Date Control

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Introduction

The **DateControl** plugin is intended to provide a way of displaying vector layers (and tables) filtered by a date range and to move that range forwards or backwards so that a time lapse animation can be produced. It is particularly suitable for historical reconstructions and BCE dates may be specified (see Date formats).

It is comprised of three modules: **Date control**, **Settings**, and **Convert dates**.

The vector layers to be filtered need start and end dates (or a single date) which may be in a variety of formats: date, integer, decimal, text (string). The use of negative integer or decimal numbers for dates allows BCE dates to be specified. Null dates are allowed. (The **Convert dates** module converts text dates, including BCE dates, to decimal years and *vice versa*.)

A date range to use as the overall time span and a list of events (dates) is obtained from one of the layers when Date control is opened (see Initialising for details).

The date range and list of events (dates) may also be obtained from any combination of the dated layers and tables. The list used to jump forwards or backwards to the date of the next event. See Using events. The total number of events is shown and the number of the previous or current event, e.g. "61 of 134". The date range may be specified manually. See Initialising

Within the date range, the date may be:

    automatically changed by the specified amount, either backwards or forwards, at regular intervals;

    changed in several ways by using the **Date slider** in combination with the keyboard or mouse;

    changed by moving to the next or previous event;

    set manually by clicking the **Current date button**.

See Using the animation

It is possible to provide a table of comments, each with a date range, which will be displayed in a dockable window to provide a guide to what is happening. If an historical project is being put together for the plugin, then starting with the table of comments provides a good "to do list" and a record of the main dates to be used.

If required, the settings for a particular project, i.e. the date fields for each layer, the date format, and the name of the comments table, may be saved in a text file in the project directory using the **Settings** module.

The image above shows the controls for the **Date control** module with a key to the help topics describing their use.

The image below shows Date control in use with a docked comments window.
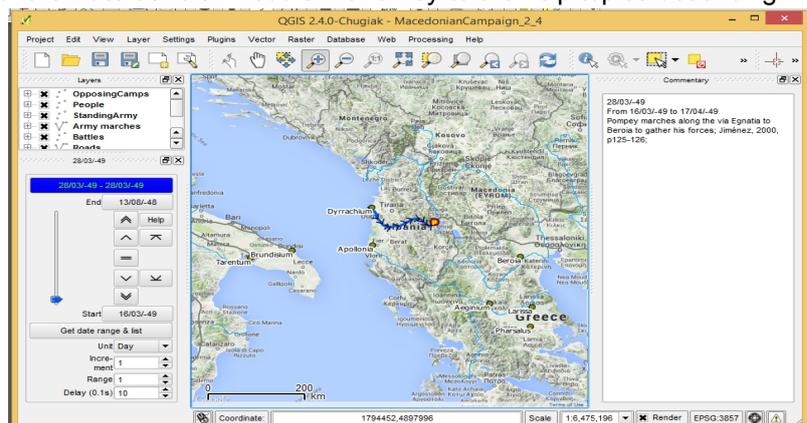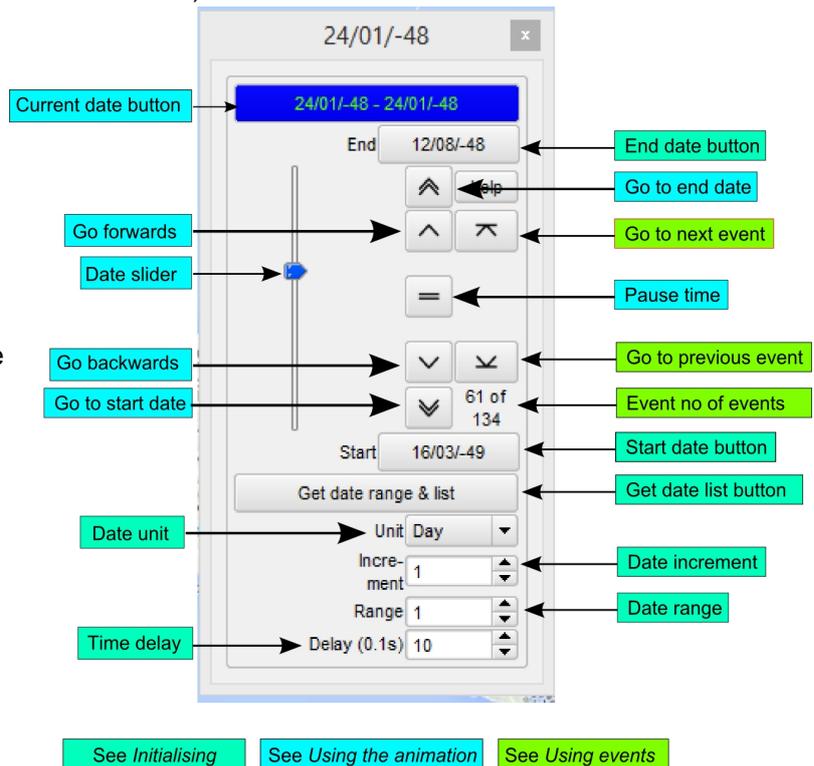
Date formats

One or two dates may be specified for each layer or table to be filtered.

For shape files and *PostGis* files a date format field may be used for the dates.

String fields with format YYYYMMDD or YYYY/MM/DD may be used (in fact, any separator may be used but it must be used consistently for both date fields!)

An integer field may be used if only the year is required.

A decimal field may be used to give the decimal year which will be interpreted as a date giving day, month, and year.

If BCE dates are required then integer or decimal fields must be used.

While each file may use only one format for both start and end dates (if two dates are specified), the fields used in the different layers or tables within a project may have different formats.

Dates may be displayed as *Day/Month/Year*, *Month/Day/Year*, *Year/Month/Day,* or *Year* as specified in the **Settings** option. *Day/Month/Year* is the default unless only integer date fields are found, in which case only years are displayed.

As an aid to generating the decimal year dates, a text date with the format YYYY/MM/DD or -YYYY/MM/DD may be used to store the date in a recognisable format which can then be converted to a decimal year by the **Convert dates** module. (A date in the format -YYYY/MM/DD **cannot** be used as a date field for filtering the layer or table.)

Plugin modules

This plugin has 3 options:

> ***Date control***
>
> ***Settings***
>
> ***Convert dates***

The **Date control** option controls the display of the data allowing you to control the date and date range to be applied.

The **Settings** options allows you to set the date fields for the required layers, to specify how the date is displayed, to specify the table to be used as a commentary (if required), and to save the settings.

The **Convert dates** option allows you to convert dates in a string date field into decimal years (e.g "0001/01/01" to 0, "-0001/6/11" to -0.558904109) and *vice versa*. It may also be used to increment dates by a specified number of days and to interactively convert dates to decimal years, day numbers, etc.

Setting the dates to use

There is no need to use the **Settings** module. If you do not, then the following is assumed:

> if a layer has fields named ***StartDT*** & ***EndDt*** or ***StartDate*** & ***EndDate*** (case independent) in an appropriate format, then these will be used as the start and end dates to filter that layer;
>
> if a layer has a field named ***Date*** (case independent) in an appropriate format, then this will be used as the both start and end dates to filter that layer;
>
> the date format used for display will be Day/Month/Year unless only integer date fields are found, in which case only years are displayed;
>
> if a table named Commentary is found with a text field Commentary, then this will be used as the commentary table & field provided the table also has valid date fields.

If you wish to use field names other than the defaults above or change the the default date type or date

display format, then you need to use the **[Settings](#)** module.

Initialising

The controls at the bottom of the plugin allow the initial environment to be set.

When the window is opened, it will try to set the date range and find a list of dates from one of the layers as follows:

> if a layer with dates is selected, that layer will be used;

> if a commentary table is found, that will be used;

> otherwise one of the layers will be used.

The **Get date range & list** button will open a dialogue showing the dated layers and tables. From the layers & tables selected, a list of the unique dates is obtained. This list may then be used to increment the date for the filter (see also Using events). The earliest & latest dates found will be used to set the date range.

The start and end dates may be set manually using the buttons showing those dates (the **Start date button** and the **End date button**).
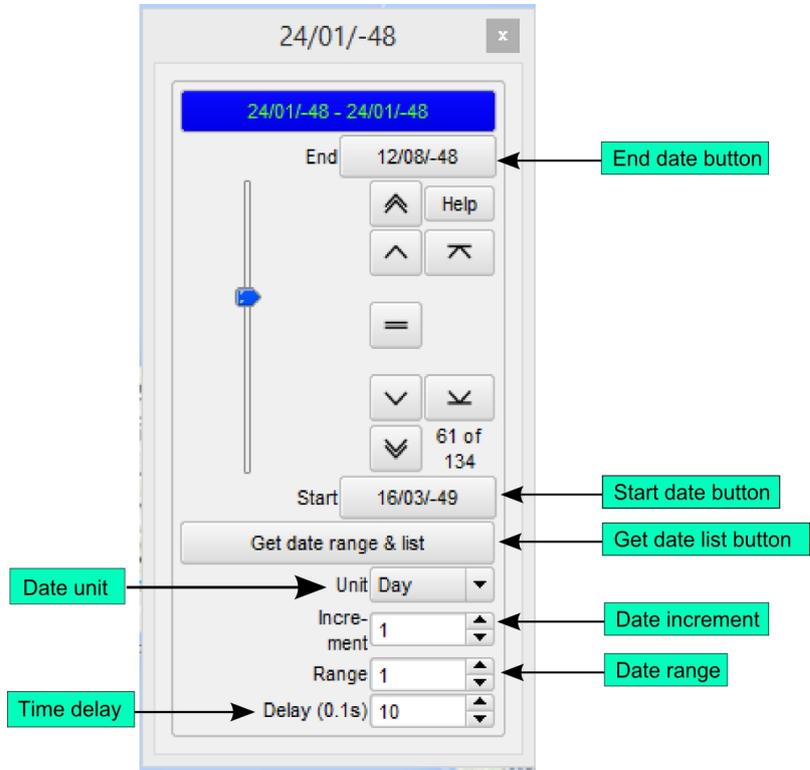
Unit shows the unit of time currently in use.

Increment shows the number of time units that will be used by the animation.

Range shows the size of the date range which will be used to filter the layers (in terms of the selected unit). The current date is used as the start of the range.

Increasing the increment will automatically increase the range so that no dates are excluded.

Delay shows the delay (in 0.1s) between time increments which will be used by the animation.
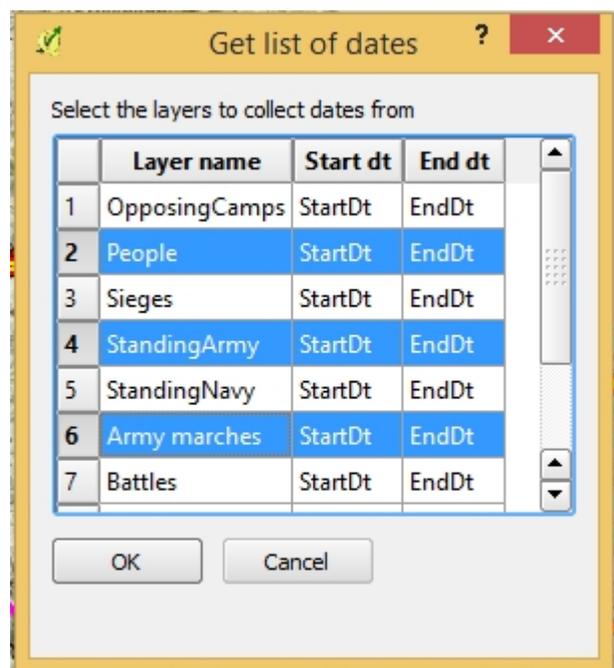
Using the animation

Once the module has been initialised, the animation may be started. The image to the right shows the available controls.

Clicking the **Go forwards** button will move the time forward by the increment specified after the delay specified.

Clicking the **Go backwards** button will move the time backward by the increment specified after the delay specified.

The **Pause time** button will pause the animation.

The **Go to start date** or **Go to end date** buttons will change the date to the appropriate end of the range.

The animation will automatically stop on reaching the start or end dates.

The **Current date** button may be used to manually enter the current date.

The **Date slider** may be used to quickly change the date by sliding it with the mouse, however, a much more controlled use is to select the **Date slider** and to press the **Up** or **Down** keys on your keyboard changing the date by the specified amount. Using the slider in combination with the mouse scroll button or the **Page Up** and **Page Down** keys will change the date by a greater amount.
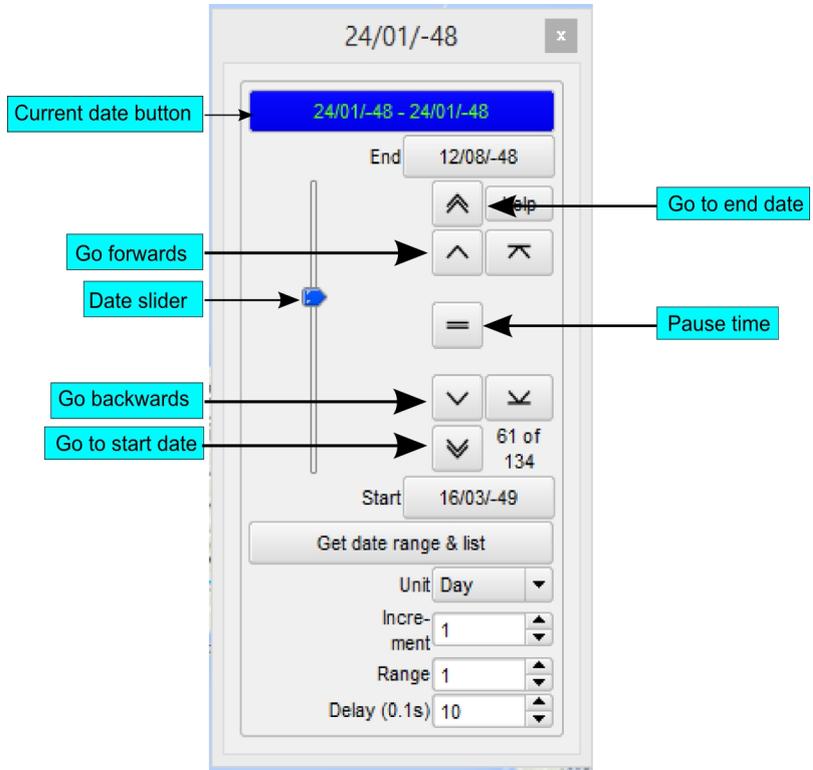
Using events

When the window is opened, it will try to set the date range and find a list of dates from one of the layers as follows:

  if a layer with dates is selected, that layer will be used;

  if a commentary table is found, that will be used;

  otherwise one of the layers will be used.

A more comprehensive list of dates may be obtained by clicking the **Get date range & list** button which will open the window shown. Select the layers from which to obtain the dates and click the **OK** button.

The start and end dates from the selected layers/tables will be collected, sorted and a list of unique dates obtained.
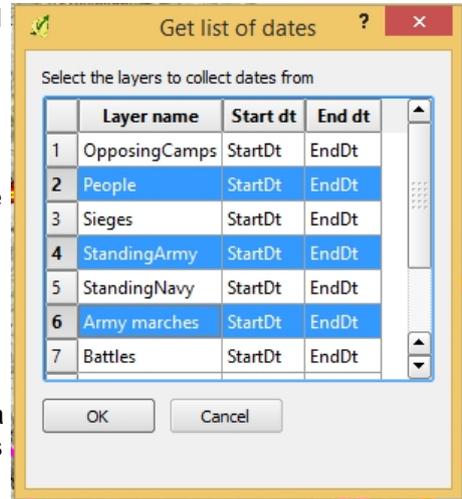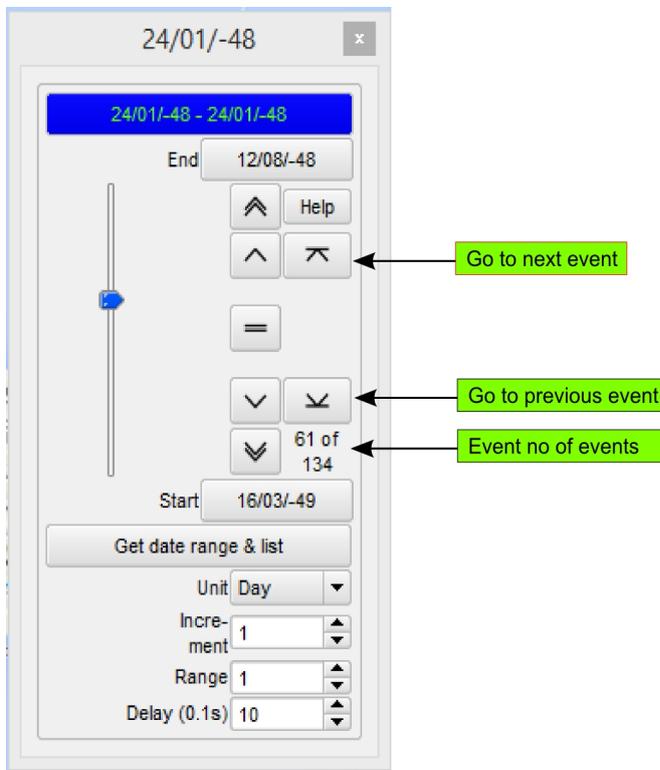
Once a list has been obtaine d, the buttons to use the events will be enabled.

The **Go to next event** button will increment the date to the next event after the current date.

The **Go to previous event** button will increment the date to the previous event before the current date.

Note that the event is found by working from the current date not from the previous event date used. Thus, the date may be changed using, say, the slider, and the next or previous events will be taken from that date. As the date changes the label shows the number of the event which is on or before the current date and the total number of events.

The date range will be set from the earliest and latest dates found.

Settings

There is no need to use the **Settings** module. If you do not, then the following is assumed:

> if a layer has fields named ***StartDT*** & ***EndDt*** or ***StartDate*** & ***EndDate*** (case independent) in an appropriate format, then these will be used as the start and end dates to filter that layer;

> if a layer has a field named ***Date*** (case independent) in an appropriate format, then this will be used as the both start and end dates to filter that layer;

> the date format used for display will be **Day/Month/Year** unless only integer date fields are found, in which case only years are displayed;

> if a table named "Commentary" is found with a text field "Commentary", then this will be used as the commentary table & field provided that the table has valid date fields.

The ***Date control*** module will check each visible vector layer and each table. If field settings for the layer or table have been saved, using the ***Settings*** module, it will use those, otherwise it will look for the default fields.

The ***Settings*** module shows a table with the layers & tables.

By clicking on the row, the fields for that layer/table are made available in the start and end date field combo-boxes on the right. By selecting the appropriate field and clicking the **Set** button, the fields for the layer/table are specified.

If string dates are selected, then the values of the fields selected will be checked. The start and end dates must have the same format ("YYYYMMDD" or "YYYY/MM/DD").

The date display format is the format that will be used by the ***Date control*** module to label the buttons *etc.*.

In the image shown, the table "Guide" has been selected as the commentary table & the fields to be used are shown.

If the **Reset** button is clicked, then these entries will be cleared and the label of the button will be changed to **Set** to show that there is no currently select commentary table.

In this condition (the label showing **Set**) clicking on a table entry in the table of layers & tables will put the table name into the text box & add the field names to the list below. If you wish to use this as the commentary table, then select the field names to use & click the **Set** button.
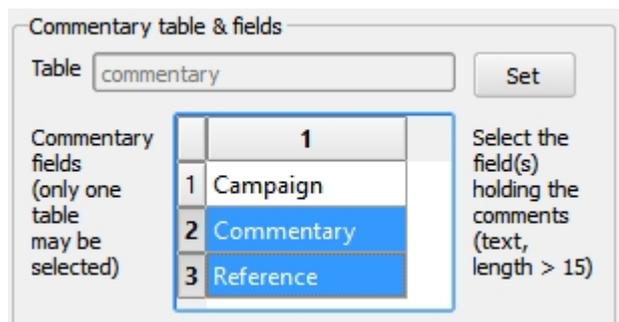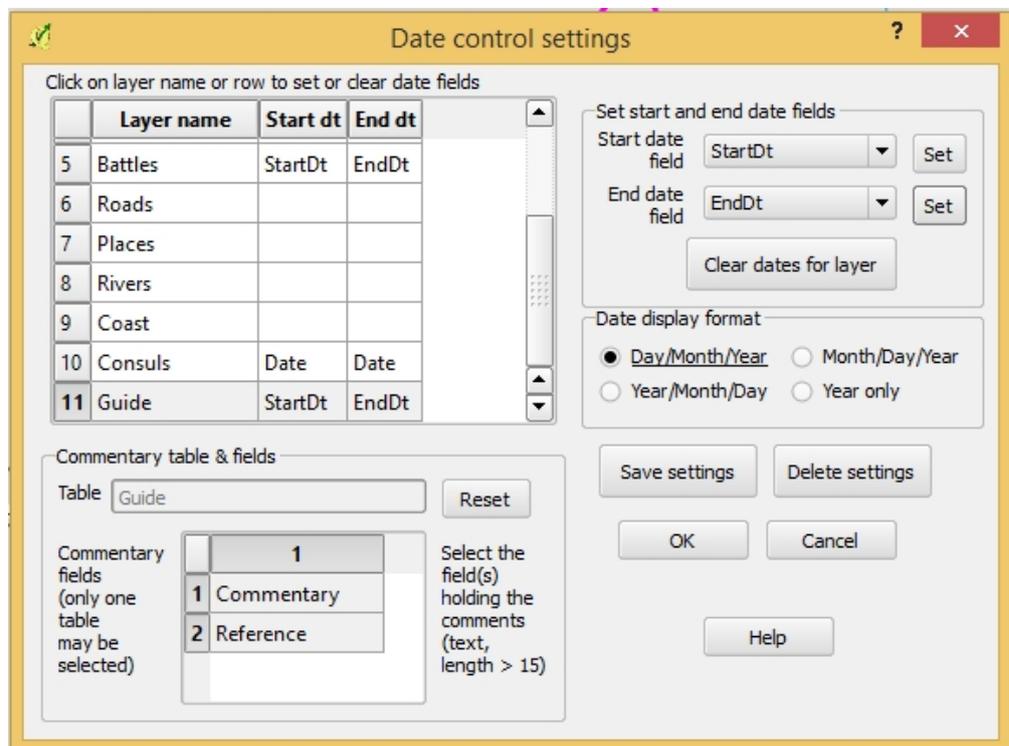
The effect of clicking in the **Set** button is shown in the lower of the two images: the button label changes to **Reset**; only the selected fields are shown in the table.

Clicking the **Save settings** button saves the settings to a text file in the same directory as the project and the name is created by appending ".settings" to the project name.

Convert dates

The *Convert dates* module allows you to convert dates to a decimal year so that BC dates may be set with more precision than just the year. (E.G. you might be interested in modelling the Roman v Carthage campaigns).

The module uses a Gregorian calendar to provide a continuous range. (This is clearly anomalous for early dates but it is a way of easily specifying dates where the exact date may not be known but the interval between dates is known.)

If you have a layer with a string field containing dates in one of the formats shown, e.g. "-0300/08/01", and also have a suitable decimal field, then you can convert the string dates to decimal dates which can then be used by the *Date control* module.

The currently selected layer is entered into the **Layer** combo-box and its fields are loaded into the **Text date field** and the **Decimal date field** combo-boxes as appropriate.

If any records are selected then by default only these will be updated, though you may uncheck the **Update only selected rows** check box if you want to update all records.

Click the **Update decimal dates** button to do the update. You will get a message saying how many dates were updated and how many errors were found.

If you want to increment dates by a specified number of days, then set the number of days in the **Days increment** spin box and click the **Increment dates** button. The dates are incremented based on the value of the text date field but both the text dates and the decimal dates are updated.

The group box **Date calculator and checker** contains controls enabling you to check how the conversion works as well as providing a way of finding the decimal year equivalent for a given date and *vice versa*. The date may be entered by using the spinners at the top (or just typed in). This will produce a day number and decimal year. The calculated results are there so that the consistency of the dates produced can be checked.