

¹⁰Be-derived denudation rates from granitic basins in Laoshan mountain, East China

LIFENG CUI¹, CONGQIANG LIU¹, SHENG
XU², ZHIQI ZHAO¹

¹ State Key Laboratory of Environmental Geochemistry,
Institute of Geochemistry, Guiyang, China

² Scottish Universities Environmental Research Centre,
Glasgow, UK

We present a new dataset of three basin-wide erosion rates from Laoshan mountain derived using in-situ produced ¹⁰Be concentrations in river sediments. The study region is located at the shore of Yellow Sea in the south of Shandong peninsula, between 36°05'~36°19' degrees north latitude and 120°24'~120°42' degrees east longitude.

Three small granitic basins with different areas were selected to be sampled. After quartz cleaning, ion exchanging, oxidation and pressing, the samples were measured to obtain ¹⁰Be/⁹Be ratios in Scottish Universities Environmental Research Centre.

The results show that the ¹⁰Be/⁹Be ratios are $1.53 \pm 0.046 \times 10^{-13}$, $1.97 \pm 0.045 \times 10^{-13}$, $1.73 \pm 0.053 \times 10^{-13}$, and the ¹⁰Be concentrations are $12.0 \pm 0.37 \times 10^4$ atoms/g, $14.7 \pm 0.34 \times 10^4$ atoms/g, $12.6 \pm 0.39 \times 10^4$ atoms/g, respectively. According to the CRONUS-Earth online calculators, the denudation rates of three small granitic basins are 47 ± 3 m/Ma, 40 ± 3 m/Ma, 50 ± 4 m/Ma which is close to the median value (52 m/Ma) statistics from global igneous basins by Portenga and Bierman. It may be a consequence of the fact that the research area is in warm temperate climate zone and about 40 percent area is bedrock exposure.