VMapper+

User Guide

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General Information

1 GENERAL INFORMATION

VMapper+ is an annotation service for tabular data that allows the association of each data column with entities defined in controlled knowledge organization systems (KOS). Entities that can be used for the annotation include ICASA variables, classes defined in ontologies available via the Ontology Lookup Service (OLS) of the European Bioinformatics Institute (EMBL-EBI), as well as custom entities defined by the user.

The tool stores the defined annotations in appropriate JSON structures associating columns with KOS entities and exports them in *Sidecar* files (plain text JSON files with a .vmpr extension). These can be used in conjunction with the raw data file and reloaded to the tool for visualisation and further processing.

Section 2 provides a detailed description of the basic VMapper+ workflow.

VMapper+ Basic Functionality

2 VMAPPER+ BASIC FUNCTIONALITY

2.1 Uploading Tabular Data in VMapper+

The annotation process is initiated by uploading the tabular data file (CSV or MS Excel™ formats are supported) to the system via the relevant option in the File Upload pop-up. The user can browse their local storage to specify the file to be uploaded ❶ or toggle the Local/Remote switch ❷ and provide the URL indicating the location of an online file. Optionally, if the user wants to continue working on an already partially annotated file, they can upload the current annotation information as it is stored in the corresponding Sidecar file ❸.

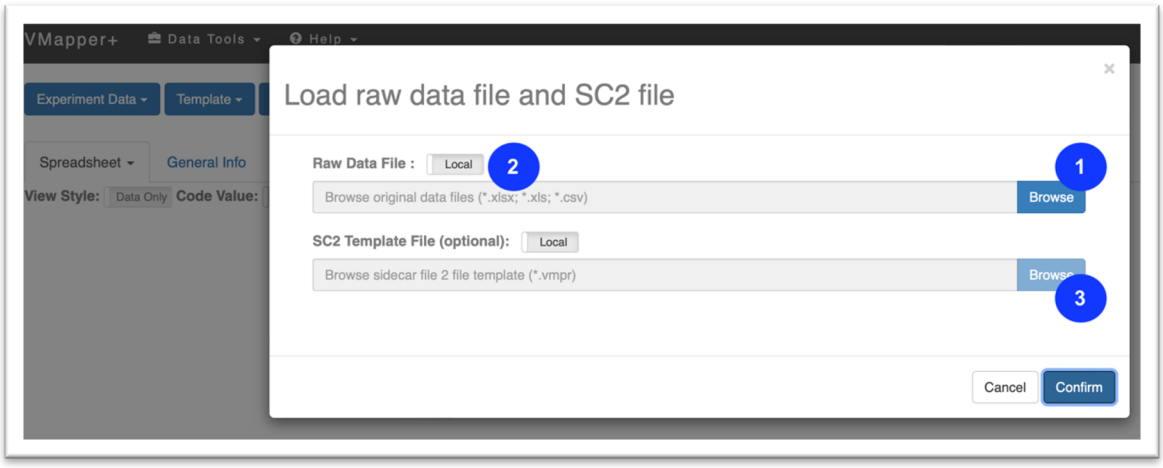


Figure 1: Load data file in VMapper+

After the user confirms the upload, they are called to select the sheets included in the spreadsheet document to be used for further processing. They tick/untick the appropriate sheets and click “Confirm” to proceed.

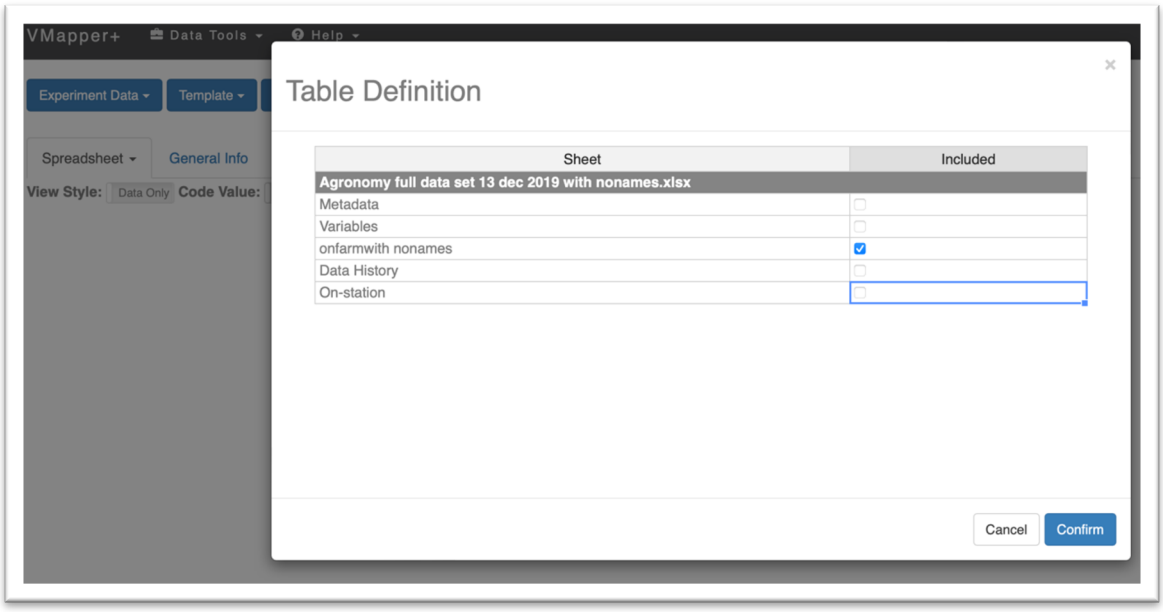


Figure 2: Table Definition Dialogue

In the case a sheet is not already annotated, they also receive a notification that they can copy definitions from another sheet (Figure 3). By clicking “Later”, they can start the annotation process.

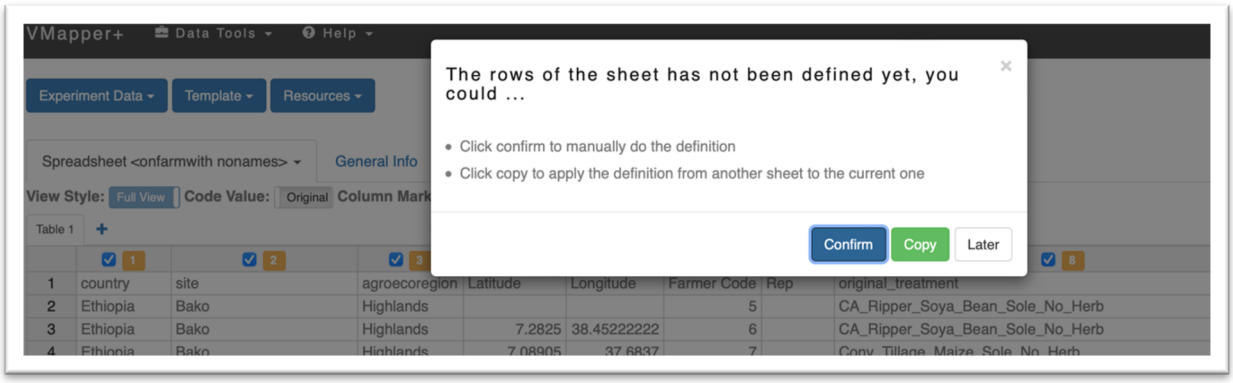


Figure 3: Definition options dialogue

2.2 Column Annotation

To annotate a column, the user right-clicks on the column header on the data matrix within the tool. The right-click menu includes options for defining, ignoring and adding columns to the spreadsheet.

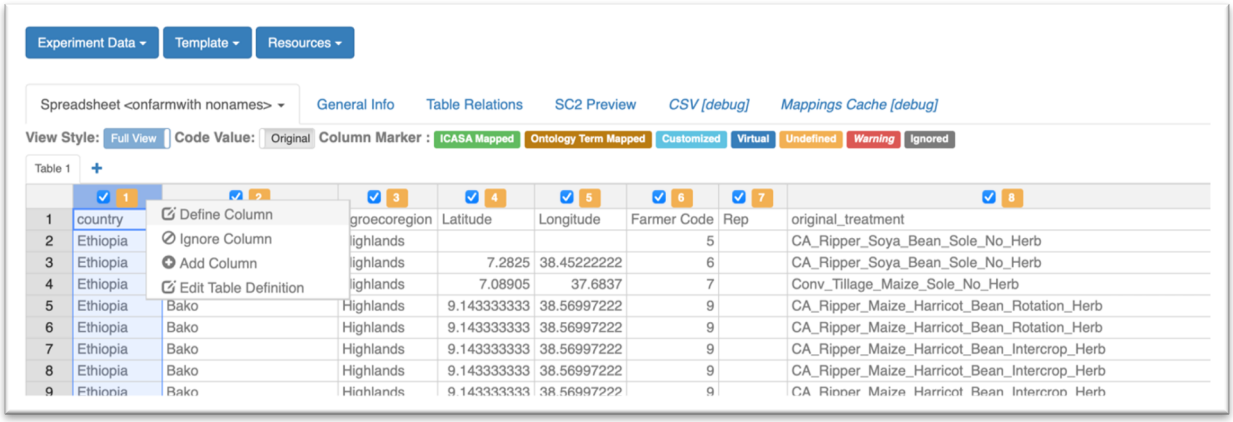


Figure 4: Right-click menu for column processing

By selecting the “Define Column” option, the column definition dialogue appears. From there, the user can select the entity type that they will use to annotate the column: ICASA variable, Ontological term, or a customized variable.

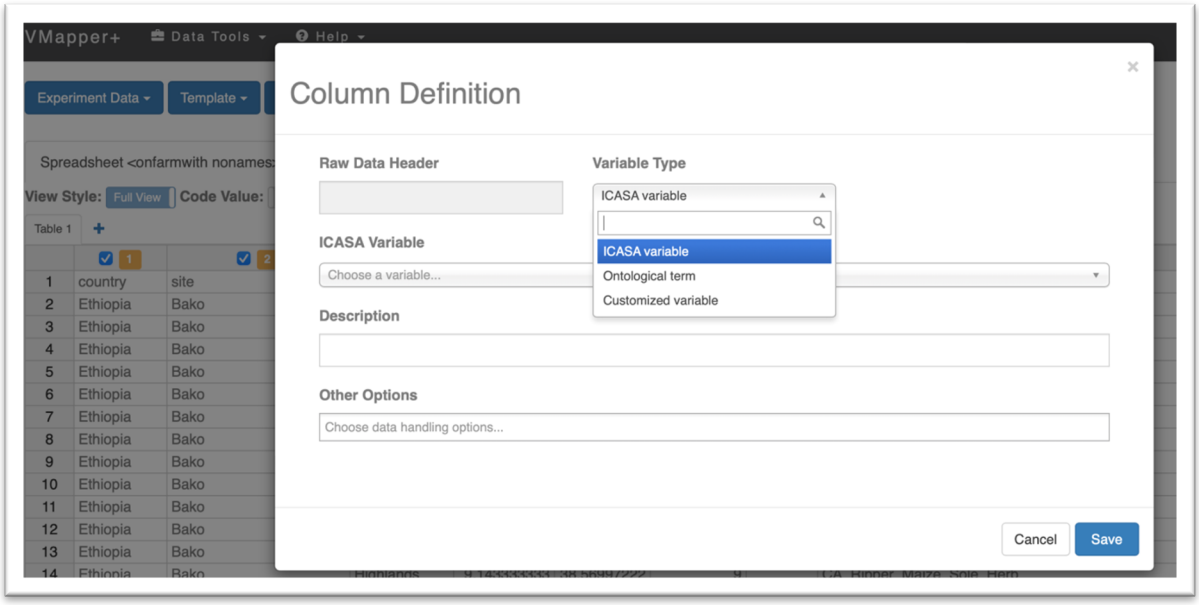


Figure 5: Column definition dialogue - Annotation options

For the ICASA variable option, the user proceeds to type some description for the variable in the search field embedded in the select dialogue under the ICASA Variable header.

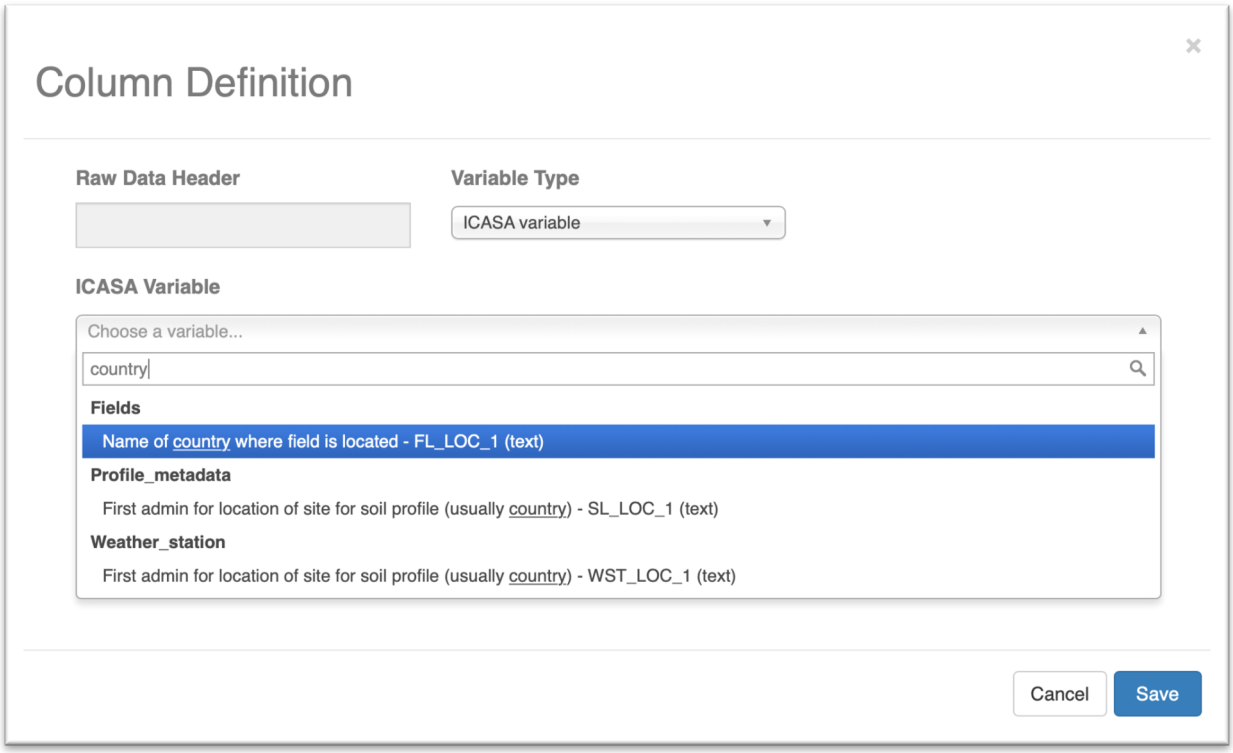
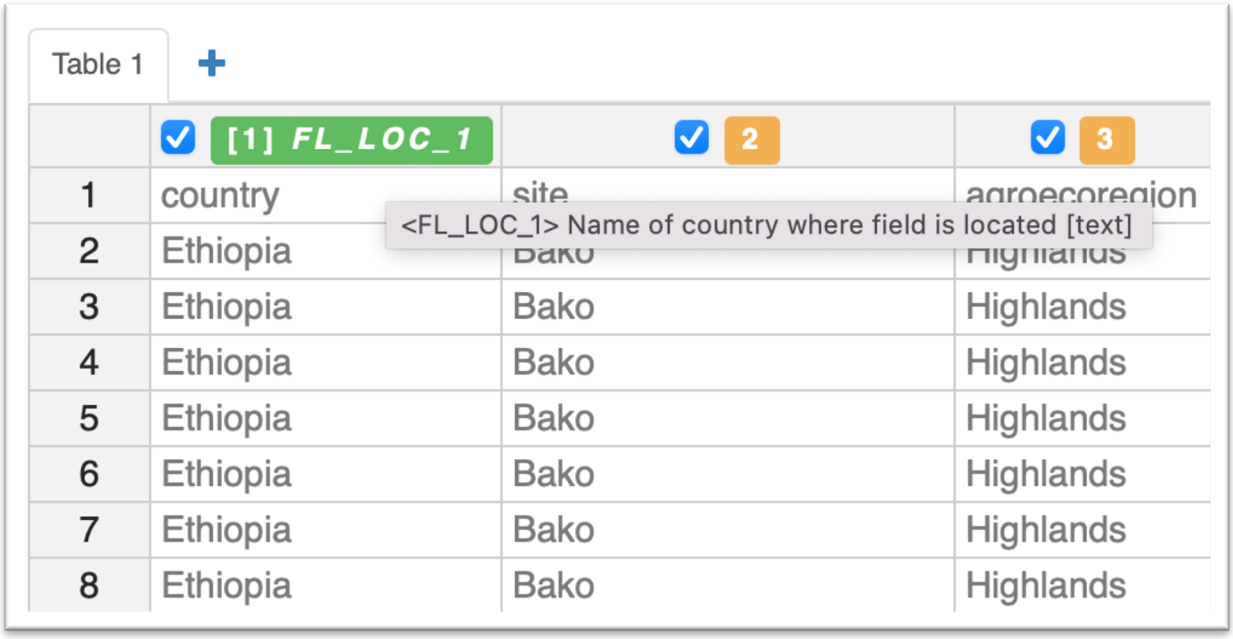


Figure 6: ICASA variable selection

The user selects the relevant variable to be used and clicks “Save”. They are transferred back to the spreadsheet, where the column header is annotated with an indicator of the mapping with the variable. If the user hovers the annotation a tooltip providing basic info on the variable appears for guidance.



	[1] FL_LOC_1	2	3
1	country	site	agroecoregion
2	Ethiopia	Bako	Highlands
3	Ethiopia	Bako	Highlands
4	Ethiopia	Bako	Highlands
5	Ethiopia	Bako	Highlands
6	Ethiopia	Bako	Highlands
7	Ethiopia	Bako	Highlands
8	Ethiopia	Bako	Highlands

Figure 7: Column annotated with ICASA variable

All columns can be subsequently annotated in the same fashion. In case an ontological term is to be used for the annotation, the user again searches over the available terms as returned from the OLS API and select the one to be used for the column definition.

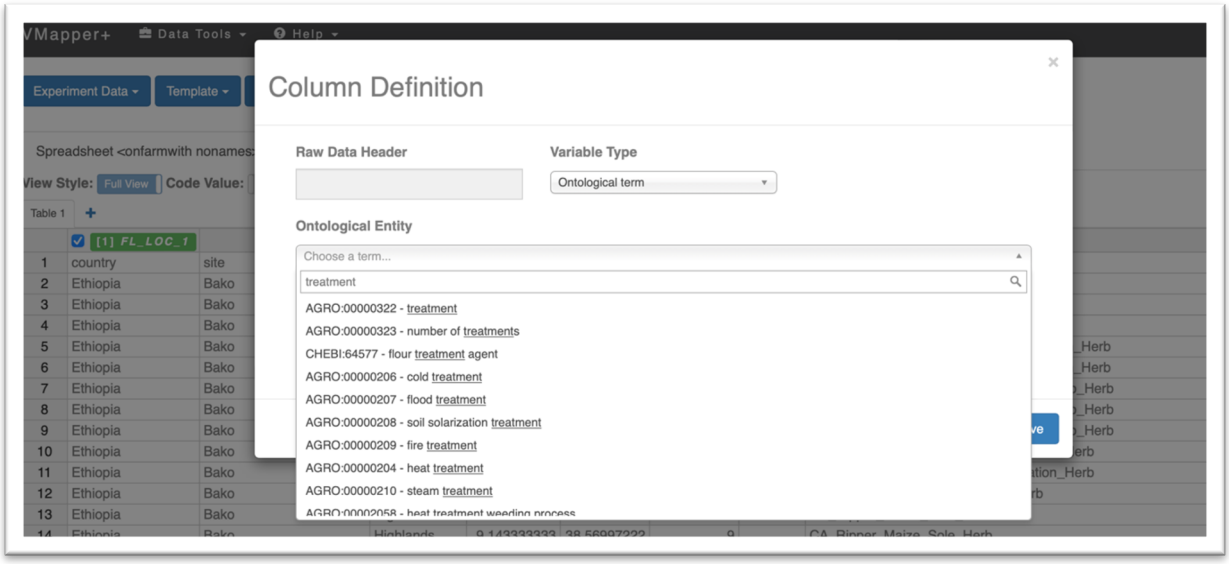


Figure 8: Ontological term selection

The corresponding column in the spreadsheet is similarly annotated and the hover tooltip provides a summary of the term used.

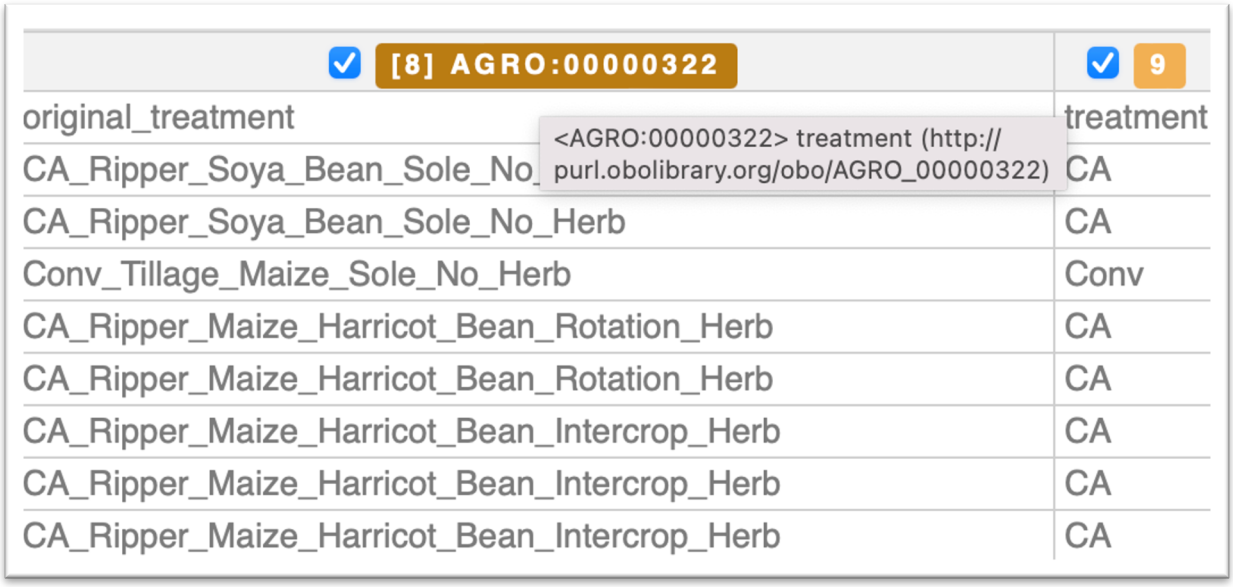


Figure 9: Column annotated with ontological term

2.3 Exporting Annotations

To save the Sidecar file containing the column definitions created, the user selects the "Save Template" option from the "Template" menu button of the tool.

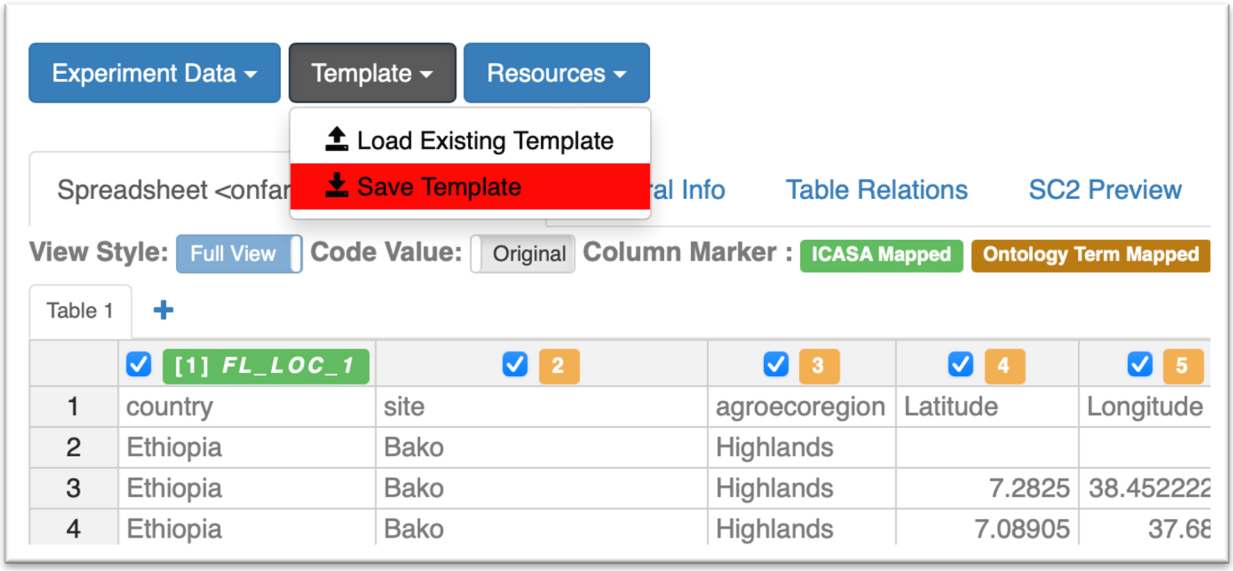


Figure 10: Save Template option

They are then prompted to provide a name for the Sidecar file (defaulting to the same name as the original datafile) and, by clicking "Save" on the dialogue, the file is downloaded to their workstation.

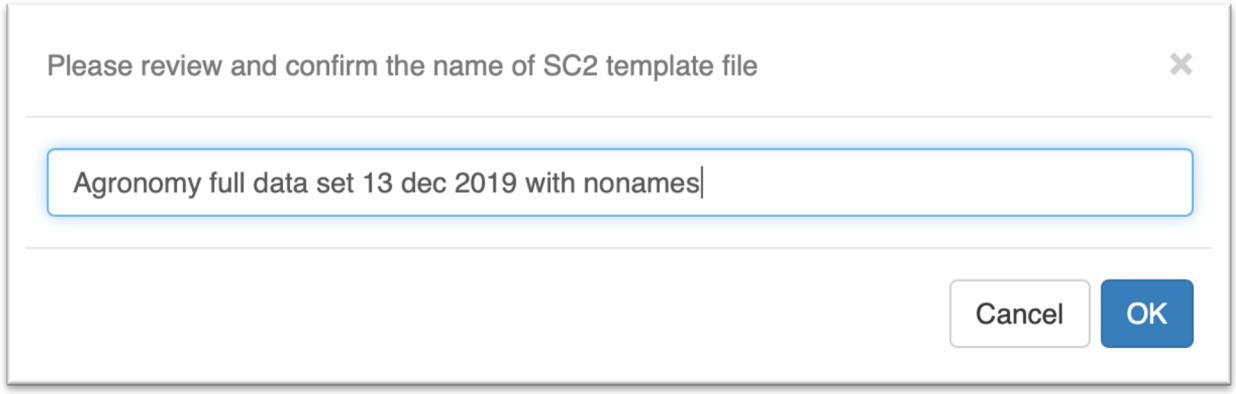


Figure 11: Save sidecar file dialogue

The exported Sidecar file can subsequently be used for re-loading the annotations and continue working on the initial datafile or with any other datafile with the same structure (see Section 2.1 for loading a sidecar file along with a datafile).

Summary and Additional Information

3 Summary and Additional Information

The present guide describes the basic annotation workflow implemented in VMapper+ for associating columns in a tabular datafile with controlled entities, namely ICASA variables and Ontological terms. For further information and updates, refer to the public GitHub repository hosting the source code and documentation for the tool: https://github.com/SCiO-systems/vmapperplus

A public deployment of the system is accessible at http://vmapperplus.scio.services/tools/vmapper.