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## Bayesian improvements to $^{210}\text{Pb}$ dating

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Dating with  $^{210}\text{Pb}$  has been instrumental in providing chronologies for sedimentary deposits back to around 100-150 years ago — a key period for recent environmental events such as increased pollution caused by industry developments. However, currently available  $^{210}\text{Pb}$  age-models often disagree with and/or cannot incorporate other types of dates, depend highly on the correct estimation of background  $^{210}\text{Pb}$ , often underestimate uncertainties and are limited by unrealistic assumptions of sediment accumulation over time. Plum is open-source Bayesian age-modelling software that solves the above problems. It can integrate other dates, produce realistic uncertainty estimates, and extend  $^{210}\text{Pb}$  chronologies several decades further back in time. Our method thus enables much more robust chronologies for studies of recent environmental change.