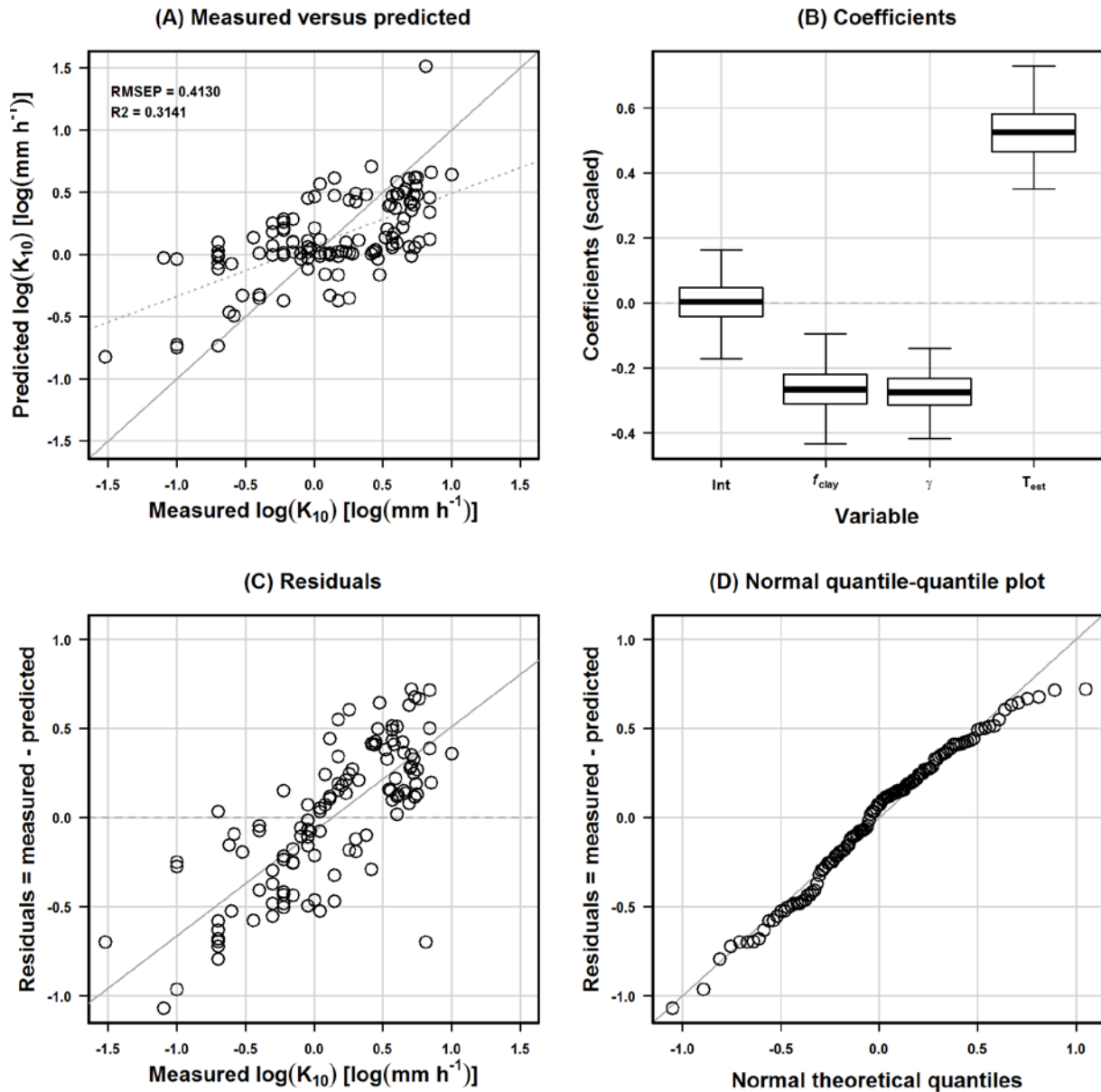

Figure S4 a.) measured vs. predicted K_{10} values, b.) box-and-whisker plots of the bootstrapped normalized model coefficients (for unscaled coefficients, see Table 4), c.) residuals as a function of measured K_{10}, and d.) a quantile plot showing how well the residuals match a normal distribution.

(A) Measured versus predicted

RMSEP = 0.5819
R2 = 0.2024

Predicted log($K_{S(ma)}$) [log(mm h^{-1})]

Measured log($K_{S(ma)}$) [log(mm h^{-1})]

(B) Coefficients

Coefficients (scaled)

Int f_{clay} γ LUT2

Variable

(C) Residuals

Residuals = measured - predicted

Measured log($K_{S(ma)}$) [log(mm h^{-1})]

(D) Normal quantile-quantile plot

Residuals = measured - predicted
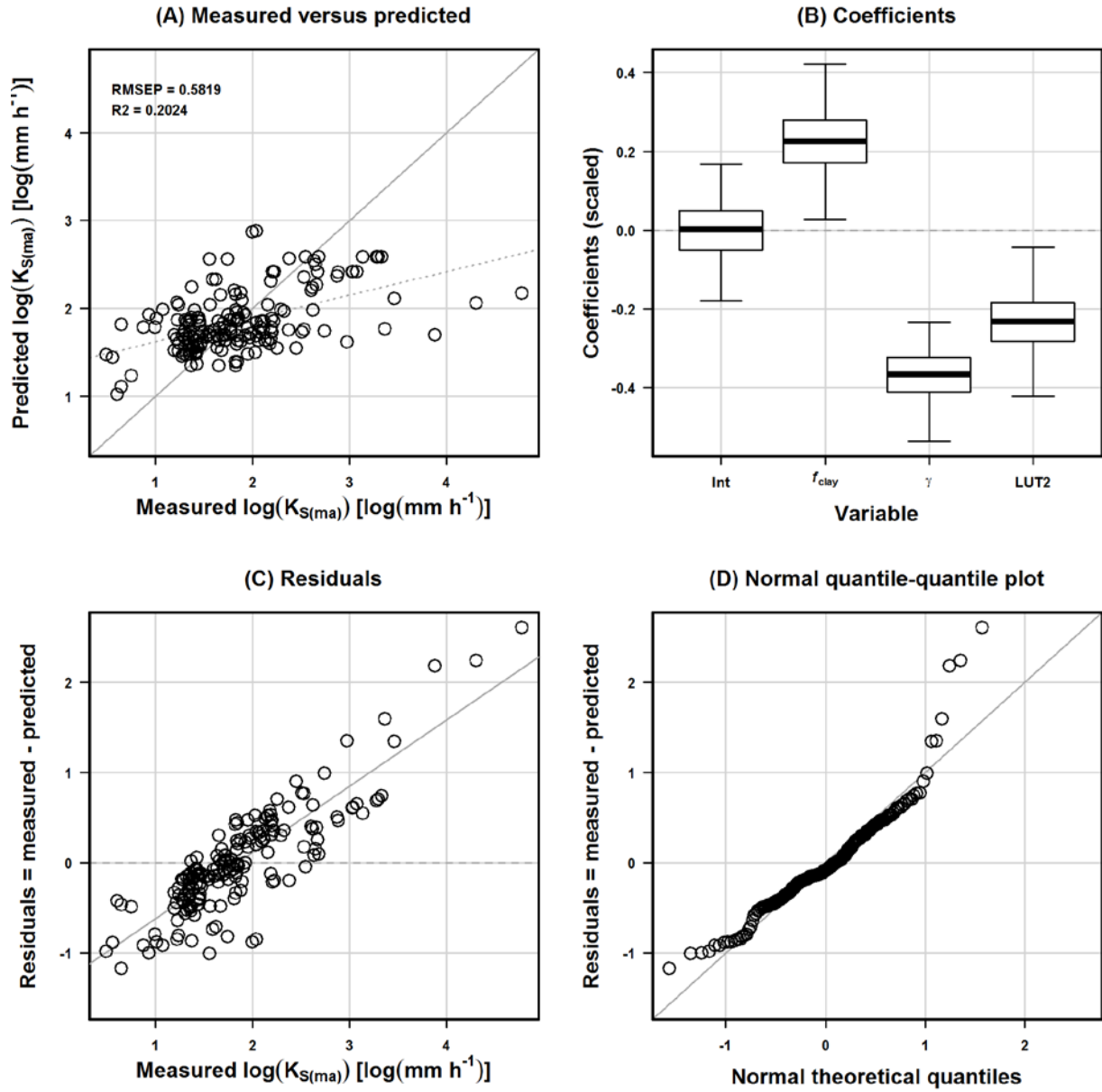
Normal theoretical quantiles

Figure S5 a.) measured vs. predicted $K_{s(ma)}$ values, b.) box-and-whisker plots of the bootstrapped normalized model coefficients (for unscaled coefficients, see Table 4), c.) residuals as a function of measured $K_{s(ma)}$, and d.) a quantile plot showing how well the residuals match a normal distribution.