



SPSS@SSDC the Web Interface tool

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Abstract

This documents presents and describes the Web interface tool available to CU5-DU13 members to access the spectrophotometric standard stars archive and database hosted by the Space Science Data Center of the Italian Space Agency (SPSS@SSDC hereafter).

Document History

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1 Introduction

The SPSS@SSDC archive responds to the needs for systematic management and organization of CU5-DU13 data, acquired and reduced to produce the SPSS grid created for the purpose of the absolute calibration of Gaia spectro-photometric data. At the moment, the SPSS@SSDC Archive access is restricted to CU5-DU13 team, but a public access to a SPSS Release (a subset of the SPSS@SSDC datatypes) is foreseen.

While a detailed description of the SPSS@SSDC archive and database can be found in SMR-006, this document describes the Web interface tool which is the access point to both the database and the archive and allows DU13 team users to query, browse, retrieve and ingest the data.

2 SPSS@SSDC Web Interface tool

The web interface to access, query and browse SPSS@SSDC data has been built using a software called FDI (Flexible Database Interface, see Fanari 2009) developed at SSDC in the framework of the IT support activity. FDI is a collection of PHP routines that allow to operate with a web interface on the data contained in a set of relational database tables in a simple and highly customizable way. The interface allows to represent the relations among data in a hierarchical way, to navigate between the linked data, to read, insert and modify the data (if needed). The interface is flexible, in the sense that it allows to establish (by table, by column, by user, and by work phase) which data will be presented, how to present them and what kind of operations can be performed on them. Once again, all this is made possible by organizing and using a proper set of metadata: the *interface metadata*. FDI allows the visualization of database tables, by automatically adapting itself to the tables structure and by reading both the data types and the foreign key constraints directly from them.

In the realization of the SPSS@SSDC web interface some needs arose:

1. Use of the web interface: navigation and paging.

By its nature, the interaction with the web server is stateless, i.e., every click is independent from the history of all previous clicks (each action calls a program execution which is independent from the previous ones). To achieve navigation ("back and forth" on the web) the system must instead have memory. In other words, since there are interactions (for example, pressing the "Submit" or "Back" buttons inside a form/module) whose effect depends on the context, it is necessary that the system remembers the previous state, i.e. that the context is always transferred entirely with each action. In FDI, this is achieved through the use of an *hidden stack* that contains information on the database, the table, the particular element of the table (on which a specific action is being performed), the possible "where" and "order by" conditions for filtering and sorting lists, the visualization phase,

and the command to be performed to restore the previous situation. The program operates on the last element of the stack: the command to be executed is usually carried by the value of the pressed button. Some commands (like "New" or "Edit") cause an element to be added to the stack before the page production while others (like "Submit" or "Back") remove the last element from the stack.

2. **Database interface needed.** To allow flexibility, it is appropriate and convenient that the data structure is not hard-coded in the program but instead taken directly from the database. To access the database, FDI make use of ADOdb¹, a fast, easy to use and popular database abstraction layer for PHP. If the access to the database is granted, also information useful for visualization (that can not be obtained directly analyzing the database tables describing SPSS datatypes structure) can be added as metadata (the interface metadata) and used when needed.
3. **Customization needed.** Each record and field can be shown, not shown, presented with a given style depending on the content of the database and/or on the context. Moreover, every table and field can request a set of particular controls. To obtain this high degree of customization, we describe the data to be presented with interface metadata (contained in appropriate tables in the same database), and introduce local functions to be called, depending on the type of data and the type of visualization that is being carried out (visualisation phase).
4. **Visualization phases.** The same data, in general, are used for different purposes. For example, to generate different view tables that lead to different visualization in the web interface. With the concept of *visualization phase* we can have different metadata for the same data, obtaining different effects.
5. **Access control.** Access to SPSS data is not public, and it is therefore necessary to introduce the *system user* concept, with access control via login. In general, users do not have all the same permissions: each user will have a given set of allowed operations and will be able to see (or act on) only a subset of the data present in the database. This different data access is regulated by a specific set of metadata that defines the user's role and, consequently, all the possible actions that the user can perform in the system.

FDI has been developed to meet all these needs.

2.1 Interface metadata

The interface metadata are needed by FDI for the creation, management and operation of the web interface. A detailed description of all interface metadata datamodels is beyond the scope of this technical report, but it is important to know that the interface metadata are of different types:

¹Database Abstraction Layer for PHP, available at: <http://adodb.org/dokuwiki/doku.php>

- **Table metadata:** are stored in a database table called `TABLEDATA`. This table contains information on each database table, for visualization purposes. In the `TABLEDATA` data-model, the following keywords are of particular importance:
 - `TABLE`: is the name of the table in database
 - `PHASE`: is the visualization phase for this table. The visualization phase is a label that defines which effects should be applied to the visualization of a given table and/or table entry.
 - `LINKED_TO`: is the list of the tables (as children) linked to a given table (the parent).
 - `RECORD BUTTON`: if a given button must be added for each entry in a table (for example, the single-entry-download button), the operational behaviour and style of the button is saved in this keyword.
 - `TABLE BUTTON`: if a given global button must be added for a given table (for example, the all-selected-entries-download button), the operational behaviour and style of the button is saved in this keyword.
 - `SHOWSTYLE`: contains the name of a function used to compute the CSS CLASS for the entries visualization.
 - `PRINTSTYPE`: if the print-button is present, this keyword defines the format for the output file production.
 - `ACCESS`: contains the name of a function called to select only a group of entries for the visualization when preparing the page. The function returns `TRUE` if no selection is present (i.e. all entries will be visualized) or a *WHERE* element for the stack containing the clauses to be used in order to select and thus visualize only the data that can be presented to a given user, depending on his `ROLE` value (as discussed later in this section).
- **column metadata:** are stored in a table called `METADATA` which contains information on the visualization of each of the datatype table columns. In the `METADATA` datamodel, the following keywords are of particular importance:
 - `TABLE`: is the name of the table to which a given column belongs
 - `COLUMN`: is the column name
 - `PHASE`: is the visualization phase
 - `COMMENT`: is the column name as it appears during the table visualization
 - `LONGCOMMENT`: it is used for the browser "suggestions" (`TITLE` attribute of the HTML tag where the field appears). When the cursor is passed over the column name, this comment appears. It contains (if needed) more details on the content of the column.
 - `ACTION`: indicates the column display mode and can be:

- * **HIDE**: the column is not shown in the tabular-visualization-mode (for the single entry of the table defined by TABLE).
 - * **SHOW**: the column is shown in the tabular view with READONLY attribute. The field can be changed by a JavaScript program but not by the user.
 - * **RULE**: the column value for each entry is computed using the query contained in the keyword RULE.
 - * **HIDE EDIT**: the column is not shown in the list-visualization-mode.
 - * **DEFAULT**: the value of the field is computed using the query contained in RULE only if it does not already have a value.
 - * **FIXED**: the column is formed in the tabular-visualization-mode as non-editable text.
- **RULE**: contains the query to be used if ACTION=DEFAULT or ACTION=RULE.
 - **SORT**: establishes the display order of the column in the list-mode visualization.
- **search metadata**: are stored in two different tables in database, called SEARCHGROUP and SEARCHFIELDS respectively. The table SEARCHGROUP contains information on which group will be present in the search form of a given datatype. Some keywords in the datamodel of the SEARCHGROUP table are used to define the style of the corresponding container in the web page and the order of appearance of each container in the search form. For a given SPSS datatype and for each group defined in the SEARCHGROUP table, the SEARCHFIELDS table contains information on which keyword the user can add conditions for the query: these keywords will appear in the query form page, each of them within its corresponding search group container.
 - **menu metadata**: are stored in a database table called MENU, and contain all the information needed by FDI to build the menu pages in the web interface.
 - **user metadata**: are stored in the USER table. This table contains all the information needed to define each user (user name, password (encoded), email address, role) for the login in the system
 - **role metadata**: are stored in the ROLE table and define the actions on the system allowed for each role (for example, only users with Admin role can visualize and edit via web interface both the SPSS datatype and the interface metadata tables).

3 Login and Home page

The SPSS@SSDC Login page is available at: `gaiaextra.ssdsc.asi.it:8900`.

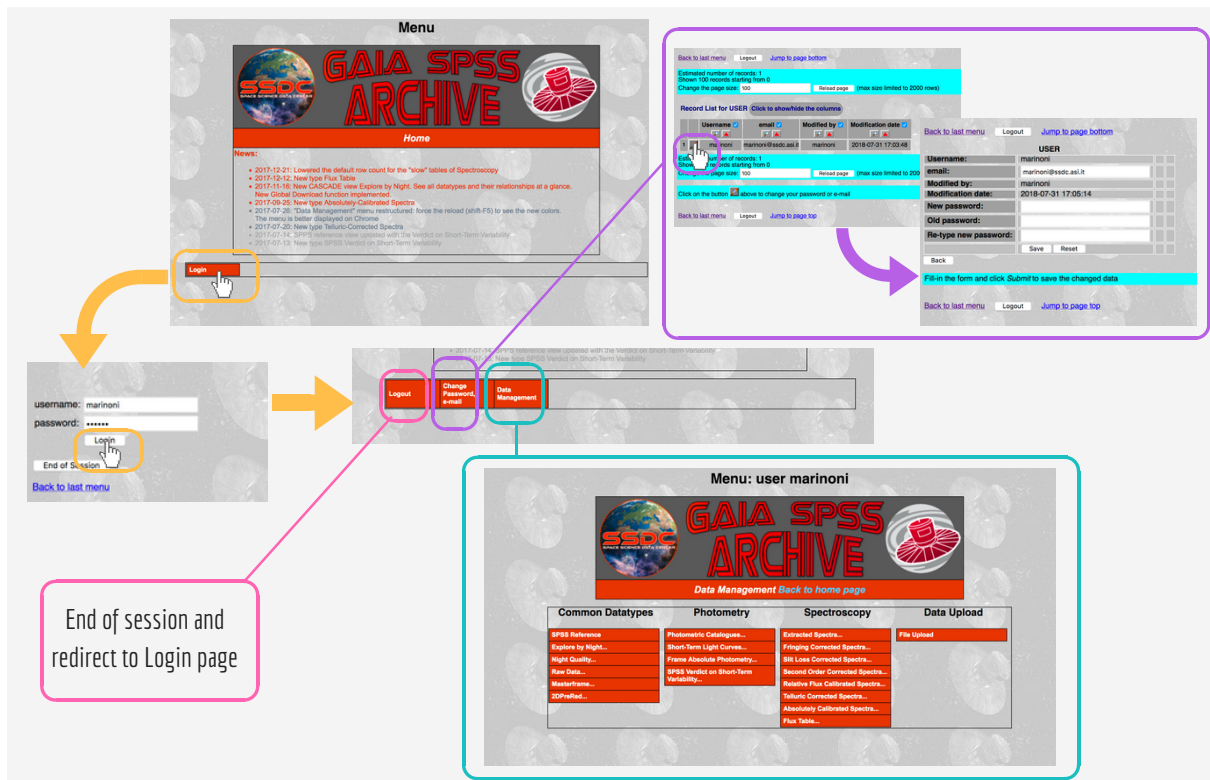


FIGURE 1: The SPSS@SSDC Login and Home page.

Figure 1 shows how the user can access the system and which menu² is presented when the Home page is loaded. In the Home page, a menu containing three buttons is presented to the user. Each button has a different function:

- Logout: ends the session, disconnects the user, and redirects to the Login page.
- Change Password, Email: allows the user to change its login password and/or its email address. All these changes will be saved in the user metadata.
- Data Management: loads the page with the menu to access the SPSS datatypes and the data uploading tool.

4 SPSS Data Management Page: the access to the SPSS datatypes

For the sake of clarity, the Data Management menu is divided in 4 sections. As shown in Figure 2, the first one (called *Common Datatype*), groups datatypes common to both photometric and

²If the user's role is Admin, this menu is different: the system administrator can access all metadata tables in the database, in both reading and editing mode. This means that the Admin is the only user that can modify the database content via web interface.

spectroscopic data. Then the menu shows the photometric and spectroscopic datatypes and, finally, the *Data Upload* button which redirects to the data uploading tool. The presence of three points at the end of a datatype button indicates that one or more second level buttons are present (see Figure 3)

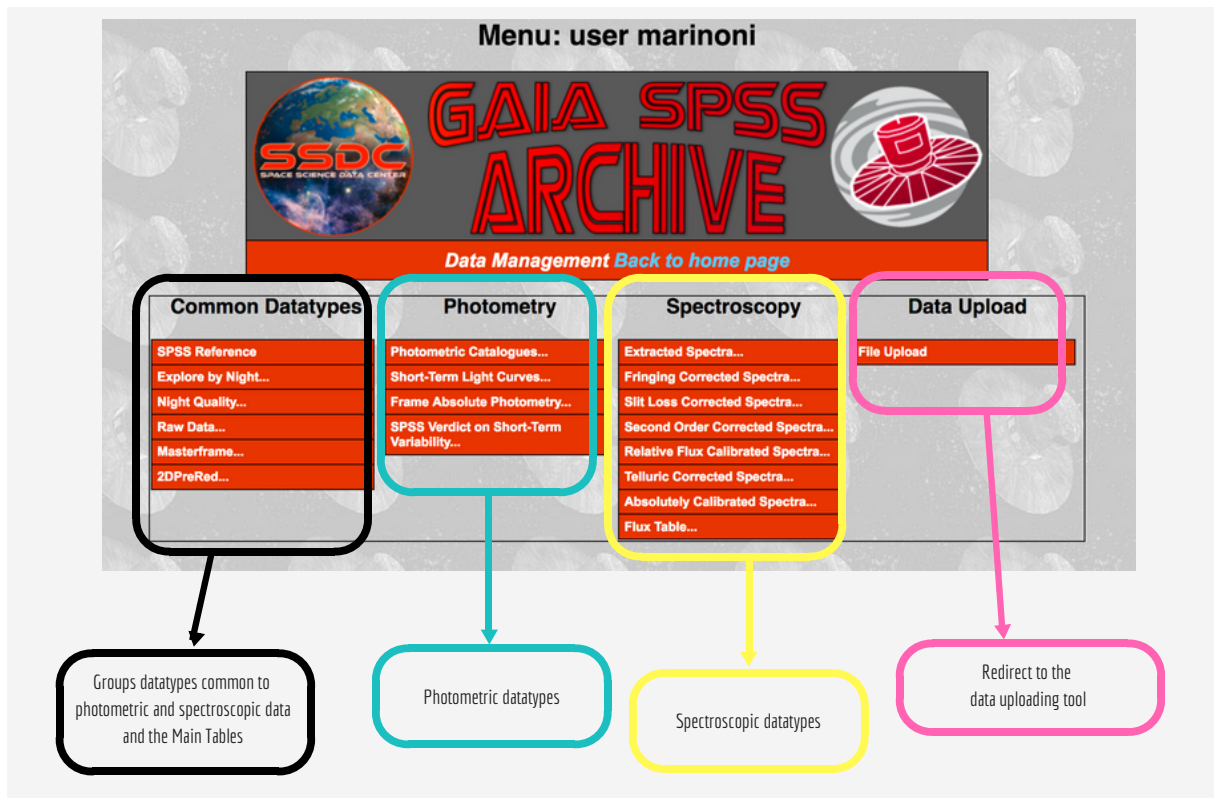


FIGURE 2: The SPSS@SSDC Data Management page.

For each datatype there are two different ways to access data. The first one is the **all file** button: if selected, a new page is loaded showing in a table all the files archived for this datatype in the current SPSS release. This means that a query like `select * from datatypeViewTable where version = currentVersion3` is run in order to build the page.

For each datatype, only a subset of the available columns in its view table is shown by default, and the user can choose to show or hide columns using the *Click to show/hide columns* button. When selected, this button opens a drop-down menu where the complete list of visualizable keywords for the current datatype is shown (see Figure 4): near each keyword a checkbox is present to allow the user to select which columns the interface will show and/or deselect those

³This setting can always be changed, once the result page is loaded, by clicking on the *In Release* magnifying glass button and selecting the desired release.

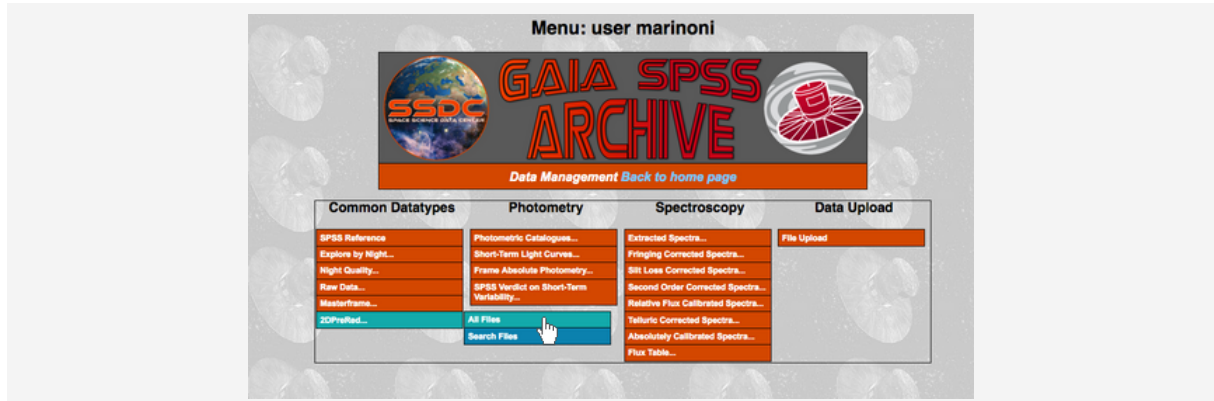


FIGURE 3: How the user can access data: the second level buttons in the Data management menu.

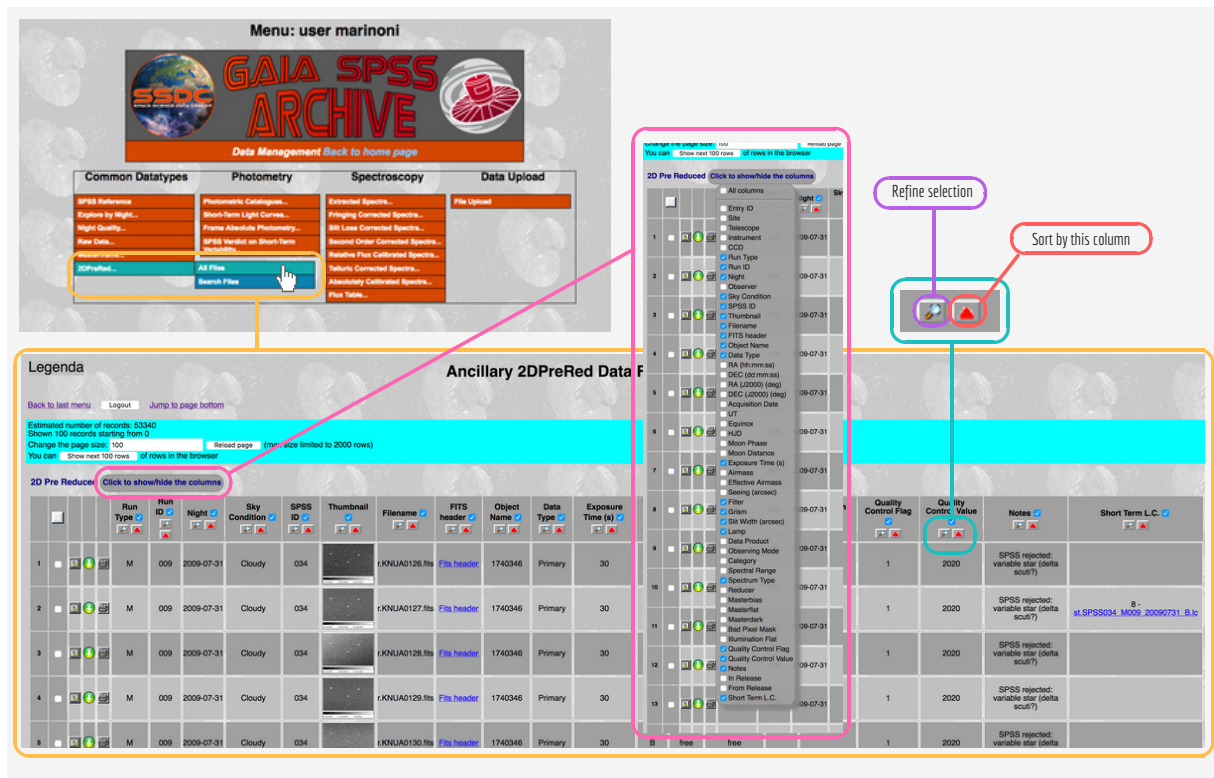


FIGURE 4: All datatypes are visualized using the same visualisation mode: the list-mode. Using this mode, the metadata keywords are shown as table columns, and each row of the visualized table represents an entry in the database view table. In this figure, we suppose the user wants to visualize all data contained in the DUEPREREDUCED table: the result of the *all file* button activation is shown. For clarity, the content of the *Click to show/hide columns* button and the location of some other useful buttons are also shown.

to be eliminated from visualization. In the table, each row can be selected and the corresponding file downloaded using the download button contained in each line (single file download). When more than one entry is selected for download, the user can use the global download button available at the page bottom. The data shown in the table can be further refined clicking on the magnifying glass button available for each shown column. In addition, the triangle icon allows to sort all data by the corresponding column.

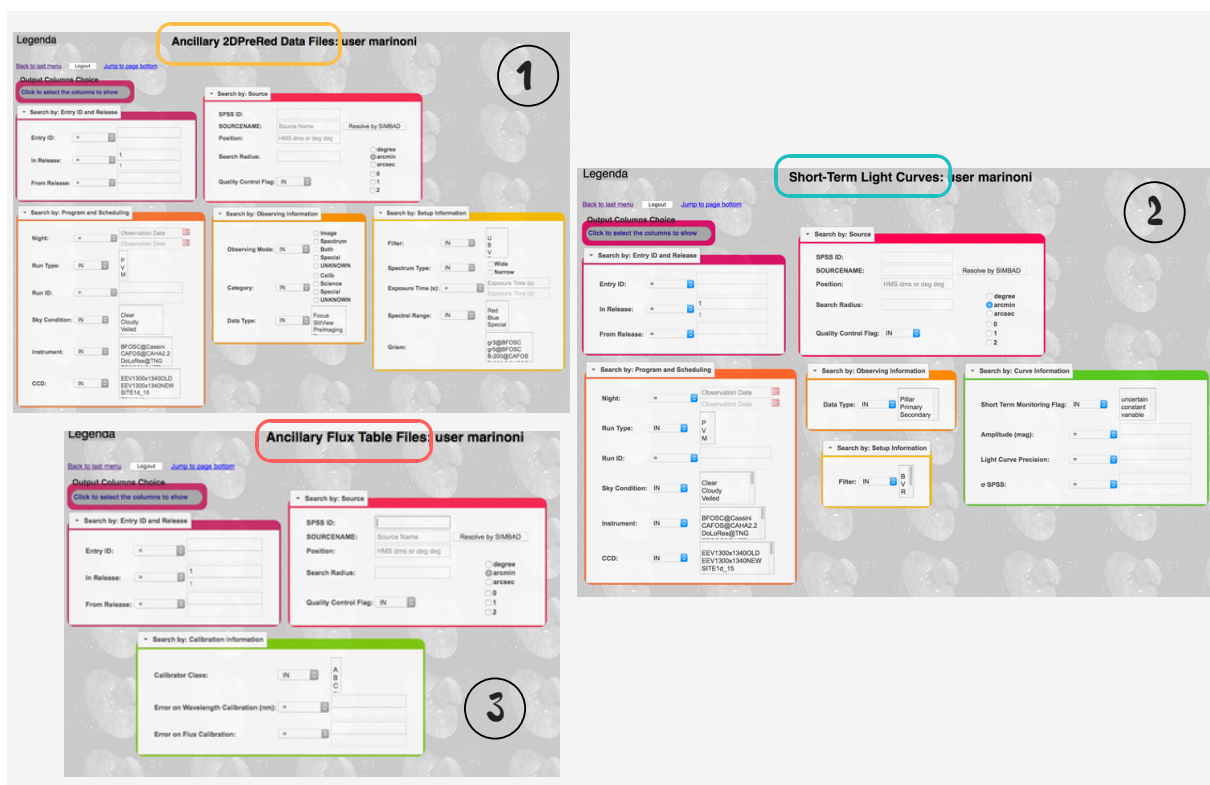


Figure 5 displays three examples of query forms for different datatypes, each with a 'Search by' section and a 'Search' button. The forms are labeled 1, 2, and 3.

- Panel 1: Ancillary 2DPreRed Data Files: user marinoni**
 - Search by: Source**
 - SPSS ID: [text input]
 - SOURCENAME: [text input]
 - Position: [text input]
 - Search Radius: [text input]
 - Quality Control Flag: [text input]
 - Search by: Program and Scheduling**
 - Night: [text input]
 - Run Type: [text input]
 - Run ID: [text input]
 - Sky Condition: [text input]
 - Instrument: [text input]
 - CCD: [text input]
 - Search by: Observing Information**
 - Observing Mode: [text input]
 - Category: [text input]
 - Data Type: [text input]
 - Search by: Setup Information**
 - Filter: [text input]
 - Spectrum Type: [text input]
 - Exposure Time (s): [text input]
 - Spectral Range: [text input]
 - Grids: [text input]
- Panel 2: Short-Term Light Curves: user marinoni**
 - Search by: Source**
 - SPSS ID: [text input]
 - SOURCENAME: [text input]
 - Position: [text input]
 - Search Radius: [text input]
 - Quality Control Flag: [text input]
 - Search by: Program and Scheduling**
 - Night: [text input]
 - Run Type: [text input]
 - Run ID: [text input]
 - Sky Condition: [text input]
 - Instrument: [text input]
 - CCD: [text input]
 - Search by: Observing Information**
 - Data Type: [text input]
 - Filter: [text input]
 - Search by: Curve Information**
 - Short Term Monitoring Flag: [text input]
 - Amplitude (mag): [text input]
 - Light Curve Precision: [text input]
 - σ SPSS: [text input]
- Panel 3: Ancillary Flux Table Files: user marinoni**
 - Search by: Source**
 - SPSS ID: [text input]
 - SOURCENAME: [text input]
 - Position: [text input]
 - Search Radius: [text input]
 - Quality Control Flag: [text input]
 - Search by: Calibration Information**
 - Calibrator Class: [text input]
 - Error on Wavelength Calibration (nm): [text input]
 - Error on Flux Calibration: [text input]

FIGURE 5: Three examples of query form for three different datatype are shown: the first one is the Search Form for the 2DPREREDUCED datatype, the second and third ones for the SHORTLTC and FLUXTABLE datatypes respectively.

The second way to access data is using the query tool available for almost all datatypes selecting the **Search File** button. The aspect of the query form depends on the selected datatype (see Figure 5), allowing queries only on the keywords defined in the corresponding SEARCHGROUP and SEARCHFIELDS interface metadata. When the composed query is submitted, a new page is loaded showing only the entries meeting to the imposed conditions. Also in this case the data are presented using the list-visualisation-mode and the selection can be further refined using the magnifying glass buttons or the result sorted using the triangle icons. The query form allows the user to select in advance which columns will be shown in the output: if no selection is made, columns will be visualized following the rules/indications contained in the column interface metadata.

Three examples of query form for three datatypes are shown in Figure 5. As can be seen, they are different: the number of available groups is defined, for each datatype, by the content of the table `SEARCHGROUP` in the interface metadata. In addition, each group contains a given number of keywords on which it is possible to make selections and impose conditions, defined by the contents of the table `SEARCHFIELDS`. Each group is visualized as an expandable window: when the page is opened all groups are closed and placed one below the other in the order defined by metadata. The windows can be moved, either when they are closed or open.

The graphic management of the opening and closing effects, once the windows are moved from their default position, still gives us some problems mainly related to the relative position of the various windows. Hopefully, these problems will be solved soon.

As seen in the previous example shown in Figure 4, all datatypes View tables in the database are visualized in the same way: a sortable table, in which each column is a metadata keyword and each line contains an entry of the given datatype.

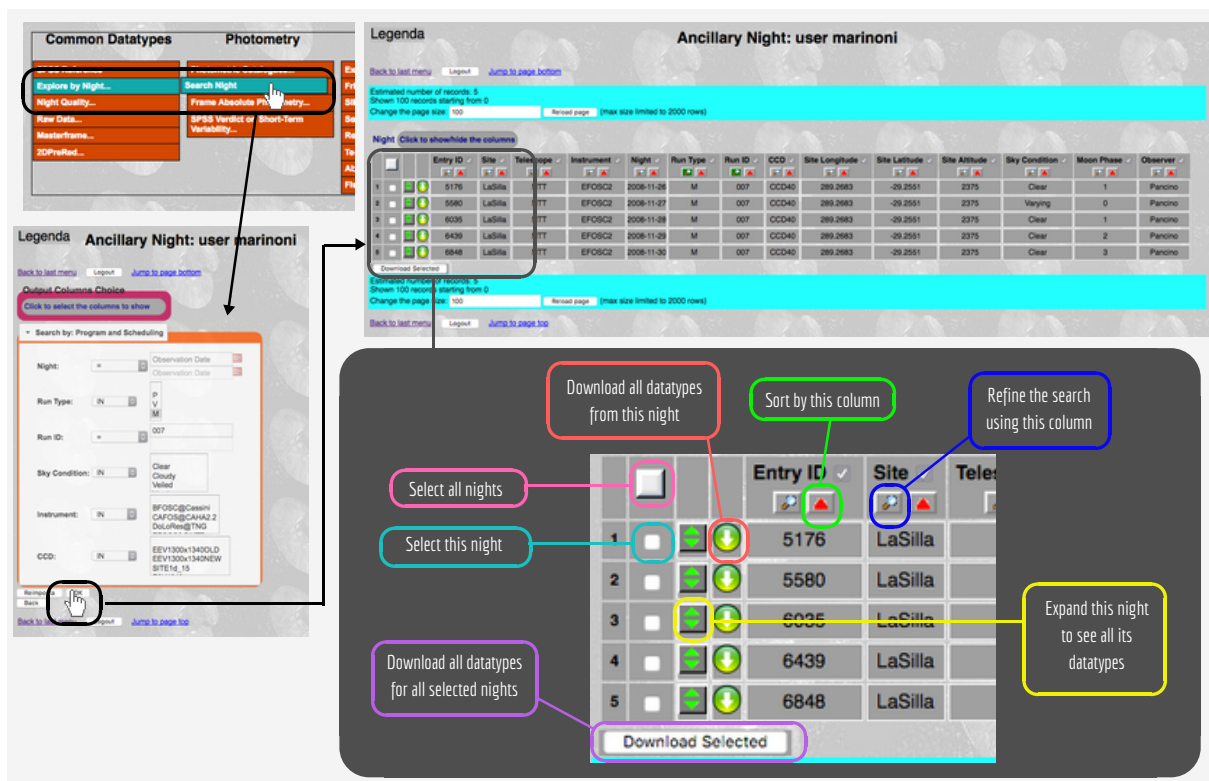
It is important to note that:

1. both at the top and bottom of each page containing the visualized table, some useful buttons and or link are present. In addition, since the page is built using a paging system, the user can select the number of entries to be displayed in each page. The maximum number allowed is set to 2000, on one hand to prevent the crash of the browser, and on the other hand not to make the loading of the page too slow. The default value proposed varies from 100 to 20 depending on datatypes visualization speed.
2. As explained at the beginning of section 2, the track of all selections and, in addition, the datatype visualization pages works using a paging tool. This means that, if something has been selected on a data visualization page (a refinement on one or more columns, one or more entries), this selection is remembered when the user moves to the following pages. For example, suppose the user is visualizing all the `EXTRACTED` spectra (at the moment 6444 entries), and chooses to page data in bunches of 200 entries. When browsing the data, the user selects the first entry shown in the first page and then, the last entry of, let's say, third page. If the *File Downlad* button (located at the bottom of each page) is activated by the user, both these spectra will be downloaded from the archive, even if the first one is no longer shown in the third page (because it does not satisfy the query that forms the content of the third page). This happens because the system keeps memory of everything was selected in the previous pages when it forms a new one. There are two ways to "reset" the memory: deselect previously selected entries for each page or go back to Data Management menu page using the *Back to last menu* link located at both the top and bottom of each page.

4.1 Browse by night

Among the common datatypes, there is also an advanced view called *Browse by Night* which allows to browse the history of each *night-and-SPSS dependent* data (see SMR-006).

This page is built using the cascade-visualisation-mode. The main characteristic of this visualization mode is that the foreign keys between datatype tables (which are on child datatype and pointing on parent datatype) are followed backward, i.e. from parent to child. This allows to build a sort of family tree for each file in the archive starting from the night at which each file belongs to. This is the most important feature of this kind of data visualization: using the *Browse by Night* view is always possible to see at which level the reduction of the selected file has stopped, allowing the DU13 team to keep the status of the project under control, and to be aware of what is missing at any time.



The figure illustrates the 'Browse by night' advanced view. It consists of a search form on the left and a data table on the right. The search form includes fields for 'Night', 'Run Type', 'Run ID', 'Sky Condition', 'Instrument', and 'CCD'. The data table displays columns for 'Entry ID', 'Site', 'Telescope', 'Instrument', 'Night', 'Run Type', 'Run ID', 'CCD', 'Site Longitude', 'Site Latitude', 'Site Altitude', 'Sky Condition', 'Moon Phase', and 'Observer'. Callouts provide instructions on how to use various buttons and icons in the interface.

Callouts and their functions:

- Download all datatypes from this night:** A button with a green download icon.
- Sort by this column:** A button with a green sort icon.
- Refine the search using this column:** A button with a blue search icon.
- Select all nights:** A button with a green checkmark icon.
- Select this night:** A button with a green checkmark icon.
- Download all datatypes for all selected nights:** A button with a green download icon.
- Expand this night to see all its datatypes:** A button with a green expand icon.

FIGURE 6: The *Browse by night* advanced view and the visualized result after the selection of all nights belonging to run M007. A brief explanation on the use of the various buttons is also present.

In Figure 6 an example is shown, where all nights belonging to run M-007 are selected: the *Browse by Night* query form is shown together with the query result.

There are various buttons in this visualization mode: some have the same effect as always, others have a slightly different effect than usual, as explained in the figure.

The *Expand* button in the cascade-visualization-mode always indicates the presence of successive datatypes. In the example shown in Figure 6 it serves to expand the chosen night in order to visualize its existing datatypes. To make the page easier to be loaded (and also more user-friendly), only a subset of the metadata is presented for each visualized datatype. The datatypes are displayed in layers, which roughly follow the reduction steps according to this scheme:

- level 0: the NIGHT datatype is presented. Each line in the visualized table represent a different observing night. The presence of the *Expand* button indicates that there are other datatypes related to a given night.
- level 1: currently, at this level three different datatypes are visualized (if they exist for a given night), since they all belong to the selected night but there is no a 1:1 correspondence between them or with other datatypes in the same night. These datatypes are:
 - NIGHTQUALITY: the night quality is a characteristic of the night;
 - MASTER: are the calibration frames for this specific night and are used in several reduction steps. However, often masterframes used to produce, for example, the 2DPREREDUCED or the SLITLOSSCORR datatypes belong to other nights. For this reason it is not always possible to create, for each masterframe, a cascade visualization of all the datatypes produced using this specific masterframe. So, masterframes are all displayed at level 1 in a dedicated table and for them the *Expand button* is not available.
 - DUEPREREDUCED: starting from this datatype is quite simple to identify and follow the direct relation between files as the reduction chain proceeds, since there is (almost) always a 1:1 correspondance between a given file and the next one along the chain. It is at the level of this datatype that the expansion starts in order to follow the reduction history of each file.

As shown in Figure 7, if there are more than 10 rows, the datatype table is shown closed by default (only the name of the datatype appear in the cascade). The user can click on the datatype name to expand the corresponding table. Obviously, it is always possible to close a table that is shown open by default (for example, the Night Quality of the 2006-11-26 night), by clicking on its name. Near to the name of each datatype, the *Click to show/hide columns* button allows the user to make visible the columns not shown by default for the corresponding datatype.

- level 2: this level is shown when an entry of the 2DPREREDUCED table is open. Depending on whether the 2DPREREDUCED file opened is a photometric or spectroscopic frame, level 2 will show:
 - one entry of the PHOTCAT datatype if the 2DPREREDUCED is a photometric frame,
 - one entry of the EXTRACTED datatype if the 2DPREREDUCED is a spectroscopic frame.

Legenda

Ancillary Night: user marinoni

Back to last menu Logout Jump to page bottom

Estimated number of records: 5
Shown: 100 records starting from 0
Change the page size: 100 Reload page (max size limited to 2000 rows)

Night Click to show/hide the columns

	Entry ID	Site	Telescope	Instrument	Night	Run Type	Run ID	CCD	Site Longitude	Site Latitude	Site Altitude	Sky Condition	Moon Phase	Observer
1	5176	LaSilla	NTT	EFOSC2	2008-11-26	M	007	CCD40	289.2683	-29.2551	2375	Clear	1	Pancino

Night Quality (Click to show/hide the table) Click to show/hide the columns

	Spectroscopic Quality	Photometric Quality	Overall Quality	Notes	In Release	From Release
1	Photometric	Photometric	Photometric	stars delete RU149 A,F, PQ0942 A	1	1

Masterframes (Click to show/hide the table) Click to show/hide the columns

2D Pre Reduced (Click to show/hide the table) Click to show/hide the columns

2	5580	LaSilla	NTT	EFOSC2	2008-11-27	M	007	CCD40	289.2683	-29.2551	2375	Varying	0	Pancino
---	------	---------	-----	--------	------------	---	-----	-------	----------	----------	------	---------	---	---------

Masterframes (Click to show/hide the table) Click to show/hide the columns

2D Pre Reduced (Click to show/hide the table) Click to show/hide the columns

3	6035	LaSilla	NTT	EFOSC2	2008-11-28	M	007	CCD40	289.2683	-29.2551	2375	Clear	1	Pancino
4	6439	LaSilla	NTT	EFOSC2	2008-11-29	M	007	CCD40	289.2683	-29.2551	2375	Clear	2	Pancino
5	6648	LaSilla	NTT	EFOSC2	2008-11-30	M	007	CCD40	289.2683	-29.2551	2375	Clear	3	Pancino

Download Selected

Estimated number of records: 5
Shown: 100 records starting from 0
Change the page size: 100 Reload page (max size limited to 2000 rows)

Back to last menu Logout Jump to page top

FIGURE 7: *Browse by night* level 1 expanded for two night belonging to run M007.

Night [Click to show/hide the columns](#)

	Entry ID	Site	Telescope	Instrument	Night	Run Type	Run ID	CCD	Site Longitude	Site Latitude	Site Altitude	Sky Condition	Moon Phase	Observer
1	5176	LaSilla	NTT	EFOSC2	2008-11-26	M	007	CCD40	289.2683	-29.2551	2375	Clear	1	Pancino

Night Quality [\(Click to show/hide the table\)](#) [Click to show/hide the columns](#)

	Spectroscopic Quality	Photometric Quality	Overall Quality	Notes	In Release	From Release
1	Photometric	Photometric	Photometric	stars delete RU149 A,F, PQ0942 A	1	1

Masterframes [\(Click to show/hide the table\)](#) [Click to show/hide the columns](#)

2D Pre Reduced [\(Click to show/hide the table\)](#) [Click to show/hide the columns](#)

	SPSS ID	Filename	Data Type	Observing Mode	Filter	Spectral Range	Spectrum Type	Quality Control Flag	Quality Control Value	Notes	In Release	From Release
1	039	EFOSC0147.fits	Primary	Image	B			0		-	1	1

Photometric Catalogues [\(Click to show/hide the table\)](#) [Click to show/hide the columns](#)

	Filename	Quality Control Flag	Quality Control Value	Notes	In Release	From Release			
1	sp.EFOSC0147.cat	0		-	1	1			
2	039 EFOSC0148.fits	Primary	Image	B		0	-	1	1
3	039 EFOSC0149.fits	Primary	Image	B		0	-	1	1
4	039 EFOSC0150.fits	Primary	Image	V		0	-	1	1

FIGURE 8: *Browse by night*: example of the photometric branch expanded. Please, note that this branch at the moment stops to PHOTCAT datatype (level 2).

Also for level 2, the presence of the *Expand* button indicates the presence of a next datatype in the reduction chain. It is important to note that, at the moment, the *Expand* button is not present for the PHOTCAT datatype (see Figure 8): this implies that the photometric branch in the cascade-visualization-mode stops at the PHOTCAT level. To continue with the cascade, it is necessary to create a FRAMEABSPHOT view table containing the link with the photometric catalog from which the measured absolute magnitude derives. If this link is

not made explicit, and using only the foreign key present in the `FRAMEABSPHOT_TBL` table (which explain the relation with the `2DPREREDUCED` datatype), `FRAMEABSPHOT` datatype would be incorrectly visualized at the same level as the `PHOTCAT` datatype. The view table to be used in the cascade-mode-visualization for `FRAMEABSPHOT` will be ready soon and the datatype included in the cascade.

- level 3: since, from the previous level, the photometric and spectroscopic datatypes follow two different paths, level 3 is divided in two branches:
 - photometric branch: to be done. This branch will be developed starting from the photometric catalogues for absolute photometry measurement and will show at the level 3 the `FRAMEABSPHOT` datatype (the last photometric Night-dependent datatype having a 1:1 correspondance with `PHOTCAT` datatype).
 - spectroscopic branch: it starts from the `EXTRACTED` datatype showing, at this level, the spectrum derived using this extracted spectrum. Depending on the instrument and the setup used to acquire the spectrum, different datatypes should be visualized at level 3: `FRINGECORR`, `2ndORDERCORR`, or `RELCAL` (see Figure 9).
- level 4: this level is needed only by the spectroscopic branch. It shows the level 3 datatype child following the reduction chain.
- level 5 and subsequent levels: the same as level 4 also applies to level 5 and subsequent levels. At moment the system manages spectrometric datatypes in the cascade-visualization-mode down to the `ABSCAL` datatype (the last Night-dependent datatype). If, for a given file, the reduction chain is not yet completed (up to `ABSCAL`) and a certain datatype is not yet available, the message *Nothing found to show* is visualized (see, for example, Figure 10).

The files download in the cascade-visualization-mode works in a slightly different way with respect to the list-visualization-mode.

The *Download* button (the green icon with a white arrow pointing downwards) near to the *Expand* button works according to these rules:

1. if the *Download* button is activated on a `NIGHT` table entry, the download of all files in the current database version belonging to the selected night is prepared;
2. if the *Download* button is activated on a `MASTER` table entry, the download of the selected masterframe is prepared. In this case, the button works exactly like the single-file-download button present in each line of the datatype tables visualized using the list-visualization-mode.
3. if the *Download* button is activated on a `2DPREREDUCED` table entry or on a given entry of any other table visualized on the following levels, the download of the selected file and all its children is prepared.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--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FIGURE 9: *Browse by night*: example of the whole spectroscopic branch expanded. Here, an example of the reduction history of one red spectrum observed during the 2008-11-26 night, starting from the first reduction step (the 2DPREREDUCED) down to the last reduction step available for this file, is shown. Please, note that the branch ends at the ABASCAL level, the last night-dependent datatype.

		Entry ID	Site	Telescope	Instrument	Night	Run Type	Run ID	CCD	Site Longitude	Site Latitude	Site Altitude	Sky Condition	Moon Phase	Observer
1		5176	LaSilla	NTT	EFOSC2	2008-11-26	M	007	CCD40	289.2683	-29.2551	2375	Clear	1	Pancino
2		5580	LaSilla	NTT	EFOSC2	2008-11-27	M	007	CCD40	289.2683	-29.2551	2375	Varying	0	Pancino

Masterframes (Click to show/hide the table) Click to show/hide the columns

2D Pre Reduced (Click to show/hide the table) Click to show/hide the columns

		SPSS ID	Filename	Data Type	Observing Mode	Filter	Spectral Range	Spectrum Type	Quality Control Flag	Quality Control Value	Notes	In Release	From Release
1		161	r.EFOSC0245.fits	Secondary	Spectrum	free	Red	Narrow	0		-	1	1

Extracted Spectra (Click to show/hide the table) Click to show/hide the columns

		Filename	Grism	Slit Width (arcsec)	Quality Control Flag	Quality Control Value	Notes	In Release	From Release
1		x.EFOSC0245.fits	G16	1.5	1	4400	Declassed Spectrum	1	1

Fringing-Corrected Spectra (Click to show/hide the table) Click to show/hide the columns

		Filename	Quality Control Flag	Quality Control Value	Notes	In Release	From Release
1		r.EFOSC0245.fits	0		-	1	1

Nothing found to show

FIGURE 10: *Browse by night*: example of what is visualized if the reduction chain is not complete for a given file.

The *Download Selected* button at the bottom of the page, on the other hand, works as a *global* download in order to allow the user to download all data belonging to different nights at the same time. Since, in principle, it is possible to select all the nights present in the archive and thus start the complete download of all the Reduced and DataProduct data in the archive, the global download is limited to a total of 1000 files in a bunch (also to limit the size of the tarfile produced). This file number corresponds to a number of nights from 2 to 12, depending on how many files belong to a single night and how long is the corresponding reduction chain. If the limit is exceeded, the user is notified via pop-up (see, for example, Figure 11).

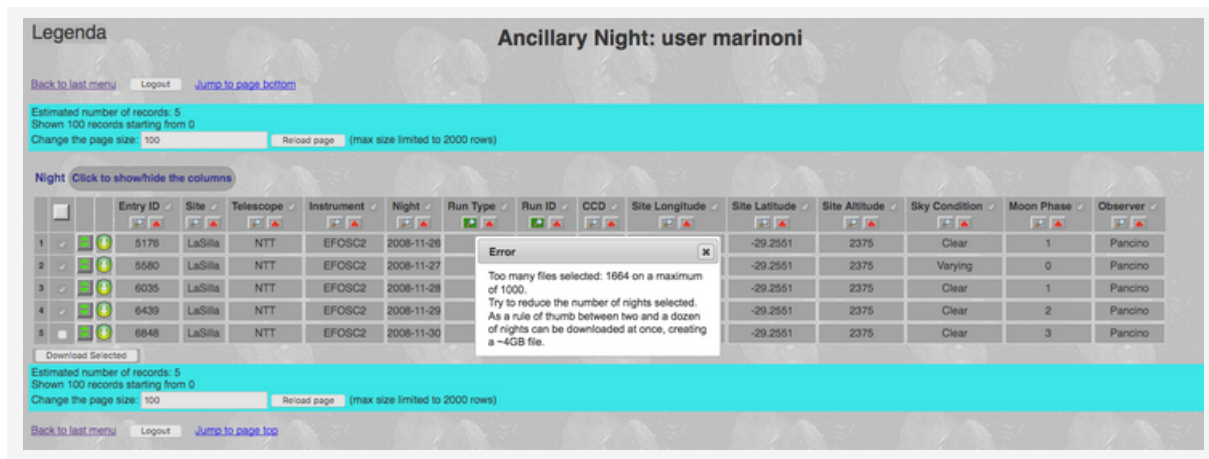


FIGURE 11: *Browse by night*: example of what is visualized if the size of the prepared download exceeds 1000 file.

Known issues on the *Browse by Night* view.

We still have some problems handling the memory of the system compared to the user's actions. The system that manages the web visualization of the SPSS databases tables (which are paged during visualization), remembers what has been selected and/or deselected on a page when the user moves to the next one. Using the stack, it is also able to handle the return to a previous page, the deselection by the user of some files that were previously selected, and the return to the next page to continue the selection.

However, the cascade-visualization-mode is much more complex and intricate than the list-visualization-mode used for individual datatypes, and a repeated selection and deselection of checkboxes can undermine the system memory stack. This means that the system might happen to loose memory of the selected and subsequently deselected files, resulting in an incorrect preparation of the files for download. For this reason, when selection and deselection of checkboxes takes place more than three or four times during the visualization of a query result in the cascade mode, we recommend to repeat the query from the beginning before the download button activation.

Unfortunately, this problem also affects the repeated opening and closing of the cascades using the *Expand* button: sometimes, if the user expands all the cascade for a given file, then closes

the corresponding night and then opens it again, some steps of the cascade are shown closed. We are working hard to solve the bug, but this implies to act quite heavily on the engine that manages the visualization (the FDI software): this will take some time to be completed.

4.2 Data upload and ingestion

The *File Upload* button in the *Data Upload* section of the *Data Management* menu redirects to a page created to allow users to upload and ingest new data (or update and correct old data) in the SPSS@SSDC system.

As shown in Figure 12, in this page two different buttons manage the data ingestion depending on whether the tarfile upload is performed from SSDC or Bologna. A new button will be added to allow data upload and ingestion also from Arcetri. One of these buttons must be activated to start the data ingestion when the tarfile(s) containing the data to be ingested has(have) been successfully uploaded in a dedicated ftp area. In addition, a table is present in the upload page: this table is the visualization of the `UPLOADEDFILE` database table (see SMR-006 Section 4.4), which contains the upload and ingestion history performed by users. In the visualized table the filename of the uploaded tarfile, the upload starting time, the time at which the ingestion of the data in the archive and in database ended, the user who made the data upload and ingestion, the ingestion status and some notes about the data ingestion are shown. This last column value is NOT NULL only if `STATUS=FAILED` or `PARTIALLY LOADED`: in these cases, the filenames of datatype metadata failing the ingestion are shown.

During the data ingestion phase, the user can follow the ingestion progress in this same page. If errors (typically in the metadata files) happen, preventing the ingestion to be completed, the ingestion pipeline notifies the user of which kind of failure occurred, making more simple the correction process.

The `UPLOADEDFILE` table visualization is the only one where a *Delete* button is present. This button can be used to delete (in the database table) entries where `STATUS=FAILED`: in this case, there are no entries in any other datatype tables for which `UPLOADEDFILENN = NN` (in the `UPLOADEDFILE` table), because the system prevents the ingestion of all entries coming from a problematic metadata file. For this reason, these kind of entries in `UPLOADEDFILE` table can be deleted, if user wishes.

The opposite argument is valid if `STATUS=OK` or `PARTIALLY LOADED`⁴. In both cases, the entry in the `UPLOADEDFILE` table is linked to entries in other datatype tables, and the system refuses the cancellation if the user clicks the *Delete* button.

⁴The case `STATUS=PARTIALLY LOADED` can happen if the user is uploading a tar file containing more than one datatype and/or datatypes belonging to different nights and/or SPSS.

Legenda

Uploaded files: user marinoni

From here it is possible to upload files in tar-compressed format.
Files have to be in a ftp-accessible directory.
Compression can be bz2, gzip, or zip.

Upload files from OABO
Upload files from ASDC

Back to last menu Logout Jump to page bottom

Estimated number of records: 2129
Shown 100 records starting from 0
Change the page size: 100 Reload page (max size limited to 2000 rows)
You can Show next 100 rows of rows in the browser

Record List for UPLOADEDFILE Click to show/hide the columns

	ID	FILENAME	UPTIME	ENDTIME	UPLOADER	STATUS	NOTES
1	2443	LfitziBluTNGNicoletta.tgz	2018-07-30 14:33:48	2018-07-30 14:35:37	fanari	OK	
2	2442	LfitziBluTNGNicoletta.tgz	2018-07-30 14:30:30	2018-07-30 14:31:15	fanari	OK	
3	2440	SLITCORR_M018-NTT-EFOSC2_20101227.tar.gz	2018-06-20 15:31:21	2018-06-20 15:31:26	altavilla	OK	
4	2439	M005_20080525_SecOrder.tar.bz2	2018-06-15 12:40:03	2018-06-15 12:40:10	ragaini	OK	
5	2438	M009_20090320_SecOrder.tar.bz2	2018-06-14 14:44:34	2018-06-14 14:44:41	ragaini	OK	
6	2437	M009_20090320_SecOrder.tar.bz2	2018-06-12 17:42:25	2018-06-12 17:42:34	ragaini	OK	
7	2436	SLITCORR_M005-TNG-DOLORES_20080525add.tar.gz	2018-06-11 17:43:28	2018-06-11 17:43:48	altavilla	OK	
8	2435	SLITCORR_M008-TNG-DOLORES_20081021.tar.gz	2018-06-11 17:40:56	2018-06-11 17:41:00	altavilla	OK	
9	2434	SLITCORR_M005-TNG-DOLORES_20080525add.tar.gz	2018-06-11 17:40:56	2018-06-11 17:40:56	altavilla	FAILED	MetaSLITLOSSCORR_ASDC_M005_20080525.txt
10	2433	M009_20090318_SecOrder.tar.bz2	2018-06-11 16:13:05	2018-06-11 16:13:10	ragaini	OK	
11	2432	SLITCORR_M009-TNG-DOLORES_20090318add.tar.gz	2018-06-08 12:56:27	2018-06-08 12:56:42	altavilla	OK	
12	2431	M009_20090320_SlitLoss.tar.bz2	2018-06-08 12:49:31	2018-06-08 12:49:39	ragaini	OK	
13	2430	M002_20080117_SecOrder.tar.bz2	2018-06-07 16:07:01	2018-06-07 16:07:08	ragaini	OK	
14	2429	M002_20080120_SlitLoss.tar.bz2	2018-06-05 15:51:25	2018-06-05 15:51:33	ragaini	OK	
15	2428	M005_20080531_SecOrder.tar.bz2	2018-05-31 15:17:40	2018-05-31 15:17:47	ragaini	OK	
16	2427	M005_20080529_SecOrder.tar.bz2	2018-05-31 11:57:12	2018-05-31 11:57:16	ragaini	OK	
17	2426	M005_20080528_SecOrder.tar.bz2	2018-05-29 16:52:27	2018-05-29 16:52:38	ragaini	OK	
18	2425	M005_20080527_SecOrder.tar.bz2	2018-05-29 15:15:09	2018-05-29 15:15:24	ragaini	OK	
19	2424	M005_20080526_SecOrder.tar.bz2	2018-05-29 11:24:08	2018-05-29 11:24:15	ragaini	OK	
20	2423	M005_20080526_SecOrder.tar.bz2	2018-05-29 11:20:11	2018-05-29 11:20:11	ragaini	FAILED	Meta2ndORDERCORR_ASDC_M005_20080526.txt
21	2422	M005_20080526_SecOrder.tar.bz2	2018-05-29 11:08:41	2018-05-29 11:08:41	ragaini	FAILED	Meta2ndORDERCORR_ASDC_M005_20080526.txt
22	2421	M005_20080531_SlitLoss.tar.bz2	2018-05-25 16:00:50	2018-05-25 16:00:59	ragaini	OK	
23	2420	M005_20080529_SlitLoss.tar.bz2	2018-05-25 15:43:36	2018-05-25 15:43:41	ragaini	OK	
24	2419	M005_20080528_SlitLoss.tar.bz2	2018-05-25 14:47:42	2018-05-25 14:48:01	ragaini	OK	
25	2418	M005_20080527_SlitLoss.tar.bz2	2018-05-25 14:47:15	2018-05-25 14:47:42	ragaini	OK	
26	2417	M012_20091210_SecOrder.tar.bz2	2018-05-24 09:15:16	2018-05-24 09:15:24	ragaini	OK	
27	2416	M012_20091210_SlitLoss.tar.bz2	2018-05-23 08:51:49	2018-05-23 08:52:01	ragaini	OK	
28	2415	M012_20091210_SlitLoss.tar.bz2	2018-05-23 08:50:48		ragaini	OK	
29	2414	M008_20081021_SecOrder.tar.bz2	2018-05-22 15:37:08	2018-05-22 15:37:25	ragaini	OK	

Annotations:

- ID-NN in the UPLOADEDFILE database table:** Points to the ID column header.
- Delete buttons:** Points to the delete icons (X) in the first column of the table.
- Upload buttons: start the data ingestion:** Points to the 'Upload' buttons in the top navigation bar.
- STATUS=FAILED: this metadata file contains errors. User must correct the error(s) and do the upload again:** Points to the 'FAILED' status in the table.

FIGURE 12: Clicking on the *File Upload* button in the *Data Upload* section of the Data Management menu, the user can open the Upload page shown in this figure. Some hints on the meaning of some buttons and/or features in the page are also reported.

5 References

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