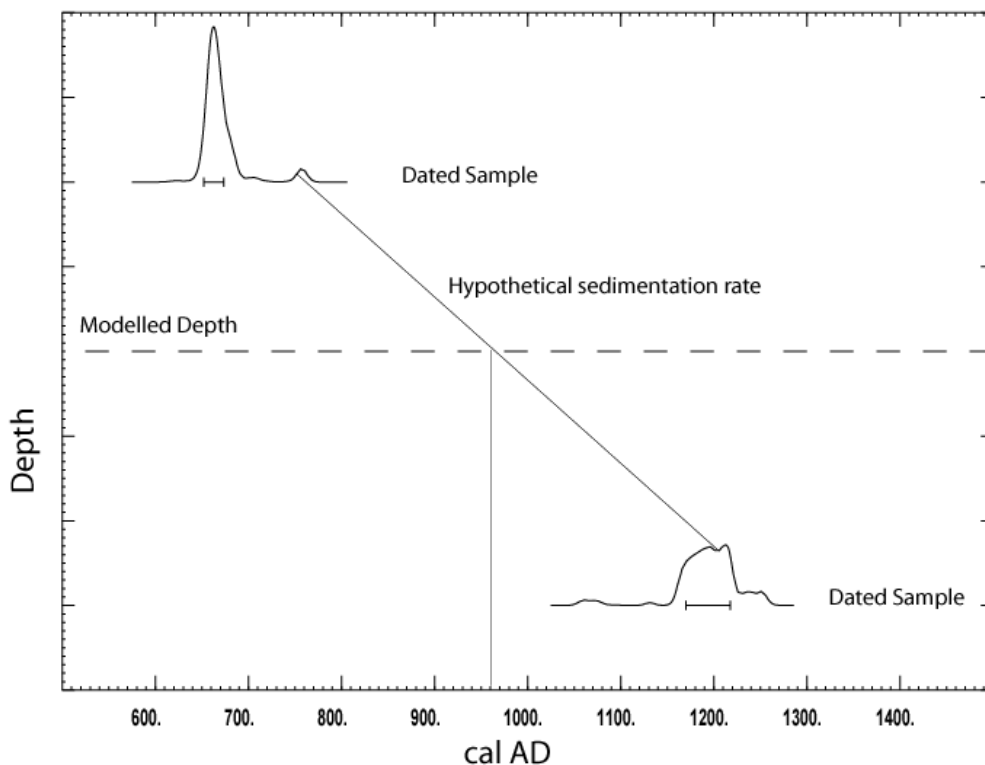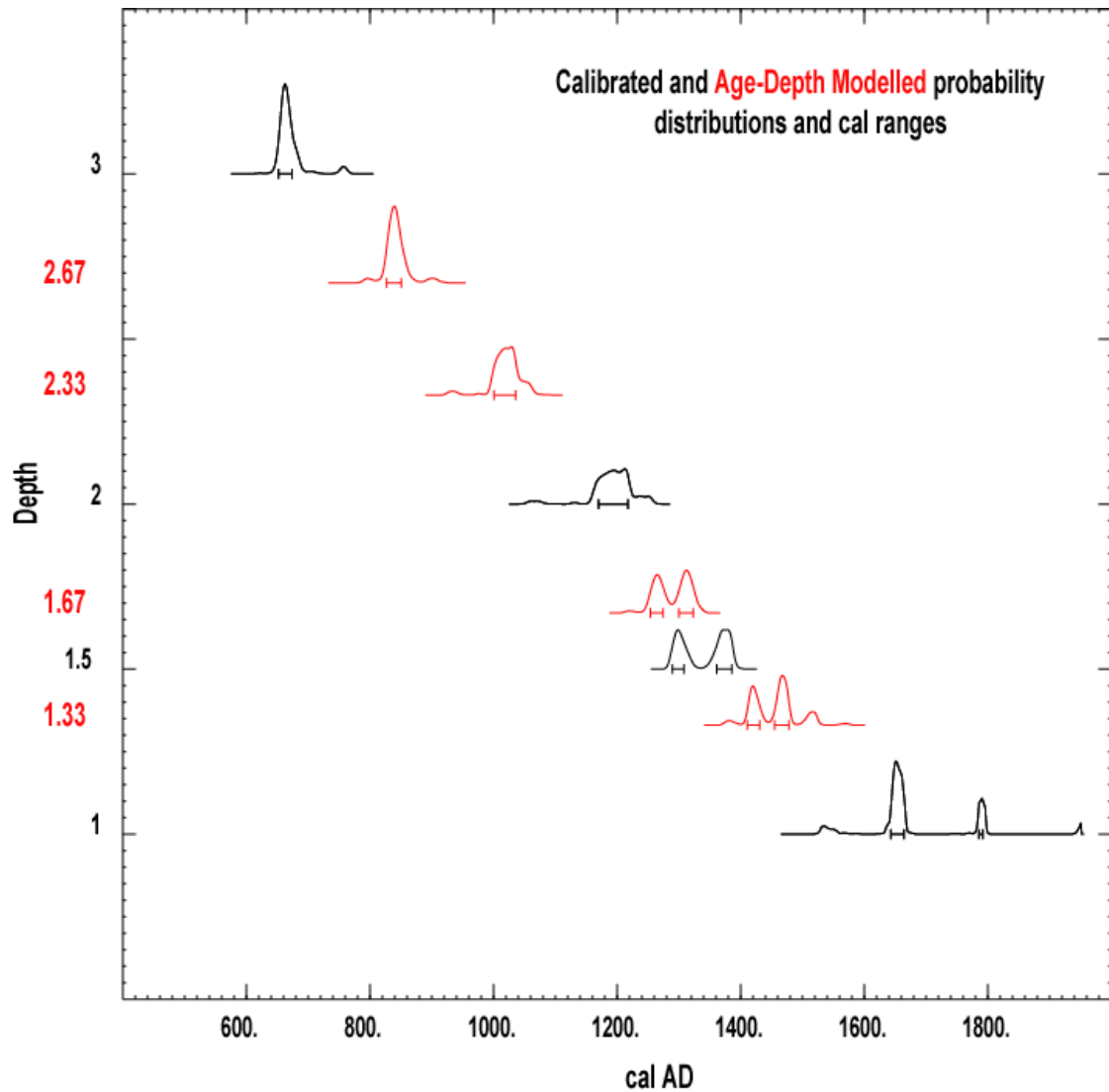An age-depth model has been incorporated in CALIB versions greater than 5.10. The model uses an assumption of a piece-wise linear sedimentation rate between each radiocarbon age. All positive sedimentation rates between adjacent radiocarbon ages are considered. A sedimentation rate is hypothesized by connecting a point in time in one calibrated distribution with a point in time of the second calibrated distribution. The probability of this rate is determined by multiplying the probability of its two endpoints. This probability is dropped into a bin at the calendar year at the intersection of this sedimentation rate with the depth being modeled. To construct the probability of at least one of these sedimentation rates being the actual one, all probabilities in a bin are summed. In this way a modeled cal distribution is constructed and confidence intervals are calculated from it in the usual way.

Determination of age probabibility at a cal year at a modelled depth for one particular hypothetical sedimentation rate

To have CALIB model the cal age at depths intermediate to ones for which radiocarbon ages are available, you must first enter depths in column P of the CALIB input spreadsheet. Save the CALIB input as a .csv file and load into CALIB. After calibration has been carried out, select the Tools / Age Depth menu option. CALIB will ask you for the number of modelled depths you require, and these modelled ages will be evenly distributed between your minimum and maximum depths. You will be informed of the number of modeled ages appended to the calibrated output, and you can arrange to have

the modeled and calibrated cal distributions plotted by choosing a multi-sample plot option.

The agedepth.csv file included with the CALIB distribution illustrates how the cal distribution curve of a modeled depth closely resembles the calibrated distribution of a sample of given radiocarbon age and nearby depth.