

In this paper, the authors used published data to analyze the variations of soil CO₂ respiration rates and their temperature sensitivity (Q₁₀) across Chinese grasslands. Furthermore, their relationships with some abiotic and biotic factors were analyzed. The results could advance the understanding of the variation and control factors of soil CO₂ respiration rates and their temperature sensitivity (Q₁₀).

The specific comments are as follows:

Line 72: shown

Line 137: Correct the equation 2

Line 148-151: The Q₁₀ values were divided into five soil depth with different soil temperature

Line 178: shown

Line S2: add the measuring methods

Line 192, Fig. 4: Why choose paired sample t-test to analyze the significant differences of the Q₁₀ among the different soil depths?

Line 209: there is no results for the temperate desert steppe in Table 1

Line 233 and Line 239: five soil depths

Line 248: 1.73±0.08

Line 267 Table S4

Line 271-286, most of the contents are descriptive and repeated with results

Line 364 relatively colder and higher than what?

Fig. 2,5: indicate the n values for each regression analysis

Fig. 3 Line 675 (e) and (g)

Table S1: what R² represent for? What the ranges of soil temperature and soil moisture?

Table S2: show the n values. Are there values of soil temperature and soil moisture?

Table S3: show the n values. Are there values of soil temperature and soil moisture?

Fig. S1, S5, S6: show the n values

Fig. S7: is data for method comparison from the same or similar sites? Otherwise, there may be many factors affect the annual R_s and Q₁₀.