A close-up of several graphs

Description automatically generated

**Fig. S3:** Markov chain Monte Carlo (MCMC) model fits to measured 36Cl concentrations and model slip histories, Anogia B profile using a production rate of 48.8 ± 3.5 atoms g Ca-1 yr-1. Slip accumulation is shown for five model earthquakes that each exhume the same vertical length of scarp rather than reflecting the magnitude and timing of historical earthquakes. Each panel includes 160k iterations, following removal of a burn-in of the first 40k iterations. A. Histogram showing the distribution of accepted model slip histories in slip-space versus time. The density of overlapping models increases from warm to cool colours. The red line is the maximum a posteriori probability (MAP) estimation model, which is the maximum likelihood multiplied by the prior probability based on scarp age. B. The 95% confidence bounds of the smoothed model distribution (black lines) calculated for age at each step in the slip. The mean (red line) and MAP (blue line) slip histories are also plotted. C. Model fits to measured 36Cl concentrations (circles). The coloured lines represent a selection of 160 model fits from low- (yellow) to high-probability (blue) at equal intervals (1000) through the distribution. The black lines indicate 1σ measurement uncertainties.