**Modeling readme**

Modeling was undertaken using the BMSC R package (<https://github.com/Pandora-IsoMemo/bmsc-app>) via its Shiny user-friendly graphical interface (<https://github.com/Pandora-IsoMemo/BMSCS>). The BMSCS interface allows users to set model inputs which are modeled using BMSC, BMSC raw results and modeling diagnostics are then summarized into text and graphs via BMSCS.

Modeling files for each dataset (1460s, 1510s, and 1580s) with extensions .bmsc are available at: <https://www.doi.org/10.48493/rz8t-wv22>

Modelling files can be loaded into BMSCS allowing for modelling re-execution. In the BMSC interface, users should select “Model input” -> “Import model” and chose to upload the appropriate model file with .bmsc extension (equivalent to a .zip extension). Once modelling inputs are set the modelling run can be started by pressing “Run model”.

The local version of BMSCS is available for cross platform installation via Docker: <https://pandora-isomemo.github.io/docs/apps.html#bmscs>

BMSCS includes under “Data input” the option to quickly create a demo dataset (option “Generate example data”).

No special hardware is required and typical installation takes less than 30 minutes on modern day Desktop computers. Modelling of the datasets (1460s, 1510s, and 1580s) should take less than a few hours each using a standard Desktop computer.