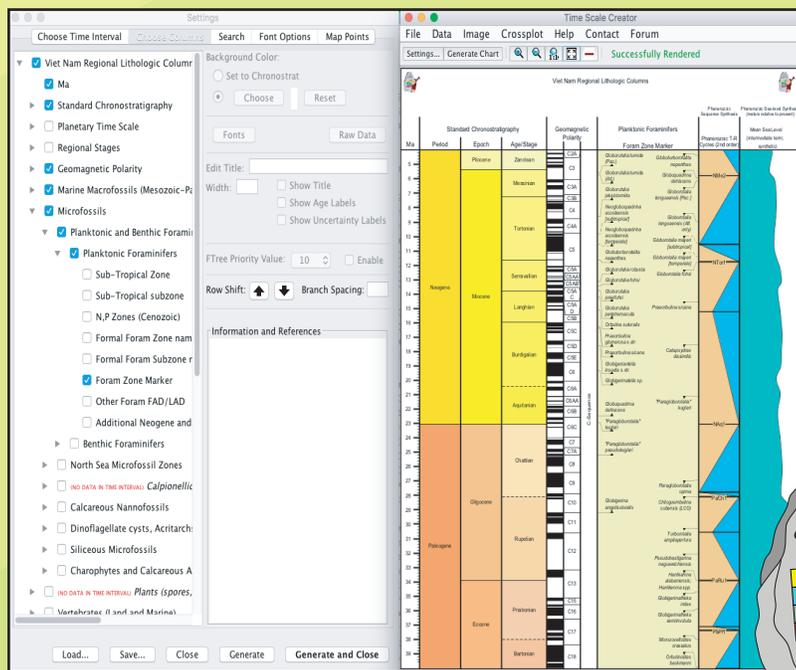


# TimeScale Creator Manual Section 1

## Reference for TSCreator Features and Datapack Formats



### Datapack Format for Range Columns with Abundances

A	B	C	D	E	F	G	H
<Title>	range	<blank>	<color>	notitle	on/off	<popup>	<b>Header Row</b>
<blank>	<label>	<age>	<abundance>	<popup>			<b>Data Row</b>

### Example

A	B	C	D	E	F	G
Dino-cysts	range		175/201/108	notitle	off	fictitious dino abundances
	Dracodinium varielongitutum	50.56	TOP		you could also add an URL link into this popup	
	Dracodinium varielongitutum	51.3	rare		poorly preserved	
	Dracodinium varielongitutum	52.6	abundant			
	Dracodinium varielongitutum	53.44	frequent			

This Manual is divided into 5 sections, each section is independent of the others and can be used on its own.

**Section 1:** Reference of TSCreator Features and Datapack Formats

**Section 2:** Hands-on Exercises for using TSCreator and how to make datapacks

**Section 3:** TSC Makers: Online tools to create lithology, transect and curve datapacks.

**Section 4:** Crossplot, convert outcrop or well datapacks from meters or feet to age datapacks in Ma or Ka.

**Section 5:** Online TSCreator display systems. Not yet fully functional.

## Important websites for TimeScale Creator

TSCreator main website <https://timescalecreator.org>

Datapack Makers (Transect, Lithology, Curve Maker)

<https://timescalecreator.org/tscmaker/>

TSC Lite

<https://timescalecreator.org/tsclite/index/index.php>

Online TimeScale Creator (testing site):

<http://show.timescalecreator.com:3000/>

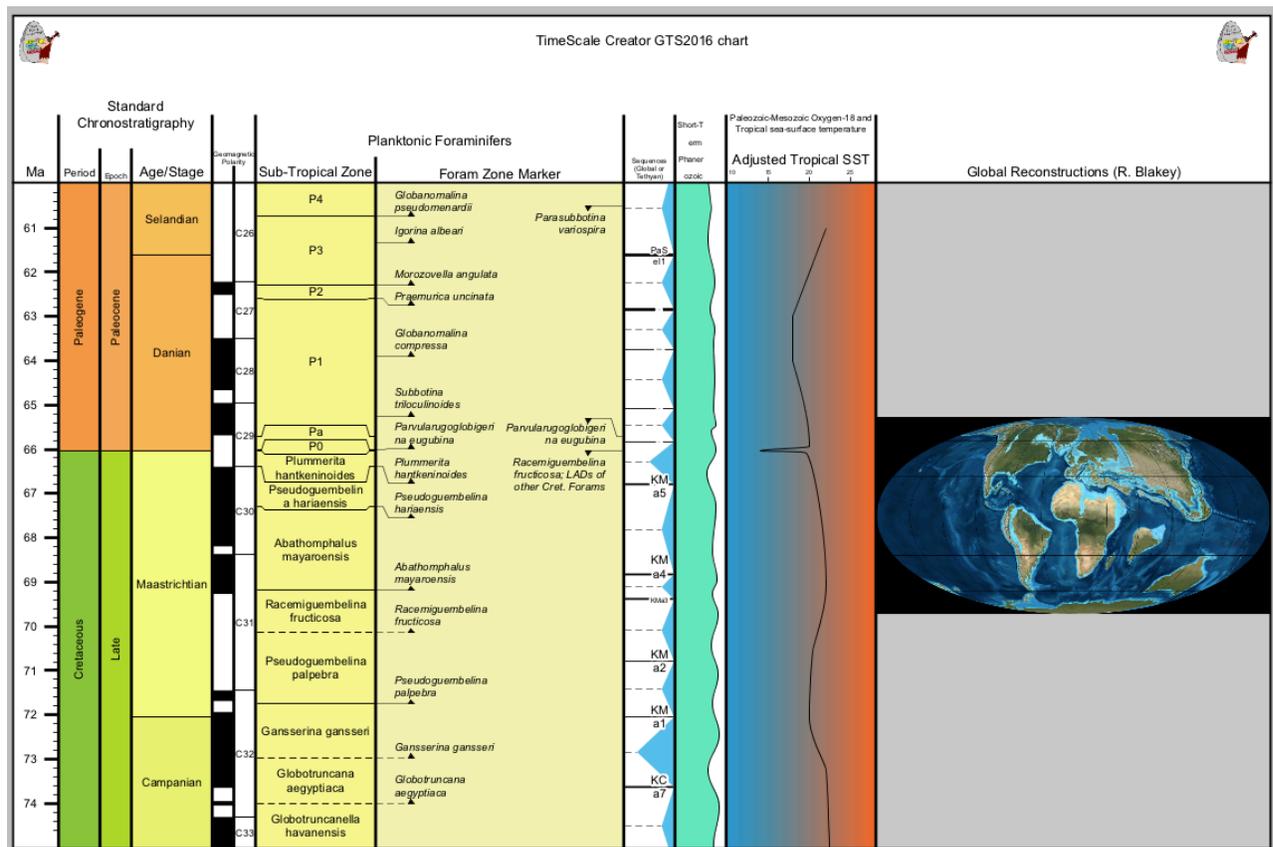
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# TimeScale Creator

“TimeScale Creator” is an extensive time-scale database with a visualization software-package in JAVA (which should work on most platforms). Our dream is to create a general portal to Earth history, plus flexibility in user-generated charts. Most of the datasets are oriented toward geologic history, but we include some datapacks with aspects of human civilization.



Currently we support a “Public”(free ) and a licensed “Pro” version. The public version allows you to generate and save charts with the internal database. You can also add external datapacks to view, but then the option to save the chart is disabled (You need to quit the program and restart TSC if you want to be again able to save charts. “Replace data with Default Datapack” will not restore the save capability). The Pro version allows you to save charts generated with external datapacks, adding your own datapacks and has also more specialized datapacks than the public version.

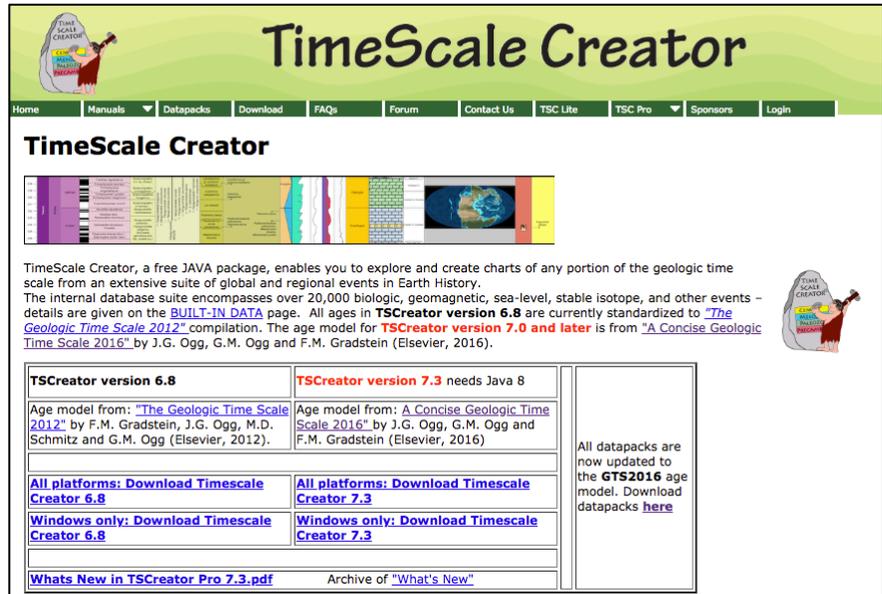
# Installing and opening TS Creator

Download the exe version for Windows or the jar version for MAC from the TimeScale Creator website:

<http://timescalecreator.org/>

**TimeScale Creator Pro** users log in and download the program from their download page.

**TSC 7.1 and later requires Java 8. See instructions on how to install it.**



TimeScale Creator, a free JAVA package, enables you to explore and create charts of any portion of the geologic time scale from an extensive suite of global and regional events in Earth History. The internal database suite encompasses over 20,000 biologic, geomagnetic, sea-level, stable isotope, and other events – details are given on the [BUILT-IN DATA](#) page. All ages in **TSCreator version 6.8** are currently standardized to "[The Geologic Time Scale 2012](#)" compilation. The age model for **TSCreator version 7.0 and later** is from "[A Concise Geologic Time Scale 2016](#)" by J.G. Ogg, G.M. Ogg and F.M. Gradstein (Elsevier, 2016).

TSCreator version 6.8	TSCreator version 7.3 needs Java 8
Age model from: " <a href="#">The Geologic Time Scale 2012</a> " by F.M. Gradstein, J.G. Ogg, M.D. Schmitz and G.M. Ogg (Elsevier, 2012).	Age model from: <a href="#">A Concise Geologic Time Scale 2016</a> " by J.G. Ogg, G.M. Ogg and F.M. Gradstein (Elsevier, 2016)
<a href="#">All platforms: Download Timescale Creator 6.8</a>	<a href="#">All platforms: Download Timescale Creator 7.3</a>
<a href="#">Windows only: Download Timescale Creator 6.8</a>	<a href="#">Windows only: Download Timescale Creator 7.3</a>
<a href="#">Whats New in TSCreator Pro 7.3.pdf</a>	Archive of " <a href="#">What's New</a> "

All datapacks are now updated to the **GTS2016** age model. Download datapacks [here](#)

## Java Version Dependency:

We recommend installing the latest Java version(which currently is Java 8) for using our Time Scale Creator software in all operating systems.

**For TSCreator version 7.1:** Installation of Java 8 is required

**For TSCreator version 7.0 or lower :** Installation of at least Java 6 is required

If you have an old version of java already installed in your system, just updating java won't automatically upgrade to a new java version. Java version being used in your system by different java programs are set by environment variable JAVA\_HOME etc. Therefore, after installing newer version of java, your system may still be using older version of Java if you have multiple Java JDK or JRE in your system. For further investigation you may like to check the following links: [https://docs.oracle.com/cd/E19182-01/820-7851/inst\\_cli\\_jdk\\_javahome\\_t/](https://docs.oracle.com/cd/E19182-01/820-7851/inst_cli_jdk_javahome_t/) Generally, a fresh installation of the latest JDK and restarting of the system should give your system the latest java which can run any of our TSCreator versions. If you are still having trouble running our software, please feel free to contact us through our forum: <https://engineering.purdue.edu/Stratigraphy/tscreator/forum/forum.php>

## Useful links:

### How to find java versions:

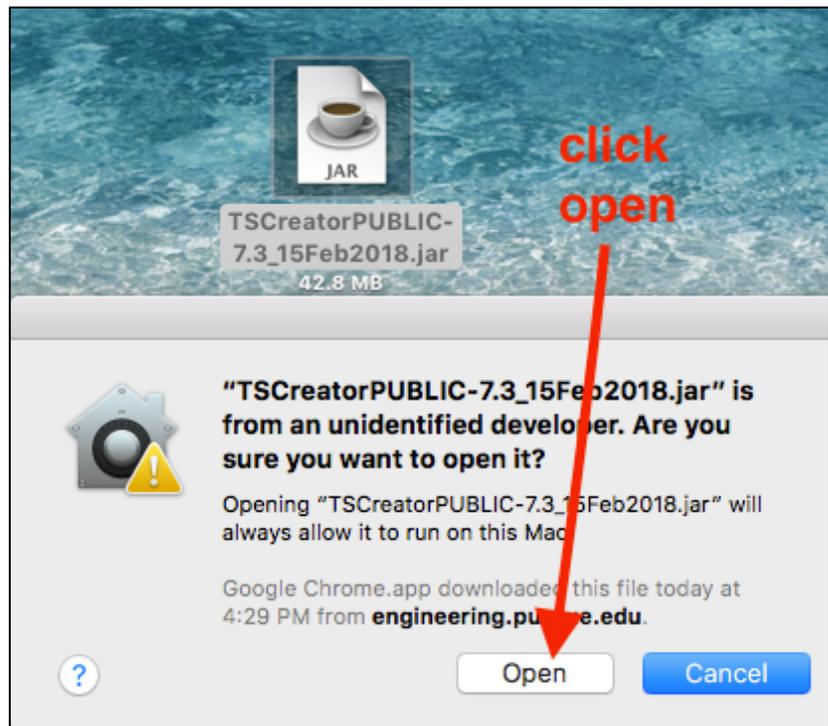
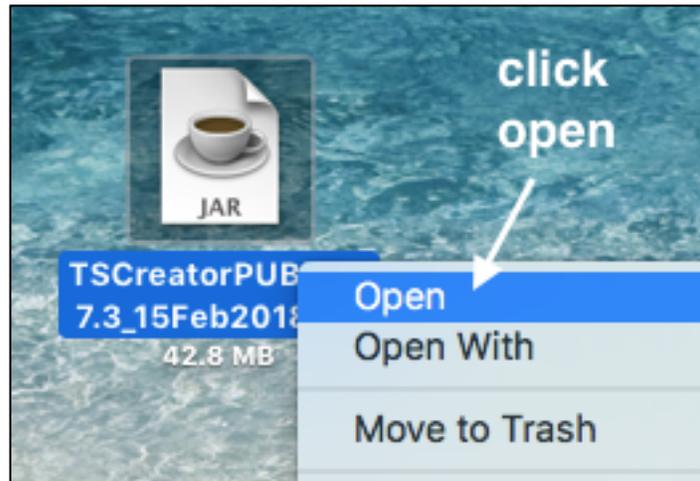
[https://www.java.com/en/download/help/version\\_manual.xml](https://www.java.com/en/download/help/version_manual.xml)

### JDK and JRE installation:

For simple execution of the program, installation of JRE is enough.

<http://www.oracle.com/technetwork/java/javase/downloads/index.html>

To open the program on a MAC, just double click the program. If your MAC is set to not allow programs to open which were downloaded from the internet, then highlight the program and right-click your mouse and click open on the next two screens. You will only have to do this the first time.



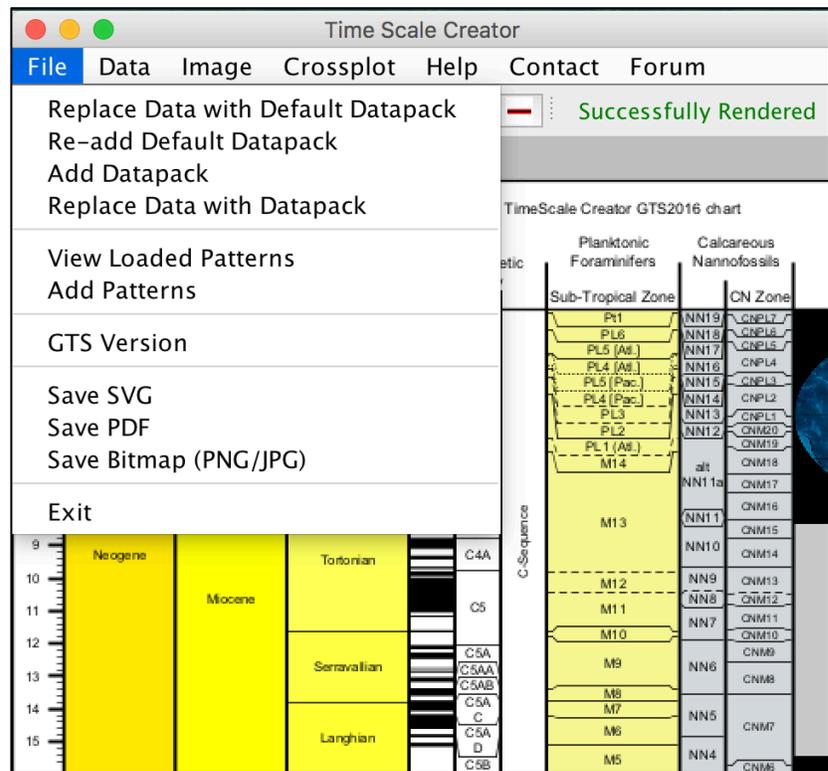
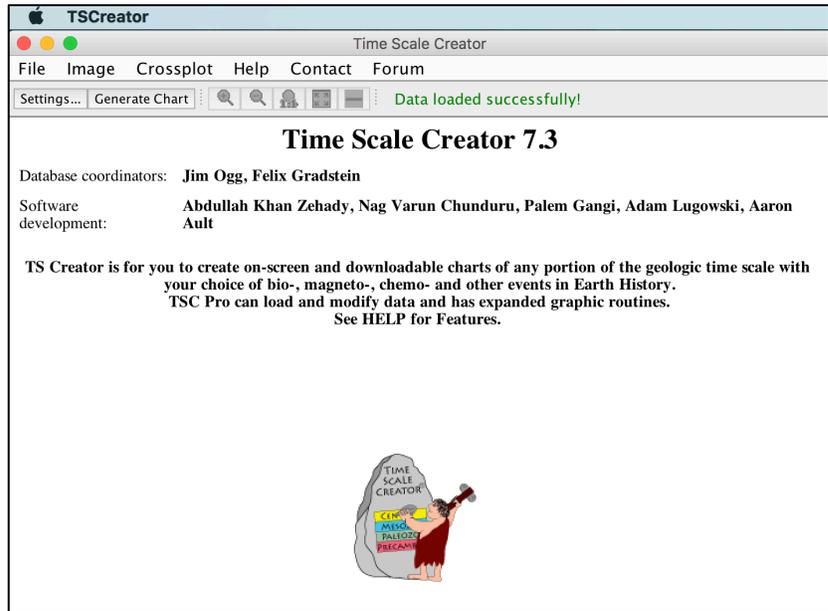
# Features on the Opening screen

After starting the program an opening screen with our data-providers appears, and the internal database is automatically loaded (~60,000 data lines of event-ages and curves).

Stretch this window to fill your particular screen size, because this will determine the “fit to window” size of the output graphic display.

**File:** Here you can add datapacks, add patterns and save the charts in different output formats.

**Replace Data with Default Datapack:** The default datapack is loaded automatically when the program starts. If you want to erase the changes you made and return to the default, then use this option. It will discard all the current data and reset all settings to the default.



**Re-add Default Datapack:**

If you replaced the default datapack with a different one, and then decide that you would like to compare it with the default datapack, then you can use this option. The default datapack will be added at the bottom of the “Choose Columns” window.

In this case you will have to re-enter the desired time interval in the “Choose Time Interval” window.

**Add Datapack:** Allows you to add external datapacks to the internal database. The external datapacks will be appended at the bottom of the “Choose Column Window”.

You can download additional datapacks from the TSCreator website.

<https://timescalecreator.org/datapack/datapack.php>

**Example of available external datapacks at:**

<https://timescalecreator.org/datapack/datapack.php>

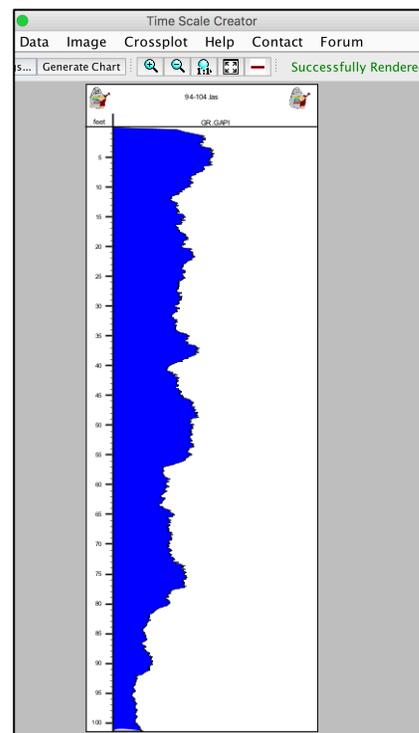
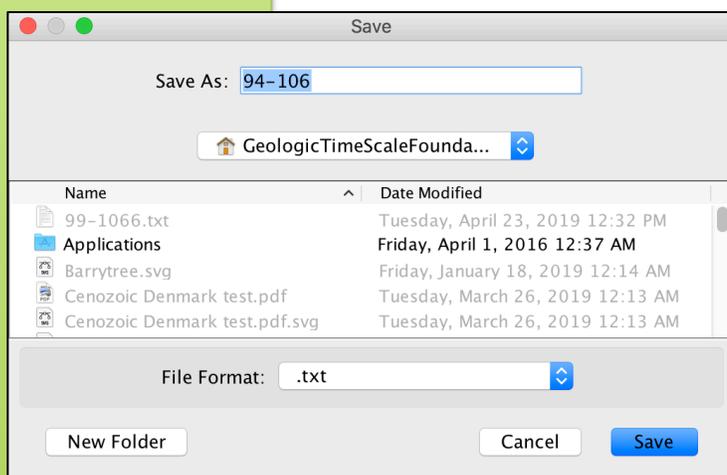
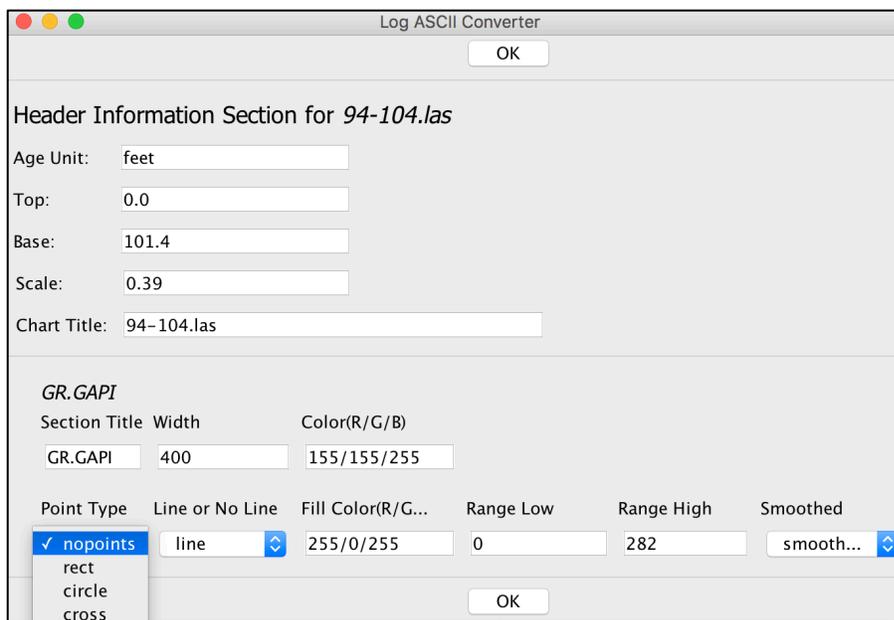
<b>Evolution of Modern Life</b>
<b>Human Evolution</b>
<b>Human Culture</b>
<b>Marine Genera Ranges</b>
<b>Calcareous Nannofossils</b>
<b>Planktonic Foraminifers (Jurassic-Present) with images</b>
<b>Planktonic Foraminifer Evolution through the Paleocene-Eocene</b>
<b>Foraminifera Evolution at Family Level</b>
<b>Australia</b>
<b>New Zealand</b>
<b>China</b>
<b>Malaysia</b>
<b>Indian Plate</b>
<b>Middle East and Libya</b>
<b>African Basins</b>
<b>British Isles</b>
<b>Belgium</b>
<b>South American Basins</b>

**Add Datapack:** Allows you also to add and convert LAS logging files to TSC text files.

Go to **Add Datapack** and select the **LAS file** and open it. A window will open and allow you to adjust the settings for the Logging curve (curve fill, background color, range limits etc.). **Hit OK.**

In the next window save the file with the **txt** extension. If your logging curve already has a top and a base age set, then just hit **Generate** and the curve will be drawn.

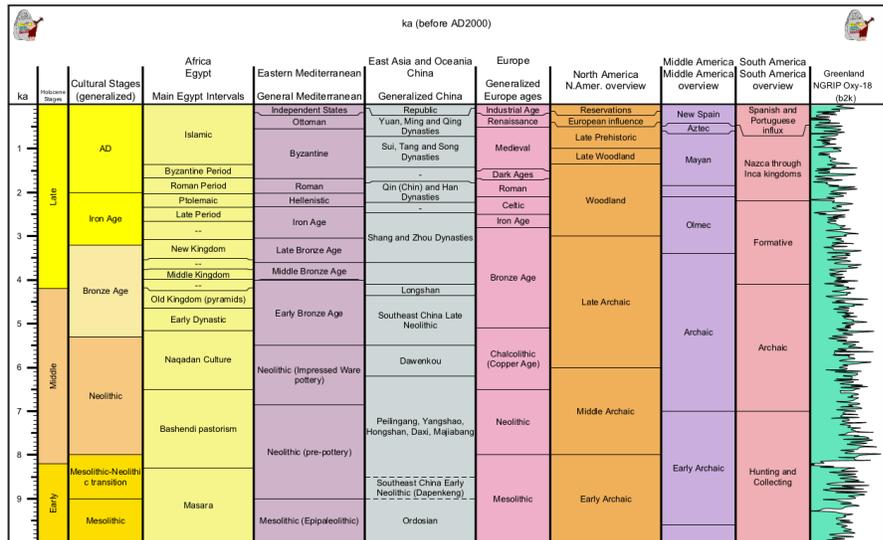
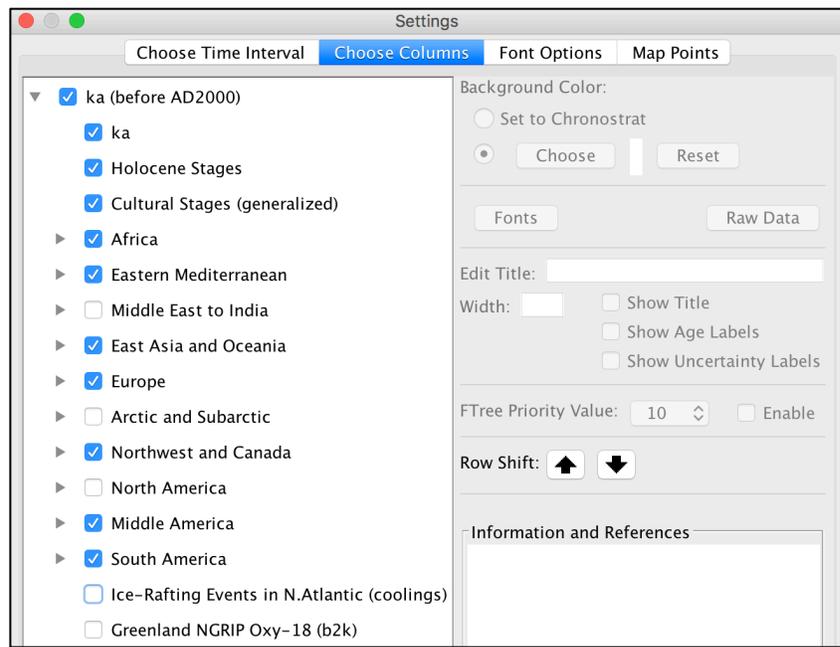
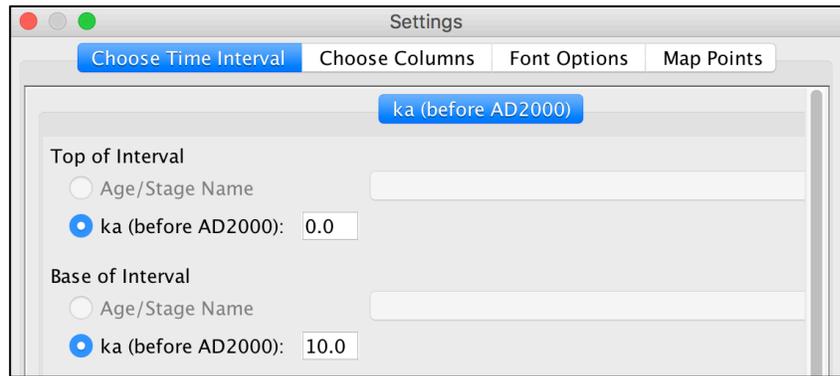
## Uploading LAS (LogASCII Standard) format files:



# Human Culture datapack

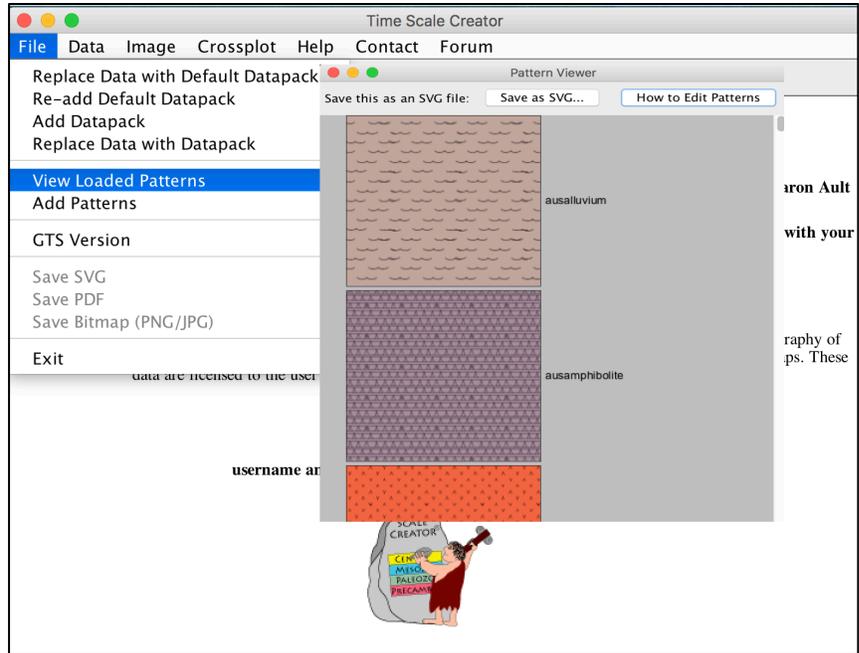
**Replace Data with Datapack:** If you do not want to use the internal database, because your datapack has a different time scale or you prefer to only view a regional datapack, then you can replace the internal database with another datapack.

For example the “Human Culture” datapack uses kyrs instead of myrs, therefore you have to replace the internal datapack.



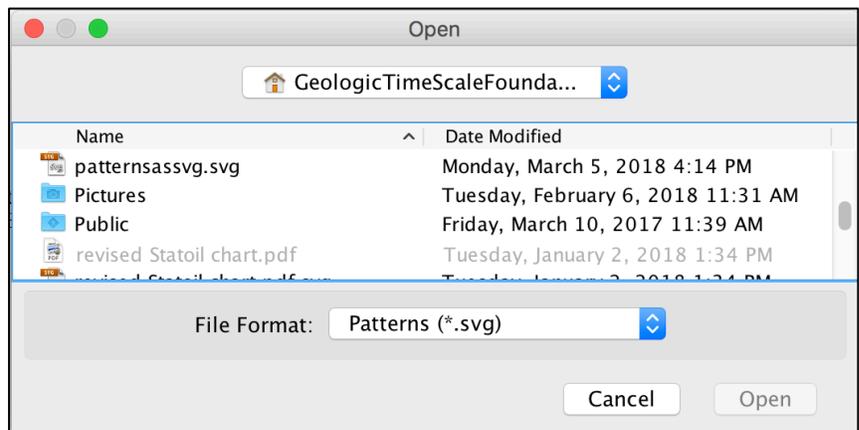
**View loaded Patterns:**

Here you can view and download all the available lithology patterns. To add new patterns, click on Save SVG button to save the patterns. Then load the file into Adobe Illustrator and add your own patterns to the swatches. Save the resulting file and click: **Add Patterns** to import the new file into TSCreator.



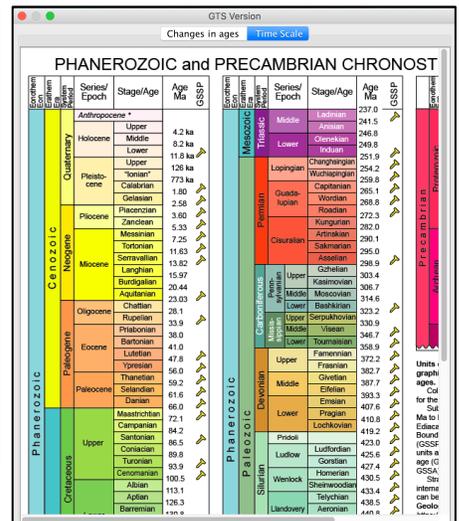
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ps. These

**GTS Version:** Shows a comparison table of the previously used time scale and the current one. Under the Time Scale tab you will find the current GTS chart with ages and GSSPs displayed.



Comparison of GTS2012 and GTS2016 ages

Chronostratigraphic unit	Age in GTS 2016	Age in GTS 2012	Summary
Middle Pleistocene	0.773	0.781	enhanced accuracy
Calabrian	1.89	1.896	enhanced accuracy
Gelasian	2.58	2.59	enhanced accuracy
Priabonian	37.97	37.7	changed marker for base
Bartonian	41.03	41.15	revised cyclestratigraphic dating
Campanian	84.19	83.6	revised radio-isotopic dating
Santonian	86.49	86.3	changed marker for base
Coniacian	89.75	89.8	enhanced accuracy
Albian	113.14	113.0	placement change for boundary
Hauterivian	134.7	133.9	revised ammonite and cycle-stratigraphy
Oxfordian	163.1	163.5	revised boundary definition
Toarcian	183.7	182.7	revised radio-isotopic dating
Pliensbachian	191.36	190.8	revision of stage boundaries
Sinemurian	199.4	199.3	revision of stage boundaries
Hettangian	201.36	201.31	revised radio-isotopic dating
Anisian	246.8	247.1	revision of stage boundaries
Olenekian	249.8	250.0	revision of stage boundaries
Induan	251.902	252.16	revised radio-isotopic dating



## Saving your Chart:

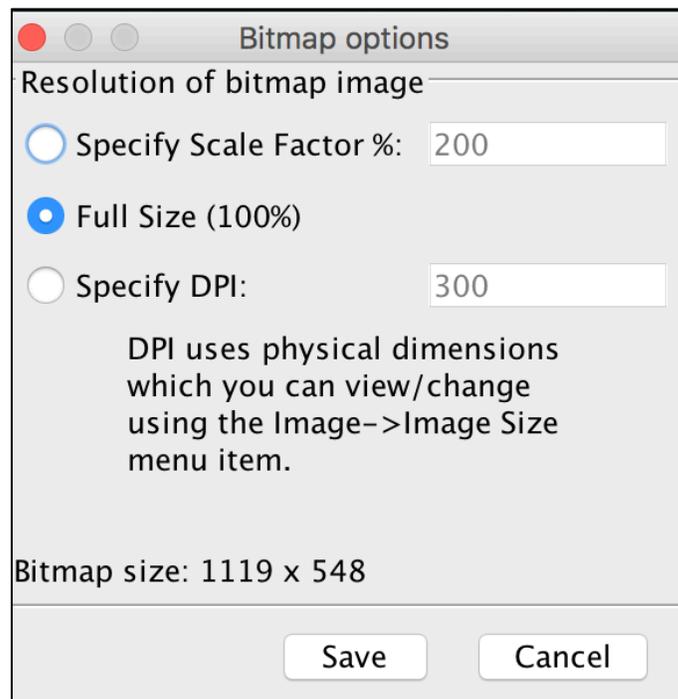
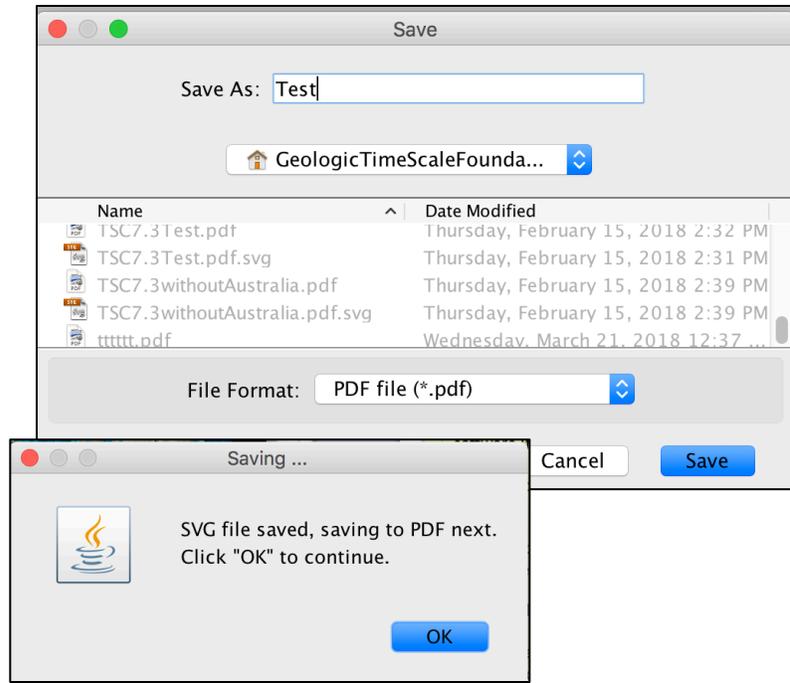
**Save SVG:** svg is a scalable vector graphics file which can be directly imported into most graphics software (f. ex. Adobe Illustrator). All individual elements can be edited.  
*Hint: make sure to deselect MouseOver before saving.*

**Save PDF:** The program will first save a svg file before saving a pdf. If you have a large chart, be patient, it might take a while to save. If the file doesn't save make sure your chart size hasn't exceeded the total allowable chart size for pdfs.

**Save Bitmap (PNG/JPG):** JPGs and PNGs can be directly imported into Powerpoint, ArcGIS and Petrel. You can specify the scaling factor and the DPI.

**Exit:** Closes the TSCreator Program.

## Saving a PDF



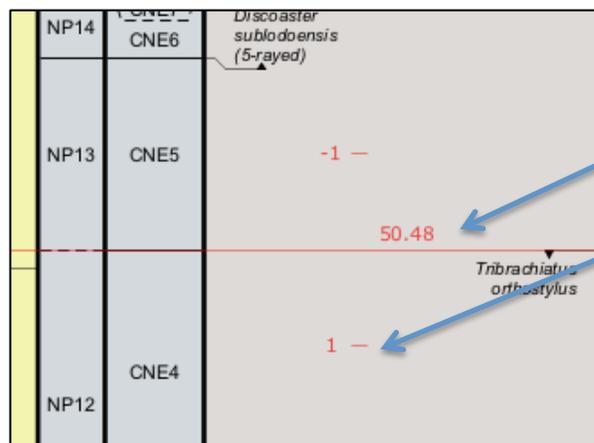
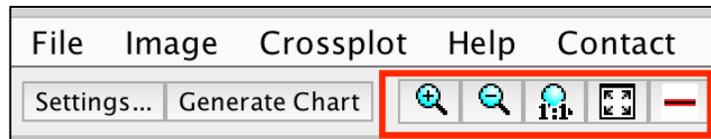
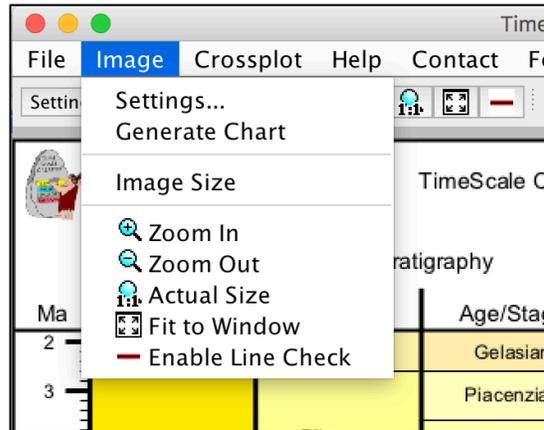
**Image:** You can resize the image to fit your screen or zoom in and out. The same menu is located at the top of your chart.

**Note:** This doesn't change the initially selected scale for the saved output file.

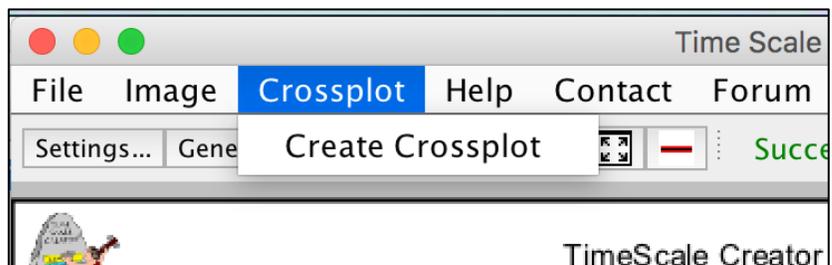
**Enable Red Line:** Clicking this icon will activate a guide line until the icon is clicked off. The guide line helps you finding the age of a particular event on a big chart. It also displays 1myr above and below the red-line.

**Hint:** A single-click when the red-line is activated will LOCK that line, until clicked again. This is useful when having zoomed into a large diagram and you wish to see what other events are coeval – lock the red-line and move the diagram sideways with the scroll bars.

**Crossplot:** Crossplot allows you to add a well or an outcrop in meters or feet to the program and then convert it to time with our Depth-to-age conversion feature. For details see **Section 4, Crossplot.**



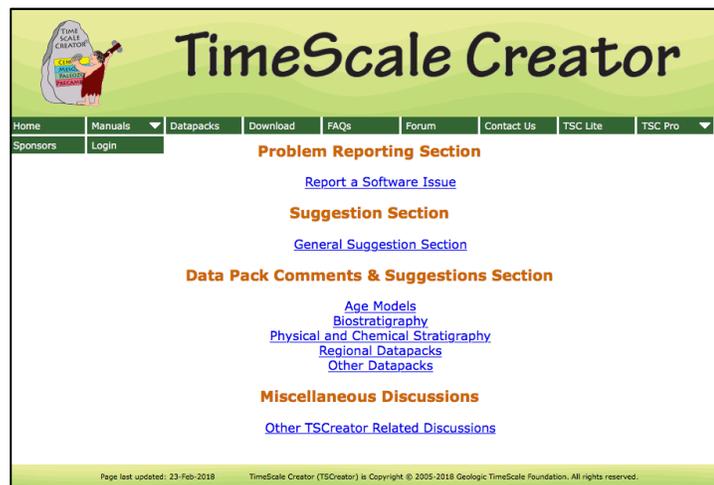
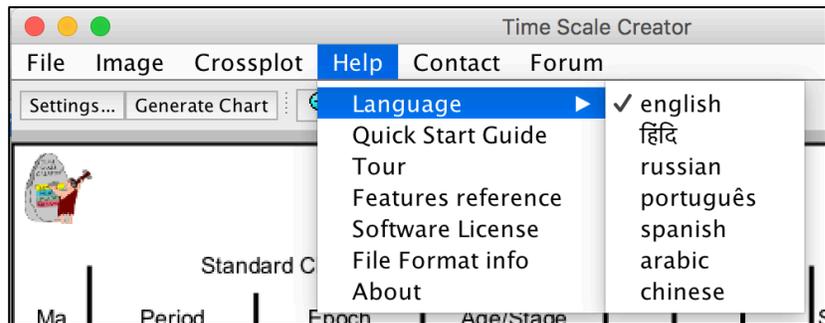
Guide line with scale of 1 myr above and below



**Help:** Gives you access to a quick *guide* and a longer *tour* about how to use the program.

**Language:** If you change the language then all the menus will be in the selected language, however, the directories of the different columns are only available in English.

**Contact and Forum:** Gives you our contact information and access to a webpage where you can leave comments.



## For TSC Pro only

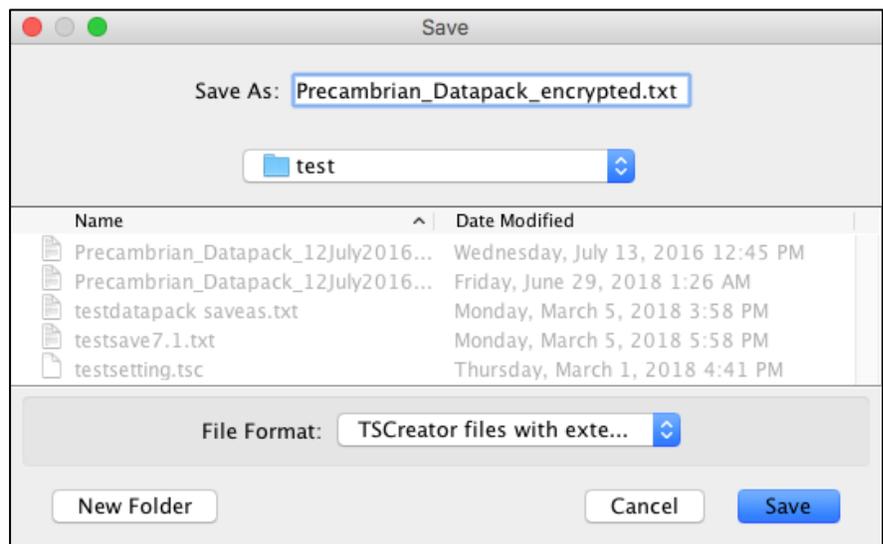
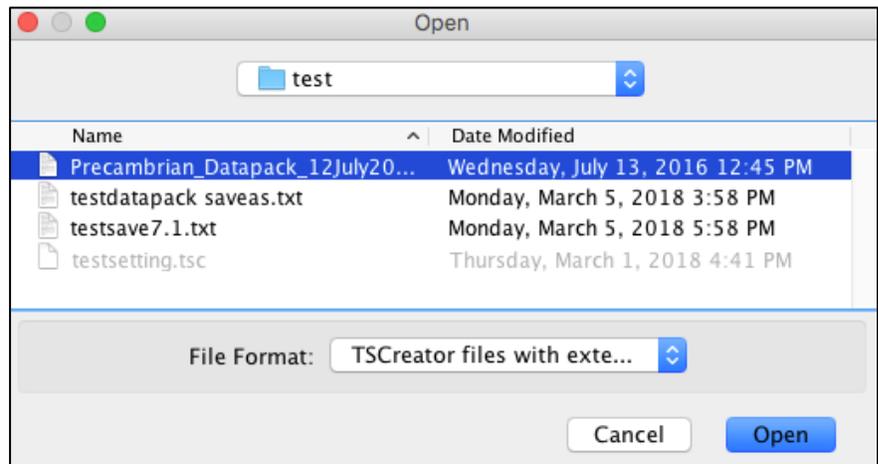
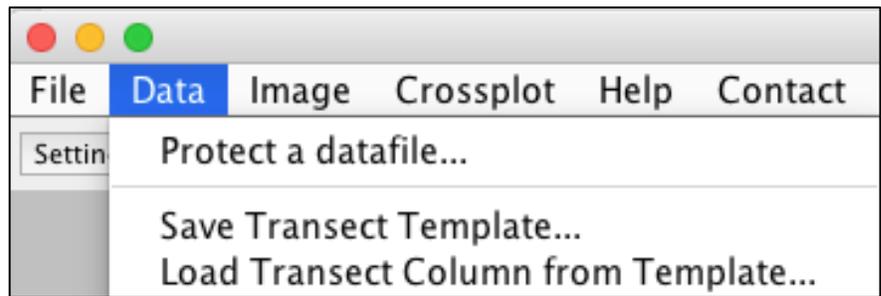
### Data:

**Protect datafile:** Gives you the possibility to encrypt datapacks which you prepared.

Select the file you want to encrypt and click **Open**, then give it a new name on the next screen and click **Save**.

**Save Transect Template:** See end of this **Reference Section** and **Section 3, TSC Makers** about how to create transects.

**Load Transect Column from Template:** See end of this **Reference Section** and **Section 3, TSC Makers** about how to create transects.



# Getting Started

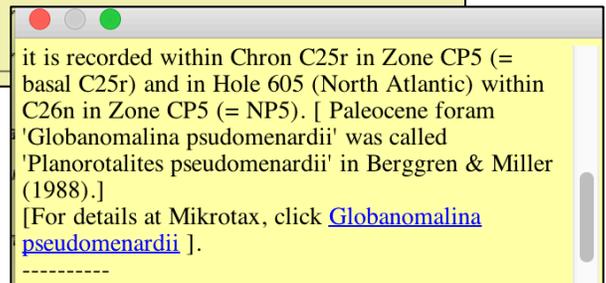
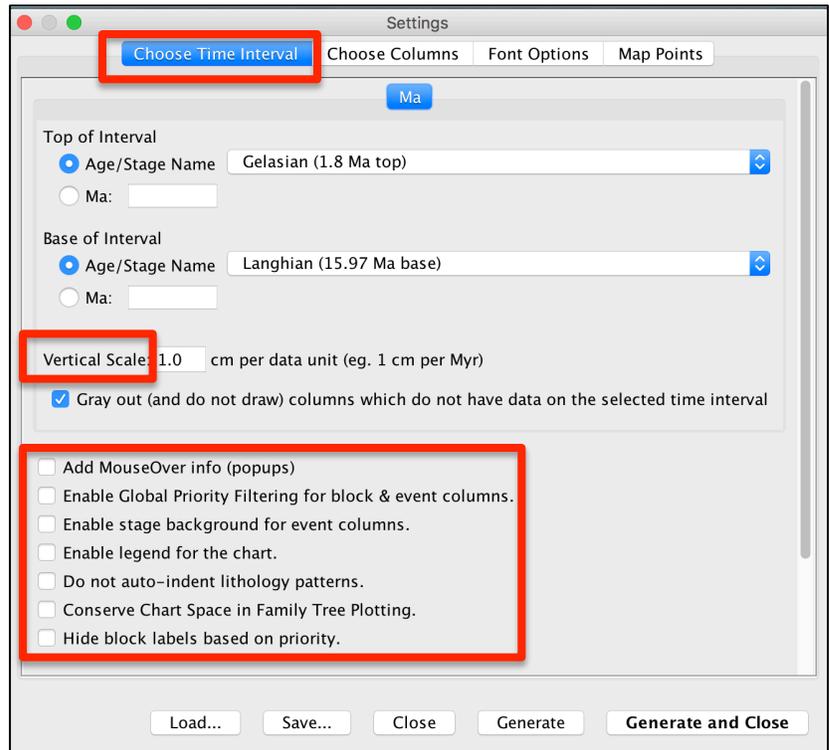
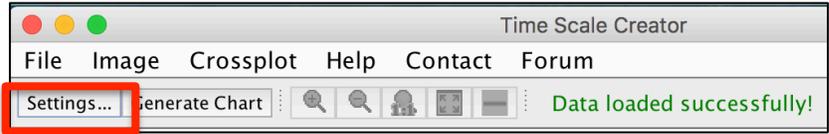
## Settings:

### Choose Time Interval:

Choose the top and base age either by Stage name from the pull-down menu or by Million of Years (Ma).

**Vertical Scale:** Determines the scale of the saved output file in cm per myr. Zooming in on your chart doesn't change this scale.

**Add MouseOver:** Popups are windows which contain additional information, like correlations, links to websites and images of fossils). When enabled, popups appear as **red highlighted areas** as the cursor is placed over them. Clicking the red area will open the popup window.



## Choose Time Interval

### Enable Global Priority Filtering:

Choose this in a low resolution scale setting to avoid over-crowding of close-spaced zone blocks or events.

Merged blocks make a combined name (top block, Dash, bottom block) to allow a more readable output.

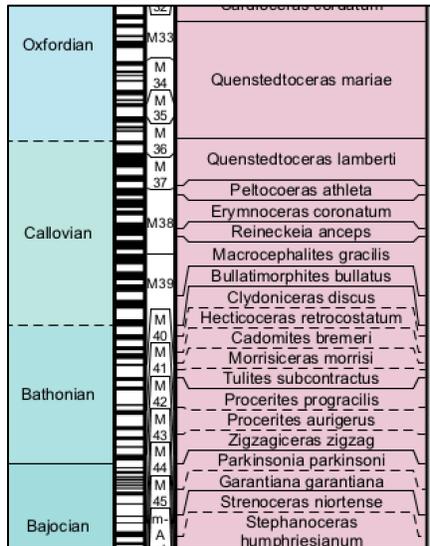
**Hint:** Pop-up window for merged block displays all the individual popups.

### Enable stage background for event columns:

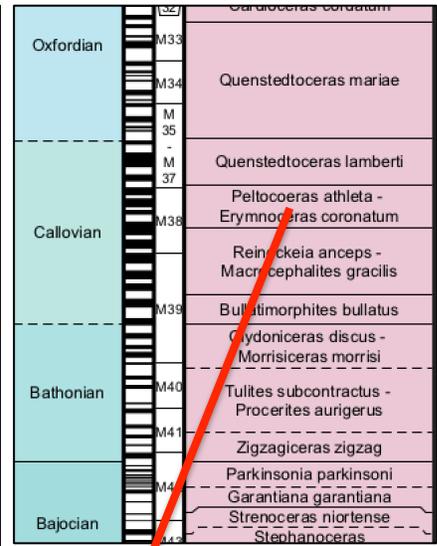
The default background can be changed globally to represent the stage colors in event columns. This makes it easier on large charts to recognize the time interval.

**Hint:** You can either choose "Priority" and "Stage Background" globally for all block and event columns in the "Choose Window" menu or individually for any highlighted column in the "Choose Column" menu.

## Without Priority

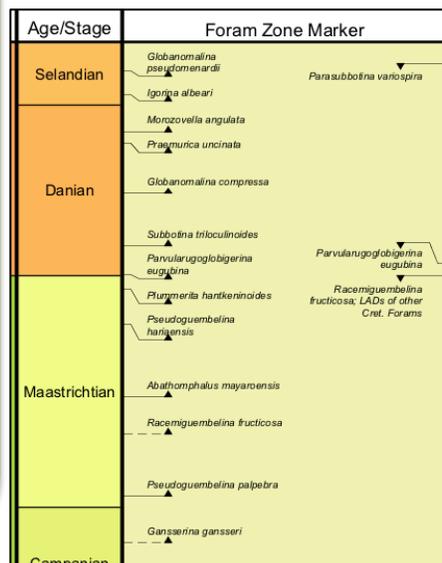


## With Priority

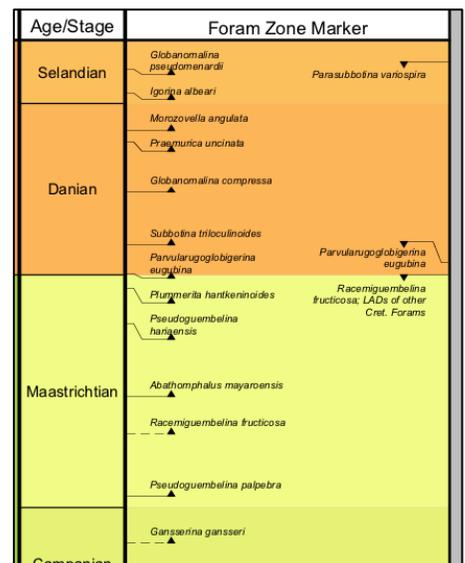


Popup Window

## Default background



## Stage color background



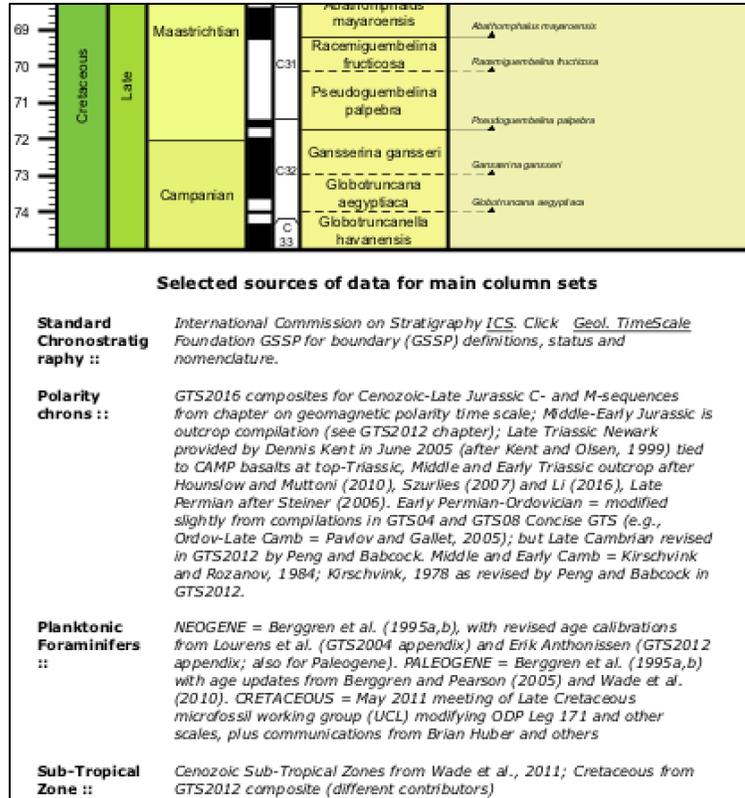
## Choose Time Interval

### Enable legend for chart:

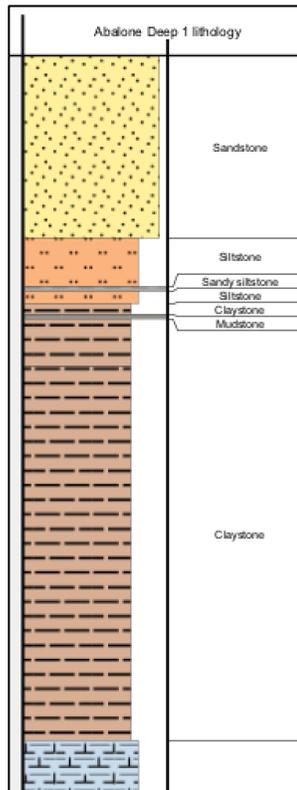
This adds a legend at the bottom of your chart with all the references used to compile the different columns.

### Do not auto-indent lithology patterns:

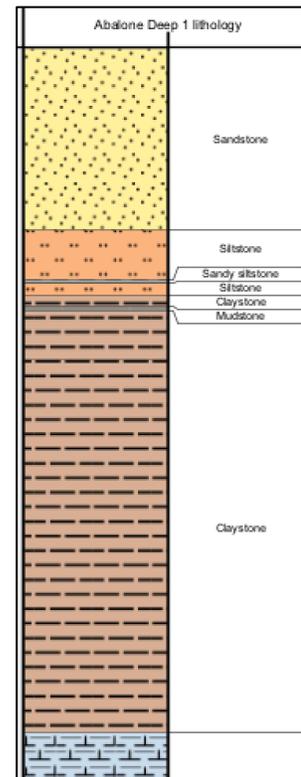
By default lithology patterns are indented according to the corresponding hardness of the rocks. You can turn this feature off and just have straight lithology columns.



Default setting



No pattern indentation



## Choose Time Interval

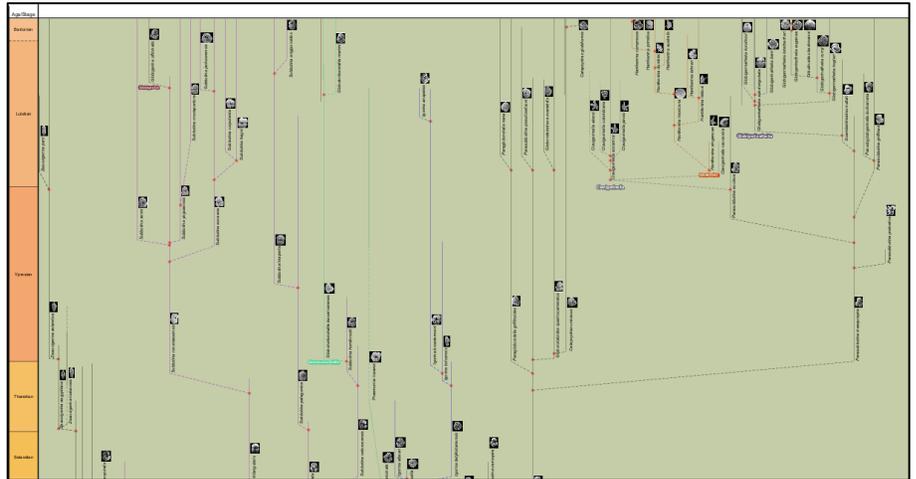
### Conserve Chart Space in Family Tree Plotting:

Evolutionary trees are often very large and therefore you have the option to conserve space by allowing the program to draw new branches over extinct ones and moving everything closer together.

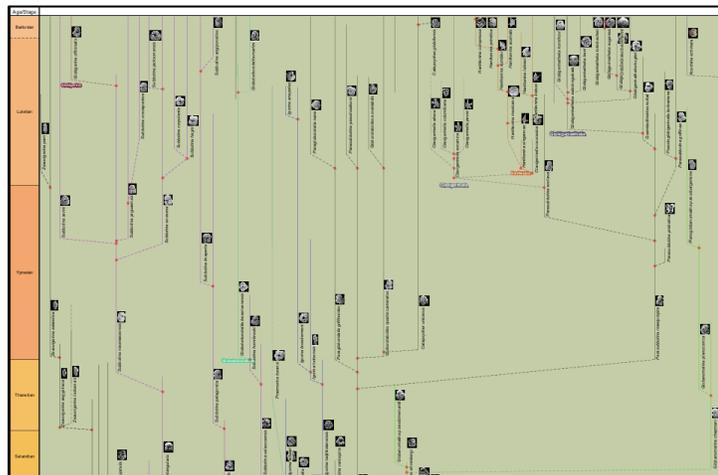
### For TSC Pro only

**Hide block labels based on priority:** If you have assigned priority to zones in a block column for your own datapacks, then turning on this feature will remove any label for lesser priority zones and only show the zone without an internal label in the case of over-crowding.

## Default setting for evolutionary trees



## Space conserving evolutionary tree



## Settings: Bottom Tabs

**Generate and Close:** This will generate your chart and close the settings window.

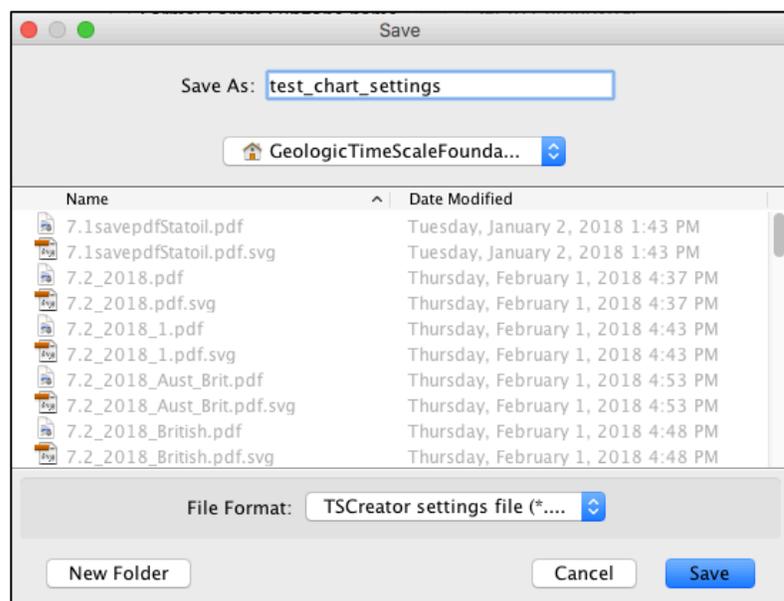
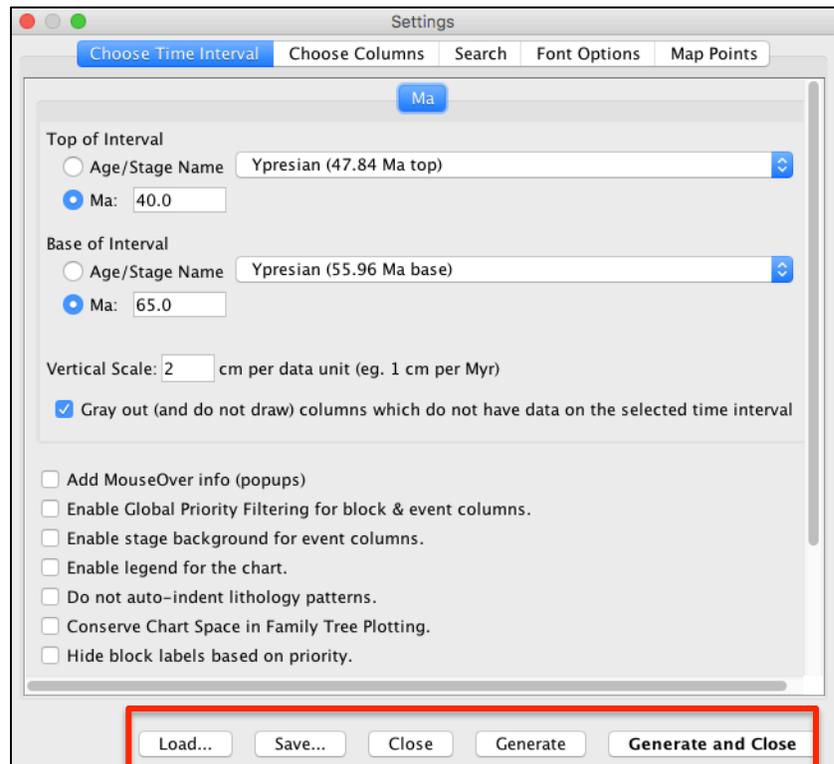
**Generate:** This will generate your chart and leave the settings window open.

**Close:** This will close the settings window, but not the program.

### Save (Settings):

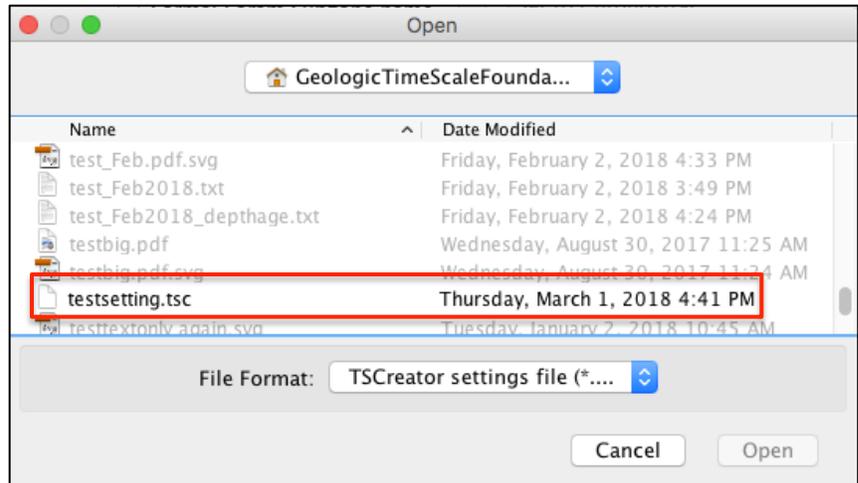
Once you have created a chart you like, you can save the chart settings in a special file (with the extension .tsc)

**Hint:** When working on a detailed chart, save settings throughout the creation of the chart for reference.



## Settings: Bottom Tabs

**Load (Settings):** Click load and select the settings file (with extension .tsc). Once loaded the file will recreate your previous chart (assuming the same data-pack is loaded).



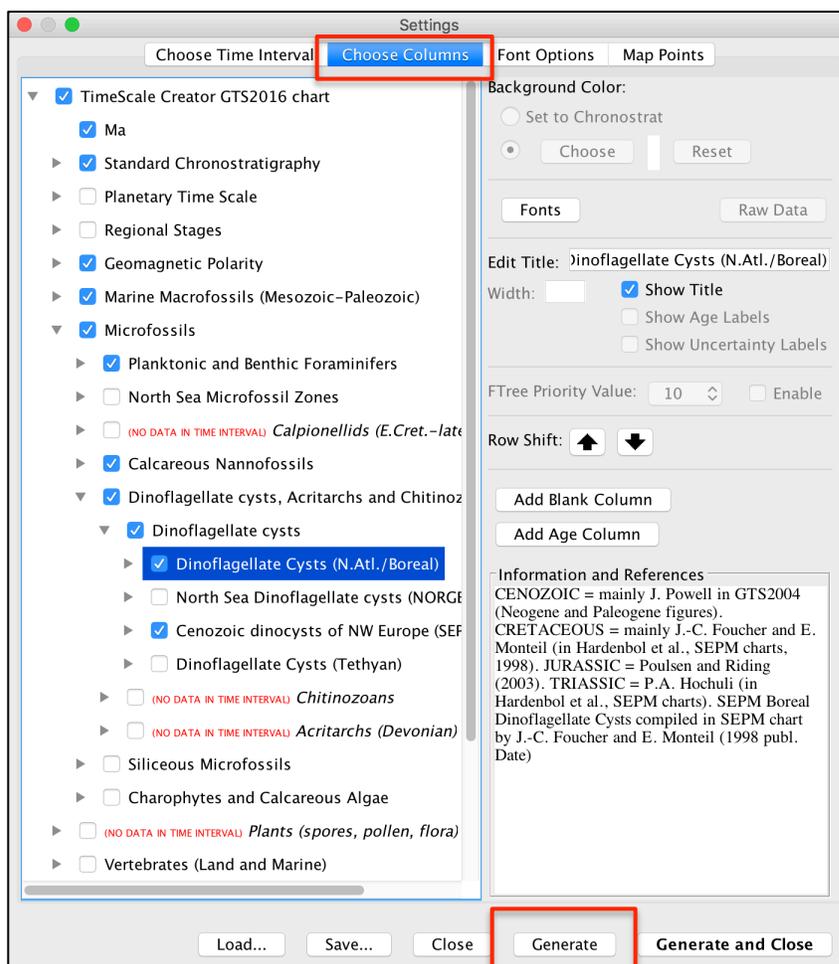
# Choose Columns

## Choose Columns

**Choose Columns:** The available columns are folded into directories and subdirectories. Open them until you find the column which you want to display. Select the desired column. Hit generate.

Red text indicates that there are no data available for your chosen time interval.

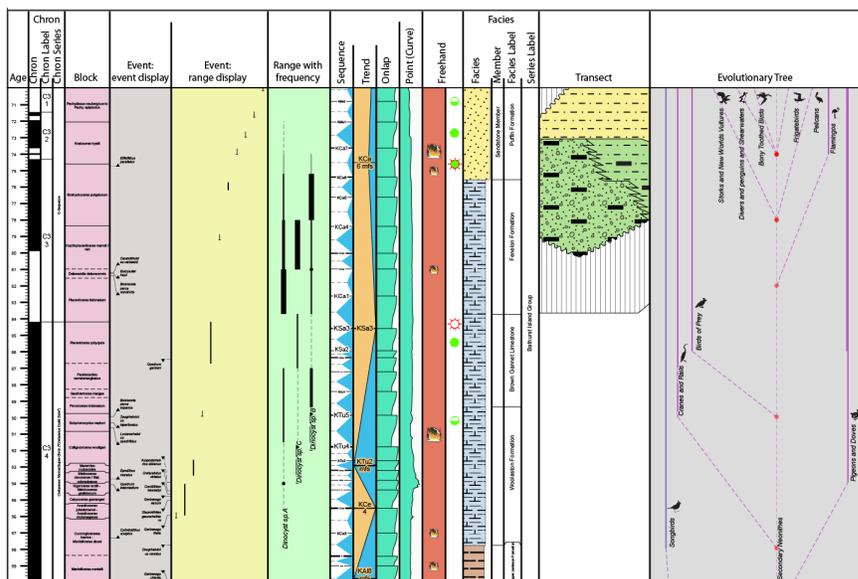
The right side of the window allows editing of the display for the highlighted column. This includes font, age labels, column width, background color, scale for curves, etc. depending on the column type.



At the bottom right of the window is a box with information and references for the highlighted column.

**Hint:** If you select a column deep in a subdirectory, then all the appropriate directories above this selection will be automatically turned on.

## Available Column types



## Options for different Columns

**Main directories:** Have only reduced menu options.

**Fonts:** Choose fonts for all the columns contained in this directory.

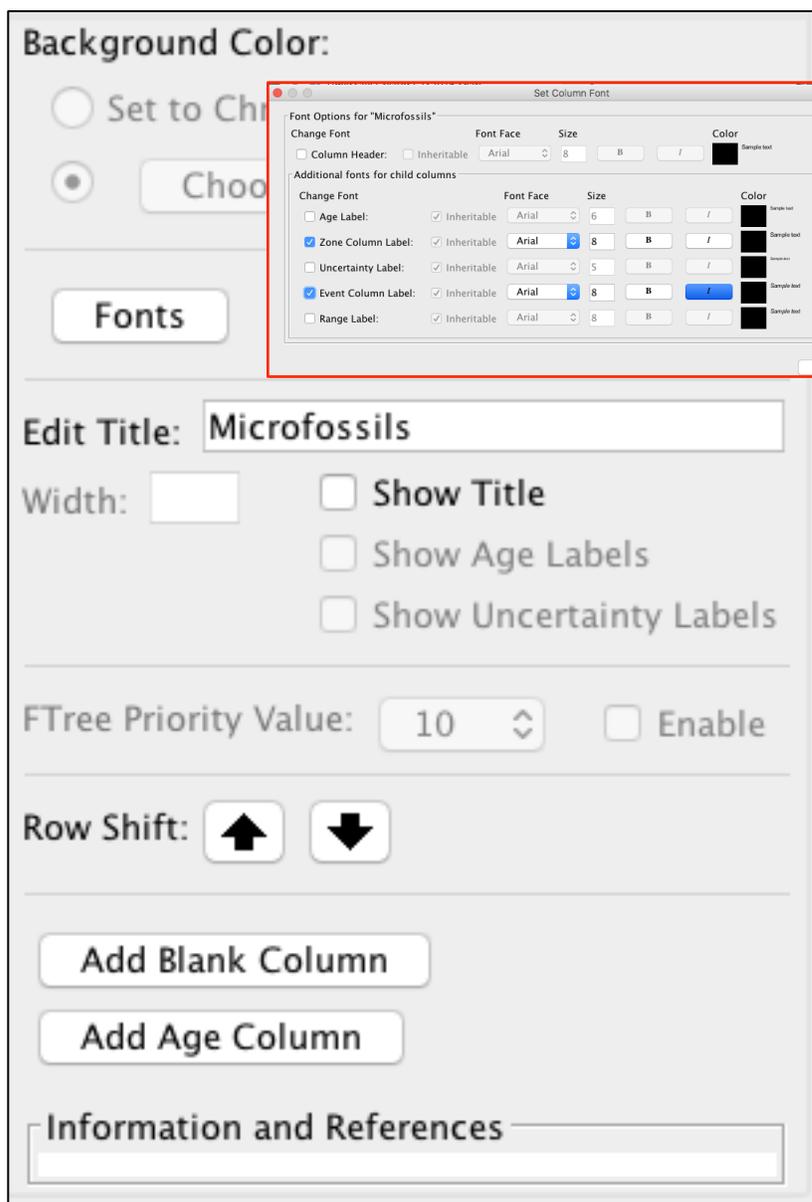
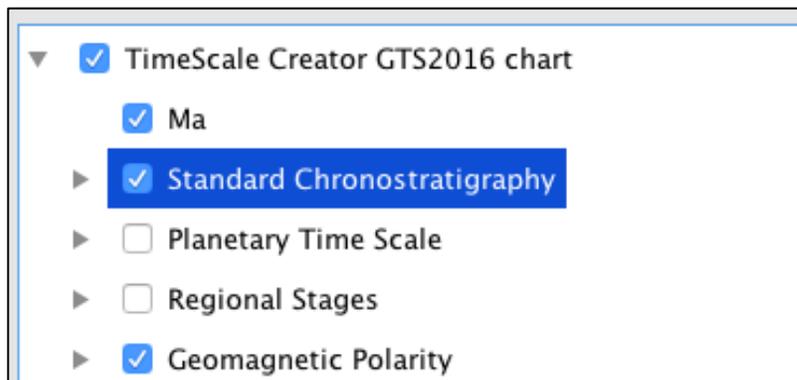
**Edit Title:** You can change the name of the title of columns and select whether or not the title gets displayed.

**Row Shift:** You can use the arrows to move a directory up or down in relative position. This will be reflected in the chart. However, individual columns can only be moved within their subdirectories.

**Add Blank Column:** A blank column can be inserted multiple times at any location. This might help to visually distinguish select columns from one another.

**Add Age Column:** An age column can be inserted multiple times at any location. This makes it easier to find the age on very wide charts.

## Main Directories



# Block Columns

## Options for different Columns

**Block Columns:** These are often zone and/or stage columns.

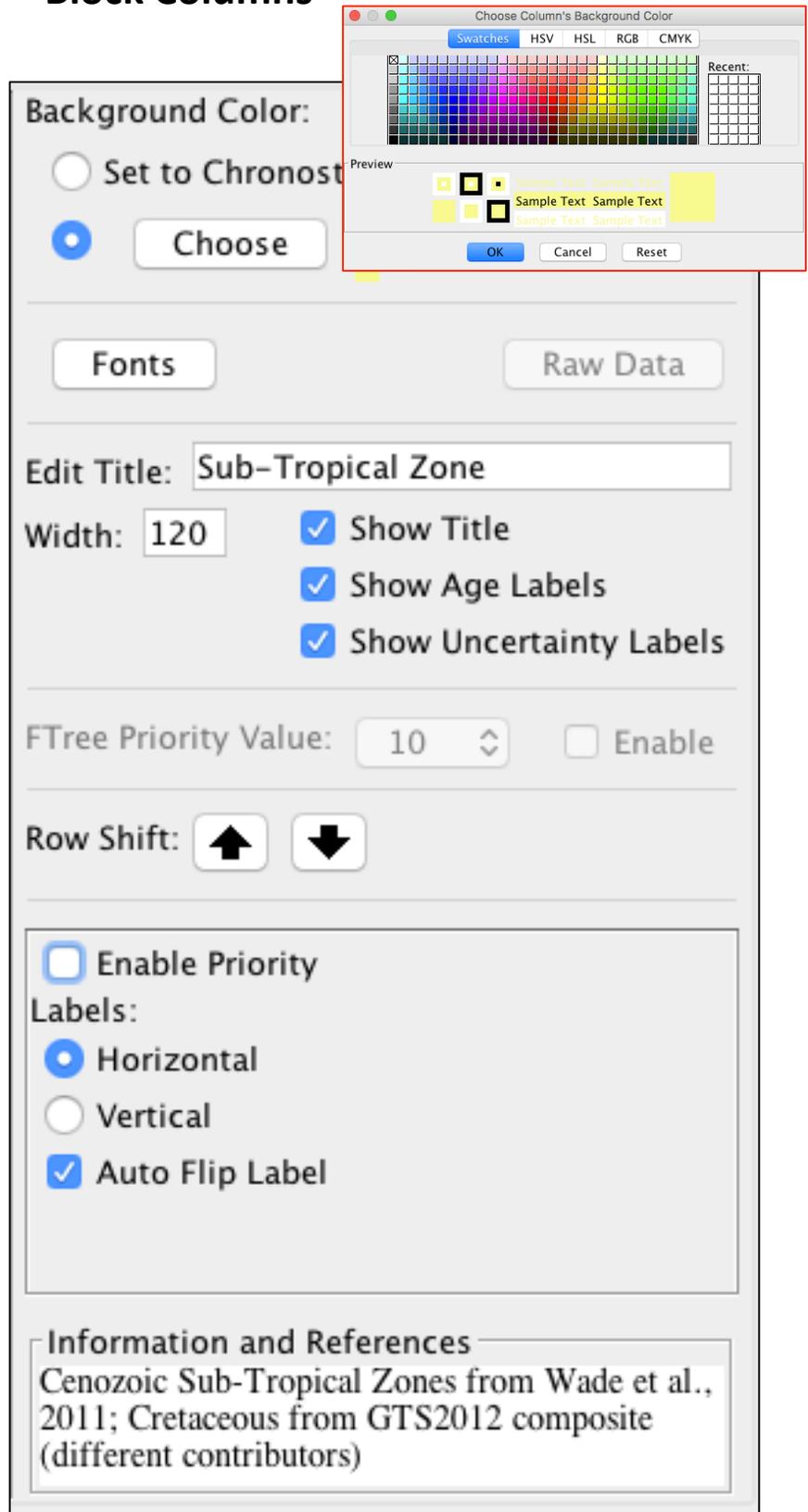
**Background color:** You can change the background to any color you like.

**Width:** determines the width of your column.

**Show Age Label:** This will display an **age label** at the base of the block. You can also add an **Uncertainty Label** to the age.

**Enable Priority:** Choose this in a low resolution setting to avoid over-crowding of close-spaced zone blocks or events. Merged blocks create a combined name (top block, Dash, bottom block) to allow a more readable output.

**Labels:** Can be displayed horizontally or vertically depending on the width of the column. Auto Flip will decide the best fit.



The screenshot shows the 'Block Columns' configuration window. At the top, there is a 'Background Color' section with a 'Set to Chronost' radio button and a 'Choose' button. A color picker dialog is open over the 'Choose' button, showing a color grid and 'OK', 'Cancel', and 'Reset' buttons. Below this are 'Fonts' and 'Raw Data' buttons. The 'Edit Title' field contains 'Sub-Tropical Zone'. The 'Width' is set to '120'. There are three checked checkboxes: 'Show Title', 'Show Age Labels', and 'Show Uncertainty Labels'. The 'FTree Priority Value' is set to '10' with an 'Enable' checkbox. Below that are 'Row Shift' buttons with up and down arrows. A section titled 'Labels' has an unchecked 'Enable Priority' checkbox, a selected 'Horizontal' radio button, an unselected 'Vertical' radio button, and a checked 'Auto Flip Label' checkbox. At the bottom, an 'Information and References' section contains the text: 'Cenozoic Sub-Tropical Zones from Wade et al., 2011; Cretaceous from GTS2012 composite (different contributors)'.

# Range Columns with abundances/ Evolutionary Trees

## Options for different Columns

**Range Columns/ Evolutionary Trees:** Display information as a range chart where a line shows the extent of a fossil from FAD to LAD. You can sort by FAD, LAD or alphabetically. The line width gives an indication of the abundance of a species.

**Margin:** Allows you to change the width of the empty space on the right side of a range chart or evolutionary Tree.

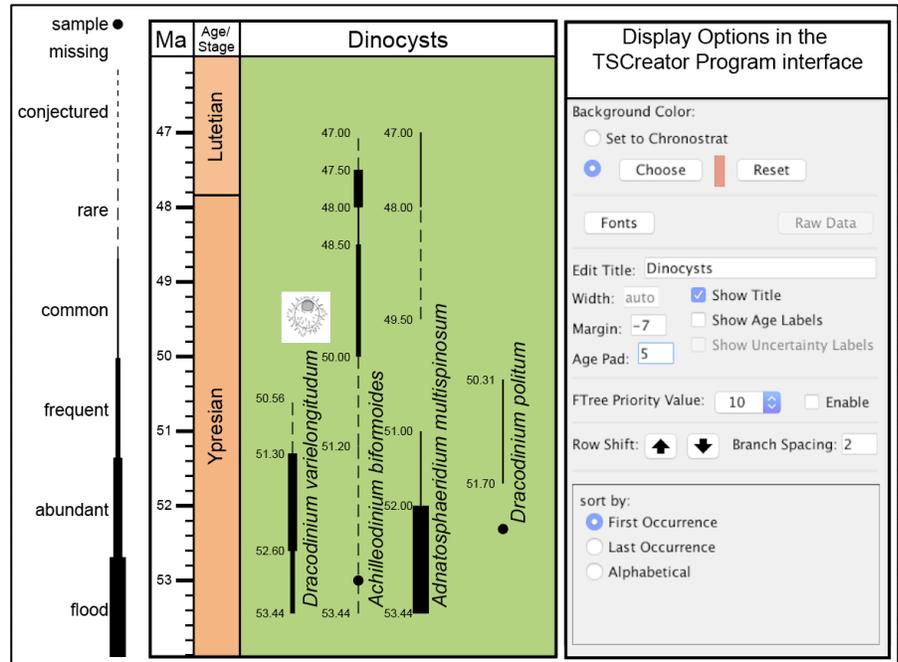
**Age Pad:** Lets you adjust the space between the Age Label and the range line, if you selected "Show Age Label".

**Show Uncertainty Labels:** Doesn't work yet.

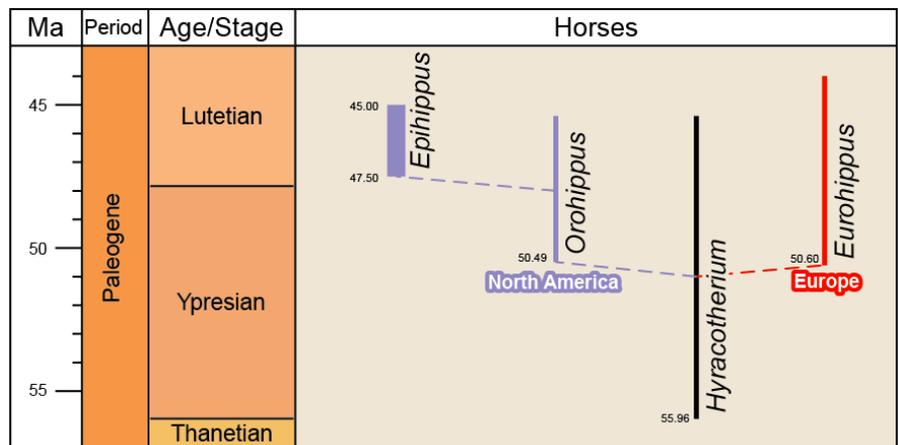
**Ftree Priority Value:** Allows you to display only evolutionary branches above a certain priority value. Hidden branches will be marked by a blinking dot. Click the dot and the hidden branch will be displayed.

**Branch Spacing:** Allows you to increase the space between 2 branches.

## Range display



## Evolutionary Tree display



# Range Columns with abundances/ Evolutionary Trees

## Options for different Columns

**Ranges:** can be sorted by FAD, LAD or alphabetically. For Evolutionary trees it is recommended to sort by FAD only, otherwise you might get strange results.

**Integrated Trees:** allows to embed one evolutionary tree into another one, to better understand phenotype evolution within the evolutionary history of a species.

You can display the two trees side by side or as an integrated tree.

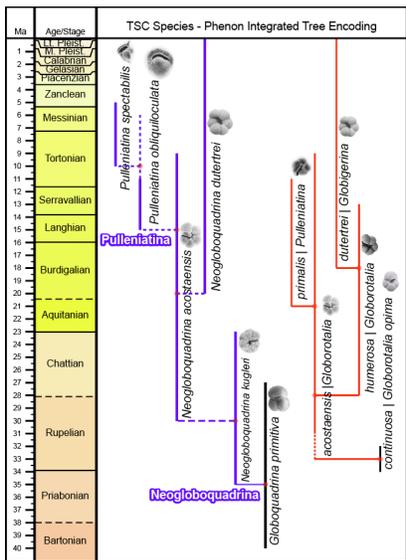
The integrated tree option only works, if the corresponding datapack was originally setup for this kind of display.

- Global Reconstructions (R. Blakey)
- ▶  Quaternary (high-resolution)
- ▶  Global Trends, Impacts, Volcanism, Tec
- TSC Species – Phenon Integrated Tree:
- TSC Species – Phenon Integrated Tree:

- First Occurrence
- Last Occurrence
- Alphabetical

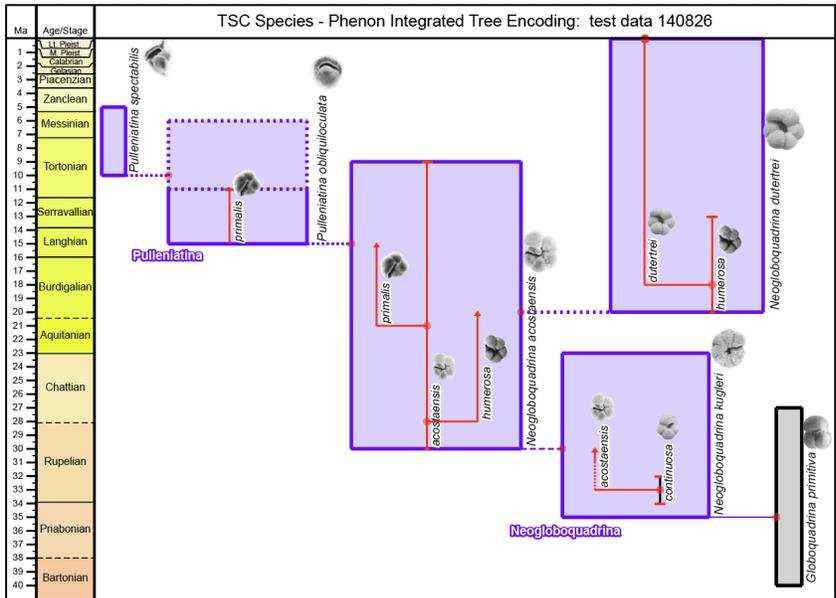
Choose tree structure:

- Integrated Tree
- Side By Side Tree



Side by Side Tree display

## Integrated Tree display



# Event Columns

## Options for different Columns

**Event Columns:** These show first (FAD) and last appearances (LAD) either as an event or in a range chart.

**Events:** Events will be displayed with up or down-pointing arrows to mark a FAD or LAD and a straight arrow to mark an event (like acme).

**Ranges:** displays the same information as a range chart where a line shows the extent of a fossil from FAD to LAD. You can sort by FAD, LAD or alphabetically. In this display mode the line width cannot be changed.

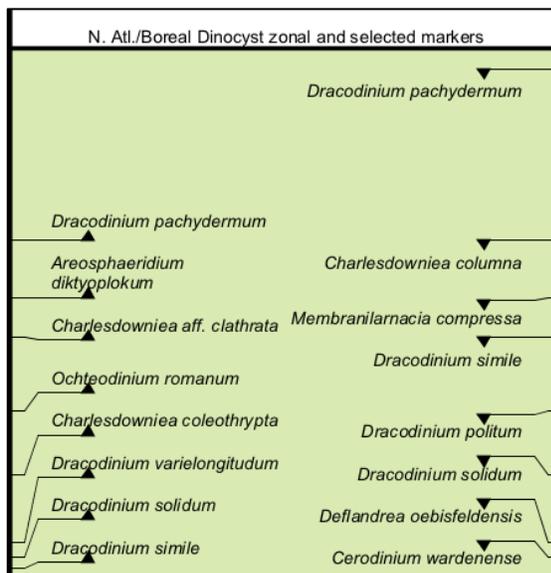
**Note:** You cannot display the same column at the same time as events and ranges. You have to choose one or the other.

Scroll down for more options

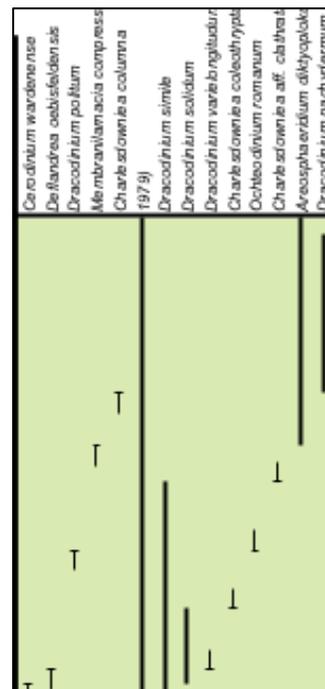
Formal Foram Zone name (Cenozoic)  
 Formal Foram Subzone name (Cenozoic)  
 Forum Zone Marker  
 Other Foram FAD/LAD  
 Additional Neogene and lesser Paleogene  
 Benthic Foraminifers

Enable Priority Filtering  
 Priority Settings  
 Events  
 Ranges  
 sort by:  
 First Occurrence  
 Last Occurrence  
 Alphabetical  
 Note: Ranges will set column width automatically

## Event display



## Range display



## Curve Columns

### Options for different Columns

**Curve Columns:** These are used for sea level change, isotopes and temperature.

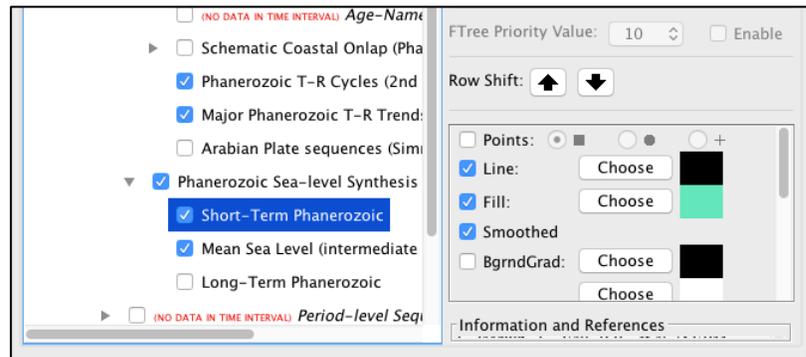
**Points:** Your curve can be displayed as a line with points or just points. You can choose rectangles, dots or crosses.

**Line:** displays the curve as a line which can be filled and smoothed. You can also change the color.

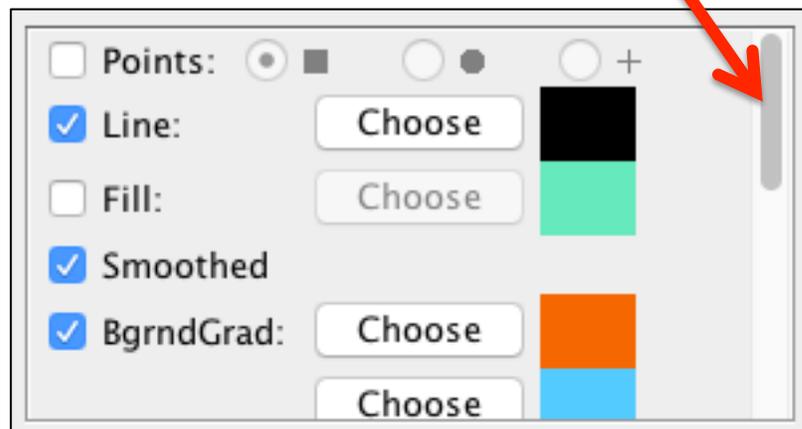
**Background Gradient:** Choose 2 colors for your background and the program will display them as a gradient between the 2 extremes.

**Curve Gradient:** Choose 2 colors for your curve and the program will display them as a gradient between the 2 extremes.

**Range:** Set the range for your curve. You can flip the curve from its original direction.



Scroll down for more options



# Curve Columns

## Options for different Columns

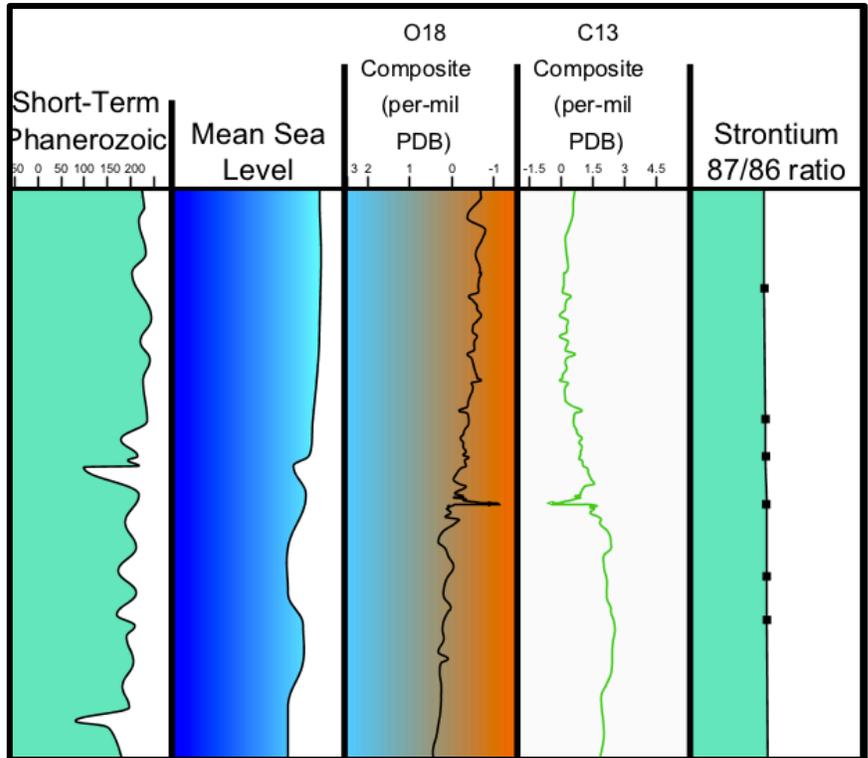
**Show Scale:** Puts a scale on top of the column.

**Start:** doesn't do anything

**Step:** subdivides your scale.

**Note:** Background and curve gradients can also be "hard-wired" directly into a datapack. See page 60 for more information.

## Curve display options



Filled curve

Curve with curve gradient

Curve with background gradient

Curve with different color

Curve with points

# Search

## Settings

### For TSC Pro only

**Search:** Allows you to search the internal database, including the popup information if "Comment Search" is selected..

Open **Search** and type the name of the event you are looking for and click **Search**.

All occurrences of the event will be displayed with the name of the corresponding column and the associated age. It will also display whether it is a FAD or LAD.

**Additional Info** will give you the corresponding pop-up information.

Select the event which you want to add to your chart.

If you want to get some more information around your event, then select "**3 Ma around event for chart generation**".

Hit **generate**.

**Hint:** You can use *\** as a wild character to search for all names of events and zones that have that partial string.

For example: search for **gocht\*** and you will get back *Wetzeliella gochti* and *Gochtedinia*.

Settings

Choose Time Interval | Choose Columns | **Search** | Font Options | Map Points

Turn ON Comments Search

orthostylus

Select 3Ma around event for chart generation

**Results for the word: orthostylus**

**Tribrachiatius orthostylus - Event**

Add To Chart	ColumnPath	Age	Qualifier	More Info.
<input checked="" type="checkbox"/>	Tethyan Nanno Zo...	50.49	LAD	<input type="button" value="Additional Info"/>
<input checked="" type="checkbox"/>	Tethyan Nanno Zo...	54.37	FAD	<input type="button" value="Additional Info"/>

**D. lodoensis / T. orthostylus CRZ - Block**

Add To Chart	ColumnPath	Age	Qualifier	More Info.
<input checked="" type="checkbox"/>	CN Zone name	50.49 - 53.04	-	<input type="button" value="Additional Info"/>

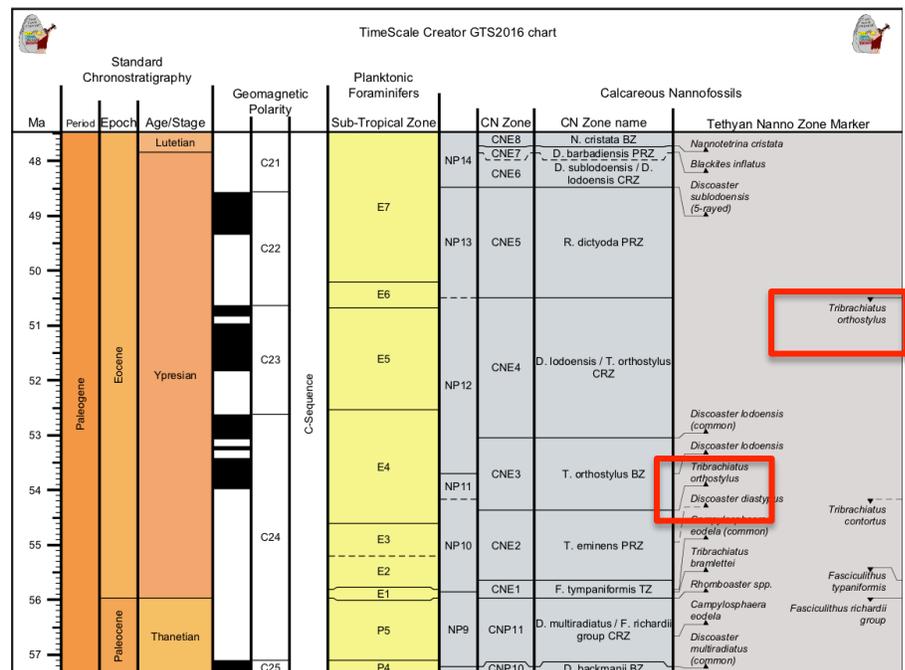
**T. orthostylus BZ - Block**

Add To Chart	ColumnPath	Age	Qualifier	More Info.
<input checked="" type="checkbox"/>	CN Zone name	53.04 - 54.37	-	<input type="button" value="Additional Info"/>

**Comments - T. orthostylus BZ**

[Next Higher Unit = D. lodoensis / T. orthostylus CRZ at 53.04 ]

Comments: Base of Tribrachiatius orthostylus to Base of Discoaster lodoensis



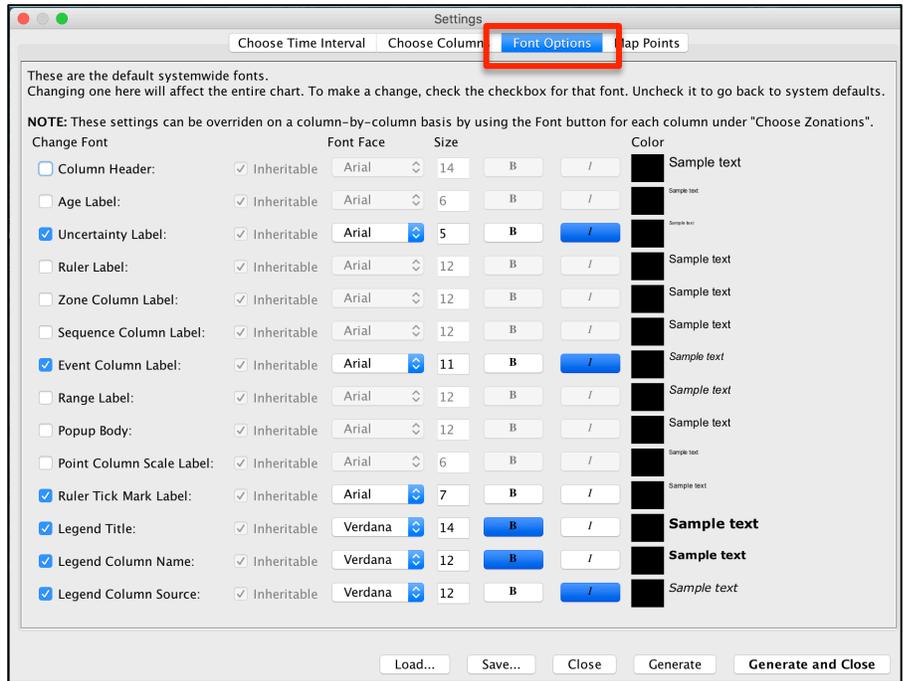
# Fonts

## Settings

**Font Options:** Here you can change the fonts and color of fonts for all the column types for the whole chart at once.

Once you have made your choice hit generate and the new font styles will be applied to your chart.

**Hint:** You can still override these styles on a column-by-column basis by using the **Font** button for each column in the **Choose Columns Menu**.



# Map Points

## Settings

**Map Points:** Only works if you have added a so-called mappack. Most of our regional datapacks include a map.

Click the **World Map** and choose a sub-map and then open individual basins. Or choose them directly from the map menu.

Hovering over the different regions of the map will display the name of the basin and the latitude and longitude. Click the rectangle and the basin map will open.

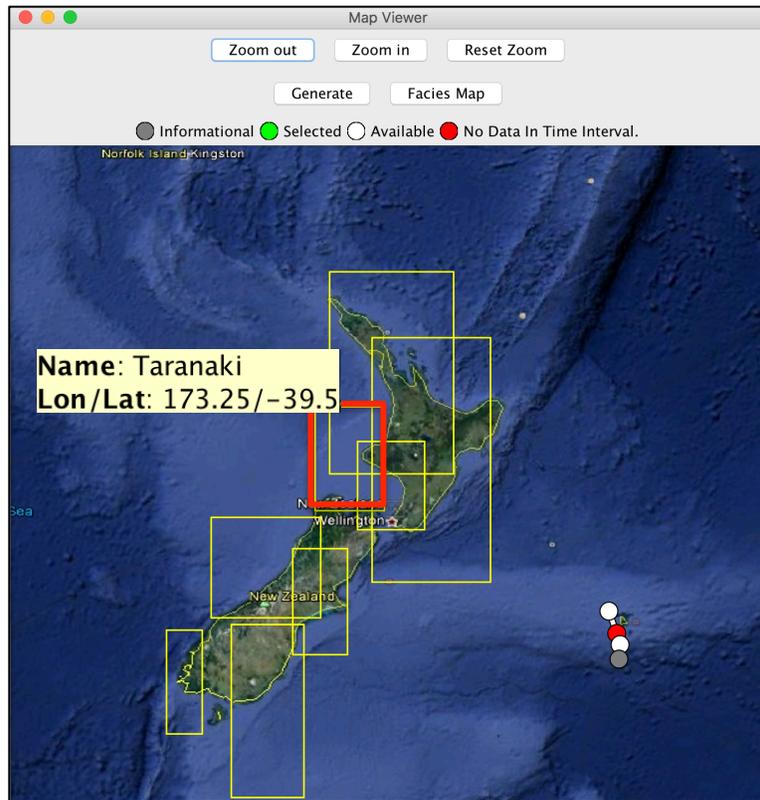
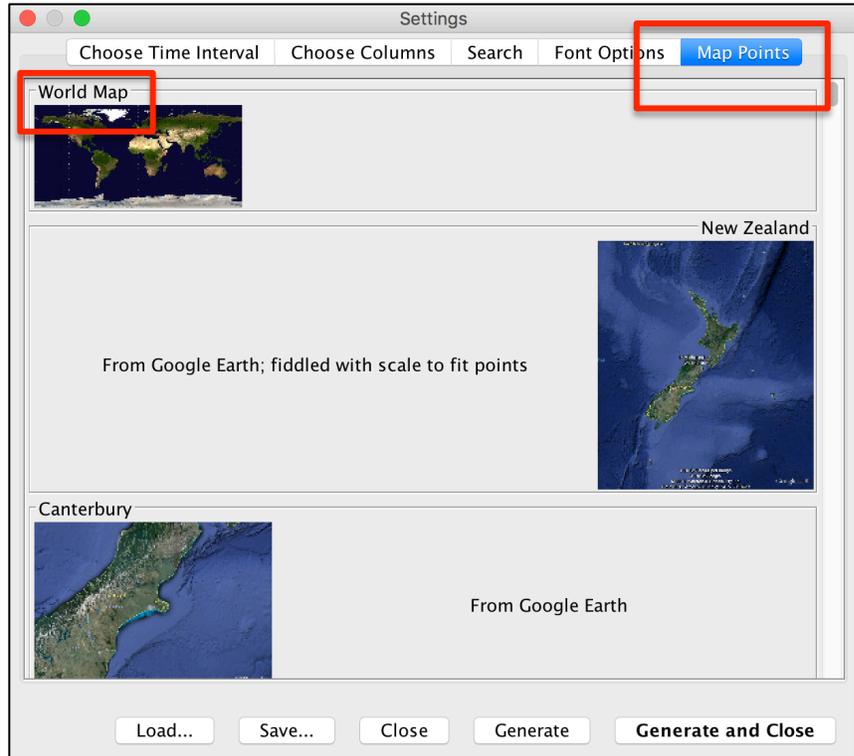
You can choose which wells or transects you want to display from this map by clicking on the dots or lines.

**Green:** selected wells or transects.

**White:** wells or transects available for selection.

**Red:** no information for the selected time interval.

**Grey :** reference points (like capitals or major cities).



## Settings

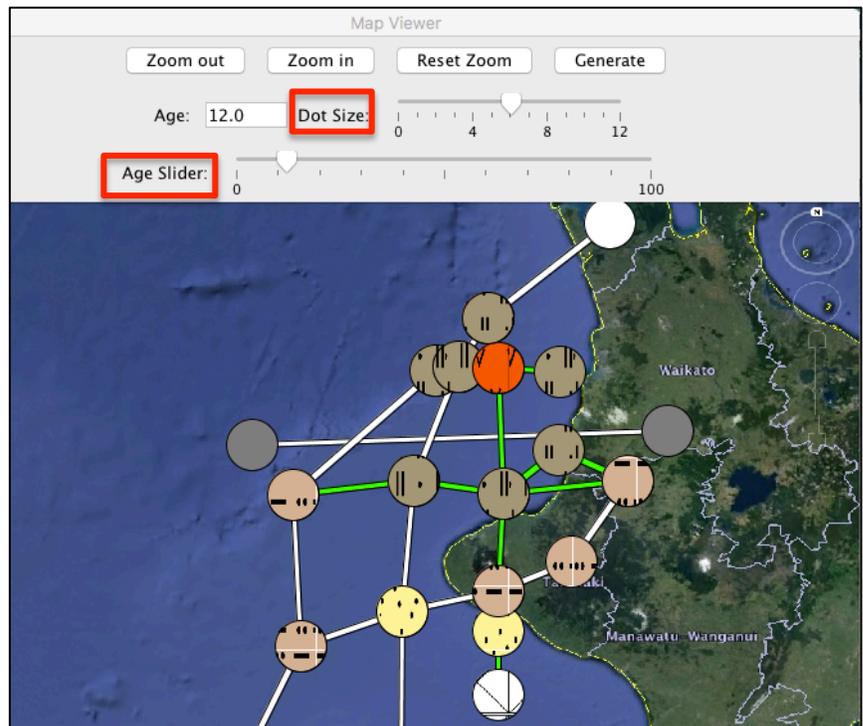
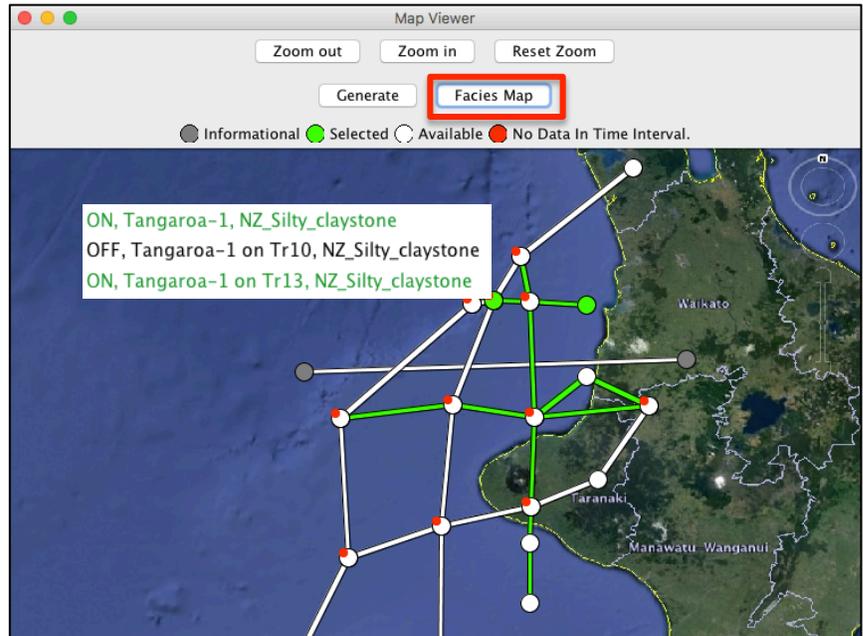
### Map Points:

In some mappacks there are intersecting transects or other overlapping points. When you click on one of these points you can select which of the intersecting columns to activate.

Hit **generate** and the selected wells will be added to your chart.

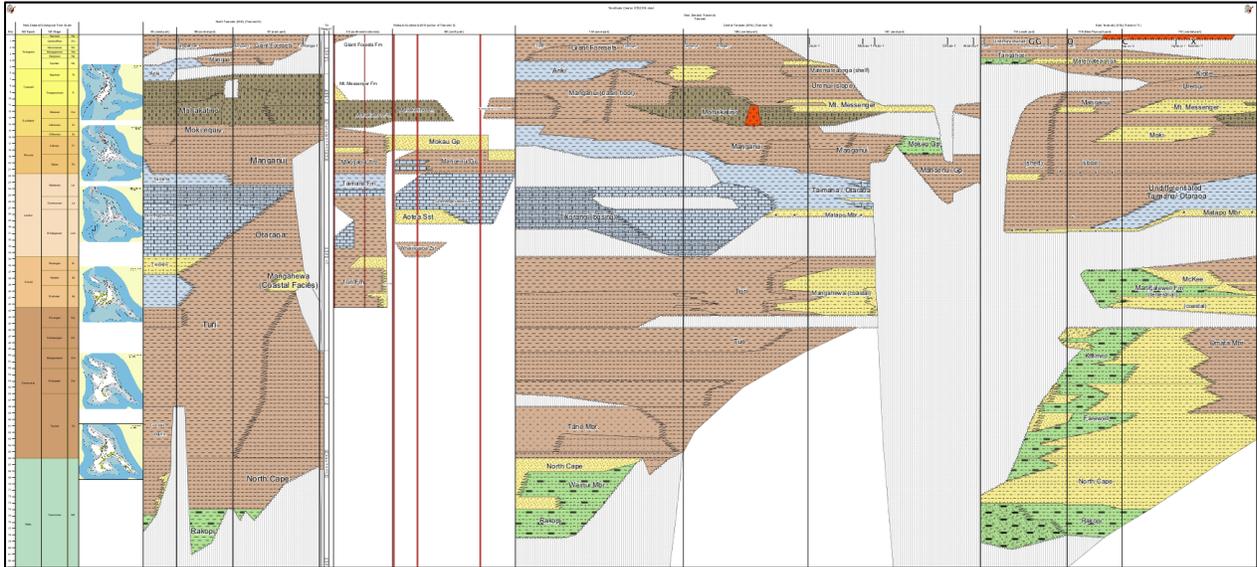
**Hint:** All the appropriate directories and columns will be automatically also turned on in the **Choose Column** menu.

**Facies Map:** To get a quick preview of the lithologies of the wells click **Facies Map**. A new window will open with a **time slider**. As you move the slider through time you will see the lithologies changing in the well dots. You can adjust the dot size with the **Dot slider**.



# Map Points

Chart generated directly from the map interface



## Choose Columns Menu

- ▼  New Zealand Transects
  - ▶  NZ-wide Megasequences
  - ▶  Northland - Waikato - Bay of Plenty
  - ▼  Taranaki
    - ▶  Taranaki Far-North (SW-NE; Transect 3)
    - ▶  North Taranaki (W-E) (Transect 9)
    - ▶  Waikato Southwest (NW portion of Trans
    - ▶  Central Taranaki (W-E) (Transect 14)
    - ▶  South Taranaki (W-E) (Transect 12)
    - ▶  North coast of Nelson (NW tip of South I
    - ▶  Nelson neck (NW tip of South Island; W-
    - ▶  West Taranaki (S-N) (Transect 10)
    - ▶  Central Taranaki (S-N) (Transect 13)
    - ▶  East Taranaki (S-N) (Transect 11)
  - ▶  Wanganui
  - ▶  Eastlands - N Canterbury

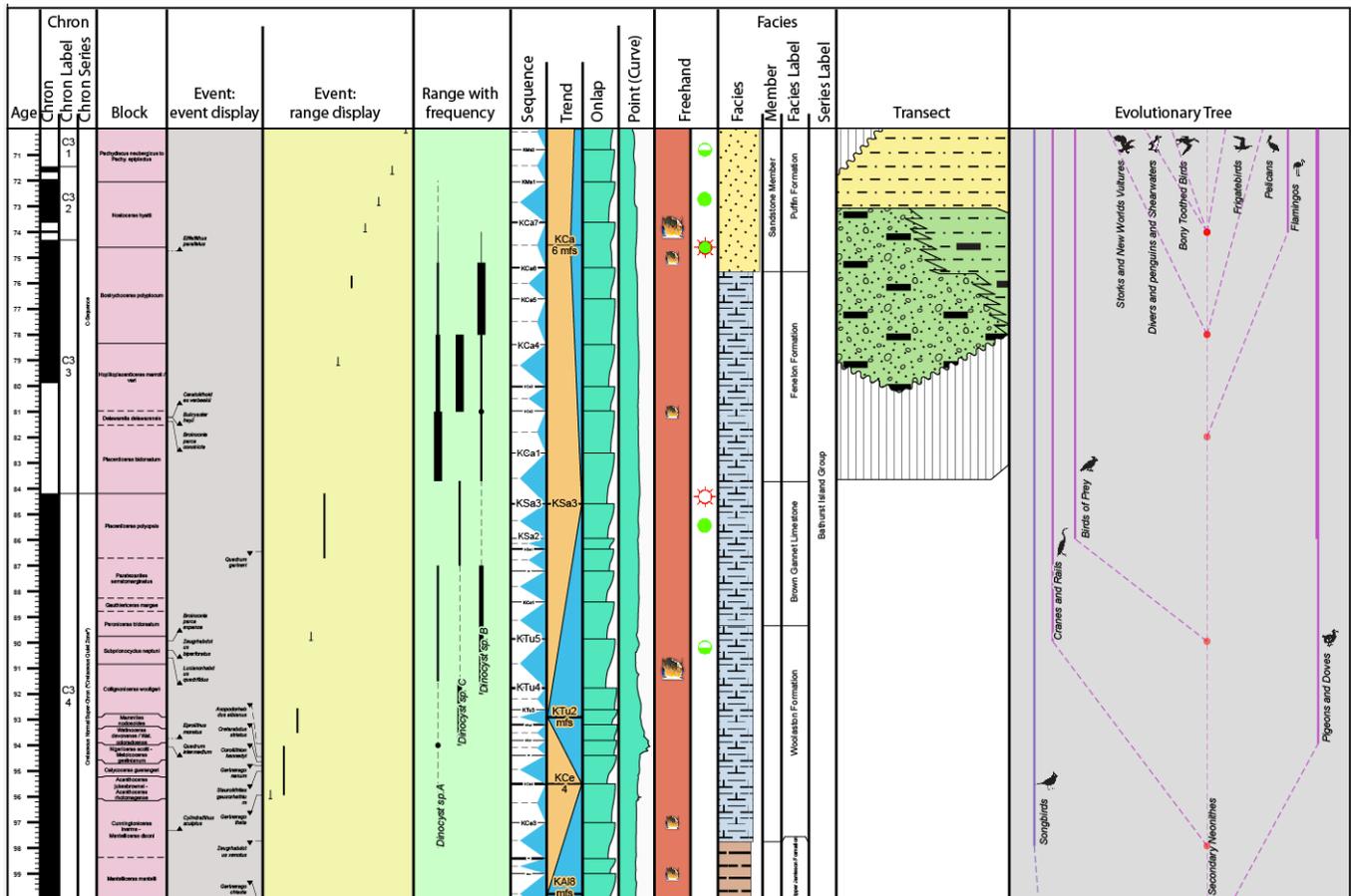
The appropriate directories are also turned on in the “Choose Columns” menu, so that you can easily make further changes to your selection.



# Datapack Formats for TimeScale Creator

TimeScale Creator allows you to produce your own datapacks and append them in addition to the internal database. In the following section you will learn how to set up the different column formats. There are 14 different kinds of columns.

## Column Types for TSCreator datapacks

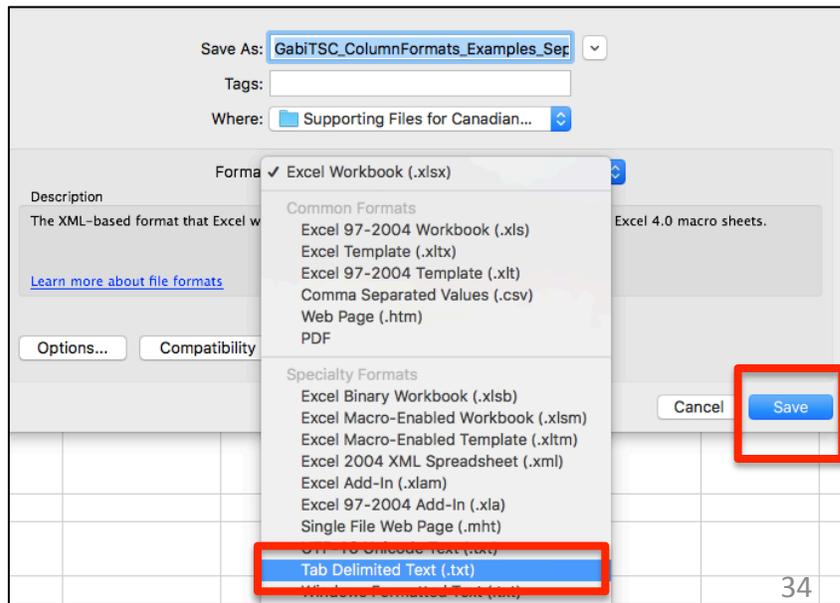


The TSCreator datapack is structured as a **Tab-delimited text file**. The tabs are used to separate cells, each cell containing some data. This structure means that the data files can be opened directly in a spreadsheet program like **Excel**. In Excel the cells will be neatly aligned, and it is the preferred method of preparing datapacks.

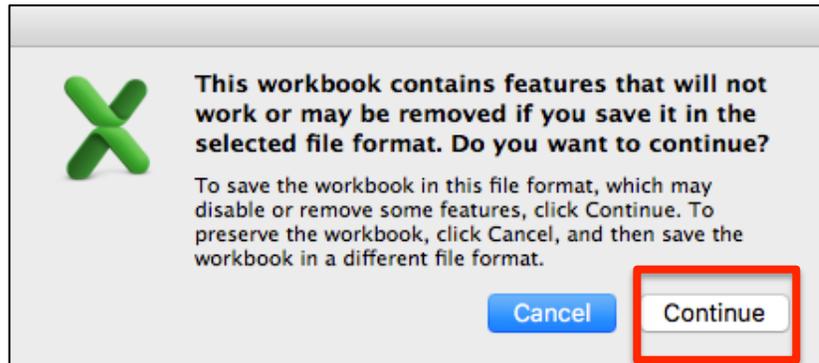
# Datapack Format in Excel

	A	B	C	D	E	F	G
1	SetTop:	4					<b>Master Header</b> (not needed if using default TSC settings). A colon (:) is needed after each item.
2	SetBase:	23					
3	SetScale:	2					
4	chart title:	TimeScale Creator format demo set					
5							empty line, marks end of a header
6	Mid-Lt Miocene Stages	block	110	240/240/240	notitle	on	Header Row for <b>Block Column</b>
7		TOP	3.6		Zanclean/Piacenzian boundary		<b>Block Column Data rows</b>
8		Zanclean	5.333		Base Pliocene	255/255/179	
9		Messinian	7.246		Chron C3Br.1r	255/255/115	
10		Tortonian	11.608			255/255/102	
11		Serravallian	13.82		Mi-3b cooling.	255/255/89	
12		Langhian	15.97	dashed	Chron C5Br	255/255/77	
13							empty line, marks end of a column
14	First set = Event, Range	:	Mid-Lt Miocene Stages	Some critters	Two ranges	_TITLE_OFF	Header Row for <b>Group Column</b> (a colon is needed in the second cell).
15							empty line, marks end of group header
16	Some critters	event	120	210/240/250		on	Header Row for <b>Event Column</b>
17	FAD						<b>Event Column Data rows</b>
18		Critter A	14	dotted			
19		Critter B	12		For a Range		
20	LAD						
21		Critter C	4	dashed			
22		Critter B	5		Top of range		
23	EVENT						empty line, marks end of a column
24		Acme Critter D	7	dashed	An event		
25							
26	Two ranges	range	100	250/240/210		on	Header Row for <b>Range Column</b>
27		Mid-Miocene horse	7	TOP			<b>Range Column Data rows</b>
28		Mid-Miocene horse	12	frequent			
29		Mid-Miocene horse	14	rare			
30		Mid-Miocene horse	15	conjectured			
31		Lt-Miocene donkey	3.5		blank = TOP		
32		Lt-Miocene donkey	5.5	common			
33							empty line, marks end of a column

**Save** this file first as an Excel file and then again as a tab-delimited txt file.



When this warning appears click **“Continue”** and then **exit Excel without saving** again, otherwise you will lose all your equations.



## Datapack Format as tab-delimited txt file

```

SetTop: 4
SetBase: 23
SetScale: 2
chart title: TimeScale Creator format demo set

Mid-Lt Miocene Stages  block  110  240/240/240  notitle on
TOP 3.6 Zanclean/Piacenzian boundary
Zanclean 5.333 Base Pliocene 255/255/179
Messinian 7.246 Chron C3Br.1r 255/255/115
Tortonian 11.608 255/255/102
Serravallian 13.82 Mi-3b cooling. 255/255/89
Langhian 15.97 dashed Chron C5Br 255/255/77

First set = Event, Range : Mid-Lt Miocene Stages Some critters Two ranges _TITLE_OFF
Some critters event 120 210/240/250 on
FAD
Critter A 14 dotted
Critter B 12 For a Range
LAD
Critter C 4 dashed
Critter B 5 Top of range
EVENT
Acme Critter D 7 dashed An event

Two ranges range 100 250/240/210 on
Mid-Miocene horse 7 TOP
Mid-Miocene horse 12 frequent
Mid-Miocene horse 14 rare
Mid-Miocene horse 15 conjectured
Lt-Miocene donkey 3.5 blank = TOP
Lt-Miocene donkey 5.5 common

```

See **Section 2, Part 3** – Making Datapacks with images, lithology columns, etc. for practicing how to make datapacks.

## Relative Age Calibration

### Age Calibration:

There are two ways to assign ages to your datapacks:

1. use a fixed age value in Ma or Ka for each age assignment.
2. link each event to its relative position in the Master\_Chronostratigraphy sheet.

By calibrating each age relative to the Master\_Chronostratigraphy updating ages to a new time scale is easy and only involves revising the Master\_Chronostratigraphy ages instead of having to revise each individual age in your datapack.

Master\_Chronostratigraphy can be Stages, or special zonations depending on your data.

### Hint:

For more information and Hands-on exercises, see **Section 2, Part 3, Exercise 2 Adding IMAGES to events and pupus**

	F	G	H
1			
2	<b>Stage</b>	<b>Sub-stage</b>	<b>Ma</b>
18	Chattian		28.087
19	Rupelian		33.90
20	Priabonian		37.99
21	Bartonian		41.03
22	Lutetian		47.84
23	Ypresian		55.96
24	Thanetian		59.24
25	Selandian		61.61
26	Danian		66.04
Master_Chronostrat   Arcticdinosaurs   Arc			

Master\_Chronostrat work sheet (has GTS2016 timescale with stage ages)

=Master_Chronostrat!H22-0.305*(Master_Chronostrat!H22-Master_Chronostrat!H21)			
Lutetian Base    -% up from base *(Lutetian Base    -    Bartonian Base)			
A	B	G	I
	Distatodinium paradoxum	44.43	LAD is 50 % above base of the Lutetian
	Lentinia wetzellii	45.76	LAD is 30.5 % above base of the Lutetian
	Heteraulacacysta leptalea	47.84	FAD is at the Base Lutetian
	Glaphyrocysta divaricata	47.84	LAD is at the Base Lutetian
	Areoligera senonensis	50.62	LAD is 65.69 % above base of the Ypresian
Master_Chronostrat   Arcticdinosaurs   Arcticspores   ArcticOutput			

Event work sheet

A	B	C	D	E
Arctic dinocyst	event	500		
LAD				
	Cleistosphaeridium placacanthum	37.99		LAD is at Base Priabonian
	Lentinia wetzellii	45.76		LAD is 30.5 % above base of the Lutetian
	Glaphyrocysta divaricata	47.84		LAD is at the Base Lutetian
	Areoligera senonensis	50.62		LAD is 65.69 % above base of the Ypresian
Master_Chronostrat   Arcticdinosaurs   Arcticspores   ArcticOutput				

Output sheet with final formatting for TSC. This sheet needs to be saved as "tab delimited txt" file

## Relative Age Calibration

Example:

The Datum Calibration column for "*Lentinia wetzelii*" (in the event work sheet) indicates that this LAD is 30.5% above the Lutetian Base. In the Master Chronostratigraphy sheet, you see the following ages for the Base Lutetian and its Top (which is the base of the Bartonian).

21	Bartonian		41.03
22	Lutetian		47.84

Therefore, the age of the LAD of *Lentinia wetzelii* would be the relationship:

**Base Lutetian age** minus **30.5%** of the **Duration of the Lutetian Stage**.

The base of the Lutetian is Excel cell H22, therefore, the duration of the Lutetian Stage is equal to its (Base age minus Top age), or (Cell H22 – Cell H21).

You can enter these calculations directly into the Excel cell for the **computed age** of *Lentinia wetzelii* in the event worksheet.

How to enter the equations into Excel:

Highlight the cell for entering the computed age

Type =

Click on base-Lutetian **age cell** (47.84) in Master chronostrat (Cell H22)

Type **-0.305\***(then click on base Lutetian **age cell** (47.84) in Master chronostrat

Type **- (minus)**

Click on base-Bartonian **age cell** (41.03) in Master chronostrat (Cell H21)

And, finally close the equation with **)**, Then, hit *return*.

Your input equation should look like this:

=Master\_Chronostrat!H22-0.305\*(Master\_Chronostrat!H22-Master\_Chronostrat!H21)

Once you have calculated all the ages, save this file as Excel file first and then resave the **Output page** as a tab delimited txt file. After that close the workbook without saving again. If you save the whole workbook as a txt you will lose all your computed age relationships.

The **Output Page** is a page where you fill in all the information from your different worksheets to the correct format for TSCreator. (Your worksheets can have many more comment columns which can then be concatenated into one popup on the output page).

We explain this procedure in detail in **Section 2, Part 3, Exercise 2 Adding IMAGES to events and popups**.

# Master Headers for Datapacks

**Note:**

A Master header is not needed if your datapack uses the current **Age scale (Ma)**, **Chronostratigraphy (GTS2016)** and the **Chart Title (TimeScale Creator Chart)**.

**Changing Age Units, Stage Names and Chart title:**

**Age Units:** If you change the default age from **Ma** to **ka** you have to use the “Replace data with datapack” tab in the **File menu**. Age units can also be changed to **m (meters)** or **feet** if you want to create a datapack for a well or an outcrop. In this case you can use the “Add Datapack” option in the **File menu** if you want to use the crossplot or the “Replace data with datapack” tab if you only want to look at your well or outcrop.

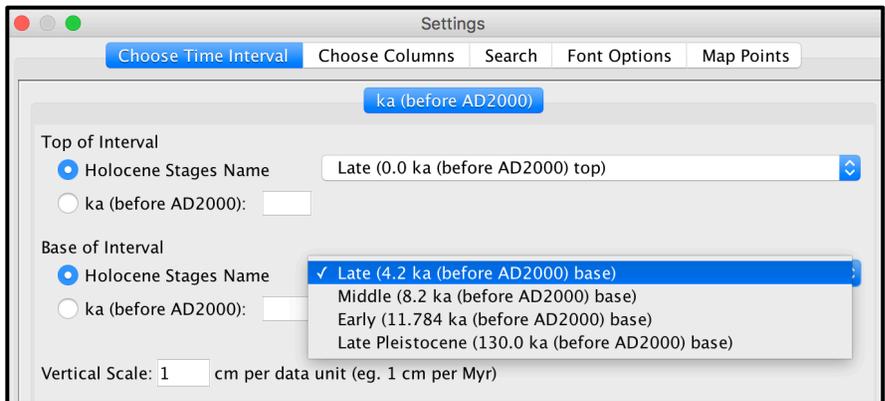
**Interval column:** Can be used to designate which block column should be used for the pull-down menu to select “Time” intervals.

**Chart title:** Can be changed to your preference. The default chart title is “TimeScale Creator Chart”.

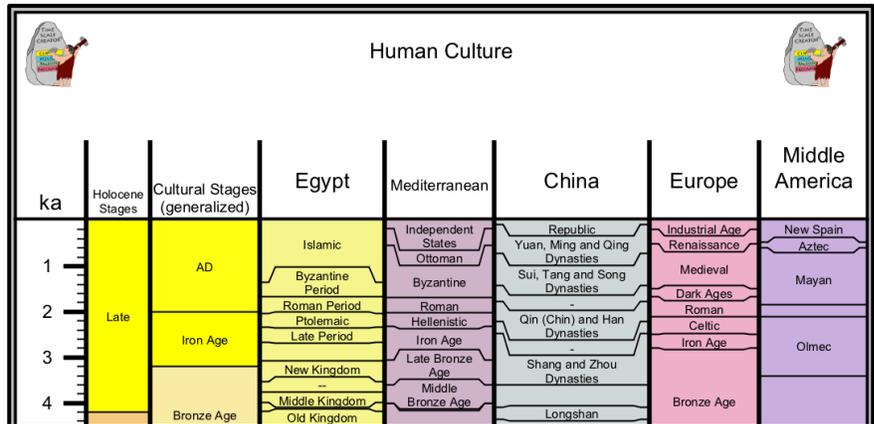
For the Master Headers a colon (:) is needed after each item in Column A

	A	B
1	age units:	ka (before AD2000)
2	interval columnn:	Holocene Stages
3	chart title:	Human Culture

## New Pull-down menu and changed Age Units



## Chart Title adjusted



You can preset the desired display interval for your datapack in the master header.

**Preset for Time Interval:** If no age unit is specified the program will assume that the age units are Ma. You can preset the Top and Base age for your chart in column B.

**Preset for Depth Interval:** You need to specify the “age units” as m or feet. The program will automatically assume that it is a well with the meter or feet level increasing with depth.

**Note:** An outcrop measured downward needs to use the well format.

**Preset for Height Interval in an Outcrop:** If an outcrop is measured upward, it needs an additional flag “outcrop: ON” for the program.

After adding a datapack with a preset age or m/feet span, a window will open and ask whether you would like to use the preset. If you choose “No” then you can choose your time span as usual in the “Choose Time Interval” Tab, otherwise the preset will be used.

Preset format for Time Interval

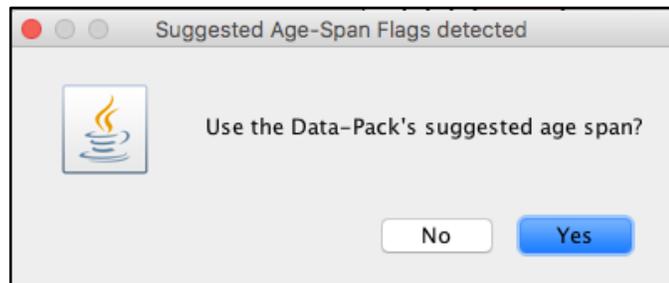
	A	B	C	D
1	SetTop:	25		top age in Ma for the chart display
2	SetBase:	32		base age in Ma for the chart display
3	SetScale:	3		vertical scale, in this case 1myr = 3cm on chart

Preset format for Depth Interval in a Well

	A	B	C	D
1	age units:	m		meter or feet or any other unit other than "Ma"
2	SetTop:	2500		top depth in m for the chart display
3	SetBase:	3200		base depth in m for the chart display
4	SetScale:	0.1		vertical scale, in this case 1m = 0.1cm on chart

Preset for Height Interval in an Outcrop

	A	B	C	D
1	outcrop:	ON		this flag tells the program that the section is measured upwards
2	age units:	feet		meter or feet or any other unit other than "Ma"
3	SetTop:	50		top level in feet for the chart display
4	SetBase:	0		base level in feet for the chart display
5	SetScale:	2		vertical scale, in this case 1 foot = 2cm on chart



## Basic Column Header for Datapacks

**Column Header:** Every column type begins with a one-line header row, followed by the data rows. (Some columns have additional, optional headers, ex. Series). One or more blank lines signal the end of a column.

**Title (A):** Is the name of the column for the directory.

**Type (B):** Is the column type, for example: event, facies, block, point, etc.

**Width (C):** width of column in pixels (100pxl = 3.33 cm).

**Color (D):** color for the entire column in RGB code.

**Notitle (E):** will turn the title off when the column is displayed. Default is normally a blank cell (meaning the title will be on).

**On or off (F):** Turns the default display of the columns on or off (Puts tick marks in the **Settings/Choose Columns** list).

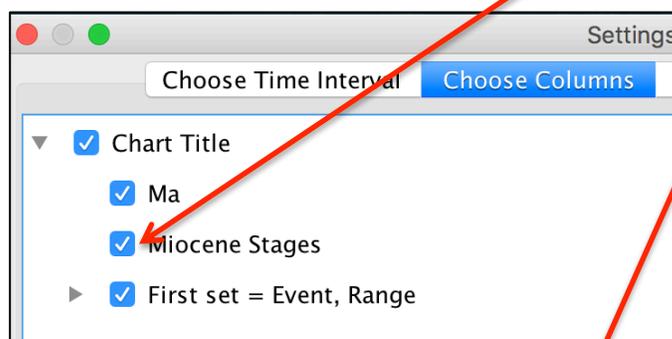
**Popup (G):** is the text that will appear in the **Mouse-Over info** window. Mouse-Over can be activated in the "Choose Time Interval" tab.

Format for Header Row

A	B	C	D	E	F	G
<Title>	<type>	<width>	<color>	notitle	on or off	<popup>

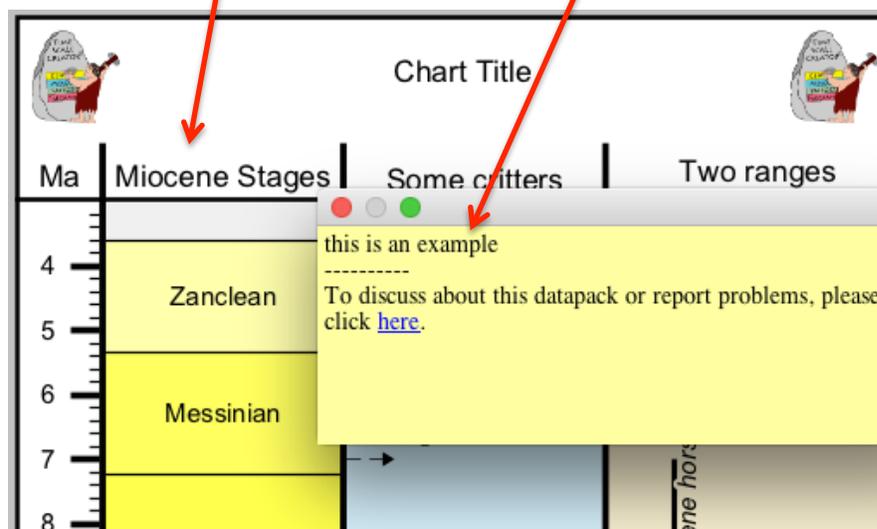
Example of a Header Row

A	B	C	D	E	F	G
Miocene Stages	block	110	240/240/240		on	this is an example



Cell E being blank displays the title of the column

Popup information



# Grouping Columns

**Group Columns** create suites of columns under one header.

**Title (A):** Is the name for the column suite.

**Cell B:** Needs a colon

**Sub-columns (C, E, etc):** Name of the sub-column. There can be as many as you want, but it needs at least one.

**\_Title\_off (cell after the last sub-column):** will not display the title of this column-grouping above the corresponding sub-columns.

**\_Metacolumn\_off (cell after the last sub-column or after \_Title\_off):** Sets default to not have a tick mark for this group in the the **Settings/Choose Columns** list).

**Popup (after an empty cell):** is the text that will appear in the **MouseOver info** window. Mouse Over can be activated in the "Choose Time Interval" tab.

Format for grouped columns

A	B	C	D	E	F	G	H
<Title>	:	<sub-column1>	<sub-column2>	<_Title_off>	<_Metacolumn_off		<popup>

Example for grouped columns

A	B	C	D	E	F	G
<b>Planetary Time Scale</b>	:	<b>Moon</b>	<b>Mars</b>	<b>_Title_off</b>		<b>Tanaka</b>
<b>Moon</b>	:	<b>Lunar Period</b>	<b>Lunar Epoch</b>	<b>Lunar Events</b>		<b>Tanaka</b>
Lunar Period	block	100	232/163/193		on	Tanaka
	TOP	3200				
	Imbrian	3800	dashed	older mare basalts	192/123/153	
Lunar Epoch	block	80	232/163/193	notitle	off	Tanaka
	TOP	3200				
	L. Imbrian	3750		mare basalts post-dating Orientale Basin	145/120/158	
	E. Imbrian	3800		Imbrium Basin	113/100/168	
Lunar Events	event	80	232/163/193		on	Tanaka
event						
	Impact 1	3300	dashed			
	Impact 2	3550				
<b>Mars</b>	:	<b>Mars Period</b>	<b>Mars Epoch</b>	<b>_Metacolumn_off</b>		<b>Tanaka</b>
Mars Period	block	100				
	TOP	3200				
	Hesperian	3600			170/123/153	
	Noachian	4000			170/86/136	
Mars Epoch	block					
	TOP					
	L. Hesperian					
	E. Hesperian					

Choose Time Interval Choose Columns

- Chart Title
  - Ma
  - Planetary Time Scale
    - Moon
      - Lunar Period
      - Lunar Epoch
      - Lunar Events
    - Mars

\_Metacolumn\_off → No tick mark

## Basic Data Row Format for Block and Range Columns

**Data Rows:** contain the information for your datapack.

Required fields are a **blank cell (A)**, a **label** or name (B) and an **age (C)**. Additional cells for color and popups are optional and will be discussed with the individual column types.

**Block, Range, Chron, and Facies** Columns display data that represent intervals. TSCreator defines each data point as the base of an interval.

The top of any interval is defined as the base of the interval above. Only **bases** will have an age assigned to them.

To start an interval data column, use the word **"TOP"** (in capitals) in the **label cell (B)** of the data row. This will specify the top of the uppermost interval.

Additional **TOPs** can be inserted anywhere in the data to illustrate gaps in the data record.

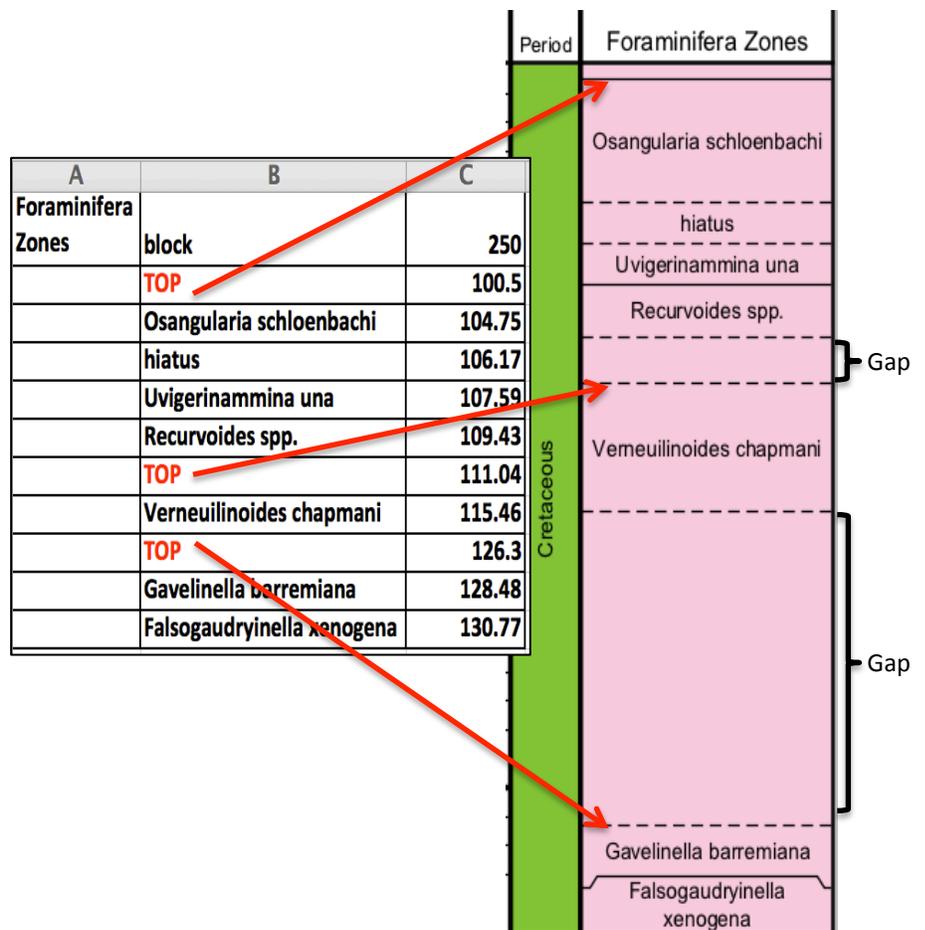
A	B	C
<blank>	<label>	<age>

A	B	C
Miocene Stages	block	110
	TOP	3.6
	Zanclean	5.333
	Messinian	7.246

Header Row

Data Rows

## Defining TOPs



## Block Columns

**Block Columns** display data in blocks over an interval. This format is used for zones, periods, epochs, etc.

The top of an interval block corresponds to the base of the block above. Only bases will have an age assigned to them. The top of the topmost interval begins with the name **TOP** (B) followed by an age value.

**Block Header:** Only **Title** (A) (for ex. Miocene stages) and the word **block** (B) are required. The other cells are optional. See page 40 for explanation.

**Data Rows:** Required fields are a **blank cell** (A), a **label** or name (B) and an **age** (C). The other cells are optional.

**Line Style (D):** can be **dotted**, **dashed** or **solid**. If left blank the line will be solid.

**Popup for data row (E):** is the text that will appear in the **MouseOver info** window. Mouse Over can be activated in the "Choose Time Interval" tab.

**Color (F):** background color for the interval in RGB code.

### Format for Block Header

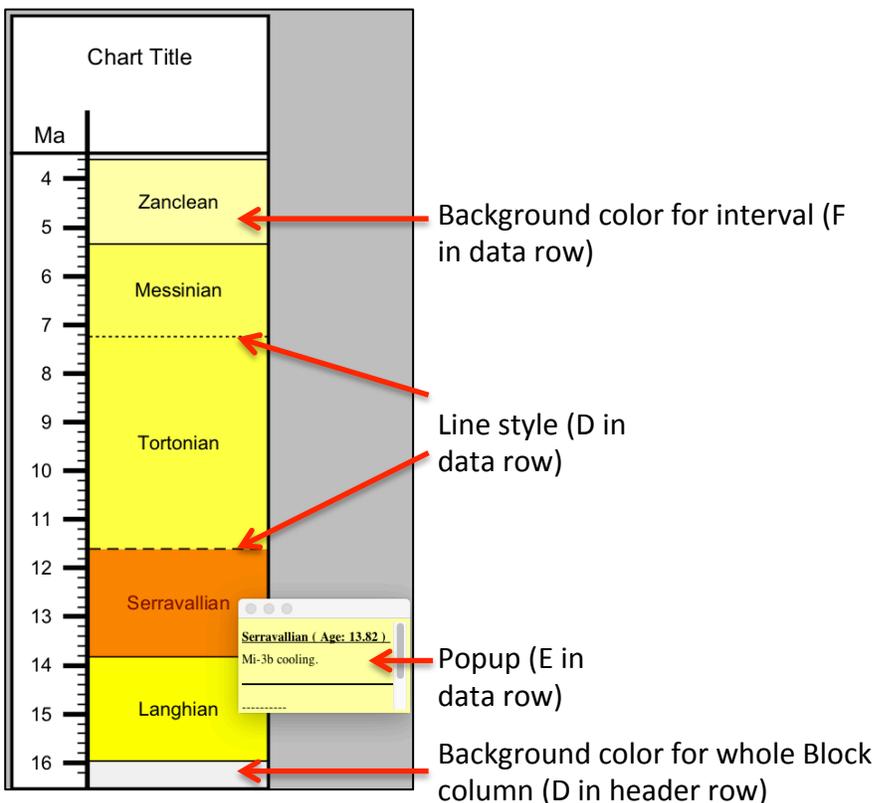
A	B	C	D	E	F	G
<Title>	block	<width>	<color>	notitle	on or off	<popup>

### Format for Data Rows

A	B	C	D	E	F
<blank>	<label>	<age>	<line style>	<popup>	<color>

### Example of a Block column datapack

A	B	C	D	E	F	G
Miocene Stages	block	110	240/240/240	notitle	on	Standard GTS
	TOP	3.6				
	Zanclean	5.333		Base Pliocene	255/255/179	
	Messinian	7.246	dotted	Chron C3Br.1r	255/255/115	
	Tortonian	11.61	dashed		255/255/102	
	Serravallian	13.82		Mi-3b cooling.	255/255/89	
	Langhian	15.97		Chron C5Br	255/255/77	



# Uncertainties for Block and Event Columns

**Uncertainties:** Can be added to ages for **block** and **event** columns. They will be displayed in parentheses after the age label in the chart.

**Uncertainty** needs to be in **Cell H**. It can be expressed as a number or as text.

To view these uncertainties you have to turn on **“Show Age Labels”** and **“Show Uncertainty Labels”** in the **“Choose Columns Window”** of the program.

Edit Title:

Width:   Show Title

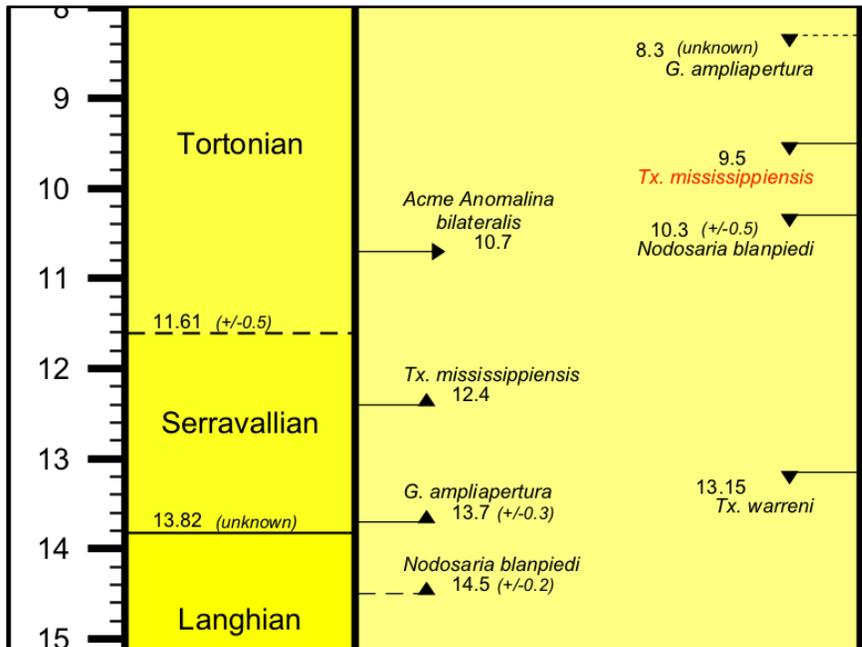
Show Age Labels

Show Uncertainty Labels

## Format for Uncertainty in Data Rows

A	B	C	D	E	F	G	H
<blank>	<label>	<age>	<line style>	<popup>	<color>	<priority>	<uncertainty>

A	B	C	D	E	F	G	H
Miocene Stages	block	110	240/240/240	notitle	on	popup	
	TOP	3.6					
	Zanclean	5.333		Base Pliocene	255/255/179		+/-0.5
	Messinian	7.246	dotted	Chron C3Br.1r	255/255/115		unknown
	Tortonian	11.608	dashed		255/255/102		+/-0.5
	Serravallian	13.82		Mi-3b cooling.	255/255/89		unknown
	Langhian	15.97		Chron C5Br	255/255/77		+/-0.2
Forams	event	200	255/255/146		on	fictitious events	
LAD							
	Nodosaria blanpiedi	10.3					+/-0.5
	G. ampliapertura	8.3	dotted	popup			unknown
	Tx. mississippiensis	9.5			255/0/0		
	Tx. warreni	13.15					
FAD							
	G. ampliapertura	13.7					+/-0.3
	Tx. mississippiensis	12.4					
	Nodosaria blanpiedi	14.5	dashed				+/-0.2
	Cibicides pipeni	15.9					



## Blank Column

### Format for Blank Column

A	B	C	D	E
<Title>	blank	<width>	<color>	notitle

**Blank column:** A blank column can be inserted multiple times at any location from the TSC program. If you want to visually distinguish select columns from one another, you can already hard-wire blank columns into your datapack..

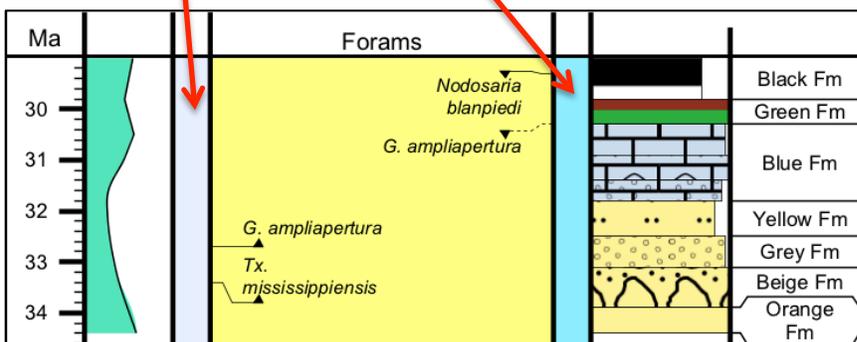
**Blank Column Format:** Only **Title (A)** and the word **Blank (B)** are required. The other cells are optional. See page 40 for explanation.

**Color (D):** is optional, but you can change it to any color (RGB code) you like.

**Notitle (E):** is necessary, if you want no title for your empty column.

**Note:** You can use several **Blank columns** in one datapack, however you need a different name for each one.

A	B	C	D	E	F
Curve with line and default fill color	point	80			
nopoints	line		-50	150	smoothed
	29	60			
	29.8	40			
	30.5	61			
	30.9	43			
	31.8	0			
	33.2	20			
	34.4	68			
Blank column 1	blank	20	230/240/255	notitle	
Forams LAD	event	200	255/255/146		on
	Nodosaria blanpiedi	29.3			
	G. ampliapertura	30.3	dotted		
FAD	G. ampli.	32.7			
	Tx. miss.	33.4			
Blank column 2	blank	20	130/240/255	notitle	
Lithostrat. tes	facies	200			notitle
Upper Group	Primary				
	OP			29	
	Coal	Black Fm		29.8	
	Banded Iron	Green Fm		30.3	
Group 2	Primary				
	Limestone	Blue Fm		30.9	
	Reef limestone	Blue Fm		31.4	
	Sandy limestone	Blue Fm		31.8	
Sandstone Group	Primary				
	Fine-grained sandstone	Yellow Fm		32.5	
	Coarse-grained sandstone	Grey Fm		33.1	
	Conglomerate	Beige Fm		33.9	
	Coarse-grained clastics	Orange Fm		34.4	



## Chron Columns for Geomagnetism

**Chron Columns** contain three component columns: **Chron (polarity)**, **Chron Label** and **Series Label**.

**Chron Header: Only Title (A)** (for ex. Geomagnetic Polarity) and the word **chron** (B) are required. The other cells are optional. See page 40 for explanation.

**Series Header:** Required fields are **Series name** (A) and the word **Primary** in cell B. The other cells are optional. See page 40 for explanation.

**Data Rows:** Required fields are a **blank cell** (A), **polarity** (B), **label** or name (C) and an **age** (D). **Popup** (E) is optional.

### Options for Polarity:

**N** (normal)    black  
**R** (reversed)    white  
**No data**    grey hatched  
**U** (unknown)    grey hatched

**Popups:** For **series** and **data rows** the popup needs to be in **cell E**.

Ma	Geomagnetic Polarity	Chron Label	Series Label
184		Pl-Toar R	s. Spain
185		It-Plien N	s. Switz.

### Format for Chron Header

A	B	C	D	E	F	G
<Title>	chron	<width>	<blank>	notitle	on or off	<popup>

### Format for Series Row

A	B	C	D	E
<Series Name>	Primary	<width>	<blank>	<popup>

### Format for Data Rows

A	B	C	D	E
<blank>	<polarity>	<label>	<age>	<popup>

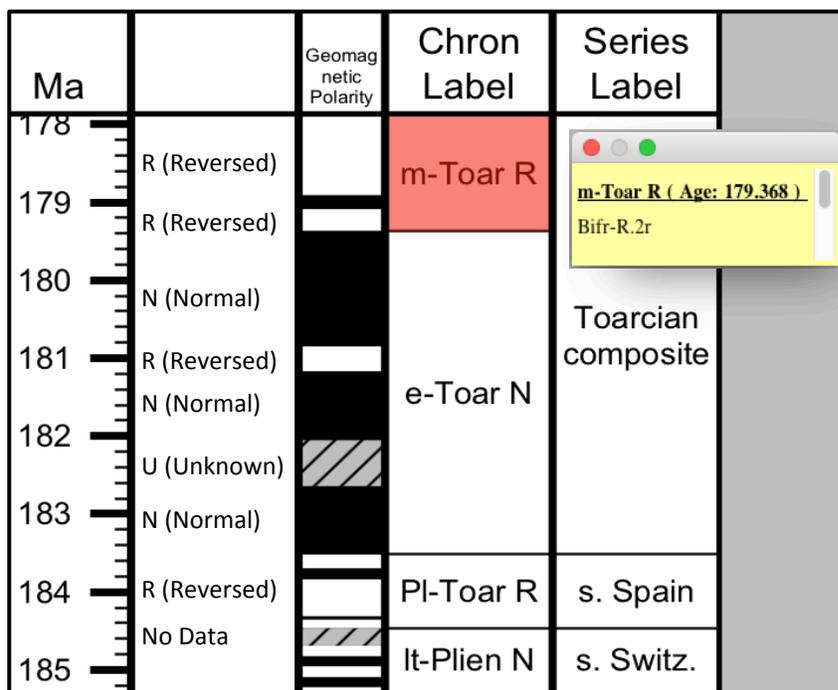
# Chron Columns for Geomagnetism

Example of a Chron column datapack

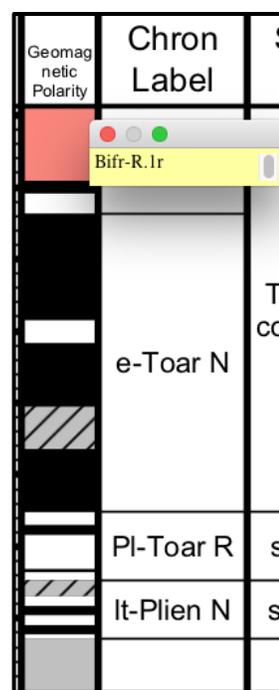
**Chron Label:** If several data entries have the same “**chron label**” name, then the program will combine the cells into one interval and only display the label once. In that case only the popup entry for the base of the **Chron Label** interval will be shown, see example A.

However, the individual popups will be shown when the Polarity intervals are highlighted in the chart, see example B.

A	B	C	D	E	F	G	H
Geomagnetic Polarity	chron	100				GTS2016 composites	chron header row
Toarcian composite	Primary	30		in the Jurassic			series row
	TOP	m-Toar R	177.869	Var-N			data row
	R	m-Toar R	178.909	Bifr-R.1r			data row
	N	m-Toar R	179.086	Bifr-R.1n			data row
	R	m-Toar R	179.368	Bifr-R.2r			data row
	N	e-Toar N	180.849	Serp-Bif N			data row
	R	e-Toar N	181.171	Serp-R1			data row
	N	e-Toar N	182.053	Serp-N1			data row
	U	e-Toar N	182.646	Serp-R1			data row
	N	e-Toar N	183.52	Tenui-N			data row
s. Spain	Primary						series row
	R	PI-Toar R	183.7	Ten-R			data row
	N	PI-Toar R	183.838	Spin-N4			data row
	R	PI-Toar R	184.313	Spin-R3.1r			data row
	N	PI-Toar R	184.355	Spin-R3.1n			data row
	R	PI-Toar R	184.467	Spin-R3.2r			data row
s. Switz.	Primary						series row
	No Data	It-Plien N	184.69	Spin-N2			data row
	R	It-Plien N	184.829	Spin-R2			data row
	N	It-Plien N	184.954	Spin-N1			data row
	R	It-Plien N	185.094	Spin-R1			data row
	N	It-Plien N	185.222	Marg-N5			data row
	R	It-Plien N	185.285	Marg-R5			data row
	Polarity	Chron label	age	popup			



Example A



Example B

## Range Columns with abundance variations

**Range Columns:** show variations in abundance of a life form over time.

**Range Header:** Only **Title** (A), the word **range** (B), a **blank cell** (C) and a **background color** (D) are required. The other cells are optional. See page 40 for explanation.

-----

**Data Rows:** Required fields are a **blank cell** (A), a **label** or name (B), and **age** (C). The other cells are optional.

**Abundance (D):** It specifies the thickness of the line that will be used to draw the range.

### Options for Abundance:

**TOP** – Top of the range  
**missing** – no line  
**conjectured** – small dashed line  
**rare** – bigger dashed line  
**common** – thin solid line  
**frequent** – thicker than common  
**abundant** - thicker than frequent  
**flood** – thickest line  
**sample** – a dot is drawn at the age date, it does not form a range.

Format for Range Header

A	B	C	D	E	F	G
<Title>	range	<blank>	<color>	notitle	on or off	<popup>

Format for Data Rows

A	B	C	D	E
<blank>	<label>	<age>	<abundance>	<popup>

### Example of a Range column datapack

A	B	C	D	E	F	G
Dino-cysts	range		175/201/108	notitle	off	fictitious dino abundances
	Achilleodinium biformoides	47	TOP			
	Achilleodinium biformoides	47.5	rare			
	Achilleodinium biformoides	48	abundant			
	Achilleodinium biformoides	48.5	common			
	Achilleodinium biformoides	50	frequent			
	Achilleodinium biformoides	51.2	conjectured			
	Achilleodinium biformoides	53	sample			
	Achilleodinium biformoides	53.44	rare			
	Adnatosphaeridium multispinosum	47	TOP			
	Adnatosphaeridium multispinosum	48	common			
	Adnatosphaeridium multispinosum	49.5	rare			
	Adnatosphaeridium multispinosum	51	missing			
	Adnatosphaeridium multispinosum	52	common			
	Adnatosphaeridium multispinosum	53.44	flood	Popup is attached to name and not to abundance		
	Dracodinium politum	50.31	TOP			
	Dracodinium politum	51.7	common			
	Dracodinium politum	52.31	sample			
	Dracodinium varielongitudum	50.56	TOP			
	Dracodinium varielongitudum	51.3	rare			
	Dracodinium varielongitudum	52.6	abundant			
	Dracodinium varielongitudum	53.44	frequent			

**Note:** There is **no blank row** between two species

# Range Columns with abundance variations

Example of a Range column with abundance

**Popups (E):** are attached to the name and not to the “abundance” in the chart, therefore popup is only needed once per fossil name.

### Display Options for Range Columns in the TSC Program:

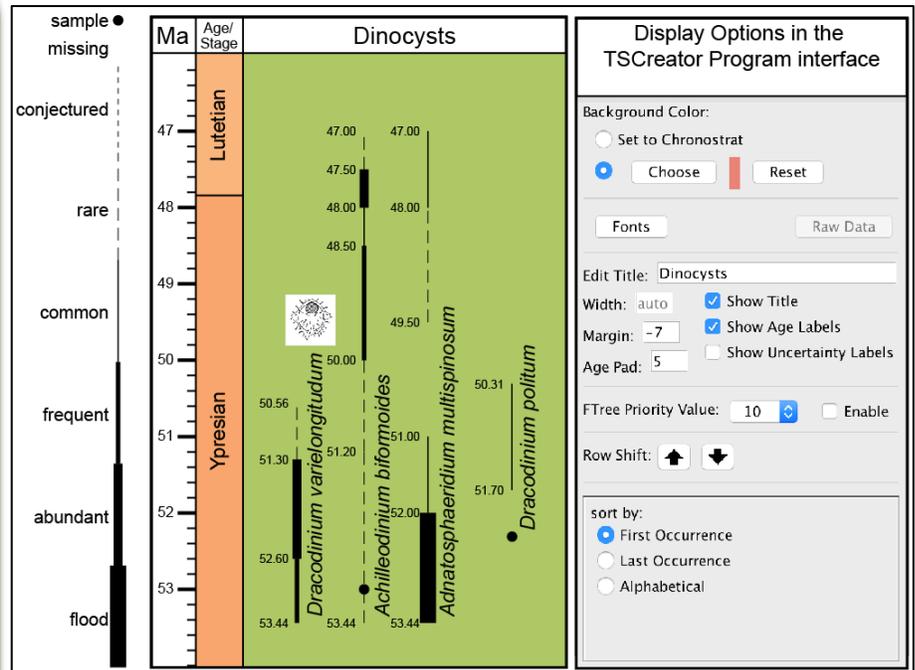
**Range Columns** can be sorted for display by First or Last Occurrence or Alphabetically. In addition, you can display the ages for the complete range of a fossil.

**Margin:** Allows you to change the width of the empty space on the right side of a range chart or evolutionary Tree.

**Age Pad:** Lets you adjust the space between the Age Label and the range line, if you selected “Show Age Label”.

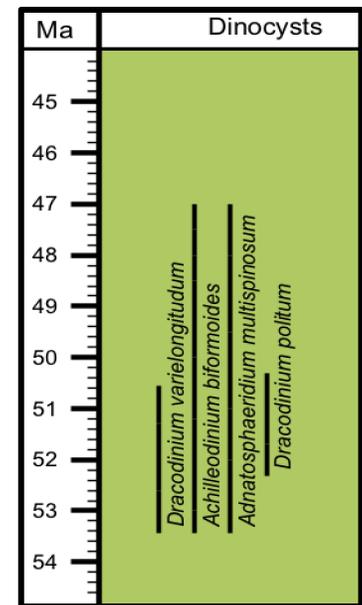
**Branch Spacing:** lets you increase the space between two range lines.

**Hint:** *If there are no abundance specifications in Column D, then the program draws just a line with the same thickness for the whole range.*



Example of a Range column without abundance

Dino-cysts	range	
	<i>Achilleodinium biformoides</i>	47
	<i>Achilleodinium biformoides</i>	47.5
	<i>Achilleodinium biformoides</i>	48
	<i>Achilleodinium biformoides</i>	48.5
	<i>Achilleodinium biformoides</i>	50
	<i>Achilleodinium biformoides</i>	51.2
	<i>Achilleodinium biformoides</i>	53
	<i>Achilleodinium biformoides</i>	53.44
	<i>Adnatosphaeridium multispinosum</i>	47
	<i>Adnatosphaeridium multispinosum</i>	48
	<i>Adnatosphaeridium multispinosum</i>	49.5
	<i>Adnatosphaeridium multispinosum</i>	51
	<i>Adnatosphaeridium multispinosum</i>	52
	<i>Adnatosphaeridium multispinosum</i>	53.44
	<i>Dracodinium politum</i>	50.31
	<i>Dracodinium politum</i>	51.7
	<i>Dracodinium politum</i>	52.31
	<i>Dracodinium varielongitudum</i>	50.56
	<i>Dracodinium varielongitudum</i>	51.3
	<i>Dracodinium varielongitudum</i>	52.6
	<i>Dracodinium varielongitudum</i>	53.44



## Evolutionary Tree Columns

**Evolutionary Trees:** show the evolutionary relationships between organisms.

**EV Tree Header:** Only **Title** (A), the word **range** (B), a **blank cell** (C) and a **background color** (D) are required. The other cells are optional. See page 40 for explanation.

### Data Rows for Range:

Required fields are a **blank cell** (A), a **label** or name (B), and **age** (C). The other cells are optional.

**Abundance:** see “Range Columns” on previous page.

### Data Rows for Branch:

Required fields are a **blank cell** (A), a **parent name** (B), and **age** (C), the word **branch** (D) and the **child name** (E). The other cells are optional.

**Parent Name (B):** Is the name of the parent from which the branch will go to the Child.

**branch (D):** flag for the program to draw a line.

### Format for Evolutionary Tree Header

A	B	C	D	E	F	G
<Title>	range	<blank>	<color>	notitle	on/off	<popup>

### Format for Data Rows for Range

A	B	C	D	E
<blank>	<label>	<age>	<abundance>	<popup>

### Format for Data Rows for Branch

A	B	C	D	E	F	G	H	I	J	K
<blank>	<parent name>	<age>	branch	<child name>	on/off	<branch label>	dashed/dotted	<popup>	<branch color>	<priority>

### Example of an Evolutionary Tree datapack

A	B	C	D	E	F	G	H	I	J	K
Horses	range		245/232/217		on	the data is not real				
	Hyracotherium	45.39		popup for Hyracotherium						
	Hyracotherium	51	branch	Orohippus		North America	dashed	70% up in Ypresian	144/139/250	10
	Hyracotherium	55.96	frequent	Base = Ypresian						
	Orohippus	45.39		only few fossils						
	Orohippus	48	branch	Epihippus			dashed	Base Lutetian		10
	Orohippus	50.49	frequent	Base = 2/3 up in Ypresian						
	Epihippus	45	TOP	Base = Early Lutetian						
	Epihippus	47.5	flood							
	Hyracotherium	51	branch	Eurohippus		Europe	dashed	70% up in Ypresian	250/0/0	10
	Eurohippus	44								
	Eurohippus	50.6		Base = 70% up in Ypresian						

**Note:** There is **no blank row** between two species

# Evolutionary Tree Columns

**Child Name (E):** Name of the new species to which the branch will go. This name must be identical to the “range” name of the child, otherwise the program ignores it.

**On/off (F):** determines if the Child branch and its descendants will be automatically displayed on the chart.

**Branch Label (G):** this is a horizontal label that gives a name to a whole tree branch. It is optional.

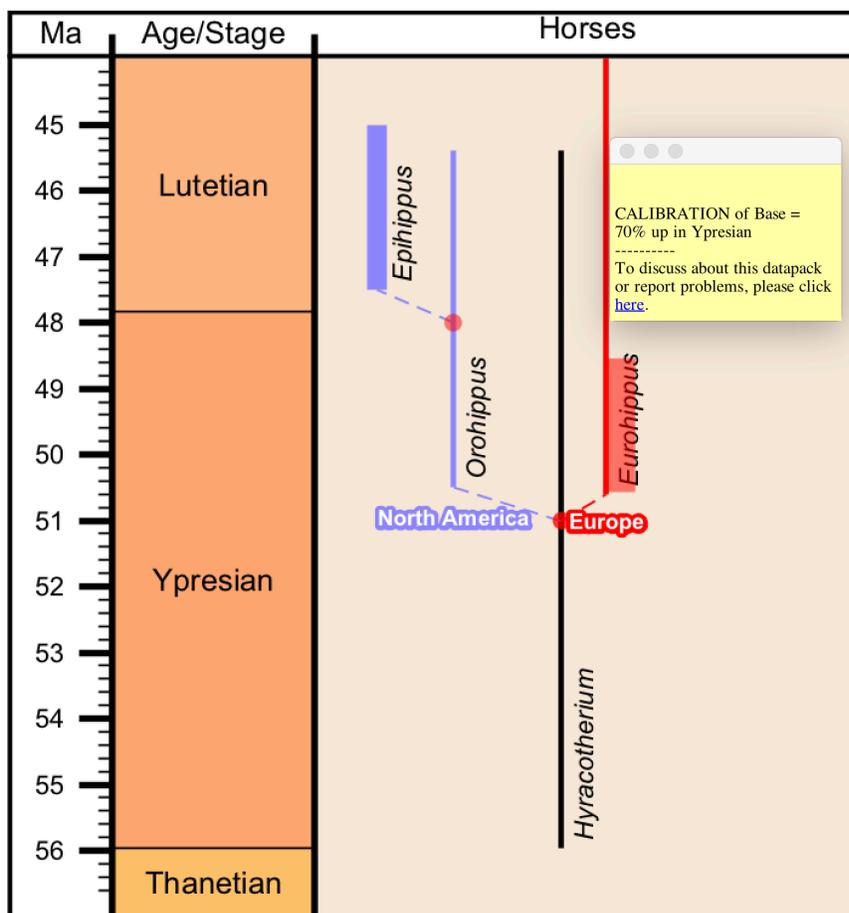
**Dashed/dotted (H):** determines the line style for the branch.

**Popups (I):** this is the information of the node. Right-click on a node in the TSC chart and it will open in a window.

**Branch Color (J):** determines the color of the new branch and all its descendants.

**Priority (K):** If priority values are used in the datapack then one can generate trees which only display branches above a certain value.

Example of an Evolutionary Tree display



## Evol. Tree branching

- (1) If only a single branch from a Parent, then goes to Left
- (2) If Parent has 2 branches; then oldest goes to Right, then next to Left, next to Right, etc.
- (3) If Parent has twins; then one goes Right and the other Left (decided by program).

## Integrated Tree Columns

**Integrated Trees:** allow to embed one evolutionary tree into another one, to better understand phenotype evolution within the evolutionary history of a species.

For an integrated tree you need a “Primary Tree” and a “Phenon Tree” in the same datapack.

For the Primary Tree you will follow the evolutionary tree format on page 48. The Phenon Tree requires some more instructions for the **TOP range point** of each phenon range in the **Data Rows for Range**.

**Data Rows for TOP range point:** Required fields are a **blank cell (A)**, a **label with an image tag (B)**, **age (C)**, the word **TOP (D)**, **name of species box** for top range of phenotype (G), and the word **phenon (H)**.

Format for **TOP range point** in Data Rows for Range

A	B	C	D	E	F	G	H
<blank>	<label with image tag>	<age>	TOP	<popup>		<name of species box where phenotype has its top range>	phenon

Example of an Integrated Tree datapack

A	B	C	D	E	F	G	H
5TSC S	range		255/255/255				
	G. primitiva	27	TOP	popup			
	G. primitiva	35	branch	N. kugleri		Neogloboquadrina	
	G. primitiva	40	abundant				
	N. kugleri	23	TOP	popup			
	N. kugleri	30	branch	N. acostaensis			dashed
	N. kugleri	35	abundant				
	N. acostaensis	9	TOP				
	N. acostaensis	20	branch	N. dutertrei			dotted
	N. acostaensis	15	branch	P. obliquiloculata		Pulleniatina	dotted
	N. acostaensis	30	abundant				
	P. obliquiloculata	6	TOP				
	P. obliquiloculata	15	abundant				
	N. dutertrei	0	TOP				
	N. dutertrei	20	abundant				
	continuaosa   Blow 1959 <img align="" src="">	32	TOP			N. kugleri	phenon
	continuaosa   Blow 1959	33	branch	acostaensis   Blow 1959			
	continuaosa   Blow 1959	34	frequent				
	acostaensis   Blow 1959 <img align="" src="">	9	TOP			N. acostaensis	phenon
	acostaensis   Blow 1959	21	branch	primalis			
	acostaensis   Blow 1959	28	branch	humerosa			
	acostaensis   Blow 1959	33	frequent				
	humerosa <img align="" src="">	13	TOP			N. dutertrei	phenon
	humerosa	18	branch	dutertrei			
	humerosa	28	frequent				
	primalis <img align="" src="">	11	TOP			P. obliquiloculata	phenon
	primalis	21	frequent				
	dutertrei <img align="" src="">	0	TOP			N. dutertrei	phenon
	dutertrei	18	frequent				

Notes:

- all instructions in red are required
- the blue line shows the separation between the primary tree above and the phenon tree below. There is no empty line between them!!
- Columns I and J (for branch node popups and branch color have been omitted from the datapack, see page 50 for instructions)

# Integrated Tree Columns

## Label with image tag (B):

in addition to a name the following image tag is required: ``.

If you don't want to attach an image, just leave the name off. `<img align="" src="">`.

You can also add the image width to the tag: ``

**TOP (D):** this is the top of the range of the phenotype.

**Popup (E):** is optional

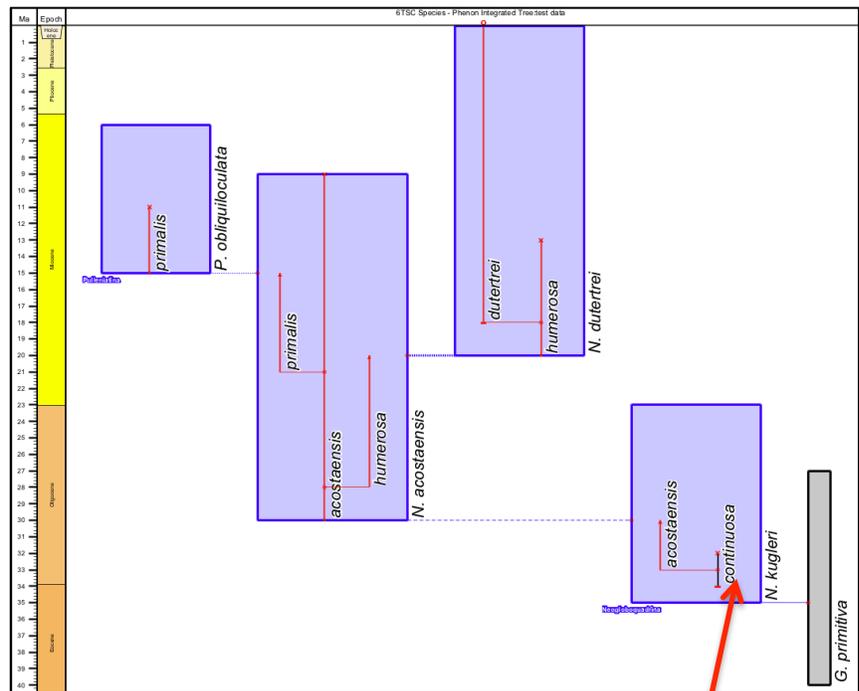
## Name of species box (G):

This is the name of the species range box in which the TOP range point of the phenon range will be positioned.

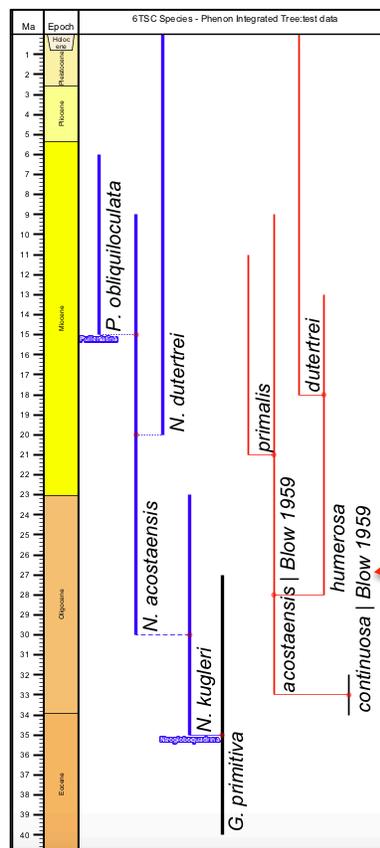
## Special icons in the output of the integrated Tree

	Range extends to recent
	Range extinction
	Base of upper part of range to where it transferred from its ancestral species
	Top of lower part of range where it transfers to its next descendent species
	Base of Range

Integrated Tree



Side by Side Tree



For the Phenon tree you have the possibility to add more information to the phenon name which is only displayed in the Side by Side Tree and is omitted in the Integrated Tree to save space. Place "|" between the name and the additional text.

Example:  
**continua | Blow 1959**

Make sure you use the complete name (including the additional information) for any resulting child branches in Cell E.

## Event Columns

**Event Columns:** are used to show the first or last occurrence of an event, or a single event, such as an acme.

**Event Header:** Only **Title** (A) and the word **event** (B) are required. The other cells are optional. See page 40 for explanation.

**Data Rows:** The first cell (A) of the row above the data row specifies what kind of an event (**FAD**, **LAD**, **EVENT**) will be entered.

Required fields in the data row are a **blank cell** (A), a **label** or name (B), and **age** (C). The other cells are optional.

**Line Style (D):** can be **dotted**, **dashed** or **solid**. If left blank the line will be solid.

**Popup for data row (E):** is the text that will appear in the **MouseOver info** window.

**Color (F):** font color for an event in RGB code.

**Multiple Entries per Age:** Can be written into the same Excel cell, separated either by a comma or dash or any other separator.

### Format for Event Header

A	B	C	D	E	F	G
<Title>	event	<width>	<color>	notitle	on/off	<popup>

### Format for Data Rows

A	B	C	D	E	F
FAD					
<blank>	<label>	<age>	<line style>	<popup>	<color>

### Example of an Event column datapack

A	B	C	D	E	F	G
Forams	event	200	255/255/146		on	fictitious events
LAD						
	Nodosaria blanpiedi	29.3				
	G. ampliapertura	30.3	dotted	species concept varies		
	Tx. mississippiensis	31.5			255/0/0	
	Tx. warreni	32.15				
FAD						
	G. ampliapertura	32.7				
	Tx. mississippiensis	33.4				
	Nodosaria blanpiedi	34.5	dashed			
	Cibicides pipeni	33.9				
EVENT						
	Acme Discorbis 18	29.7				
	Acme Anomalina bilateralis	31.7				

### Options for Event entries:

**LAD** – arrow on right side pointing downward

**FAD** – arrow on left side pointing upward

**EVENT** – straight arrow on left side

### Format for Multi Entries per Age Date

A	B	C	D
	G. ampliapertura, Tx. warreni, Nodosaria blanpiedi	30.3	dotted

G. ampliapertura, Tx. warreni, Nodosaria blanpiedi

# Event Columns

**Event Columns** can be displayed in TSC as either an **event display** or as a **range display** (these display types cannot be set in the datapack, but are chosen in the "Settings/Choose Columns" window).

**Event Display only:** Allows you to show a single event with a straight arrow.

**Range Display only:** A vertical line shows the extent of a fossil from FAD to LAD. You can sort the data by First (FAD) or Last Occurrence (LAD) or **Alphabetically**.

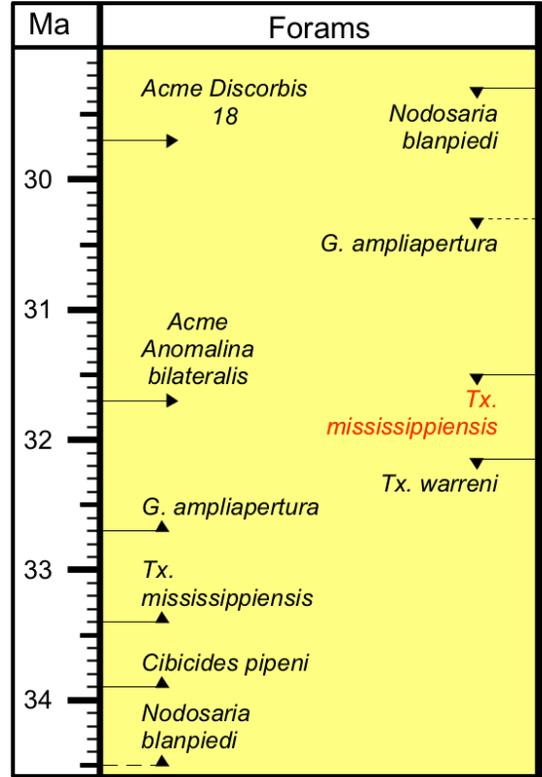
This Range display cannot display a varied line style. Use **Range columns** to prepare a datapack with abundance variations (see page 48).

## Event Display

Settings in TSC

Events

Ranges



## Range Display

Settings in TSC

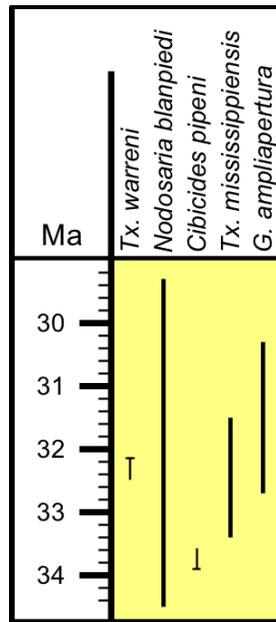
Ranges

sort by:

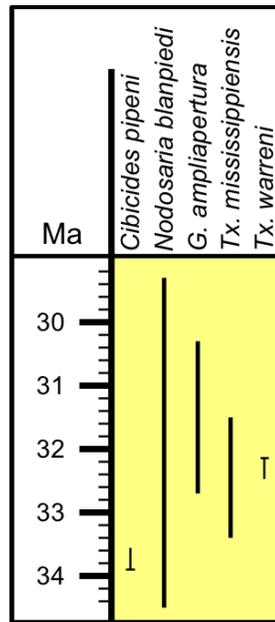
First Occurrence

Last Occurrence

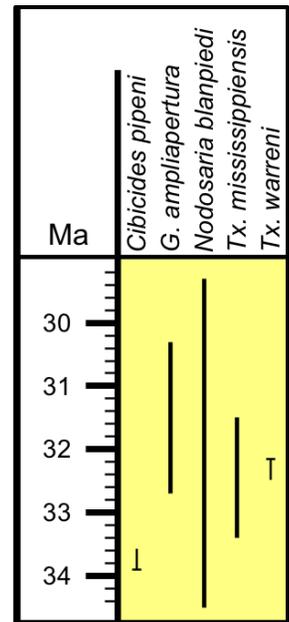
Alphabetical



Sorted by FAD



Sorted by LAD



Sorted Alphabetically

## Priority Settings for Block and Event Columns

**Priority Option** can be chosen to avoid overcrowding of close-spaced zone blocks or events. Merged blocks make a combined name (top block, Dash, bottom block) to allow a more readable output.

**Hint:** Pop-up window for merged block displays all the individual popups.

### Merge-Control:

The internal datapack does not have a specific merge-control. TSC decides itself how to combine cells into one interval.

**Merge-control** gives you the option to designate certain data as always being displayed as the base of an interval.

A "2" in **Cell G** is a flag for the program to keep this zone as a base of an interval.

No designation in Cell G is the default option.

### Without Priority

Subprionocyclus neptuni
Collignoniceras woollgari
Mammites nodosoides
Watinoceras devonense / Wat. coloradoense
Nigericeras scotti
Neocardioceras juddii
Burroceras clydense
Metoicoceras geslinianum
Calycoceras guerangeri
Acanthoceras jukesbrownei
Acanthoceras rhotomagense
Cunningtoniceras inerme
Mantelliceras dixoni

### With Priority

Subprionocyclus neptuni
Collignoniceras woollgari
Mammites nodosoides - Calycceras guerangeri
Acanthoceras jukesbrownei - Mantelliceras dixoni
Mantelliceras mantelli

### Format for Block Data Rows with Merge-Control

A	B	C	D	E	F	G
<blank>	<label>	<age>	<line style>	<popup>	<color>	<merge-control>

A	B	C	D	E	F	G
Ammonites	block	180				
	TOP	66.04				
	Peroniceras tridorsatum	89.75				
	Subprionocyclus neptuni	90.84		will be kept as bottom of a zone		2
	Collignoniceras woollgari	92.9				
	Mammites nodosoides	93.35				
	Watinoceras devonense / Wat	93.9				
	Nigericeras scotti	93.98				
	Neocardioceras juddii	94.15				
	Burroceras clydense	94.27				
	Metoicoceras geslinianum	94.57				
	Calycoceras guerangeri	95.24		will be kept as bottom of a zone		2
	Acanthoceras jukesbrownei	95.47				
	Acanthoceras rhotomagense	96.08				
	Cunningtoniceras inerme	96.24				
	Mantelliceras dixoni	98.37	dashed	will be kept as bottom of a zone		2
	Mantelliceras mantelli	100.25				

# Priority Settings for Evolutionary Tree Columns

**Priority Option:** adding priority values to branches in the Evolutionary Tree Columns allows you to focus your tree on the main branches and then select how many sub-branches you want to see.

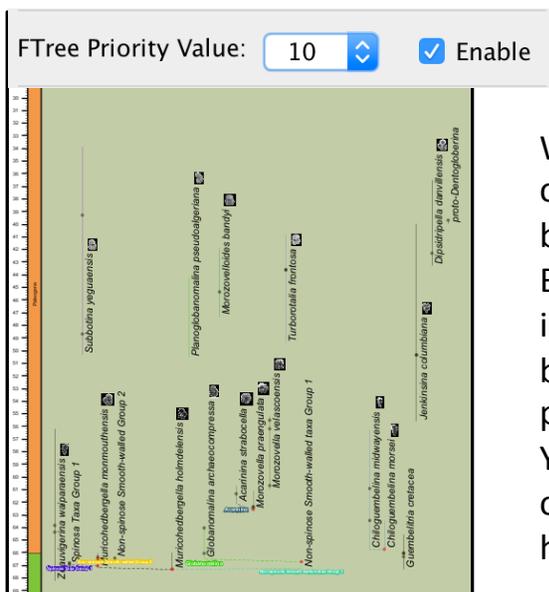
For detailed Header and Data Row format for Evolutionary trees see page 44.

**Priority (K):** If priority values are used in the datapack then one can generate trees which only display branches above a certain value. Values are from 0 - 10, with 10 being the most important.

## Format for Data Rows for Branch

A	B	C	D	E	F	G	H	I	J	K
<blank>	<parent name>	<age>	branch	<child name>	on/off	<branch label>	dashed/dotted	<popup>	<branch color>	<priority>

## Example of the same tree with high and low priority



With priority 10, only the main branches are shown. Blinking dots indicate where branches with lower priorities are hidden. You can always click on a dot to show the hidden branches.



## Sequence and Trend Columns

### Sequence and Trend

**Columns:** show transgressive/regressive sea level cycles and are represented by a horizontal set of peaks.

**Sequence columns** show high frequency events.

**Trend columns** show low frequency events (broader scope).

### Sequence/Trend Header:

Only **Title (A)** and the word **sequence** or **trend (B)** are required. The other cells are optional. See page 40 for explanation.

**Color (D) in Header:** The default background color for **Sequences** is white, while it is orange for **Trend** columns. These presets can be edited in Cell D.

**Data Rows:** Required fields are a **blank cell (A)**, **SB or MFS (C)**, **age (D)** and the **severity (E)**. The other cells are optional.

**Label (B):** is optional

**SB or MFS (C):** SB is a sequence boundary and MSF is the maximum flooding surface.

### Format for Sequence or Trend Header

A	B	C	D	E	F	G
<Title>	sequence or trend	<width>	<color>	notitle	on/off	<popup>

### Format for Data Rows

A	B	C	D	E	F
<blank>	<label>	SB or MFS	<age>	<severity>	<popup>

### Example of a Sequence and Trend column datapack

A	B	C	D	E	F	G
Sequences test	sequence	100		notitle		CENOZOIC
	PaPr1	SB	37.39	Major	Middle of Sequence Pt	
		MFS	38.23	Minor	Base of Late Eocene	
	PaBart1	SB	39.07	Minor	Middle of Sequence B	
		MFS	40.31	Medium	Arbitrarily 0.1 myr	
	PaLu4	SB	42.22	Medium	Base of Nanno Zone N	
		MFS	42.51	Minor	Arbitrarily 0.05 m.y. ab	
	PaLu3	SB	43.31	Medium	FAD of foram Globiger	
		MFS	44.65	Medium	Middle of Nanno Zone	
	PaLu2	SB	45.59	Minor	Slightly below (.2 myr)	
		MFS	46.79	Major	Shown on Hardenbol c	
	PaLu1	SB	47.31	Major	Arbitrarily2/3rds up in	
		MFS	47.84	Minor	Arbitrarily1/3rd up in	
	PaYp10	SB	49.16	Major	Coincides with base o	
		MFS	49.49	Minor	Arbitrarily2/3rds up in	
Phanerozoic Test	trend	100				Ceno and s
		MFS	37.11	Medium	Middle of Sequence Pt	
	PaPr1	SB	37.39	Major	Base of Late Eocene n	
		MFS	40.31	Medium	Base of Nanno Zone N	
	PaLu4	SB	42.22	Medium	Arbitrarily 0.05 m.y.	
		MFS	46.79	Major	Arbitrarily2/3rds up in	
	PaLu1	SB	47.56	Major	Arbitrarily1/3rd up in N	
		MFS	48.63	Minor	Coincides with base o	
	PaYp10	SB	49.16	Major	Arbitrarily2/3rds up in	
		MFS	53.67	Minor	MFS is drawn on Hard	

## Sequence and Trend Columns

**Severity (E):** Determines the width of the sequence or trend triangle.

**Options for Severity:**

**Major** peak of triangle reaches 100% of column width in Trend column and 75% in Sequence column

**Medium**

**Minor**

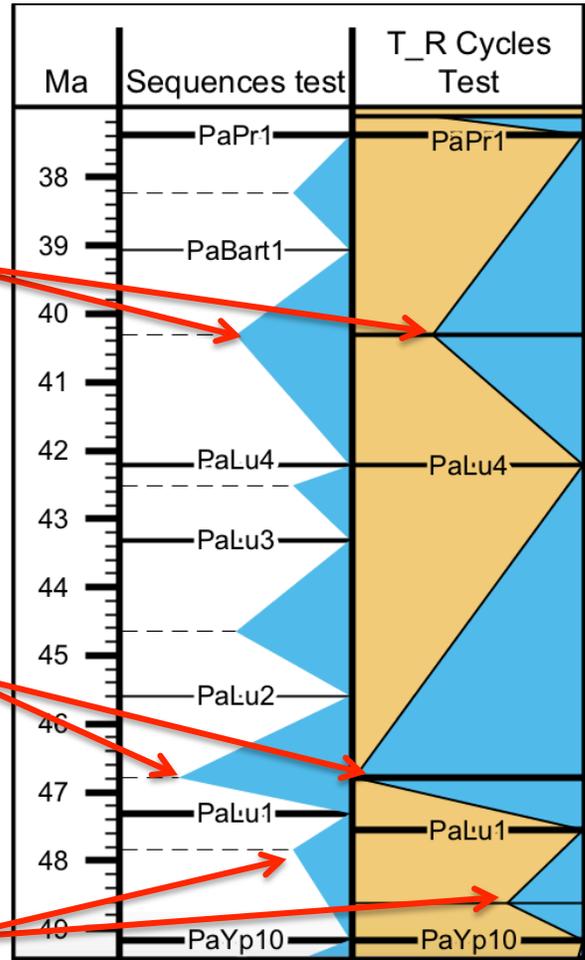
**Popup for data row (F):** is the text that will appear in the **MouseOver info** window.

**Severity Options**

Medium

Major

Minor



## Curve Columns

**Curve Columns:** are used to draw curves or to draw a “cloud” of points as an X versus age plot.

**Curve Column Header:** Only **Title (A)** and the word **point (B)** are required. The other cells are optional. See page 40 for explanation.

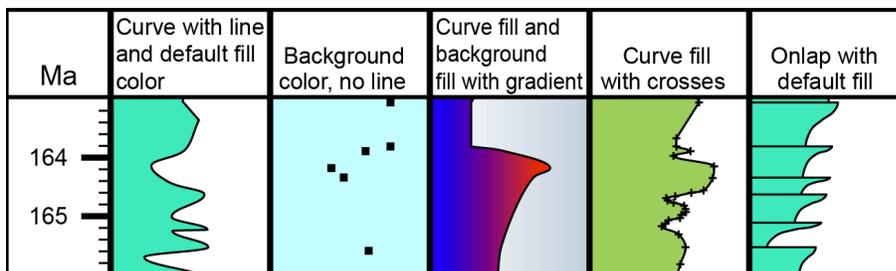
**Style Row:** is optional, but if used **Point type (A)** is required, all other fields are optional.

**Point Type Options:**  
**nopoints** - no points displayed on curve  
**rect** - each point is a ■  
**circle** - each point is a ●  
**cross** - each point is a +

**line/noline (B):** **line** will connect the points to form a curve. **noline** only displays the individual points.  
 Instead of “**line**” one can also use a color in RGB code. This will change the line color in the chart.

**Fill color/nofill (C):** color fill for curve in RGB code. **nofill** only displays the curve.

Examples of different Curve column styles



Format for Curve Column Header

A	B	C	D	E	F	G
<Title>	point	<width>	<bgcolor>	notitle	on/off	<popup>

Format for Style Row

A	B	C	D	E	F
<Point Type>	line/noline	fill color/nofill	<range low>	<range high>	smoothed

Format for Style Row with Gradient-filled column

A	B	C	D	E	F	G	H	I	J	K
nopoints	line	gradient	range low	range high	smoothed	side	left edge bg color	right edge bg color	left edge curve color	right edge curve color

Format for Data Rows

A	B	C
<blank>	<age>	<X value>

## Curve Columns

**Range low (D)/Range high (E):** specifies the range of the curve in the X dimension. If omitted TSC will fit all data points inside the column.

**Smoothed:** determines whether or not to smooth the line through the points.

**Special Style Row for Gradient-filled column:** required fields are **Point Type (A)** the word **gradient (C)**, the word **side (G)** and then the color RGB codes for the **background (H, I)** and **curve-fill (J, K)**.

**Note:** If gradient style is hard-wired into the datapack, then both the background and the curve-filling needs to have a left and right edge color code.

**Data Rows:** Required fields are a **blank cell (A)**, **age (B)** and **X value (C)**.

**X value (C):** is the horizontal position of the line.

### Example of some Point column datapacks

A	B	C	D	E	F	G
<b>Curve with line and default fill color</b>	point	80				CENOZOIC
nopoints	line		-50	150	smoothed	
	162.12	60				
	163.04	40				
	163.36	61				
	163.87	43				
<b>Background color, no line</b>	point	80	200/255/255			Different sources
rect	noline	nofill	-5	0	smoothed	
	162.3	-1.8				
	163.06	-1.2				
	163.81	-1.2				
	163.89	-2				
<b>Curve fill with crosses</b>	point	80				CENOZOIC
cross	line	161/205/103	-2	3.5	smoothed	
	162.68	1.5				
	163.06	1.8				
	163.67	1				

### Example of a Point column with gradient-filled column datapack

A	B	C	D	E	F	G	H	I	J	K
<b>Curve fill and background fill with gradient</b>	point	80				pop-up				
nopoints	0/0/0	gradient	15	30	smoothed	side	255/255/255	197/211/222	0/0/255	255/0/0
	162.3	21.2								
	163.1	18.8								
	163.8	18.8								
	163.9	22								

## Curve Column Overlays

### Curve Column Overlays:

allow you to overlay several curves on top of each other in one column.

Format of the **first curve** is the same as usual (see page 52) . For each additional curve you have to indicate that it is an overlay. All curves need to have the same width and range.

### Curve Overlay Header:

**Title** (A), the word **point-overlay** (B) and **width** (C) are required. The width needs to be the same as in the main curve column.

**Curve Overlay Style Row:** **Point type** (A), **line/noline** or **RGB code** (B), **nofill** (C), **low range** (D) and **high range** (E) are required.

If you use a **RGB color code** in **cell B**, then your line will display that color.

**low range** (D) and **high range** (E) values need to be the same as in the main curve.

**Data Rows** are the same as for curves (see page 60).

Format for Curve Overlay Header

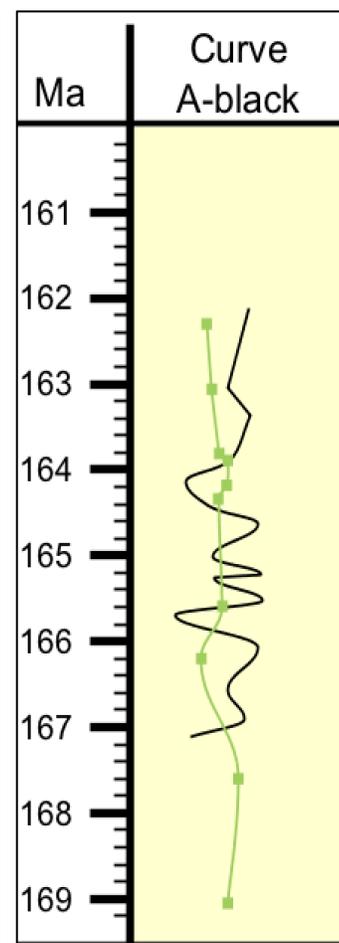
A	B	C
<Title>	point-overlay	<width>

Format for Curve Overlay Style Row

A	B	C	D	E	F
<Point Type>	line/noline/ RGB line color code	nofill	<range low>	<range high>	smoothed

Example of a Curve Overlay datapack

A	B	C	D	E	F
Curve A- black	point	80	255/255/210		
nopoints	line	nofill	-50	150	smoothed
	162.12	60			
	163.04	40			
	163.36	61			
	163.87	43			
	164.14	0			
	164.4	20			
	164.63	68			
	165.01	26			
	165.23	72			
	165.25	27			
	165.53	73			
	165.7	-9			
	166.07	69			
	166.56	40			
	166.91	56			
	167.11	5			
Curve B- green	point-overlay	80			
rect	161/205/103	nofill	-50	150	smoothed
	162.3	20			
	163.06	25			
	163.81	32			
	163.89	40			
	164.18	39			
	164.34	31			
	165.59	35			
	166.2	15			
	167.6	50			
	169.05	40			



## Onlap Curve – a special Curve Column

**Onlap Curves:** are used to schematically show the position of a beach through time.

They use the same header format as the curve columns (see p. 50), however for the data rows the data needs to be entered a certain way to force the horizontal lines to go back to the left edge.

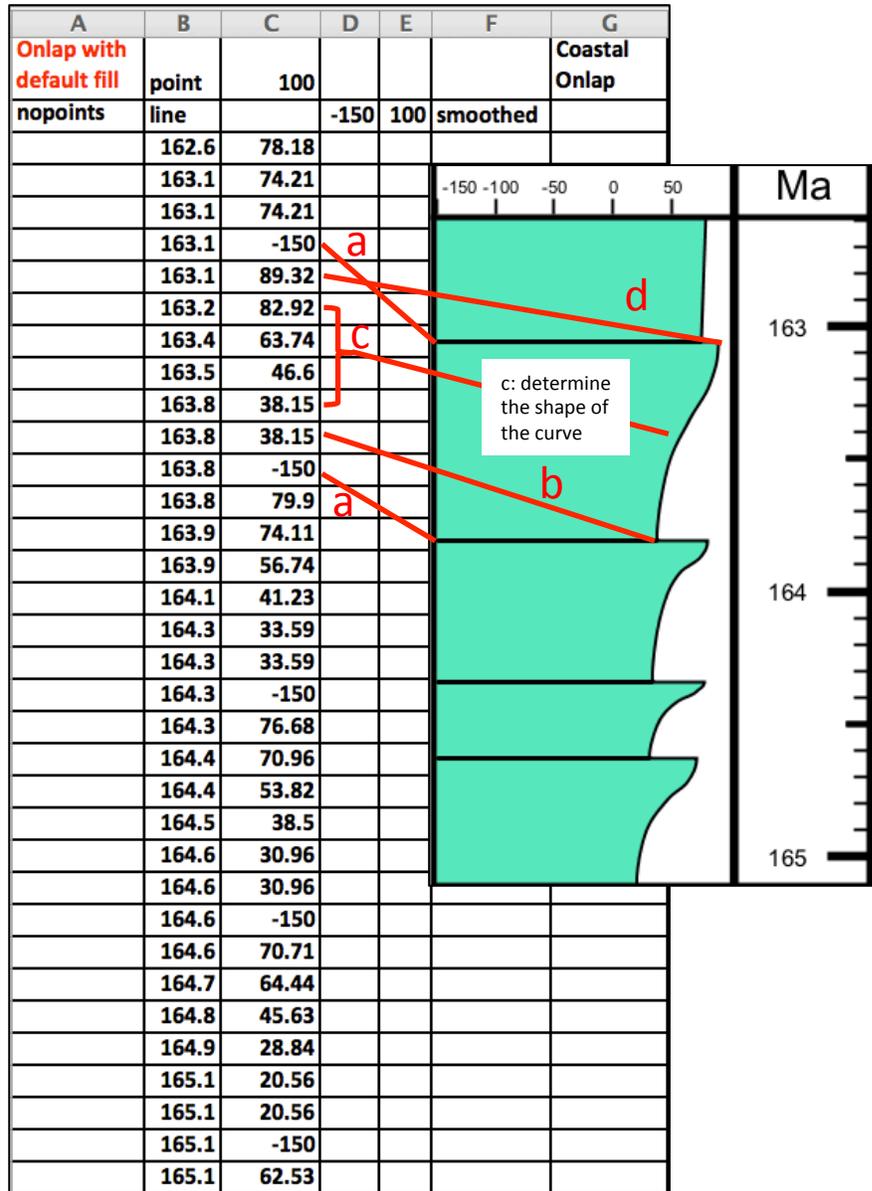
**Data Row:** Required fields are a **blank cell (A)**, **age (B)** and **X value (C)**.

**a:** forces the horizontal line back to the left edge.

**b:** forces the horizontal line to the point where you want to start your curve.

**c:** these points determine the shape of the curve.

**d:** is the uppermost and rightmost point of your curve. It is also the point on the right side for another horizontal line.



## Facies Columns

**Facies columns:** Display lithostratigraphic patterns and names. There are 4 components to Facies columns (Facies-pattern, Member Label, Facies label and Series label).

**Facies Header:** Only **Title** (A) and the word **facies** (B) are required. The other cells are optional. See page 40 for explanation.

**Series Header:** is optional, but if used then required fields are **Group name** (A) and the word **Primary** in cell B. **Popup** in Cell E is optional.

Whether used or not, a series column will be displayed in the chart. It can only be closed from TSC program.

**Data Rows:** Required fields are a **blank cell** (A), **pattern name** (B) and an **age** (D). The other cells are optional.

**Pattern name:** TSC has about 250 different patterns to choose from. You can view them either under **File/View loaded patterns** (see p. 8) or in this manual on page 85.

### Format for Facies Column Header

A	B	C	D	E	F	G
<Title>	facies	<width>		notitle	on/off	<popup>

### Format for Series Row

A	B	C	D	E
<Group Name>	Primary	<blank>	<blank>	<popup>

### Format for Data Rows

A	B	C	D	E	F	G
<blank>	<pattern name>	<Formation name>	<age>	<popup>	<Member name>	<line style>

### Example of Facies column datapack

A	B	C	D	E	F	G
Lithostrat. test	facies	300		notitle	on	popup
Upper Group	Primary			this is the popup for the Upper Group		
	TOP		0	Mostly coal with sandy intervals		
	Coal	Black Fm	0.09	Mostly coal with sandy intervals		
	Banded Iron	Green Fm	1.31	This formation contains a lot of iron		
Group 2	Primary					
	Limestone	Blue Fm	2.24	Mostly bedded limestone	Mbr 1	dashed
	Reef limestone	Blue Fm	2.78	lots of patch reefs	Reef Mbr	wavy
	Sandy limestone	Blue Fm	3.09	Base of formation is very sandy		
Sandstone Group	Primary			This is a sand dominated Group		
	Fine-grained sandstone	Yellow Fm	3.33	fining upward cycle, fine grained sand		
	Coarse-grained sandstone	Grey Fm	4.5	Coarser sandstones, with channels at base		dotted
	Conglomerate	Beige Fm	5.95	big rounded pebbles		
	Coarse-grained clastics	Orange Fm	6.56	Coarse dense sandstones		
	Primary					
	Gap		8.7			
Group 4	Primary					
	Evaporite	Red/Green Fm	9.08	dried lakes	Salty Mbr	
	Gap	Red/Green Fm	9.7			
	Brackish	Red/Green Fm	12.74	some channel fillings	Mbr 2	wavy
	Dolomitic limestone	Red/Green Fm	13.82	dolomite lenses	Dolo Mbr	

# Facies Columns

**Formation Name (C):** If several data entries have the same “**Formation name**” label, then the program will combine the cells into one interval and only display the label once. In that case only the popup entry for the base of the **Formation name** interval will be shown (see example “Red/Green Fm”). However the individual popup will be shown when highlighting the pattern.

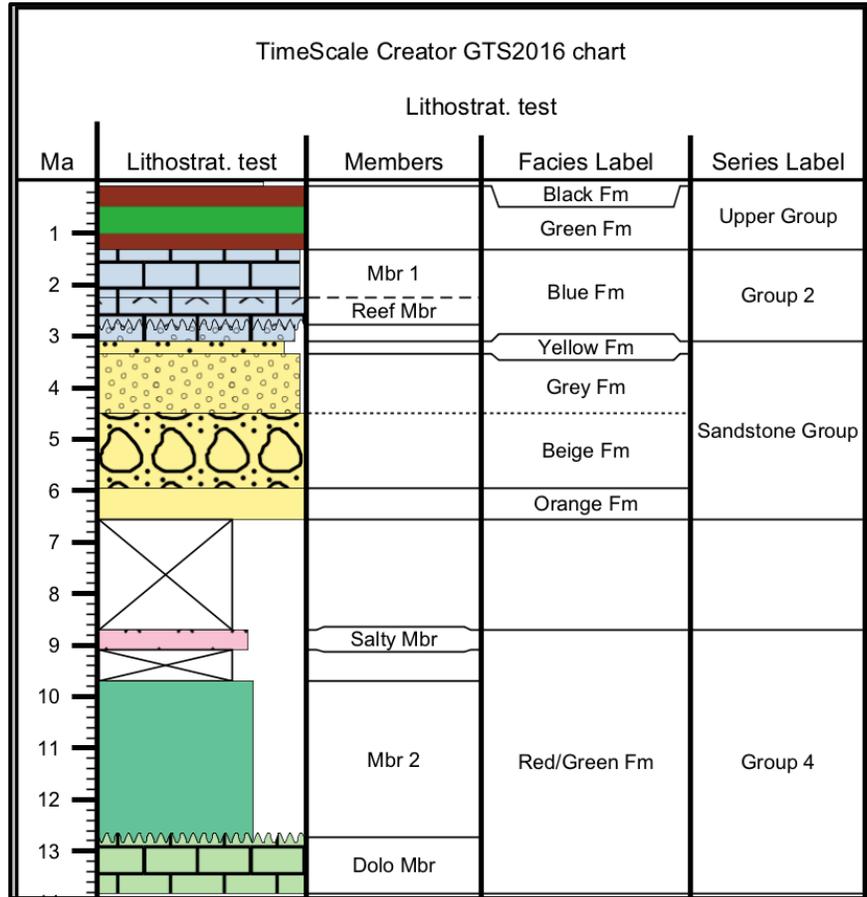
**Popup for data row (E):** is the text that will appear in the **MouseOver info** window.

**Member Name (F):** Individual patterns can have a member name designation. The popup will be displayed when the pattern or the member are highlighted on the chart.

**Line Style (G):** can be **dotted, dashed, wavy** or **solid**. If left blank the line will be solid.

**Wavy** will only display in the pattern column.

**Dashed/Dotted** only display in the label columns.



## Special case: Gap Display

A gap can either be displayed as a gap between Groups or only inside a formation.

**Gap between Groups:** a row with a blank cell (A) and the word **Primary** in cell B are needed above the row with the gap information.

A	B	C	D	E
<blank>	Primary			
<blank>	Gap		<age>	<popup>

**Gap inside a formation:** the gap row has the same format as any data row.

A	B	C	D	E
<blank>	Gap		<age>	<popup>

**Note:** Facies columns can now also be produced with our online Lithology Maker. See **Section 3, TSC Makers** for detailed manual.

## Freehand Columns

**Freehand columns:** Allow the import of image files to be displayed as **overlay** (on top of) or **underlay** (underneath) in the column listed directly above the freehand datapack. It can also be displayed as a separate free-standing column. Image files can be jpg or png.

**Freehand Header:** Only **Title (A)** and **Column Type (B)** are required. **Width (C)** is required if a separate column is desired.

**Column Type (B):**  
**freehand** – image is displayed in a separate column  
**freehand-overlay** – image is displayed on top of the datapack listed above  
**freehand-underlay** – image is displayed underneath the datapack listed above

**Data Rows:** Required fields are the word **image (A)**, **file name (B)**, **top age (C)** and **base age (D)**.

Format for Freehand Column Header

A	B	C	D
<Title>	<column type>	<width>	<bgcolor>

Format for Data Rows

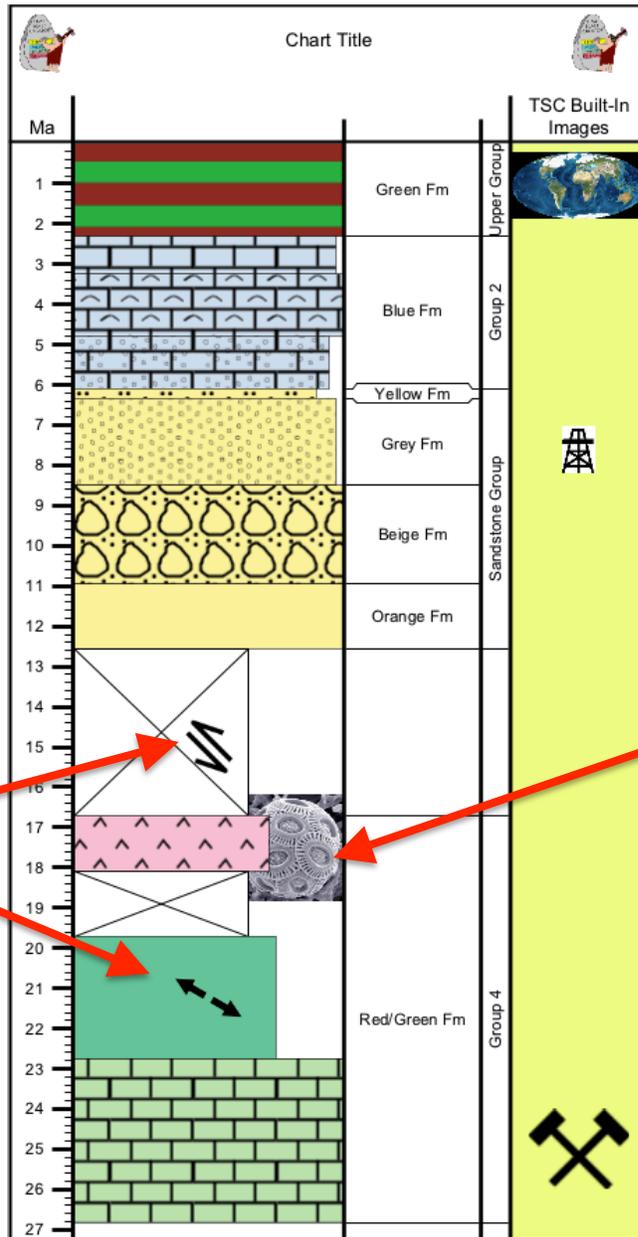
A	B	C	D
image	<file name>	<top age>	<base age>

Example of Freehand column datapack

A	B	C	D	E
Lithostrat. test	facies	400		
Upper Group	Primary			
	TOP		0	
	Banded Iron	Green Fm	2.31	
Group 2	Primary			
	Limestone	Blue Fm	3.24	
	Reef limestone	Blue Fm	4.78	
	Sandy limestone	Blue Fm	6.09	
Sandstone Group	Primary			
	Fine-grained sandstone	Yellow Fm	6.33	
	Coarse-grained sandstone	Grey Fm	8.5	
	Conglomerate	Beige Fm	10.95	
	Coarse-grained clastics	Orange Fm	12.56	
	Primary			
	Gap		16.7	
Group 4	Primary			
	Evaporite	Red/Green Fm	18.08	
	Gap	Red/Green Fm	19.7	
	Brackish	Red/Green Fm	22.74	
	Dolomitic limestone	Red/Green Fm	26.82	
Additional symbols	freehand-overlay			overlays on top of lithology column
image	fault.png	14	16	
image	expansion_NW_SE.png	20.5	22	
more images	freehand-underlay			underlays lithology column
image	Emiliana_huxleyi.jpg	16	19	
TSC Built-In Images	freehand	100	242/250/140	draws new column
image	Global_reconstructions_Blake	0.1	2	
image	Oil_Gas/oilrig	7	8.2	
image	Oil_Gas/Mine	24	26	

# Freehand Columns

**Image placement:** Images will be always placed centered both horizontally, and vertically between the top and the base age maintaining their aspect ratios.



Overlay

Underlay

Separate Column

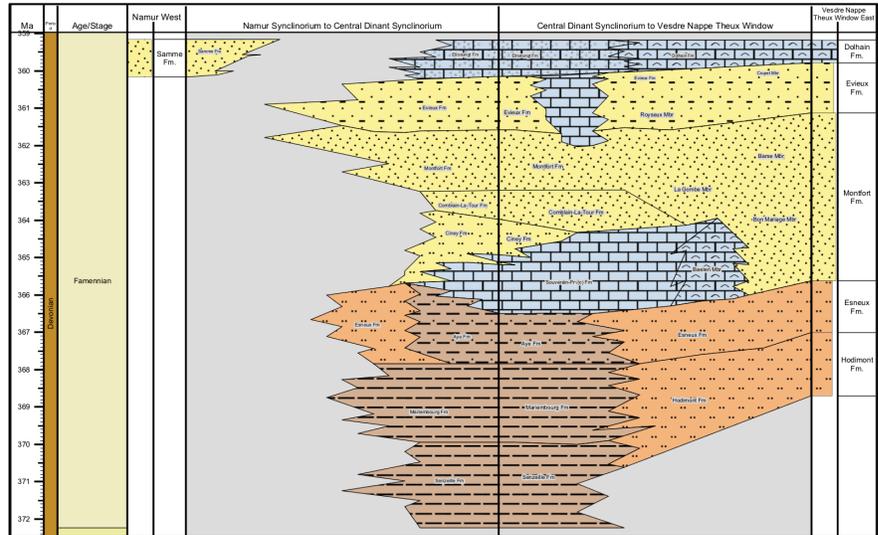
# Transect Columns

**Transect columns** are inferred panels between two reference wells. There are two ways to create these columns: One is a very time involved method using Adobe Illustrator (see detailed description at the end of this manual, page xxx) and the other one is using our online Transect Maker Tool (detailed transect maker manual is in **Section 3, Transect Maker** and online at <https://timescalecreator.org/tscmaker/docs/TransectMakerManual.pdf>)

The online Transect Maker formats all the needed cells correctly for you.

**Hint:**  
If you use the online Transect Maker, then make sure to keep the associated json files. Whenever the Geologic Time Scale changes, you have to reload the json file and readjust the ages of the timelines with the new ages. Then save the file again and you can use your transect with the new time scale.

Example of a Transect Column



## Website for Transect, Lithology and Curve Maker:

<https://timescalecreator.org/tscmaker/>

The TSC Makers always save a zip file which includes a json and a txt file. The txt file can be loaded into the TSC program and the json file should be kept for making future changes to your transect when the time scale changes or when you want to improve you file. *The Makers cannot read the txt files.*

*Remember, datapacks with more than 3000 characters cannot be loaded in the Public TSCreator. You will need to buy a TSC Pro License.*

## Facies Pattern Width Format (pattern indentation)

**Facies columns** show hardness of the rock by varying the indentation of the lithologic pattern. The program automatically assigns these pattern width. However, you can change these preset width with your own set with the following datapack using the **Patternwidth format**.

**Patternwidth Header:** The word **patternwidths** (A) and the word **patternwidths** (B) are required.

**Data Rows:** Required fields are a **blank cell** (A), **pattern name** (B) and **pattern width in %** (C).

**Hint:** *percentages between 50% and 100% work best.*

**Note:** The **Patternwidth Parameters** are independent of the Facies column (do not include them within the Facies data in the datapack). The pattern widths of this datapack are global and will replace the preset in all the loaded facies columns.

Format for Pattern Width Header

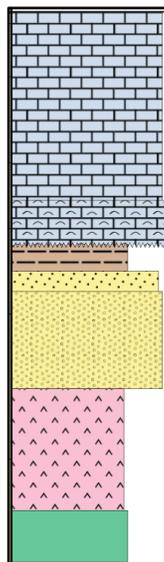
A	B
<b>patternwidths</b>	<b>patternwidths</b>

Format for Data Rows

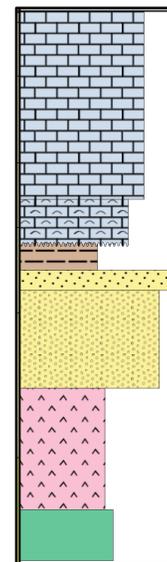
A	B	C
<b>&lt;blank&gt;</b>	<b>&lt;pattern name&gt;</b>	<b>&lt;pattern width&gt;</b>

Example of a Pattern Width datapack

A	B	C
patternwidths	patternwidths	
	limestone	80
	Coarse-grained sandstone	90
	Reef Limestone	70
	Evaporite	55
	Brackish	60
	Sandstone	100
	Claystone	50



default TSCreator pattern width format



Pattern width using the above datapack example

# Attaching Images and Web Links to Events, Zones and Pop-ups, etc.

**Images and web links** can be easily attached to all text labels using HTML format. This allows you to:

- show thumb nail icons for events on the chart,
- include images in pop-ups,
- add links to outside expert websites about specific events or fossils.

**External images** need to be in the same folder as the datapack which uses these images or the path to a different folder needs to be added to the "image source" instructions.

Images can be in png or jpg format.

HTML instructions give you the option to align your images at the bottom, middle or at the top of the text.

**Thumb nail icons in chart:** For thumb nails it is best to specify the width as 40 pixels and align the image in the middle of the text.

Images and web links can be combined in popups.

## HTML Format for Thumb Nail Icons in chart:

Event Name ``

A	B	C
	<code>&lt;label&gt;</code>	<code>&lt;age&gt;</code>
FAD		
	Event Name <code>&lt;img align="middle" width="40" src="image_file.png"&gt;</code>	145

## HTML Format for full size images in popups:

Event Name ``

## HTML Format for web links in popups:

`<a href="http://web address">click here</a>`

## HTML Format for line break:

`<br>`

## Example of combined image and web link instructions in the popup

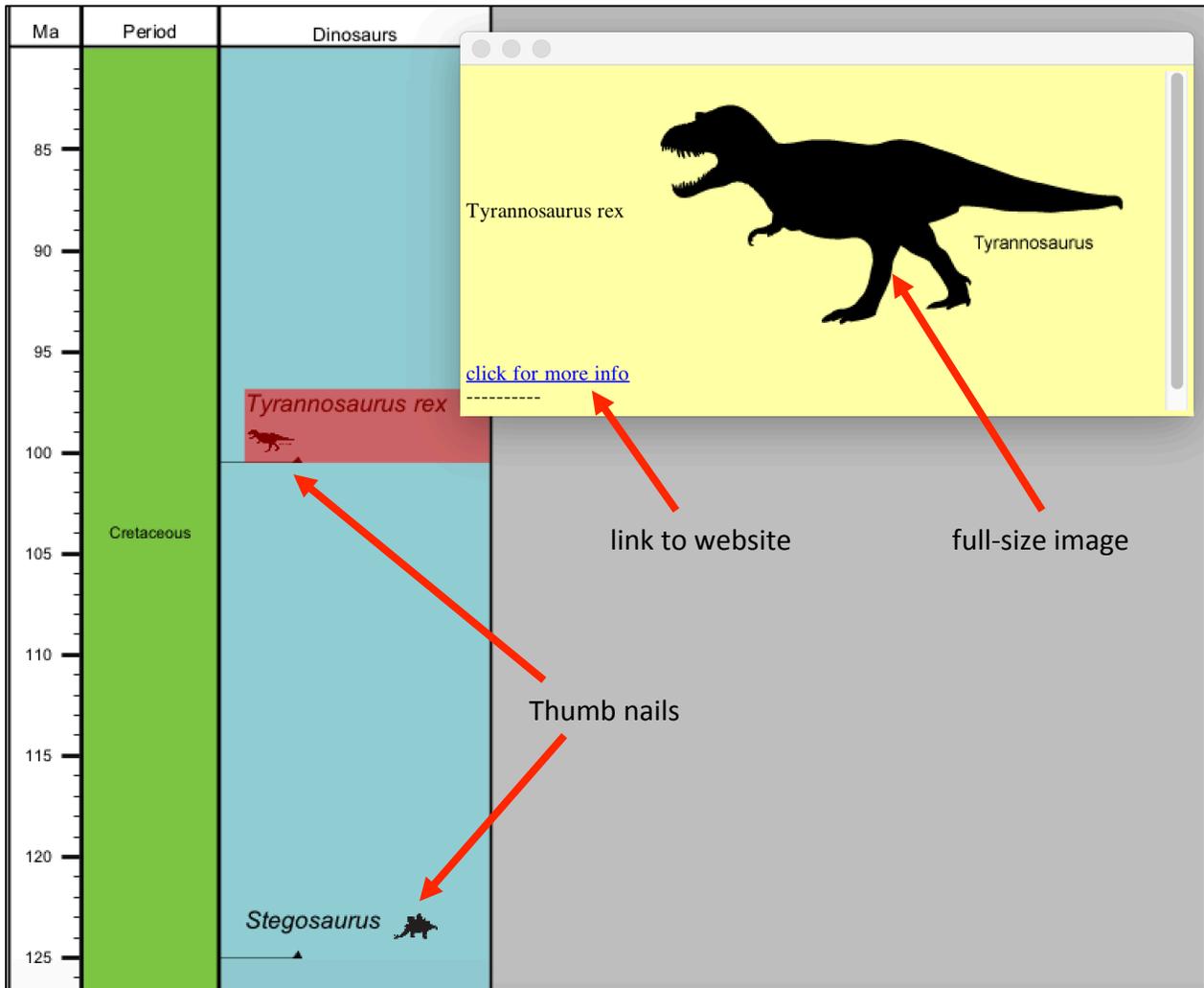
A	B	C	D	E
	<code>&lt;label&gt;</code>	<code>&lt;age&gt;</code>	<code>&lt;line style&gt;</code>	<code>&lt;popup&gt;</code>
FAD				
	Event Name	145		Event Name <code>&lt;img align="middle" src="image_file.png"&gt;</code> <code>&lt;br&gt;</code> <code>&lt;a href="http://web address"&gt;click here&lt;/a&gt;</code>

To practice the image attachments go to "Section 2, Part 3, Exercise 2: Adding IMAGES to events and popups."

# Attaching Images and Web Links to Events, Zones and Pop-ups, etc.

Example of datapack with thumb nails, full-size images and web link instructions in the popup

A	B	C	D	E
Dinosaurs	event	200	149/205/210	
FAD				
	Tyrannosaurus rex 	100.5		Tyrannosaurus rex    <a href="https://www.newdinosaurs.com/tyrannosaurus/">click for more info</a>
	Stegosaurus	125		Stegosaurus    <a href="http://palaeos.com/vertebrates/ornithischia/stegosauria.html#Stegosaurus">click for more info</a>



## Attaching Images and Web Links to Events, Zones and Popups, etc.

The images on this page are already built into the TS Creator, therefore you can just refer to the image name. These images can also be used in the freehand columns.

### Note:

Use these file names without the extension, the program will find the correct file.

### Format examples:

```
  

```

### Hint:

To practice the image attachments go to **Section 2, Part 3, Exercise 2: Adding IMAGES to events and popups.**

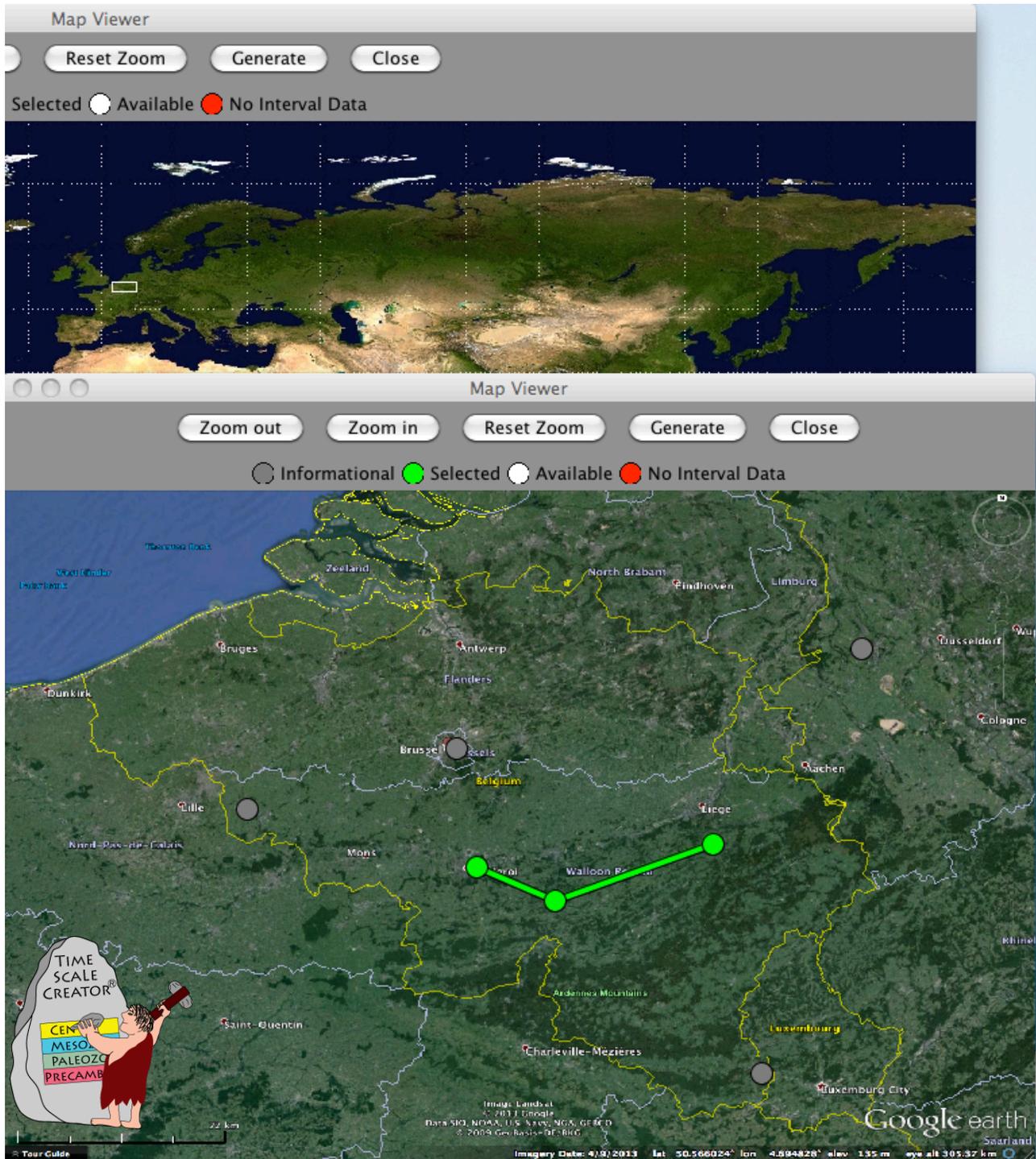
Global\_reconstructions\_Blakey/105moll.jpg  
Global\_reconstructions\_Blakey/120moll.jpg  
Global\_reconstructions\_Blakey/150moll.jpg  
Global\_reconstructions\_Blakey/170moll.jpg  
Global\_reconstructions\_Blakey/200moll.jpg  
Global\_reconstructions\_Blakey/20moll.jpg  
Global\_reconstructions\_Blakey/220moll.jpg  
Global\_reconstructions\_Blakey/240moll.jpg  
Global\_reconstructions\_Blakey/260moll.jpg  
Global\_reconstructions\_Blakey/280moll.jpg  
Global\_reconstructions\_Blakey/300moll.jpg  
Global\_reconstructions\_Blakey/340moll.jpg  
Global\_reconstructions\_Blakey/35moll.jpg  
Global\_reconstructions\_Blakey/380moll.jpg  
Global\_reconstructions\_Blakey/400moll.jpg  
Global\_reconstructions\_Blakey/430moll.jpg  
Global\_reconstructions\_Blakey/450moll.jpg  
Global\_reconstructions\_Blakey/470moll.jpg  
Global\_reconstructions\_Blakey/500moll.jpg  
Global\_reconstructions\_Blakey/50moll.jpg  
Global\_reconstructions\_Blakey/540moll.jpg  
Global\_reconstructions\_Blakey/560moll.jpg  
Global\_reconstructions\_Blakey/600moll.jpg  
Global\_reconstructions\_Blakey/65moll.jpg  
Global\_reconstructions\_Blakey/90moll.jpg  
Global\_reconstructions\_Blakey/Pleistmoll.jpg  
Global\_reconstructions\_Blakey/presentmoll.jpg

Oil\_Gas/Gas\_discovery.png  
Oil\_Gas/Gas\_discovery\_Oil\_indication.png  
Oil\_Gas/Gas\_discovery\_Oil\_show.png  
Oil\_Gas/Gas\_indication.png  
Oil\_Gas/Gas\_show.png  
Oil\_Gas/Gas\_show\_Oil\_indication.png  
Oil\_Gas/PetroExpl\_dry\_hole.png  
Oil\_Gas/PetroExpl\_not\_classified.png  
Oil\_Gas/SourceRock\_Gas.svg  
Oil\_Gas/SourceRock\_Oil.svg  
Oil\_Gas/SourceRock\_Oil\_and\_Gas.svg  
Oil\_Gas/SourceRock\_Possible.svg  
Oil\_Gas/Mine.png

Oil\_Gas/oilrig.jpg  
Oil\_Gas/Oil\_and\_Gas\_discovery.png  
Oil\_Gas/Oil\_and\_Gas\_indication.png  
Oil\_Gas/Oil\_and\_Gas\_show.png  
Oil\_Gas/Oil\_discovery.png  
Oil\_Gas/Oil\_discovery\_Gas\_indication.png  
Oil\_Gas/Oil\_discovery\_Gas\_show.png  
Oil\_Gas/Oil\_indication.png  
Oil\_Gas/Oil\_show.png  
Oil\_Gas/Oil\_show\_Gas\_indication.png  
Oil\_Gas/CO2\_discovery.png  
Oil\_Gas/CO2\_discovery\_Oil\_show.png

Other/ge\_impact\_icon.png  
Other/Lava1.png

# Map Packs (Geographic Interface) for TS-Creator



What you need for the map packs:

Open the folder: Mappack making Files

You will need the following files:

Belgium\_Famenne\_mappack partial setup

Famenne\_finished\_23Feb2014.txt

If you want, you can use the Mappack\_template.xls and just fill in the appropriate cells.

*Load "Finished\_Belgium\_Famennian\_23Feb2014.map" into TSCreator to check what your map pack should look like.*

# CREATING MAP-PACKS (Geographic Interface)

## What are MapPacks?

MapPacks are .map files that contain graphical information about datapacks loaded into TSCreator. Users can load MapPacks for a visual way to select and deselect data points.

## MapPack Contents

MapPacks contain at least two files: 1) the MapPack Data file and 2) the map images.

	A	B	C	D	E	F	G
1	MAP-VERSION		1				
2							
3	COMMENT	Map Information					
4	HEADER-MAP INFO	MAP NAME	IMAGE	NOTE			
5	MAP INFO						
6							
7	COMMENT	Parent Map Information					
8	HEADER-PARENT MAP	PARENT NAME	COORDINATE TYPE	UPPER LEFT LAT	UPPER LEFT LON	LOWER RIGHT LAT	LOWER RIGHT LON
9	PARENT MAP	World Map	RECTANGULAR	51.6	2.46	49.4	7.25
10							
11	COMMENT	Coordinate System					
12	HEADER-COORD	COORDINATE TYPE	CENTER LAT	CENTER LON	HEIGHT	SCALE	NOTE
13	COORD						
14							
15	COMMENT	DATACOLUMNS					
16	HEADER-DATACOL	NAME	LAT	LON	NOTE		
17	DATACOL						
18	DATACOL						
19	DATACOL						
20							
21	COMMENT	INFORMATION POINTS					
22	HEADER-INFORMATION POINTS	NAME	LAT	LON	NOTE		
23	INFOPT						
24	INFOPT						
25							
26	COMMENT	TRANSECTS					
27	HEADER-TRANSECTS	NAME	STARTLOC	ENDLOC	NOTE		
28	TRANSECT						
29	TRANSECT						
30							

*Template of an Excel spreadsheet for a map pack (the World Map is already included)*

MapPack data files are tab-delimited files that contain information about the following:

Basic map information: **Name, Image Name, and Note**. The image name is the file name of the image, which is located in the MapImages folder. You do **not** need to append the folder name, just the file name itself. **Please note: Use CAPITALS for the Header information**

HEADER-MAP INFO	MAP NAME	IMAGE	NOTE
MAP INFO	BELGIUM	Belgium_map.png	from Google Earth

Map parent information: **Parent Name**, **Parent Coordinate Type**, and **Parent Coordinate Information**. The **parent map** is a world map on which a “submap” of your chosen area can be overlain. In this manual, we will be using Belgium as an example.

COMMENT	Parent Map Information					
HEADER-PARENT MAP	PARENT NAME	COORDINATE TYPE	UPPER LEFT LAT	UPPER LEFT LON	LOWER RIGHT LAT	LOWER RIGHT LON
PARENT MAP	World Map	RECTANGULAR	51.6	2.46	49.4	7.25

There are 2 coordinate systems you can use for your submap: Rectangular or Vertical Perspective. We will discuss both methods:

Map coordinate information for your submap: **Coordinate Type**, and **Coordinate Information**.

### Format for “Rectangular” (parallel Lat and parallel Long lines), or simple X-Y coordinate system

- The coordinate information is where the corners of our map are in latitude and longitude format. However, it is important to be as accurate as possible with these corners, as all of the coordinate data for the columns will be overlain on this map relative to the corners you choose. If your corners are off by a half a degree, all of your column locations will also be off by a half a degree on the map.

HEADER-COORD	COORDINATE TYPE	UPPER LEFT LON	UPPER LEFT LAT	LOWER RIGHT LON	LOWER RIGHT LAT
COORD	RECTANGULAR	1.70	51.55	6.47	49.42

- Data column coordinates: **Name**, **Coordinate Information**, and **Description**

COMMENT	DataColumns			
HEADER-DATACOL	NAME	LAT	LON	NOTE
DATACOL	Oostende anc	51.22	3.07	

Important: Latitude and longitude coordinates must be in decimal degrees, not degree-minute-second form. To convert, simply use the formula: degree + minutes/60 + seconds/36000.

## Format for “Vertical Perspective” coordinate system

### Making the Image and Input format for “Vertical Perspective” (Google-Earth or other “from space” view):

- Step 1: Select the area in Google Earth for the map.
- Step 2: Make sure map is aligned properly with the north.
- Step 3: Mark the center using the Pin. Selecting the pin puts it automatically in the center. Make sure the Latitude and Longitude are in decimal-degree. If not, go to **Google Preferences (3DView)** and change them to decimal-degrees. Make sure the values for the Scale and height are in KM's. If not change them in the same window.
- Step 4: Note Center Lat, Center Lon, eye altitude (eye alt) and scale. You need this info for your Excel file.
- Step 5: Hide the pin if necessary before taking the snapshot of the map.
- Step 6: Once again make sure that the map is aligned north wards.
- Step 7: Use command + shift + 4 in case of a MAC to get the snapshot tool. (Or use the appropriate snapshot tool in case of other OS and Windows (Snip tool)). Select the entire area of the map as snap shot, including image details like elevation, Lat, Long etc..
- Step 8: Use Scale and Eye Alt and Pin Values (in lower right corner of the screenshot) for the SCALE , HEIGHT and CENTER LAT LON values in the map pack. Make sure the values for the Scale and height are in KM's. If not, change them in Google Preferences (3DView).
- Step 9: Rename the screen shot to the name you like.
- Step 10: Add the values to the corresponding fields in the map pack.  
For e.g. In this example (Google Earth of Belgium):, **CENTER LAT** = 50.57 , **CENTER LON** = 4.69, **HEIGHT** (Eye alt) = 305.37 (km), **SCALE** = 14.4 (km)

HEADER-COORD	COORDINATE TYPE	CENTER LAT	CENTER LON	HEIGHT	SCALE	NOTE
COORD	VERTICAL PERSPECTIVE	50.57	4.69	305.37	14.4	Scale on 1/4th was 72; implying full is 288, so 10% center-to-edge or 5% of total is 14.4

The scaling of Google Earth maps is not clear, therefore you have to select a few info points and make sure that they really appear where they are located. If not, you have to adjust the scaling. For Belgium we found that a 5% (14.4) scaling of the whole map width (~ 288km) works best.

## Building MapPacks

MapPacks are tab-delimited files with the map contents described above. They can be built in a spreadsheet application (like Microsoft Excel) for a more user-friendly and cleaner interface. The contents (or sections) must be displayed in the file in the following order:

**Map Information > Parent Map Information > Coordinate System > Data Columns > Information Points > Transects**

The first column of a MapPack has information about the row type. Row types include:

- Comments – used for displaying purposes and informational notes only.
- Header – used for indicating a new section. The rest of the row contains header information (and the order) for items underneath the header.
- Information Items – items that follow specific details for a particular header.
- Transect information: **Name, Start Location** (Name of Data column), **End Location** (Name of Data column), **Note**.

COMMENT	TRANSECTS			
HEADER-TRANSECTS	NAME	STARTLOC	ENDLOC	NOTE
TRANSECT	Namur Synclinorium to Central Dinant Synclinorium	Namur West	Dinant Central	Reference: Bultynck, P. & Dejonghe, L., 2001. Devonian lithostratigraphic units (Belgium). Geologica Belgica 4/1.
TRANSECT	Central Dinant Synclinorium to Vesdre Nappe Theux Window	Dinant Central	Vesdre Nappe Theu	Reference: Bultynck, P. & Dejonghe, L., 2001. Devonian lithostratigraphic units (Belgium). Geologica Belgica 4/1.

**HINT:** The names of the transect need to be exactly the same as in your “transect txt file” otherwise the program will not recognize them.

Once you have filled in all the information your mappack should be looking like the one below

	A	B	C	D	E	F	G
1	MAP-VERSION	1					
2							
3	COMMENT	Map Information					
4	HEADER-MAP INFO	MAP NAME	IMAGE	NOTE			
5	MAP INFO	BELGIUM	Belgium_map.png	from Google Earth			
6							
7	COMMENT	Parent Map Information					
8	HEADER-PARENT MAP	PARENT NAME	COORDINATE TYPE	UPPER LEFT LAT	UPPER LEFT LON	LOWER RIGHT LAT	LOWER RIGHT LON
9	PARENT MAP	World Map	RECTANGULAR	51.6	2.46	49.4	7.25
10							
11	COMMENT	Coordinate System					
12	HEADER-COORD	COORDINATE TYPE	CENTER LAT	CENTER LON	HEIGHT	SCALE	NOTE
13	COORD	VERTICAL PERSPECTIVE	50.57	4.69	305.37	14.4	Scale on 1/4th was 72; implying full is 288, so 10% center-to-edge or 5% of total is 14.4
14							
15	COMMENT	DATA COLUMNS					
16	HEADER-DATACOL	NAME	LAT	LON	NOTE		
17	DATACOL	Namur West	50.41	4.44			
18	DATACOL	Dinant Central	50.28	4.91			
19	DATACOL	Vesdre Nappe Theux Window East	50.49	5.86	Used Spa between Stavelot and Verriers		
20							
21	COMMENT	INFORMATION POINTS					
22	HEADER-INFORMATION POINTS	NAME	LAT	LON	NOTE		
23	INFOPT	Lille	50.62	3.06			
24	INFOPT	Duesseldorf	51.22	6.78			
25	INFOPT	Luxemburg City	49.61	6.13			
26	INFOPT	Brussel	50.86	4.32			
27							
28	COMMENT	TRANSECTS					
29	HEADER-TRANSECTS	NAME	STARTLOC	ENDLOC	NOTE		
30	TRANSECT	Namur Synclinorium to Central Dinant Synclinorium	Namur West	Dinant Central	Reference: Bultynck, P. & Dejonghe, L., 2001. Devonian lithostratigraphic units (Belgium). Geologica Belgica 4/1.		
31	TRANSECT	Central Dinant Synclinorium to Vesdre Nappe Theux Window	Dinant Central	Vesdre Nappe Theux Window East	Reference: Bultynck, P. & Dejonghe, L., 2001. Devonian lithostratigraphic units (Belgium). Geologica Belgica 4/1.		

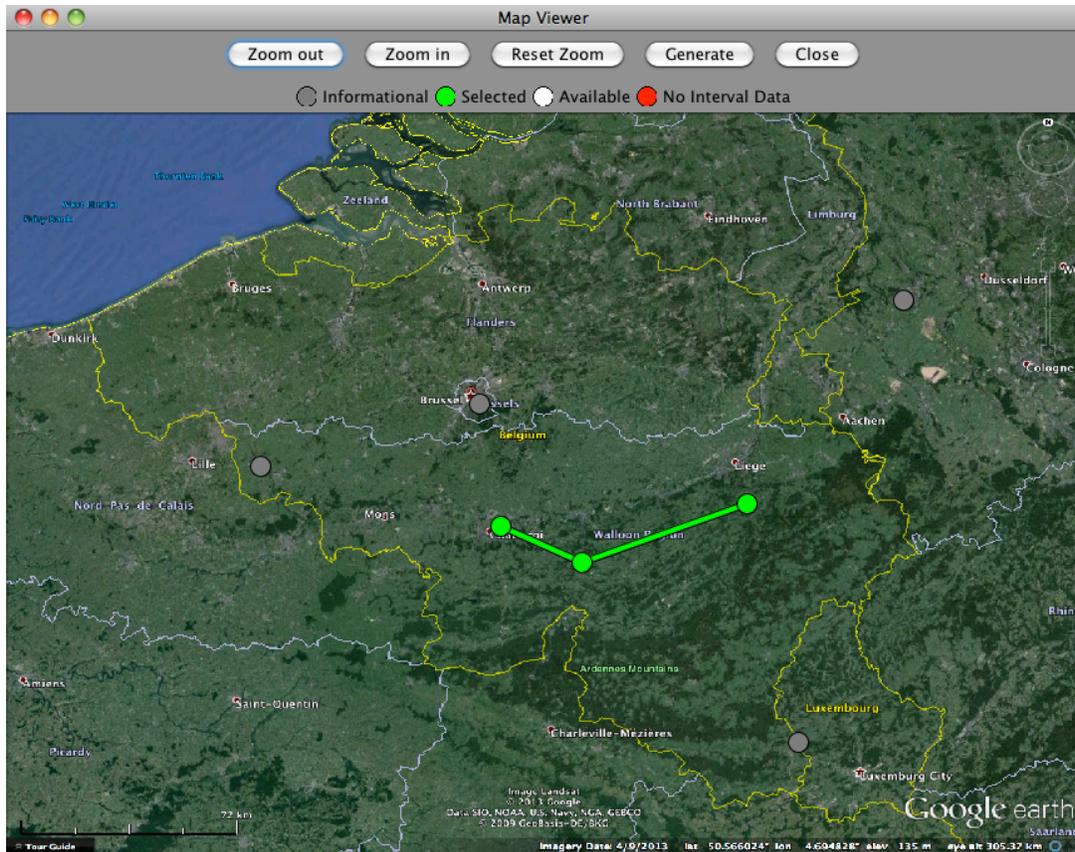
1. Once you are satisfied with your map data, save the file first as Excel and then using Save As...
2. For **Format** or **Save as Type**, select Tab Delimited Text or Text (Tab delimited) depending on your version of Microsoft Office.
3. You should now have a valid map file. You can combine these with Datapacks to create a MapPack file following the instructions below.

\*\*\*\*\*

## MapPacks and Datapacks

MapPacks can contain regular TSCreator datapacks. When a MapPack contains a TSCreator datapack, that datapack is loaded into TSCreator just as it would normally, but after it is successfully loaded, the MapPack information is also loaded.

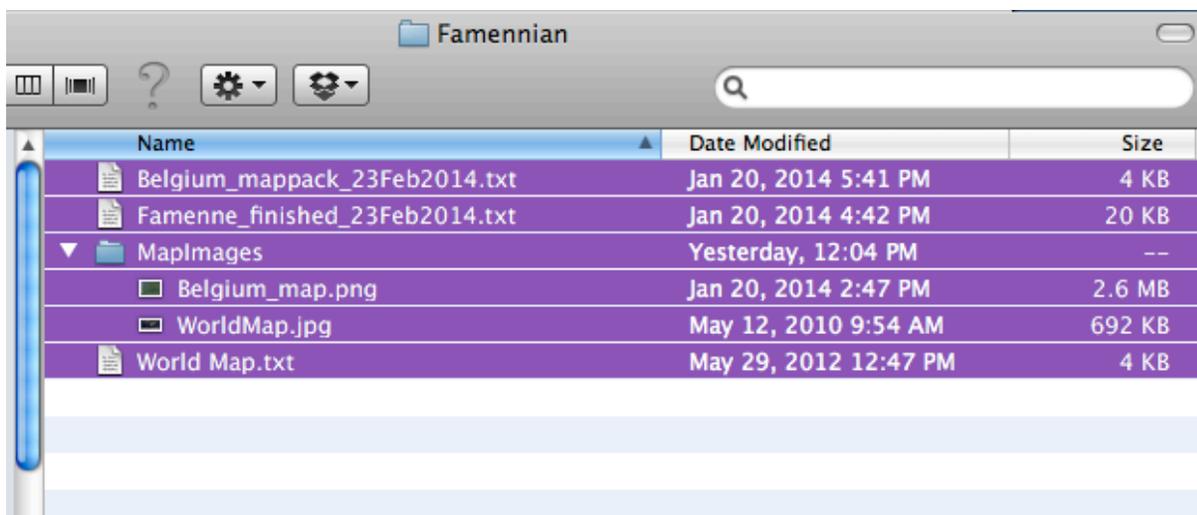
You can then in the TS-Creator settings choose Map Points, and select the appropriate transect or well data columns directly from the map.



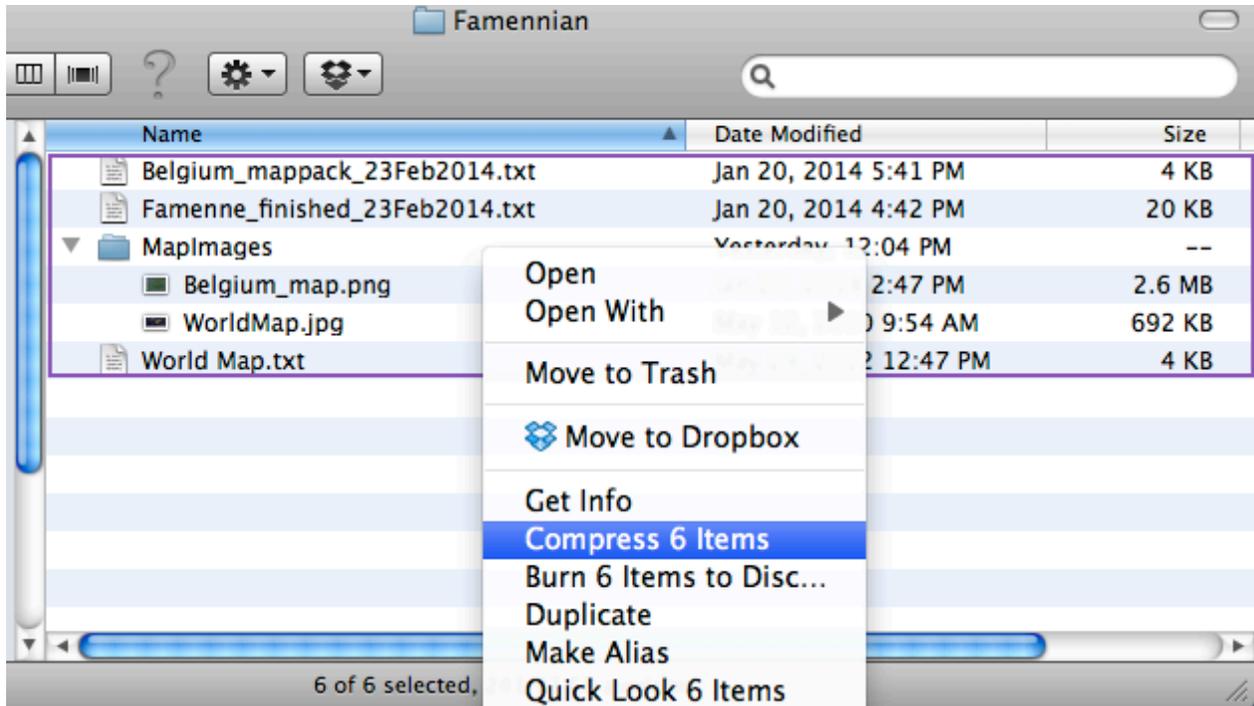
## Creating the .map File in Mac OS X

MapPack files are created as .zip files and then properly renamed to .map files. Once the Map Pack data files and images are correctly created, zip the files by performing the following:

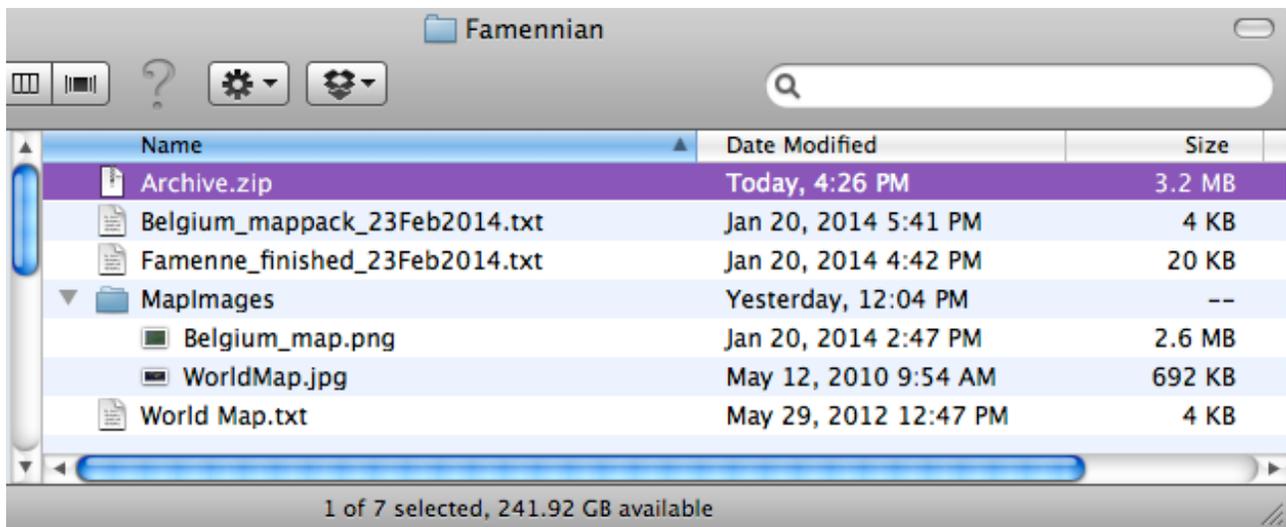
1. Select the necessary files and datapacks if available (see previous section MapPacks and Datapacks)



2. Right click and select “**Compress Items**”

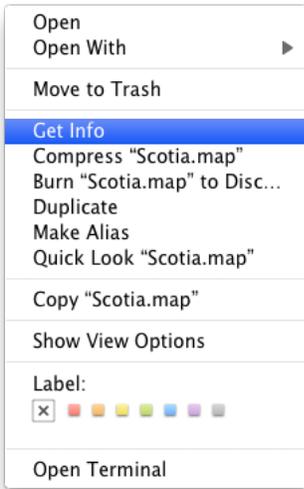


3. A new “**Archive.zip**” file should have been created

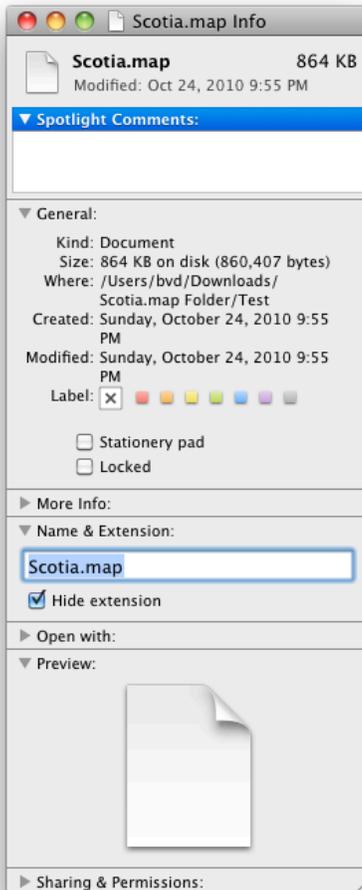
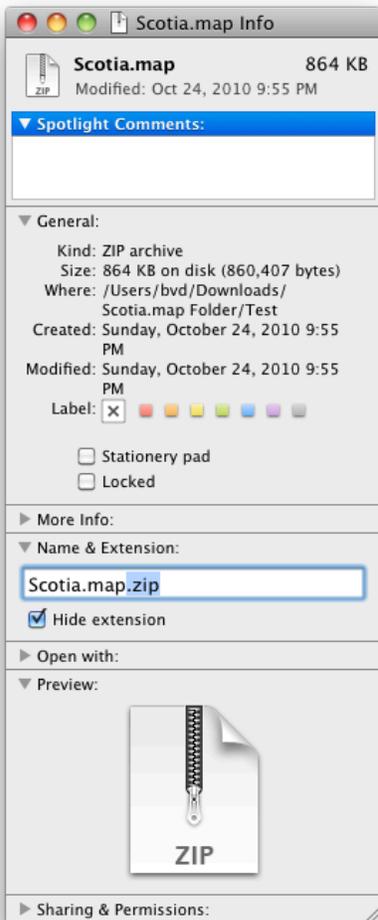


4. Rename the Archive.zip to **.map**. Select the file and rename the extension. Make sure that

the file has really been renamed. (sometimes files just look renamed, but also keep the .zip extension). Right click the file and go to “Get Info”.



This will open the properties window, remove the ending “.zip” in the “Name & Extensions” section. Ensure that the file name now ends in “.map”.

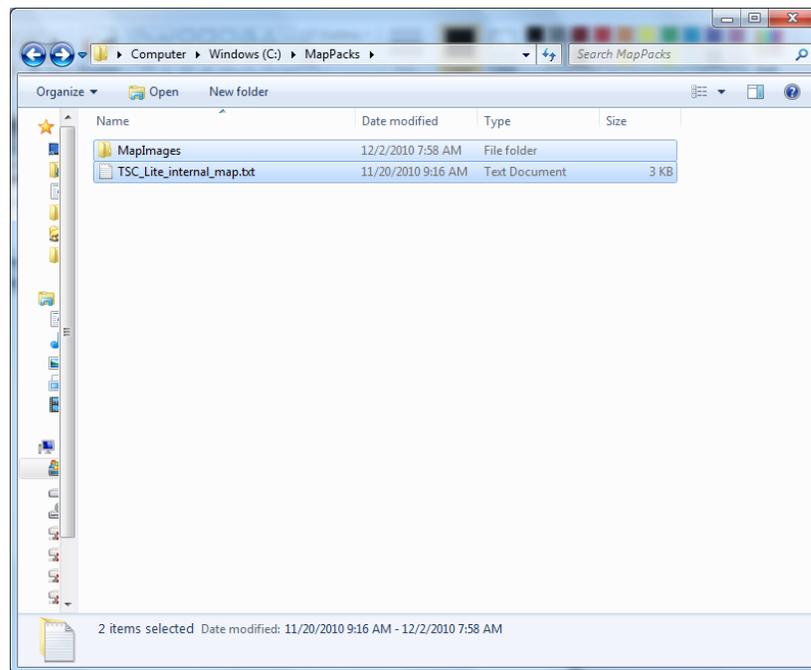


The MapPack looks the same as it did in the beginning, but following these steps ensures it is in the correct format.

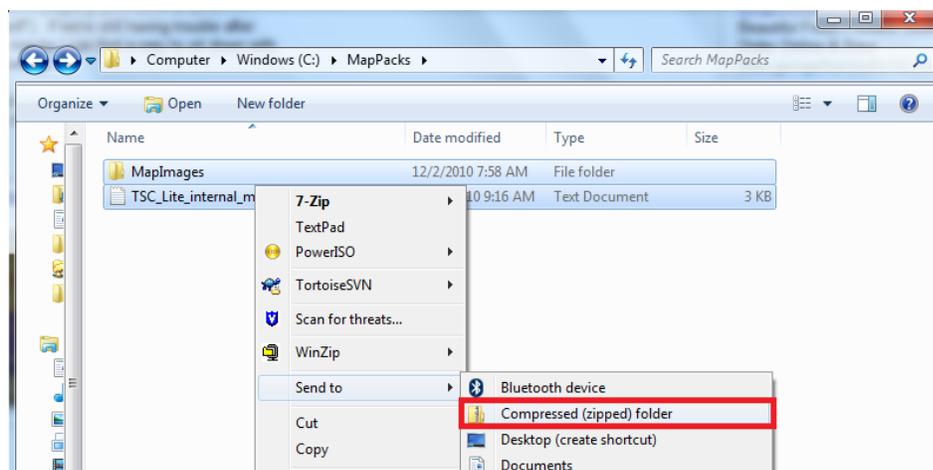
## Creating the .map File *in Windows*

MapPack files are created as .zip files and then properly renamed to .map files. Once the Map Pack data files and images are correctly created, zip the files by performing the following:

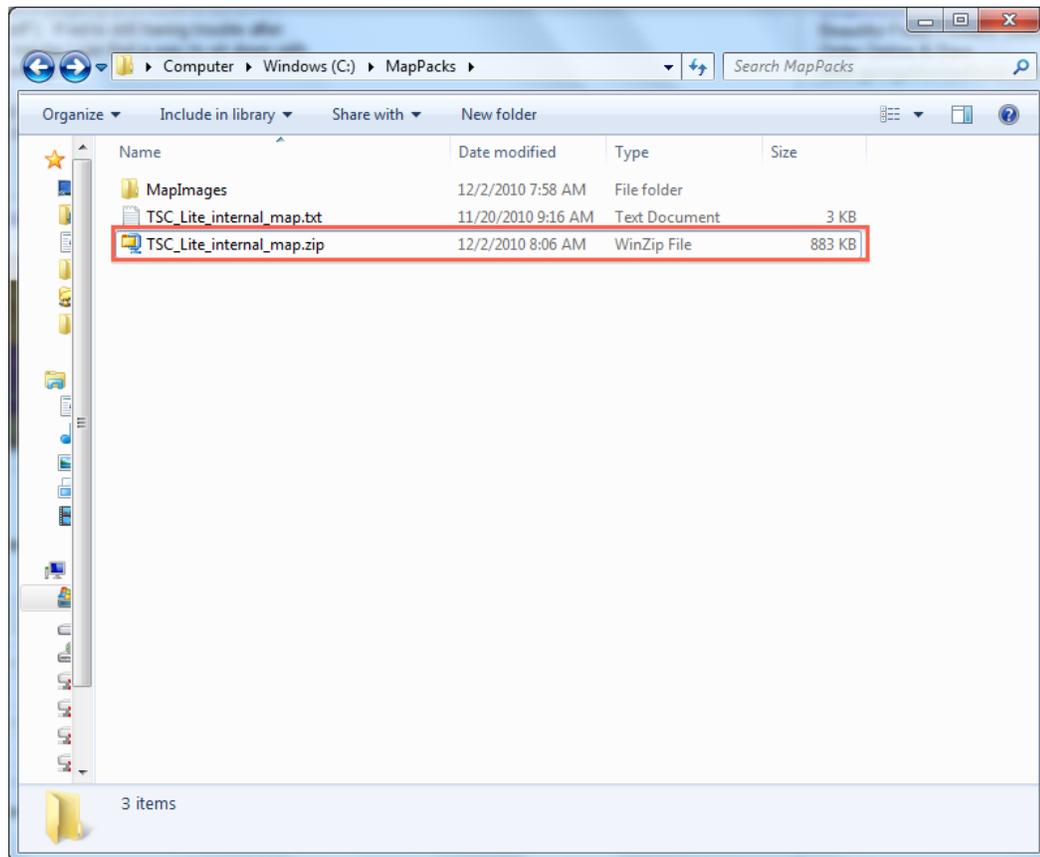
1. Select all of the necessary files



2. Right click and select "Send to" -> "Compressed (zipped) folder".



4. You should now have a zipped folder with the contents of the files



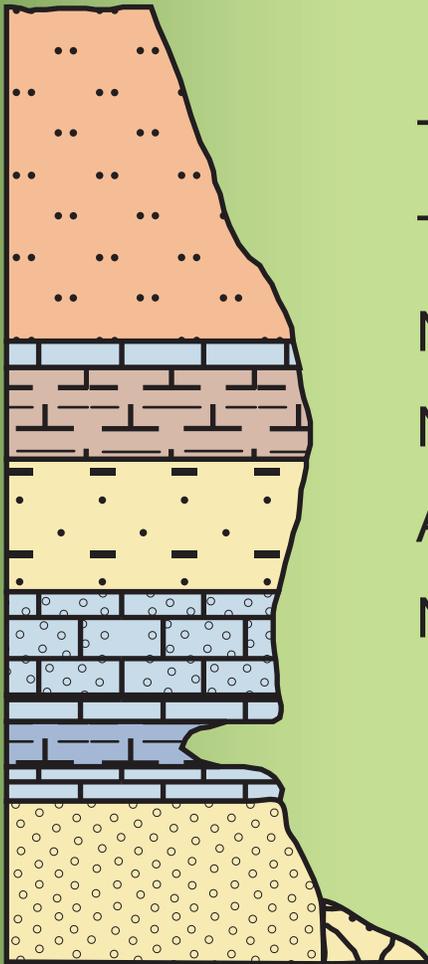
Rename the MapPack to **.map**

1. Right click and select “Rename”

Remove the .zip ending and add **.map** to the end of the file name.

Your file can now be loaded into the TSCreator program.

# Available Pattern Fills for TimeScale Creator Graphics



TSC Color Patterns

TSC Lithostratigraphic Patterns

Norwegian Lithostratigraphic Patterns

Neftex Lithostratigraphic Patterns

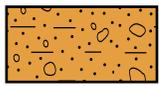
Australian Lithostratigraphic Patterns

New Zealand Patterns

# TSC Color Patterns

	CS_light_yellow		CS_dark_blue		CS_medium_magenta
	CS_medium_yellow		CS_light_navy		CS_dark_magenta
	CS_dark_yellow		CS_medium_navy		CS_light_pink
	CS_light_beige		CS_dark_navy		CS_medium_pink
	CS_medium_beige		CS_light_purple		CS_dark_pink
	CS_dark_beige		CS_medium_purple		CS_light_gray
	CS_light_green		CS_dark_purple		CS_medium_gray
	CS_medium_green		CS_light_brown		CS_dark_gray
	CS_dark_green		CS_medium_brown		two_tone_beige
	CS_light_olive_green		CS_dark_brown		two_tone_olive_green
	CS_medium_olive_green		CS_light_red		two_tone_blue
	CS_dark_olive_green		CS_medium_red		two_tone_red
	CS_light_seagreen		CS_dark_red		two_tone_gray
	CS_medium_seagreen		CS_light_orange		two_tone_red_green
	CS_dark_seagreen		CS_medium_orange		
	CS_light_blue		CS_dark_orange		
	CS_medium_blue		CS_light_magenta		

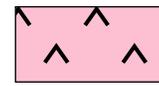
# TS-Creator Lithostratigraphic Patterns



Glacial till



Pelagic marl



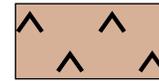
Evaporite



Conglomerate



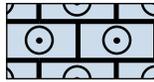
Limestone



Gypsiferous claystone



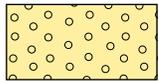
Coarse clastics



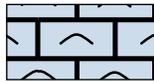
Oolitic limestone



Lacustrine



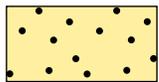
Coarse-grained sandstone



Reef limestone



Brackish



Sandstone



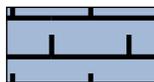
Siliceous limestone



Saline



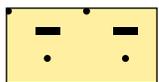
Fine-grained sandstone



Chalk



Basement



Clayey sandstone



Siliceous chalk



Granitic



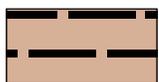
Siltstone



Chert



Gneiss



Claystone



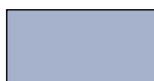
Shallow-marine carbonate



Metavolcanics



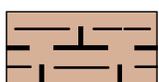
Sandy\_claystone



Pelagic biogenic



Volcanics



Continental marl



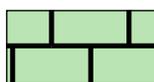
Dolomite



Volcanic\_ash



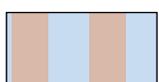
Continental to marine fine-grained clastics



Dolomitic limestone



Lava



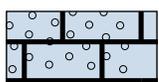
Mixed marine



Soil



Banded Iron



Sandy limestone



Coal



No Data



Clayey limestone



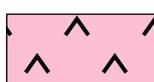
Halite



Unknown



Shallow-marine marl



Gypsum-Anhydrite

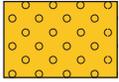


Gap

# Norwegian Lithostratigraphic Patterns

## 5.1 Rock Types

### 5.1.1 Clastic rocks



NOR Conglomerate



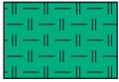
NOR Sedimentary breccia



NOR Sandstone



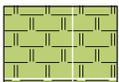
NOR Siltstone



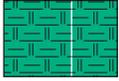
NOR Mudstone



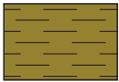
NOR Claystone



NOR Fissile siltstone

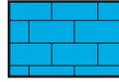


NOR Fissile mudstone

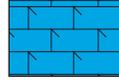


NOR Shale

### 5.1.2 Carbonate rocks



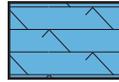
NOR Limestone



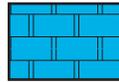
NOR Dolomitic limestone



NOR Dolostone



NOR Calcareous dolostone

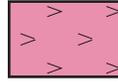


NOR Chalk



NOR Marl

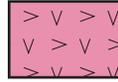
### 5.1.3 Evaporites



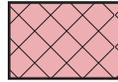
NOR Gypsum



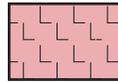
NOR Anhydrite



NOR Gypsum/Anhydrite



NOR Halite



NOR Salt in general

### 5.1.4 Coal

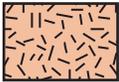


NW Coal



NW Brown coal

### 5.1.5 Magmatic rocks



NOR Intrusive rock in general



NOR Silicic plutonic rocks

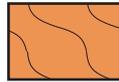


NOR Mafic plutonic rocks



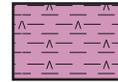
NOR Dykes and sills

### 5.1.6 Metamorphic rocks



NOR Metamorphic rocks

### 5.1.7 Combined symbols



NOR Tuffaceous



NOR Bituminous



NOR Skraraster

# Neftex lithostratigraphic patterns



NF\_Lacustrine shale



NF\_Clastic source rock



NF\_Continental sandstone



NF\_Shallow carbonate



NF\_Shallow sandstone



NF\_Deep carbonate



NF\_Deep-water sandstone



NF\_Carbonate source rock



NF\_Shallow-marine shale



NF\_Anhydrite



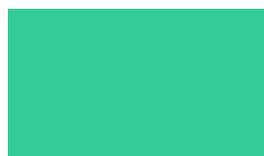
NF\_Deep-marine shale



NF\_Salt

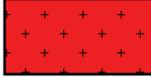
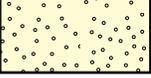
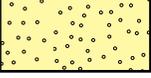
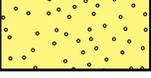
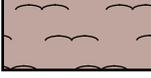
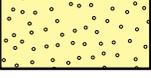
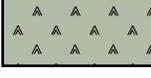
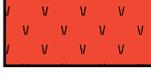
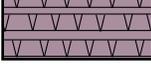
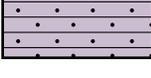
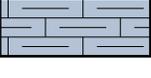


NF\_Basement and volcanics

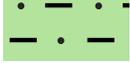
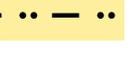
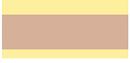
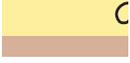
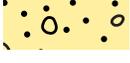


NF\_Oceanic crust

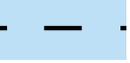
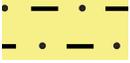
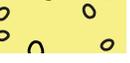
# Australian Lithostratigraphic Patterns

	Aus Conglomerate		Aus Limestone with chert		Aus Granite
	Aus Breccia		Aus Calc-silicate rock		Aus Syenite
	Aus Sandstone very fine		Aus Chert		Aus Dolerite
	Aus Sandstone fine-grained		Aus Glacial till		Aus Intrusive
	Aus Sandstone medium-grained		Aus Alluvium		Aus Peridotite
	Aus Sandstone coarse-grained		Aus Coal		Aus Pegmatite
	Aus Silty mudstone		Aus Halite		Aus Rhyolite
	Aus Muddy siltstone		Aus Anhydrite		Aus Dacite
	Aus Siltstone		Aus Gypsum		Aus Basalt
	Aus Mudstone		Aus Evaporites		Aus Volcanics
	Aus Sandy siltstone		Aus Slate		Aus Andesite
	Aus Limestone		Aus Phyllite		Aus Volcanic breccia
	Aus Massive limestone		Aus Schist		Aus Tuff
	Aus Chalk		Aus Gneiss		Aus Ignimbrite
	Aus Dolomite		Aus Amphibolite		
	Aus Massive dolomite		Aus Quartzite		
	Aus Silty dolomite		Aus Marble		
	Aus Silty limestone		Aus Hornfels		
	Aus Calcareous siltstone		Aus Granulite		

## New Zealand Pattern fills - Folio 1

	NZ_Coal_claystone		NZ_Sandy_siltstone		NZ_Silty_marl
	NZ_Coal_silty_claystone		NZ_Sandy_mudstone		NZ_Clayey_marl
	NZ_Coal_clayey_sandstone		NZ_Silty_claystone		NZ_Marl_limestone
	NZ_Coal_conglomerate		NZ_Muddy_sandstone		NZ_Chert_nodule_limestone
	NZ_Coal_sandstone		NZ_Tuff		NZ_Marl
	NZ_Coal_siltstone		NZ_Tuffaceous_claystone		NZ_Flysch
	NZ_Coal_pebbly_sandstone		NZ_Tuffaceous_conglomerate		NZ_Conglomerate_flysch
	NZ_Pebbly_sandstone		NZ_Tuffaceous_siltstone		Red
	NZ_Conglomerate		NZ_Tuffaceous_sandstone		

## NZ Pattern fills -Taranaki Chronostrat

	NZ_Fan_sands		NZ_Shelf_mud		NZ_Shoreface_sand_mud
	NZ_Mid_bathyal_carbonate		NZ_Shelf_sand_mud		NZ_Terrestrial_coal
	NZ_Mid_bathyal_clastic_marl		NZ_Shelf_silt		NZ_Upper_bathyal_clastic_marl
	NZ_Mid_bathyal_marl		NZ_Shoreface_gravel		NZ_Upper_bathyal_marl
	NZ_Mid_bathyal_mud		NZ_Shoreface_sand		NZ_Upper_bathyal_mud

## TSC default pattern overwrites

	NZ_Clayey_sandstone		NZ_Limestone		NZ_Sandy_limestone
	NZ_Sandy_claystone		NZ_Clayey_limestone		NZ_Chert
	NZ_Claystone		NZ_Volcanics		NZ_Siliceous_chalk
	NZ_Fine-grained_sandstone		NZ_Siltstone		NZ_Siliceous_limestone
	NZ_Sandstone		NZ_Chalk		