

Traceability Tool User Guide v2 (Oct 2016)

Introduction

This note provides a brief explanation of the web-based traceability tool being developed by CGI for QA4ECV. This version incorporates various comments raised at a meeting held on 10th Oct 2016 with NPL.

Several major changes have been incorporated, including a new entry-level screen, and the introduction of a menu-bar at the top of the screen, to reduce the number of separate drop-down lists and buttons, previously present in the display, and to accommodate an additional window to show descriptive text specifically focused on the uncertainty aspects for each processing step.

Using the Traceability Tool

The Traceability Tool can be accessed from the following URL:

<http://ec2-52-39-21-246.us-west-2.compute.amazonaws.com/QA4ECV/TCtool.html>

This is a version of the tool installed on a virtual machine on the Amazon Web Services cloud. On entry to the web page, you should see the following:

The screenshot displays the QA4ECV Traceability Chain Tool interface. At the top, there is a navigation menu with options: File, View, Navigation, Edit, Versions, Information, and About Tool. Below the menu, there are several input fields for configuration: ECV (set to None), User (set to None), Origin (set to Master), Mode (set to Display), Chain (empty), and Step (empty). A 'Process (no info)' button is located next to the Step field. The main content area is divided into two sections. The left section, titled 'Processing Information:', contains a small QA4ECV logo and the text 'Traceability/Uncertainty Propagation Tool'. Below this, it says 'For more information, please visit the [QA4ECV web site](#)'. The right section, titled 'Uncertainty Information:', contains the text: 'This area is intended for a description of the uncertainty processing and propagation associated with each chain, processing step and data item.' The central part of the interface features a large graphic with the QA4ECV logo on the left, the text 'QA4ECV Traceability Chain Tool WELCOME!' in the center, and a flow diagram on the right. The flow diagram shows a sequence of three boxes: 'input data' (a parallelogram), 'processing step' (a rectangle), and 'output data' (a parallelogram), connected by arrows pointing from left to right.

Most operations are determined through the drop-down menus at the top of the screen, and through interactive operations with the main graphical display part of the screen.

The structure of the main menu is as follows:

File

- Select ECV
 - < *Choice of ECV chains* >
- Select Chain
 - < *Choice of chains within current ECV* >
- Save

View

- User
 - < *Choice of users* >
- Origin
 - Master*
 - Personal*
- Edit Mode
 - Display Only*
 - Editable*

Navigation

- Full View
- Up Level

Edit

- New Chain
- Edit Processing Descrip.
- Edit Uncertainty Descrip.
- User Grid []
- Undo
- Redo
- Save

Versions

- ECV Versions
 - < *List of versions for current ECV* >
- Proc Descrip. Versions
 - < *List of versions of processing description for currently selected process/data box* >
- Unc. Descrip. Versions
 - < *List of versions of uncertainty description for currently selected process/data box* >

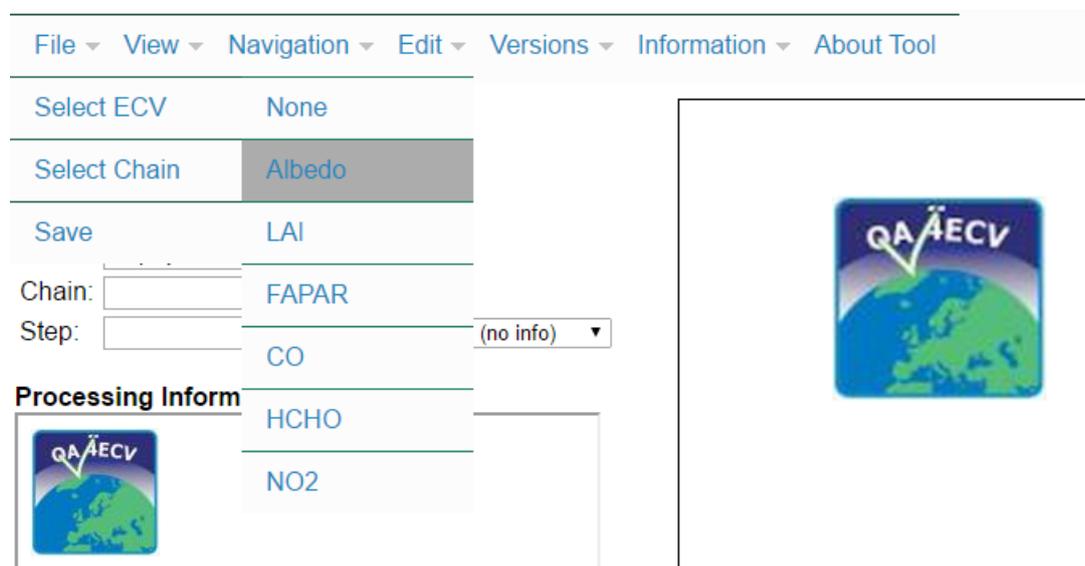
Information

- Show Chain Info
- Show Step Info
- Show ATBD Info for ECV
- Show ATBD Contents

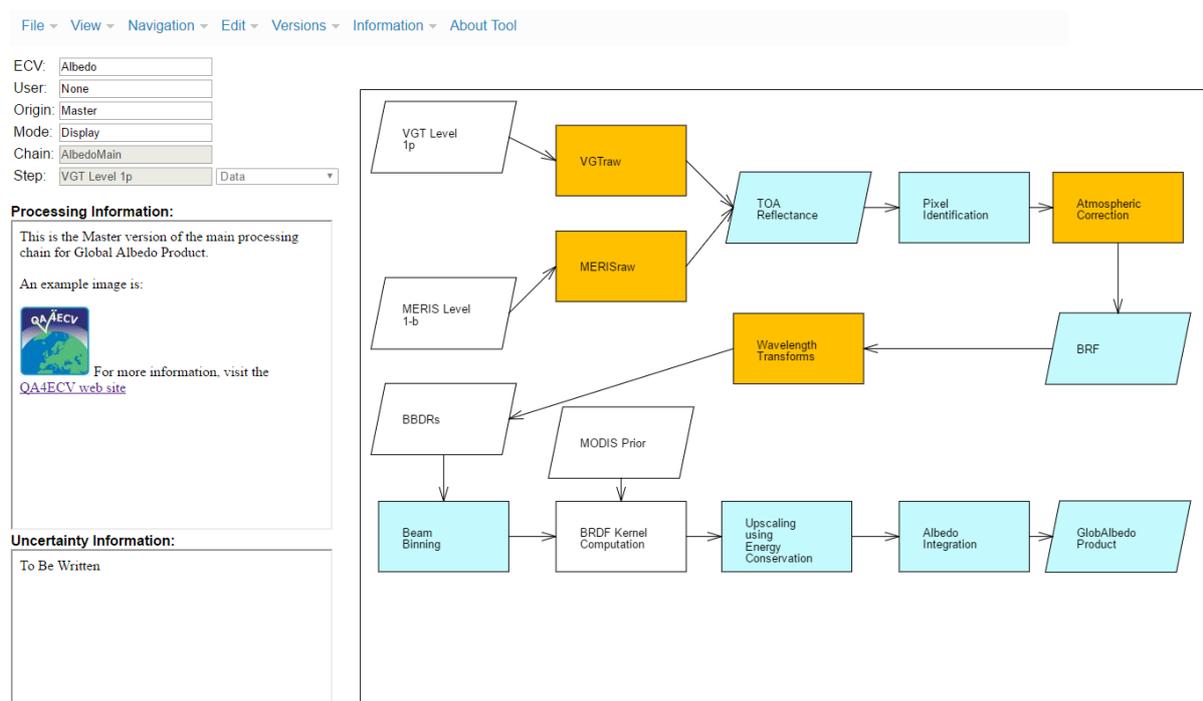
About Tool

The current default starting scenario is to be no user, so only display is possible of the “Master” version of teach ECV chain (ie not editable, and no “personal” versions).

The first step is to choose an ECV, for example (“File/Select ECV”):



This will result in the following display:



Clearly, **an outstanding action will be to replace the user selection mechanism by the co-ordinated QA4ECV login process**, but for the time being the selection of which user to be, allows for individual testing by the different pre-defined users. So the first thing to do is to select yourself as the user – this means that any changes you make will be limited to your own user area, and should not affect the Master version or any other user. Thus, select your name on the user’s drop down menu, eg:

	File	View	Navigation	Edit	Versions
ECV:		User		None	
User:		Origin		Alex	
Origin:					
Mode:		Edit Mode		Clive	
Chain:				Isabelle	
Step:				Joanne	▼
				Martin	
				Maya	
				Nadine	
				Peter	
				Ralf	
				Said	
				Simon	
				Tracy	

Processing Information:



Traceability/Uncertainty Pro

For more information, please visit [QA4ECV web site](#)

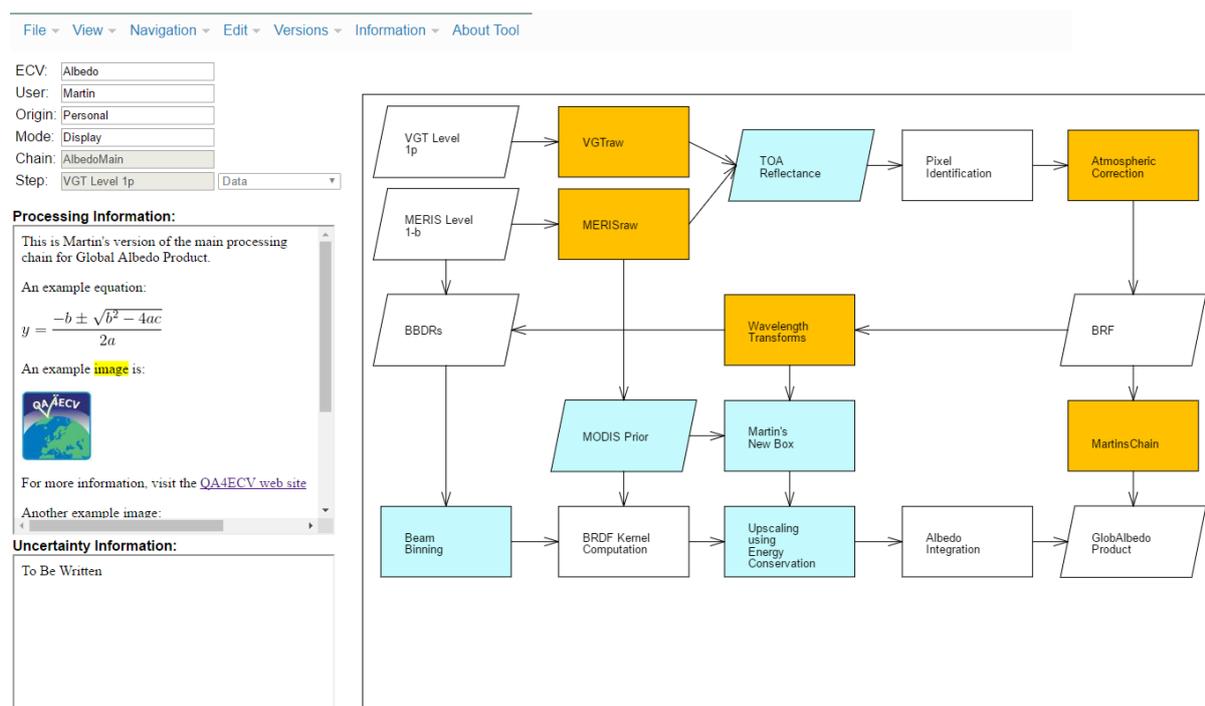
Uncertainty Information:

This area is intended for a description of the uncertainty processing and propagation associated with each chain, processing step and data item.

As any user, whilst accessing the “**Master**” version of an algorithm chain, the system is forced into Display Mode, so all you can do is to view the various components of the chain and associated metadata.

In order to view your own version of the selected chain, you need to switch to “**Personal**” mode (View/Origin/Personal)

You should then see something like the following:



You are still in **Display Mode**, so you can only view the chain – this defaults to the “Master” version wherever the Personal version has no specific changes in relation to the Master.

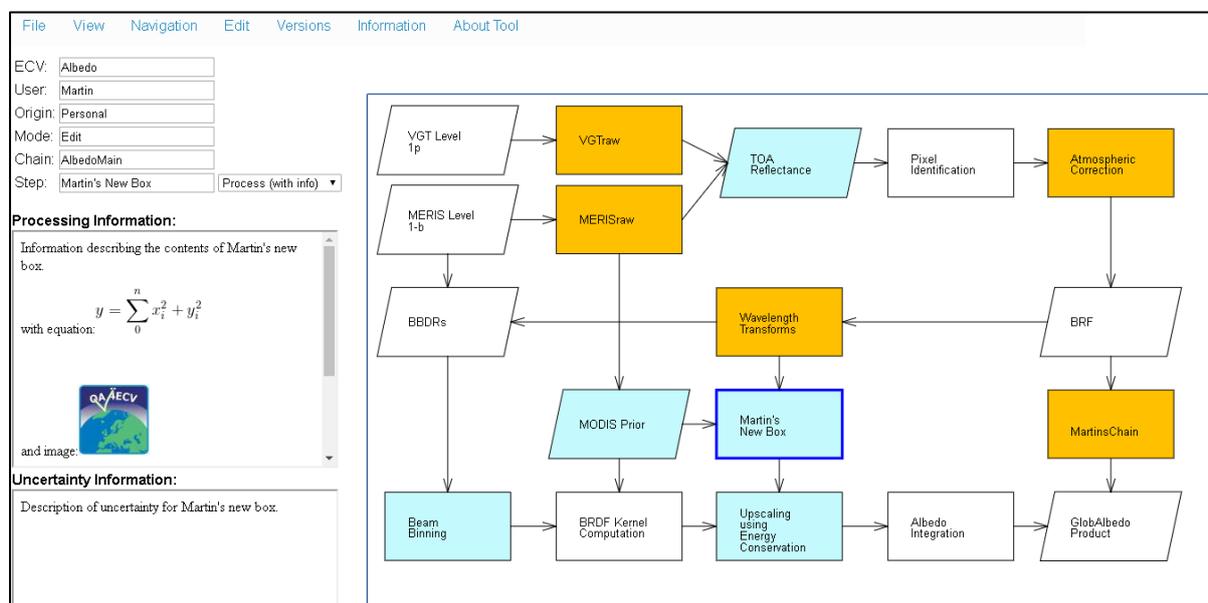
In order to make any changes to your personal copy, you need to change to **Edit Mode**: (View/Edit Mode/Editable).

The above example (as user Martin) shows some of the other features of the tool:

Here, you can see that Martin’s personal version of the chain has a new processing node “Martin’s New Box”. Also note the inclusion of equations in the descriptive HTML.

The general **Display Mode** mouse-operations are as follows:

- Whilst over the processing chain plot, mouse scroll wheel causes zooming in and out, left-button hold down (not over any shape) dragging allows for panning.
- Single click on a box: Selects box (border shown as thick blue line, and related box info displayed in left panel)



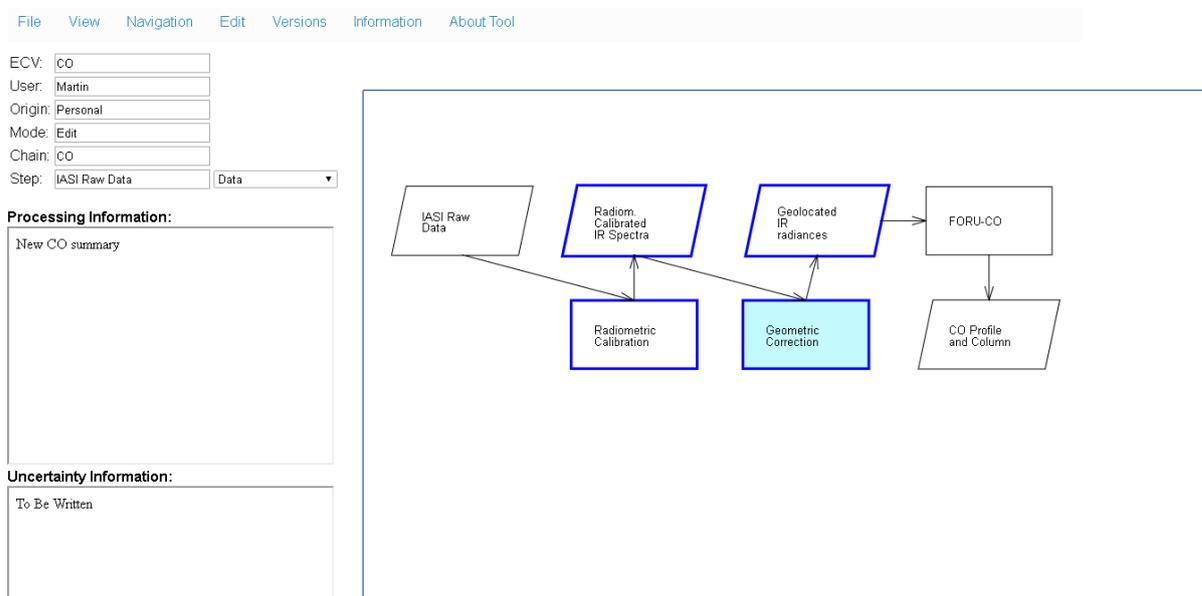
- By holding the mouse down, the selected box can be moved around; if the "**Use Grid**" check-box is set, then the box (and all other boxes) will align to a regular grid, to make it easier to get horizontal and vertical alignment of shapes.

Whilst in either Display or Edit mode, the colours of the processing boxes and data boxes are automatically adjusted to reflect the presence (or not) of any associated descriptive information (as displayed in the "Processing Information" window). If any such information exists, the box is shaded; if no such information is available the box is white (and the Processing Information window says "To Be Written").

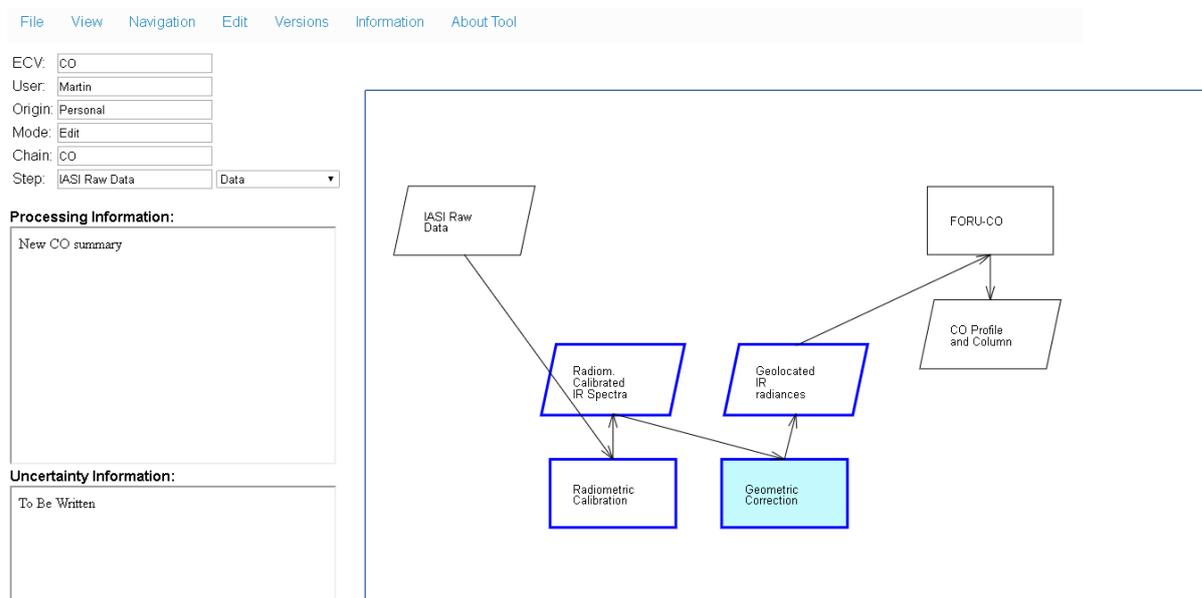
Note that whether a box is shaded or not will vary depending on whether the Origin is "Master" or "Personal"; the shading reflects specifically information at "Master" or "Personal" level respectively. However, if in Personal mode, and information *does* exist for the corresponding box in the equivalent "Master", then that information will be displayed, even though the box will be shown unshaded.

When in **Edit Mode**, additional edit operations are possible, as follows:

- Mouse right-button down **not** over any box, then keeping button down, dragging mouse to cover multiple boxes – all boxes within selected region will be highlighted;



On releasing the right mouse button, all highlighted boxes can be moved together by using left mouse button over any of the selected boxes, and then dragging:



- Multiple box selection can also be used to create a new sub-chain, if the “**Edit/New Chain**” menu option is selected whilst multiple boxes are highlighted. In this case, a new subchain is created corresponding to all the highlighted boxes; these are replaced by a single new “drill-down” box, which then links to the newly created sub-chain. The new chain is next displayed:

File View Navigation Edit Versions Information About Tool

ECV: CO
 User: Martin
 Origin: Personal
 Mode: Edit
 Chain: MyNewChain
 Step: Radiometric Calibration Process (no info)

Processing Information:
 To Be Written

Uncertainty Information:
 To Be Written

```

graph TD
    A[Radiometric Calibration] --> B[Radiometric Calibrated IR Spectra]
    C[Geometric Correction] --> B
    C --> D[Geolocated IR radiances]
  
```

The new higher level can be viewed by re-selecting the original chain from the main menu (File/Select Chain):

File View Navigation Edit Versions Information About Tool

ECV: CO
 User: Martin
 Origin: Personal
 Mode: Edit
 Chain: CO
 Step: IASI Raw Data Data (no info)

Processing Information:
 New CO summary

Uncertainty Information:
 To Be Written

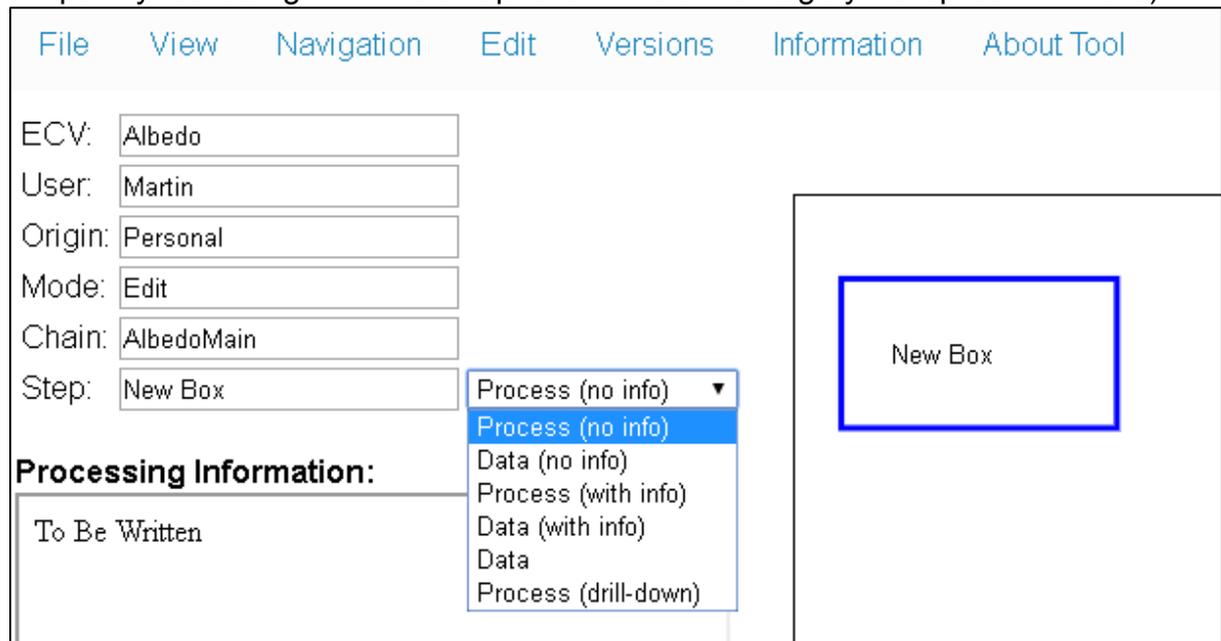
```

graph TD
    A[IASI Raw Data] --> B[FORU-CO]
    B --> C[MyNewChain]
    C --> D[CO Profile and Column]
  
```

The name of the new chain can be changed by editing the “Chain” field at the top left of the screen.

- Pressing the “**Del**” keyboard key will delete the box. However, changes are only saved if you select the File/Save or Edit/Save menu options – they both have the same effect)
- Adding a new connection between boxes involves holding the right-mouse button down over the “from” shape and moving to the “to” shape (keeping the right-mouse button down). Whenever the mouse moves over another shape, the arrow automatically “locks-on” to that shape. Releasing the mouse over another shape creates a new link.

- To *select* a connection arrow, use the left mouse button and click over a position near the centre of the required line – it will then be highlighted with a thick blue line.
- To delete a connection arrow, first select it, then press the “**Del**” keyboard key.
- To delete a box, first select it, then press the “**Del**” keyboard key.
- To create a new box, simply double-click (left mouse button) in an empty region of the screen. A new box appears (labelled “New Box”). You can change its shape by selecting from the options in the “Category” drop-down menu):



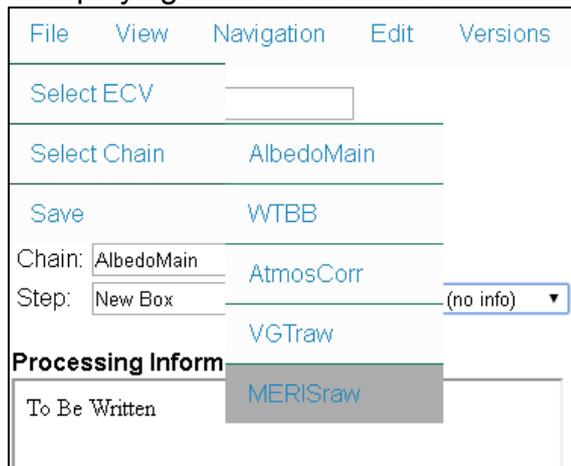
- To change the name, simply edit the “Step:” name at the top left of the screen.
- To add links to the new box, use the mouse right-button, as described above.
- Double-click on a “drill-down” shape navigates to a lower level in the processing hierarchy.

Explanations of Top-Level Menu Options

Further controls available from the top-level menu (not previously described) include the following:

Specific File functions include:

- **“File/SelectChain”** dropdown menu allows selection of a particular chain; note that this list may vary depending on user (eg user “Martin” has two additional chains available), when displaying in “Personal” mode:



Specific Display Navigation functions include:

- **“Navigation/UpLevel”** menu option, allows navigation up a level (if already not at the top level)
- **“Navigation/FullView”** menu option restores view to all shapes at the current level in the processing hierarchy (typically used after having zoomed in/out)

Specific Display Information functions include:

- **“Information/Show Chain Info”** menu option provides an overall description of the currently displayed processing chain. For example:

<p>Processing Information:</p> <p>Top Level LAI description with added info</p>
<p>Uncertainty Information:</p> <p>Uncertainty description at top level for LAI with extra info added</p> <p>and a new extra line and more text with even more with another line</p>

- **“Information/Show Step Info”** menu option provides specific information relating to the currently selected step; this information is presented in a separate pop-up window. If in Edit Mode, then the contents can be modified – these will be saved (as a new version) if the “File/Save” or “Edit/Save” option is selected.

ec2-52-39-21-246.us-west-2.compute.amazonaws.com/QA4ECV/stepinfo.ht...

ec2-52-39-21-246.us-west-2.compute.amazonaws.com/QA4ECV/stepinfo.ht

Processing Step Information

Step : Martin's New Box

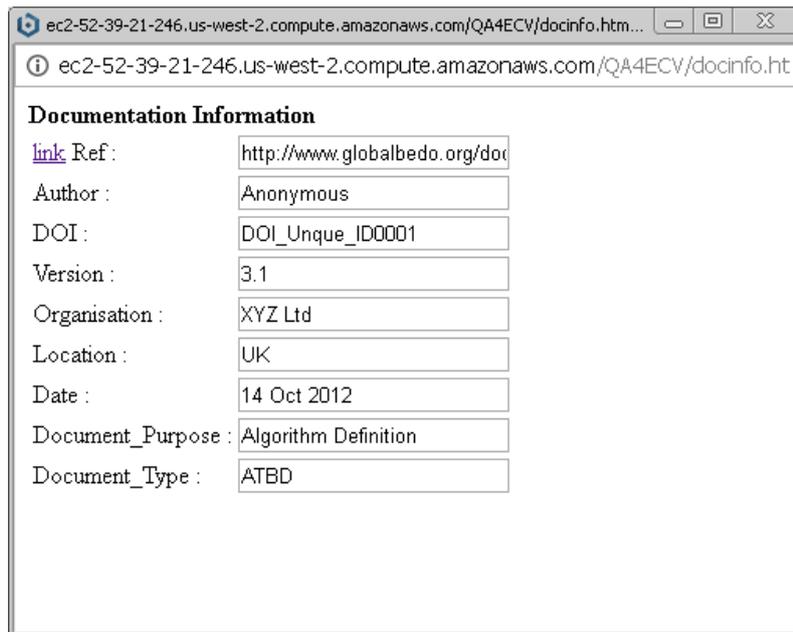
Comments : Still under development

Version : 0.1

Status : Draft

Maturity : Unproven

- **“Information/Show ATBD Info”** menu option provides specific information relating to the ATBD associated with the current processing chain; this information is presented in a separate pop-up window. If in Edit Mode, then the contents can be modified – these will be saved (as a new version) if the “File/Save” or “Edit/Save” option is selected.



ec2-52-39-21-246.us-west-2.compute.amazonaws.com/QA4ECV/docinfo.htm...

ec2-52-39-21-246.us-west-2.compute.amazonaws.com/QA4ECV/docinfo.ht

Documentation Information

link Ref :	<input type="text" value="http://www.globalbedo.org/doc"/>
Author :	<input type="text" value="Anonymous"/>
DOI :	<input type="text" value="DOI_Unque_ID0001"/>
Version :	<input type="text" value="3.1"/>
Organisation :	<input type="text" value="XYZ Ltd"/>
Location :	<input type="text" value="UK"/>
Date :	<input type="text" value="14 Oct 2012"/>
Document_Purpose :	<input type="text" value="Algorithm Definition"/>
Document_Type :	<input type="text" value="ATBD"/>

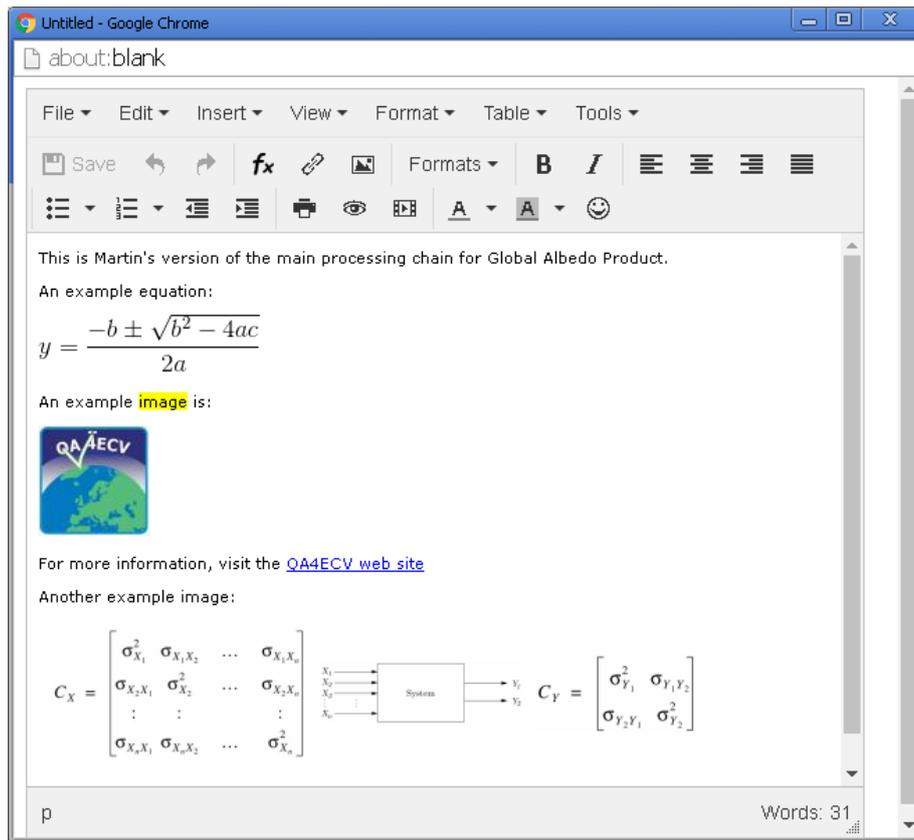
- “**Information/Show ATBD Contents**” menu option will create a new window in the browser and open the web page referenced in the “Ref” field shown in the ATBD Info display.

Specific Edit functions include:

“**Edit/Edit Processing Descrip.**” option, which causes a new window to appear, with a WYSIWYG HTML editor for creating or modifying the description of the processing for the currently selected processing step or data.

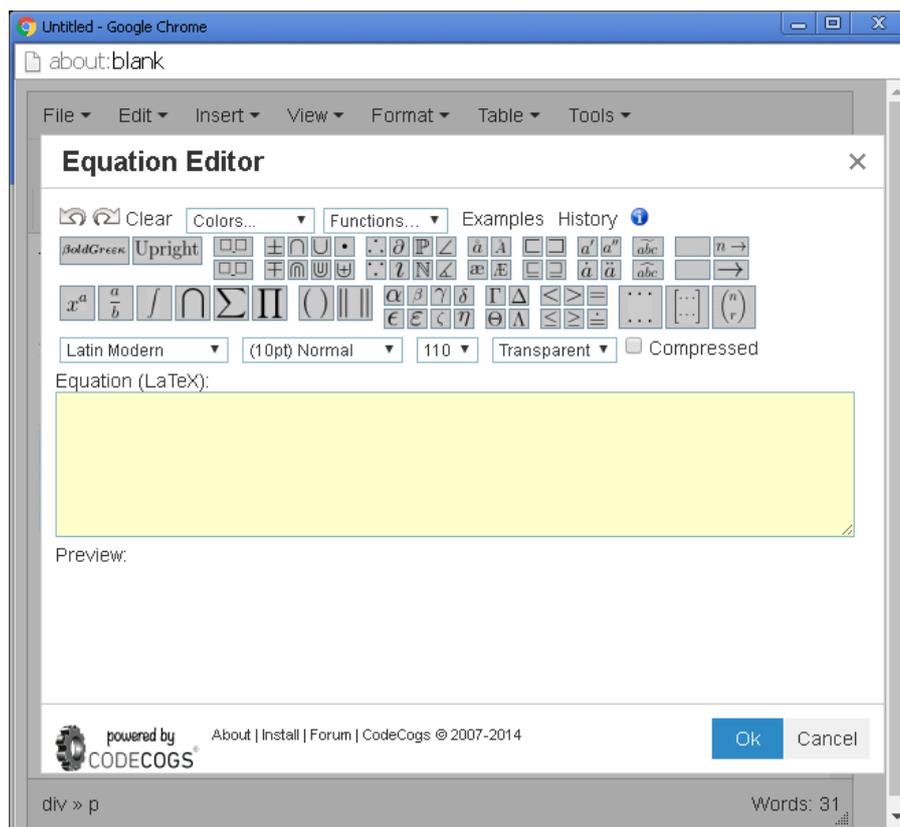
“**Edit/Edit Uncertainty Descrip.**” option, which causes a new window to appear, with a WYSIWYG HTML editor: for creating or modifying the description of the uncertainty aspects for the currently selected processing step or data.

Both options cause the same HTML editor to open (containing the selected contents for editing).

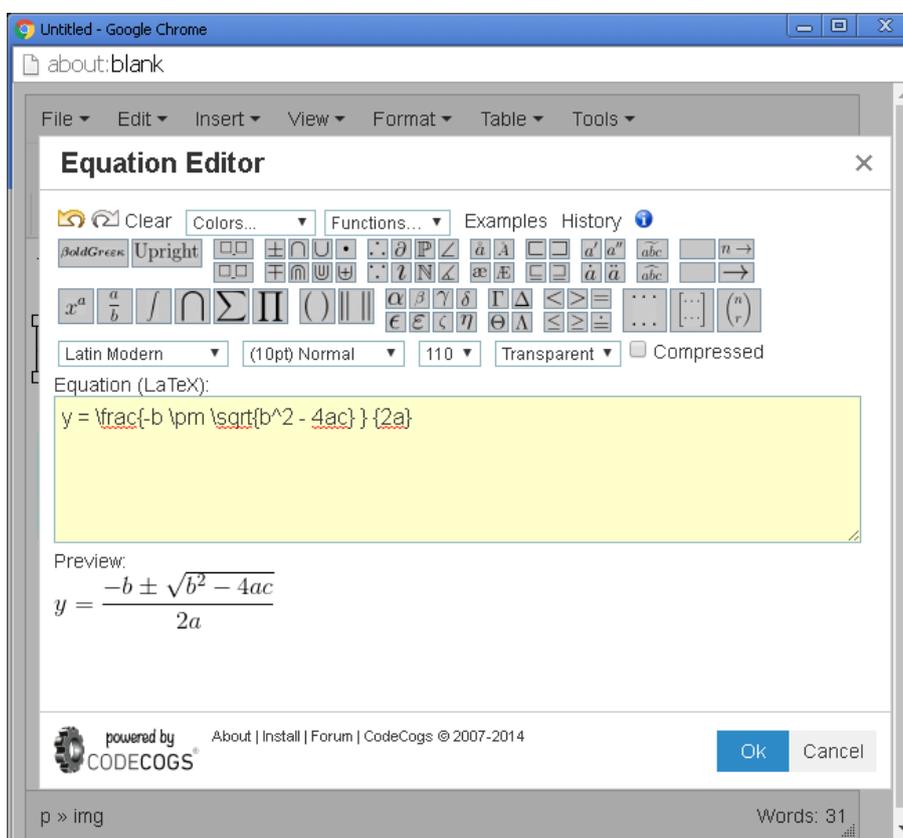


The text can be freely edited, with various settings being available for formatting the appearance of the text.

Equations can be added by selecting the “**fx**” button, which results in the following Equation Editor opening:



You can use the various buttons to help compose the LaTeX description of your required equation, or if you are proficient in LaTeX, you can write/edit it directly. For example:

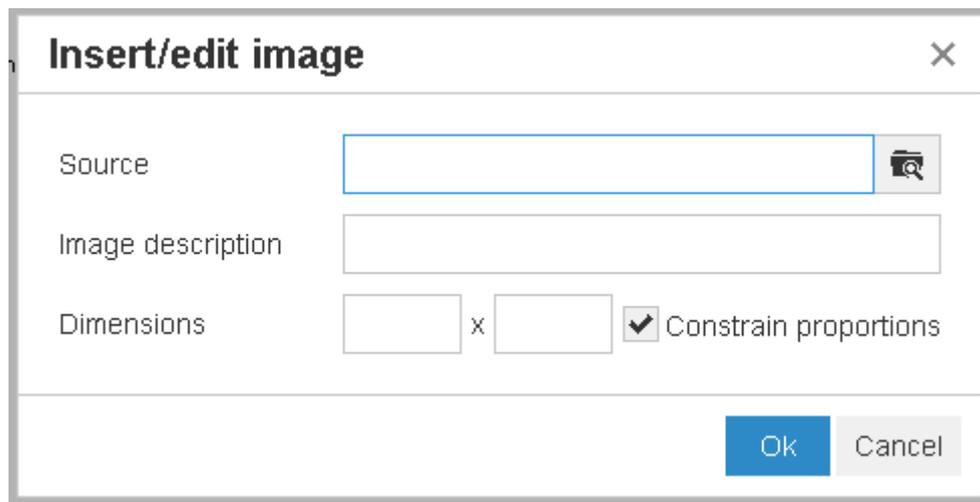


If you have made any changes to the HTML, then the “Save” option is un-greyed, and clicking on this will save the HTML in your personal area (regardless of whether the original was in the “Master” or “Personal” area). [Note this “save” is specifically for the currently edited html, and is independent of using the main menu “File/Save” option].

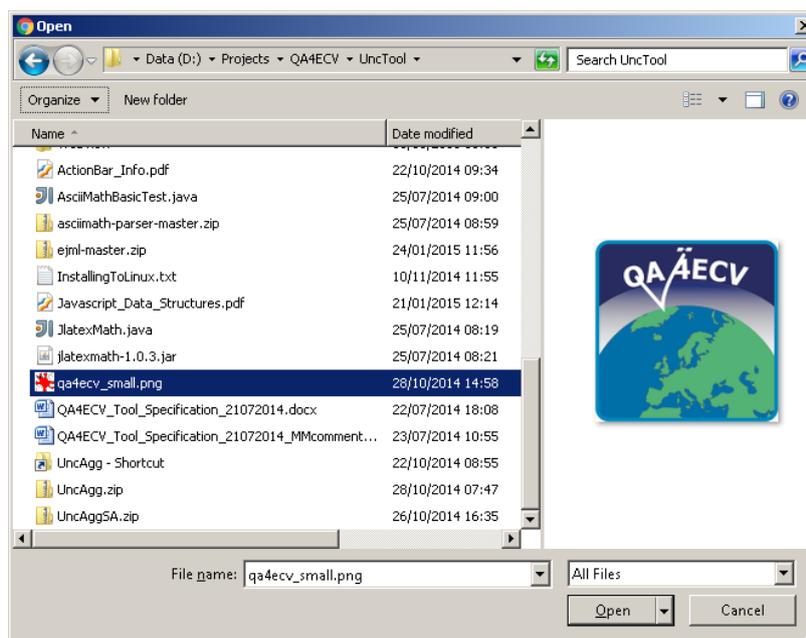
Incorporation and editing of images

Incorporation and editing of images within the HTML is described below.

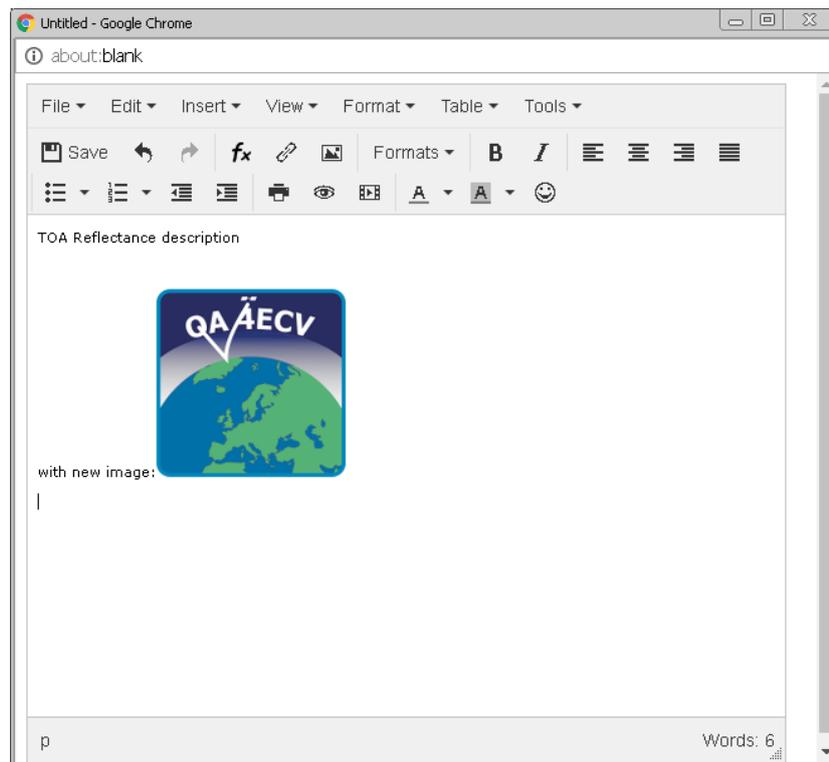
To add a new image to the text being edited, select the icon ; the following window then appears:



Click on the  icon, and a file-selection window then appears, allowing you to select an image from your local machine for upload to the web server, and incorporation into the html text; after browsing to the required location, click on the required image, and select “Open”:



The image will then be uploaded and displayed at the current location of the cursor in the html text being edited:



On selecting “Save”, the updated html will be saved with this new image included.

“**Edit/New Chain**” option allows for creation of a new algorithm chain. On clicking this button, a blank window is presented, and the Chain Name is shown as “MyNewChain”; this should be changed to the name you require for the new chain. You can then start creating your chain by double-clicking to create new boxes, and right-button click-and-drag to join them together.

NB: The new chain will not be saved unless you click on the “File/Save” or “Edit/Save” menu option!

“**Edit/Undo**” option : Greyed-out until an edit is made to the diagram, then successively undo’s latest edit made, in reverse order (most recent first).

“**Edit/Redo**” option : Greyed-out until an “UnDo” is performed, after which a previously “undone” edit can be reinstated.

“**Edit/Save**” option : Select this to permanently save any modifications made to the diagram and/or associated text information (if not selected, then any modifications will not be permanent, and will not be available on return to the web site). The same operation is performed if “**File/Save**” is selected.

Specific Versions Information functions include the following:

Note that versions are only accessible when in Personal Edit Mode, as selecting a version will load that version into the system, and over-write whatever is the latest representation – it will only be saved as a new version if the **File/Save** or **Edit/Save** options are selected.

“Versions/ECV Versions” menu option

Presents a list of versions for current ECV, as a new sub-menu. Selecting a new ECV chain version will cause the current chain to be over-written with the selected version.

“Versions/Proc Descrip. Versions” menu option

Presents a list of versions of processing description for currently selected process/data box, as a new sub-menu. Only available when a box is selected. Selecting a new Processing Description Version will cause the current Processing Description for the selected box to be overwritten with the selected version.

“Versions/Unc. Descrip. Versions” menu option

Presents a list of versions of uncertainty description for currently selected process/data box, as a new sub-menu. Only available when a box is selected. Selecting a new Processing Description Version will cause the current Uncertainty Description for the selected box to be overwritten with the selected version.

About Tool

This menu option simply displays a brief summary for the Traceability Tool, along with info on the latest version of the tool.