



Contribution ID: 174 Contribution code: PSB-22

Type: Poster

Discovery and correction of loess susceptibility decline relying on cosmogenic ^{10}Be record in loess

Wednesday, 23 October 2024 17:35 (20 minutes)

Attributed from combination of AMS-measured cosmogenic ^{10}Be record in loess with RTA mathematical trace method, decline of loess susceptibility in the Xifeng 0-870Ka profile is unexpectedly revealed by the uptilting of the RTA-reconstructed 0-870Ka atmospheric ^{10}Be production rate P_r curve and is indubitably certificated by high similarities $R^2 \approx 0.9$ (or $r = 0.94$) shown in the linear regression between both measured or both corrected ^{10}Be concentration $\text{Be}(M)$ and the susceptibility $\text{SUS}(M)$ in the same sample all the time within 0-870Ka interval. Then, the “inversion correction” method (“ μ correction”) of loess susceptibility decline is developed to recover the declined susceptibility and the “Indirect Verification of Golden Standard” method is adopted to assess accuracy of the μ -corrected Xifeng 0-870Ka loess susceptibility.

The μ -correction has shown that the average decline amount (or average correction amount) of the Xifeng 0-870Ka loess susceptibility is as high as 87%. And the “Indirect Verification of Golden Standard” has indicated almost complete similarity $r = 0.99$ and acceptable relative standard deviation of point to point difference $\text{RSD} = 4.43\%$ between the verifying curve related to the Golden Standard of Verification and the examined curve related to the recovered susceptibility, which inconceivably manifests that decline rule of loess susceptibility accumulated in the specific Xifeng 0-870Ka profile is in almost complete similarity ($r = 0.9914$) to the decay rule of the ^{10}Be atoms due to unknown mechanism.

Student Submission

No

Primary authors: 周, 卫健 (中国科学院地球环境研究所); 唐, 玲 (中国科学院地球环境研究所); 孔, 祥辉 (中国科学院地球环境研究所); Prof. 陈, 茂柏 (Institute of Earth Environment, CAS); 杜, 雅娟 (中国科学院地球环境研究所)

Presenter: Prof. 陈, 茂柏 (Institute of Earth Environment, CAS)

Session Classification: Poster Session B

Track Classification: Applications of Cosmogenic Isotopes