

USER GUIDE ICE CORE DATING SOFTWARE
CLIMATE CHANGE INSTITUTE
UNIVERSITY OF MAINE
DEVELOPED BY: BASHAR ABDUL, ANDREI KURBATOV
DOCUMENTATION WRITTEN BY: SUSAN KASAPARI

The ice core dating software is a program designed to create a depth-age scale from ice core glaciochemical records.

CREATING THE DATA FILE

To run the program, the glaciochemical data needs to be saved in a comma delimited file (.csv) file with the columns in the following order with the following headings:

tube top bottom length Na NH4 K Mg Ca Cl NO3 SO4

Tube=tube number

Top=top depth (m)

Bottom=bottom depth (m)

Length=sample length (i.e., top depth-bottom depth)

Na etc. =the concentrations for the chemical time series.

Note: When wanting to plot an element or isotope that is not listed above, just use one of the listed headers (replace δD for NH4) . When plotting a time series that has negative values (i.e. δD , $\delta^{18}O$) the values need to be made positive (I just added 200 to my δD values).

Store the file in the ice core dating folder.

STARTING THE PROGRAM

To start the program, open the software NewIceCoreDating.jar

From the Start Menu, click 'Start A New Dating Session'

The program will prompt you to open your data file (go to the ice core dating file where the file was stored).

The program will read "Your file contains X zeros. File is in valid format, you may proceed. Click OK.

Under Main Menu, click the elements that you want to plot.

Enter the top year of the ice core in the box (if you know the top of the core is 2000, enter 2000).

Choose plotting method.

Click OK

The program will ask to confirm that the top year is XXX.

ADJUSTING THE X AND Y AXIS

Before beginning to date the core, set the x and y axis to appropriate limits to maximize the detail necessary for making annual picks.

ADJUSTING THE Y AXIS

The Y axis is adjustable for each element. In the box below the graphs, select the element for which you want to adjust the scale. Enter the minimum and maximum Y values, and click 'Set Y Axis limits'.

Log values?

ADJUSTING THE X AXIS

To zoom in on a section:

Click on the box next to 'Zoom'. Put the mouse over the graph- a blue vertical line will appear. Click (and hold), and drag over the section of the graph that you want to zoom in on. The program will highlight the section of graph that you are zooming in on- when you've highlighted the desired region release the mouse and the program will adjust the x axis limits.

To zoom out on the X axis:

To zoom out a small amount, right click. Select 'Zoom out' then 'horizontal axis'. The program will increase the X axis range.

To reset the X axis to cover the whole range, right click. Select 'Auto range' then 'horizontal axis'. The program will increase the X axis to cover the whole dataset.

DATING THE ICE CORE

Recording years

Once the axis limits have been set, select 'Start Recording'. Align the vertical line over the graph to the location where you want to record a year. Click the mouse. A line will appear with the year recorded at the top. Continue this process over the core. The program will automatically count down from the top year of the core.

Note- if you reset the Yaxis limits after recording years, the year labels may not be visible. One way to work around this is to delete a year and then re-record it. The year labels should reappear.

Deleting a year

If a year is recorded that you want removed, click on 'Delete'. Align the mouse over the vertical line of the unwanted year, and click. The year will be deleted. To resume dating the core, click on 'Recording'.

Moving up or down the core

To move to another section of core, click 'Pan'. This feature enables you to pan up or down the core to work on a new section. For example, to pan down the core, click on 'Pan', click on the right side of the graph and drag towards the left side of the graph. The opposite enables viewing of upper sections of core.

GENERATING A REPORT

To save your dating, click 'Generate Report'. The program will display 'Report generated successfully. Click on view report to display it'. Reports can be generated at any point during the dating process. *YOU MUST GENERATE A REPORT TO SAVE YOUR WORK.*

VIEWING THE REPORT

To view the report from the ice core dating software, click 'View Report'. A window will display the depth for each year.

The report can also be viewed from other programs (Excel, etc.). The program automatically stores the report in the ice core dating folder under 'Reports'.

CONTINUING AN EXISTING DATING SESSION

After a report has been generated, you can continue working on the core at a later time. From the Start Menu, click 'Continue An Existing Dating Session'. Browse to the folder containing the Core data file (the .csv file) and select the appropriate file. The software loads the data along with your previously determined annual picks.

PRINTING OR SAVING THE WINDOW

The ice core dating window can be printed or saved by right clicking, and selecting either 'print' or 'save'.