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Instrumentation**



Dwarfs4MOSAIC
QUICK START GUIDE

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About this guide

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Intended Audience

Part I of this guide is designed for researchers and users without administrative privileges. It explains how to navigate and use the Dwarfs4MOSAIC platform as a non-administrative user, providing step-by-step instructions.

Part II is intended for the *Administrator* user, with administrative privileges, and describes exclusively the platform's administrative functionalities, providing step-by-step instructions.

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Users's guide

1. Accessing the Platform

To start using Dwarfs4MOSAIC, open your preferred web browser and navigate to the project URL, <http://halmax.fis.ucm.es/>. It is recommended to use modern browsers such as Chrome, Firefox, or Edge for optimal compatibility. Once the page loads, you will reach the welcome page.



Fig I.1. Dwarfs4MOSAIC welcome page.

Click the **LOGIN** option located at the top-right corner of the page to access the login form. Then enter your assigned username and password in the corresponding fields. If you forget your password or experience login issues, [contact the project coordinator](#) to request a new password.

A screenshot of the Dwarfs4MOSAIC login form. It has a teal header bar with the text 'Dwarfs4MOSAIC Administration'. Below it is a light gray background. There are two input fields: 'Username:' containing 'agil' and 'Password:' containing a series of dots. At the bottom is a teal 'Log in' button.

Fig I.2. Login form.

2. Navigating the Home Page

After logging in, you will be directed to the *Home* page, which displays all the targets you are authorized to access, depending on your user permission: *Core Team* members have full access to all entries, while *Collaborators* can only view the targets and blocks assigned to their group, with any restricted or denied blocks and associated data files remaining hidden.



Fig I.3. Add image

Each target is displayed with several fields that provide key information at a glance:

- **Image:** target's associated image, if available.
- **Name:** unique identifier of the target.
- **Type:** category of the astronomical object.
- **Right Ascension:** celestial coordinate along the equatorial plane [hh:mm:ss].
- **Declination:** celestial coordinate perpendicular to the equatorial plane [dd:mm:ss].
- **Apparent Magnitude:** brightness of the target as observed from Earth.
- **Redshift (z):** measured redshift of the object.
- **Angular Size:** apparent size of the target in the sky.
- **Visibility Semester:** observing semester when the target was observed.
- **Observing Run:** name of the observing run(s) the target belongs to.
- **Instrument:** instrument used to acquire data for the target.
- **Data Files:** list of associated files available for download.
- **Comments:** additional information.

3. Downloading Files

On the *Home* page, locate the target of interest. In the **Data Files** column, you will see the available files along with a download icon. Clicking this icon opens the file download view.



Fig I.4. Add image

In this view, a table lists all files associated with the selected target. You can select one, multiple, or all files at once. If only a single file is selected, it will be downloaded directly. If multiple files are selected, a .zip archive containing all selected files is generated. The download process is handled directly by your web browser.

4. Logging Out

To securely exit the platform, click the **LOG OUT** option located in the header at the top-right corner of the page. This will end your session and return you to the welcome page. Your session will also automatically expire after 15 minutes of inactivity, requiring you to log in again.

Always log out when you finish using the system, especially on shared or public computers, to protect your account and data.

5. Support

For any questions, technical issues, or to request a new password, please contact the project coordinator at j.gallego@ucm.es.

Response times may vary, and users are encouraged to provide a clear description of the issue.

Always keep your login credentials secure and do not share them with others.

Administrators's guide

1. Accessing the Platform

The *Administrator* user should refer to chapter [Accessing the Platform](#) in [Part I](#) for general instructions on logging in and accessing the platform.

After login,in the platform header, a welcome message displaying the *Administrator* user's username is shown, along with several additional navigation options:

- **Home**: main page displaying the *targets* table.
- **Database**: access to all database tables.
- **Admin**: administration interface to manage users, permissions, and tables.
- **Log out**: option to manually log out of the platform.



Fig II.1. Administrator menu.

2. Navigating the Home Page

The *Administrator* user should refer to chapter [Navigating the Home Page in Part I](#) for an overview of Home page navigation and target access.

3. Database Visualization

This section provides access to the contents of the project's database tables. Through the visualization interface, users can browse the records stored in each category. The purpose of this feature is to facilitate exploration of the stored information, enabling the *Administrator* to quickly consult details, verify associations between objects, and ensure that the database structure reflects the ongoing work of the project.

TABLE NAME
group
instrument
observatory
observing_block
observing_run
researcher
target
telescope

Fig II.2. Database tables interface.

The list of categories appears in alphabetical order; however, in the following sections they will be presented according to their logical order of creation, so that relationships between objects can be more clearly understood.

3.0.1 Groups

The *group* table defines the different groups of project members used to organize roles and manage permissions collectively. Each entry corresponds to a group created in the administration panel, containing its name and the associated authorization settings. Groups are particularly useful for granting access to observing blocks in a unified way, so that permissions do not need to be configured individually for every researcher.

Groups table

NAME	MEMBERS	ALLOWED OBSERVING BLOCKS
megara-group		
weave-group		

Fig II.3. Groups table.

3.0.2 Researchers

The researcher table stores information specific to each project member that goes beyond the basic user account. Each entry is linked one-to-one with a record in the *user* table, ensuring that login credentials and researcher details remain connected.

This table contains fields related to the researcher's role in the project (Core Team or Collaborator), PhD status, and permissions for accessing observing blocks. By managing this information separately from the user account, the system allows user credentials to be deleted while preserving the researcher's record, thereby maintaining the history of participation in past observing campaigns.

Researchers table

NAME	ROLE	GROUP	PhD	INSTITUTION	OBSERVING RUNS	DENIED OBSERVING BLOCKS	EMAIL	COMMENTS
Armando Gil de Paz	core_team		✓	Universidad Complutense de Madrid, Spain			agil@ucm.es	

Fig II.4. Researchers table.

3.0.3 Observatories

The *observatory* table stores the information of the observatories associated with the project. Each record represents one observatory and includes its name, geographical location (longitude and latitude, stored in separate fields), altitude, and optional descriptive details.

Observatories act as the root element in the database structure, since telescopes are always linked to a specific observatory. Defining observatories first ensures that subsequent records, such as telescopes, instruments, and observing runs, can be properly associated with their physical location.

Observatories table

NAME	LOCATION	LONGITUDE	LATITUDE	ALTITUDE (m)	WEBSITE
AURA-O	Cerro Pachón (Chile)	70° 44' 1.11" W	30° 14' 16.41" N	2713.0	🔗
Roque de los Muchachos	La Palma (Spain)	17° 53' 30.0" W	28° 45' 22.0" N	2396.0	🔗

Fig II.5. Observatories table.

By clicking on the name of an observatory in the list view, a detailed page is displayed showing all the specific information related to that observatory.

Observatory: Roque de los Muchachos

Telescopes belonging to the observatory.

TELESCOPE	DESCRIPTION	OWNER	STATUS	APERTURE (m)	WEBSITE
GTC	Gran Telescopio de Canarias	GRANTECAN S.A.	operational	10.4	🔗
INT	Isaac Newton Telescope	Instituto de Astrofísica de Canarias (IAC), Isaac Newton Group of Telescopes- La Palma, Nederlandse Organisatie voor Wetenschappelijk Onderzoek	maintenance	2.5	🔗
LT	Liverpool Telescope	Liverpool John Moores University	operational	2.0	🔗
WHT	William Herschel Telescope	Instituto de Astrofísica de Canarias (IAC)	operational	4.2	🔗

Fig II.6. Specific observatory information.

3.0.4 Telescopes

The telescope table stores information about the specific telescopes associated with each observatory. Every telescope record is linked to one observatory, ensuring that its location is always clearly defined. The fields typically include the telescope name, aperture size, and optional descriptive information.

Telescopes serve as an intermediate element in the database hierarchy: they belong to observatories and, in turn, have one or more instruments attached to them. This structure guarantees that all observing runs and blocks can be properly traced back to the physical telescope used.

Telescopes table

Name	Description	Observatory	Owner	Status	Aperture (m)	Website
GTC	Gran Telescopio de Canarias	Roque de los Muchachos	GRANTECAN S.A.	/ operational	10.4	🔗
INT	Isaac Newton Telescope	Roque de los Muchachos	Instituto de Astrofísica de Canarias (IAC), Isaac Newton Group of Telescopes- La Palma, Nederlandse Organisatie voor Wetenschappelijk Onderzoek	/ maintenance	2.5	🔗
LT	Liverpool Telescope	Roque de los Muchachos	Liverpool John Moores University	/ operational	2.0	🔗
SOAR	Southern Astrophysical Research	AURA-O	The SOAR Consortium	/ operational	4.1	🔗
WHT	William Herschel Telescope	Roque de los Muchachos	Instituto de Astrofísica de Canarias (IAC)	/ operational	4.2	🔗

Fig II.7. Telescopes table.

By clicking on the name of a telescope in the list view, a detailed page opens showing its specific information.

Telescope: GTC (Gran Telescopio de Canarias)

Instruments belonging to the telescope.

Instrument	Description	Status	Website
MEGARA	Multi-Espectrógrafo en GTC de Alta Resolución para Astronomía	inoperative	🔗

Fig II.8. Specific telescope information.

3.0.5 Instruments

The *instrument* table contains the instruments available for each telescope. Each instrument is linked to a specific telescope, ensuring that its use is always associated with the correct observational setup. Typical fields include the instrument name, type, and a short description of its characteristics.

Instruments represent the final physical element in the observational chain: they are attached to telescopes, which in turn belong to observatories. Observing runs and blocks are always tied to a specific instrument, making this link essential for tracing how and with which configuration each dataset was obtained.

Instruments table

NAME	DESCRIPTION	TELESCOPE	STATUS	WEBSITE
IO:O	Infrared-Optical suite of instruments: optical imaging component	LT	operational	🔗
MEGARA	Multi-Espectrógrafo en GTC de Alta Resolución para Astronomía	GTC	inoperative	🔗
SIFS	SOAR Integral Field Spectrograph	SOAR	operational	🔗
WEAVE	WHT Enhanced Area Velocity Explorer	WHT	operational	🔗
WFC	Wide-Field Camera	INT	inoperative	🔗

Fig II.9. Instruments table.

3.0.6 Observing Runs

The *observing_run* table stores the periods of time during which observations are scheduled at a given observatory with a specific telescope and instrument. Each observing run is therefore linked to an instrument and inherits its association with a telescope and observatory.

The main fields include the run name or code, start and end dates, and additional information describing the scope of the run. Observing runs act as a container for multiple observing blocks, which represent the individual units of scheduled observations.

Observing Runs table

NAME	INSTRUMENT	DESCRIPTION	START DATE	END DATE	COMMENTS
------	------------	-------------	------------	----------	----------

Fig II.10. Observing Runs table.

By clicking on the name of an observing run in the list view, you can access a detailed page showing its configuration and all associated observing blocks.

3.0.7 Observing Blocks

The *observing_block* table defines the fundamental scheduling units within an observing run. Each block corresponds to a specific target or set of targets to be observed, and it is always linked to an observing run, thereby inheriting its telescope, instrument, and observatory.

The main fields include the block name or identifier, its temporal allocation (start and end time), and the associated target(s). Additional information, such as constraints or priority, may also be recorded. Observing blocks provide the framework for assigning researchers and managing permissions, determining who has access to view or contribute to the block.

Observing Runs table

NAME	INSTRUMENT	DESCRIPTION	START DATE	END DATE	COMMENTS
------	------------	-------------	------------	----------	----------

Fig II.11. *Observing Blocks* table.

By clicking on the name of an observing block in the list view, you can access a detailed page displaying its configuration, associated targets, and permissions.

3.0.8 Targets

The *target* table contains all astronomical objects included in the project. Each target is linked to an observatory, telescope, instrument, and observing block, providing a complete context for data acquisition.

The main fields include the target name or identifier, type, coordinates (right ascension and declination), apparent magnitude, redshift, angular size, and visibility semester. Additional information such as associated images, observing runs, instruments, and data files is also available.

Targets table

IMAGE	NAME	OBSERVING BLOCK	TYPE	RA	DEC	MAG 	z	SIZE (arcsec)	VISIBILITY SEMESTER	COMMENTS	DATA FILES PATH 
-------	------	-----------------	------	----	-----	---	---	---------------	---------------------	----------	---

Fig II.12. *Targets* table.

4. Administration Panel

The *Administration Panel* offers a centralized interface to maintain the database, and manage user accounts and permissions.

The header menu presents the following options for the *Administrator* user:

- **View Site**: returns to the platform's main page.
- **Change Password**: allows the *Administrator* to update their password.
- **Log out**: closes the current session.



Fig II.13. Administration menu.

4.1 Panel Overview

The administration panel is organized into two main sections.

Authentication and Authorization section contains the *Groups* and *Users* categories, to manage user accounts, assign users to groups, and configure permissions.

AUTHENTICATION AND AUTHORIZATION		
Groups		Add
Users		Add

Fig II.14. Authentication and Authorization administration.

Database section defines a category for each table of the *dwarfs4MOSAIC* platform, allowing to view, add, modify, or delete records as required.

Database administration

DATABASE		
Instruments	 Add	 Change
Observatories	 Add	 Change
Observing Blocks	 Add	 Change
Observing Runs	 Add	 Change
Researchers	 Add	 Change
Targets	 Add	 Change
Telescopes	 Add	 Change

Fig II.15. Database administration.

When selecting a category in the administration panel, a list of existing objects of that type is displayed, allowing you to view, edit, or delete them as needed.

Select Instrument to change

Action: [Go](#) 0 of 5 selected

INSTRUMENT

IO:O

MEGARA

SIFS

WEAVE

WFC

5 Instruments

Fig II.16. List of instruments.

All categories in the Administration Panel follow the same basic workflow:

Adding an object

Open the form to create a new object:

- By clicking **Add+** next to the category name in the main panel.
- By selecting a category and then clicking **Add [object name]+**.
- By clicking **Save and add another** after creating an object, which immediately opens a new form for the same type of object.



Fig II.17. Add a new object.

Fill in the required fields and any optional fields as needed, and click **Save** to create the object. After saving, the new object will appear in the list of objects of that category, and you can edit it at any time to view it, update it or delete it if it is no longer needed.

Editing an object

Select a category and click on the object you wish to modify from the list. Update the fields as needed and click **Save** to apply the changes.

Deleting an object

Select a category, click on the object from the list to open its form, and click **Delete**. You will be asked to confirm before the deletion is applied.

It is also possible to delete multiple objects at once by selecting several entries in the list and choosing the **Delete selected** action from the dropdown menu.

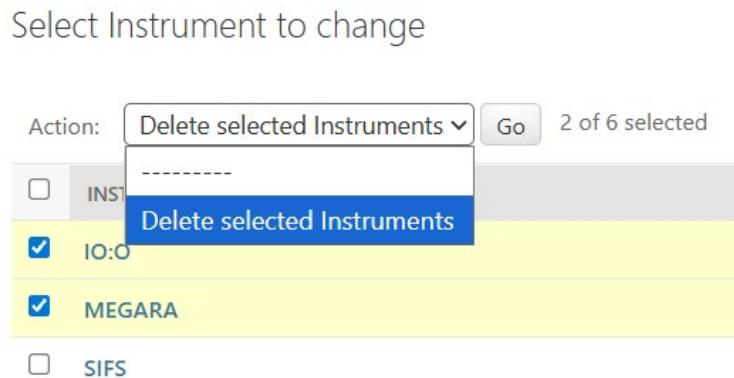


Fig II.18. Delete existing object/s.

4.2 Database

This section describes the database categories in an order that reflects the typical workflow for creating and linking objects. Presenting them in this sequence helps clarify the relationships between different types of entries and ensures a logical understanding of how data is organized within the platform.

4.2.1 Observatories

Observatories represent the locations where telescopes and instruments are installed. Each entry includes information such as the observatory name, location, website, geographical coordinates (latitude and longitude) and altitude.

Add Observatory

Name:

General Information

Location:

Website:

Coordinates

Longitude: degrees minutes seconds direction

Latitude: degrees minutes seconds direction

Altitude: meters

Fig II.19. Observatory information.

Maintaining accurate observatory data is essential, as telescopes and observing blocks are linked to these locations, and the relationships are used throughout the platform to manage observations efficiently.

4.2.2 Telescopes

Telescopes are the instruments installed at observatories to carry out astronomical observations. Each telescope entry includes its name, type, and the observatory where it is located. Additional details such as aperture size, focal length, and relevant notes can also be specified.

Add Telescope

Name:

General Information

Description:

Institutional Owner:

Observatory: ----- ▼ + × ⚡

Website:

Status: Unknown ▼

Characteristics

Aperture: 0 meters

Fig II.20. Telescope information.

Accurate telescope data is important because instruments, observing blocks, and targets are linked to specific telescopes. Ensuring these relationships are correctly established allows proper management and planning of observations across the platform.

4.2.3 Instruments

Instruments are the devices attached to telescopes used to acquire observational data, such as cameras, spectrographs, or photometers. Each instrument entry includes its name, type, and the telescope to which it is associated, along with optional descriptive notes.

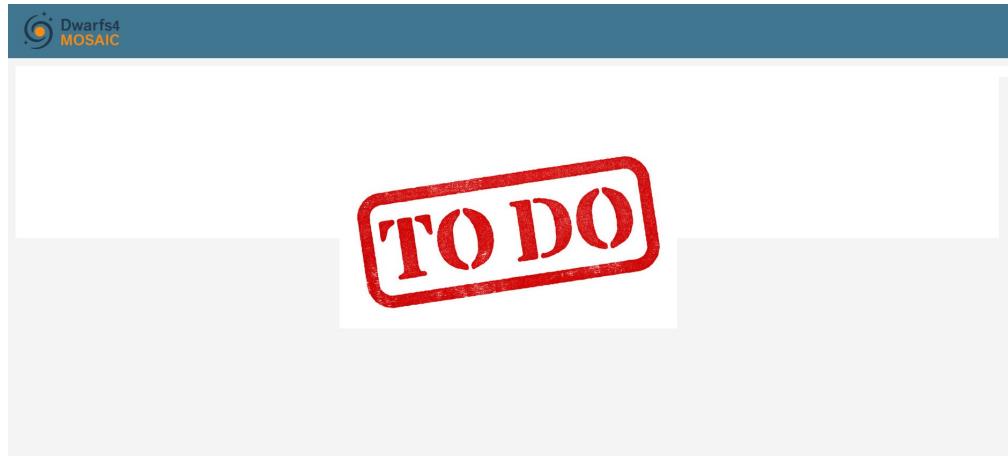


Fig II.21. Add image

Correctly registering instruments ensures that observing blocks and targets are properly associated with the hardware used, which is essential for data management and planning of observations.

4.2.4 Observing Runs

Observing runs represent the periods of scheduled observations conducted at a given observatory with specific telescopes and instruments. Each observing run entry includes its name, the associated observatory, the telescope used, the start and end dates, and optional notes.

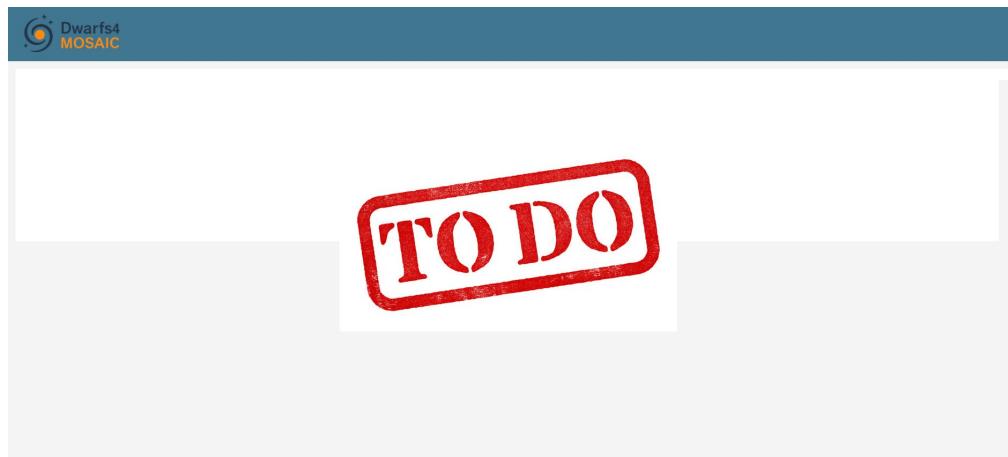


Fig II.22. Add image

Properly registering observing runs is crucial for organizing observing blocks, associating data files, and maintaining accurate records of the observations carried out.

4.2.5 Observing Blocks

Observing blocks are subdivisions of an observing run that define specific targets, instruments, and observation parameters for a given session. Each block includes a name, the observing run it belongs to, assigned targets, instruments, and any relevant notes.



Fig II.23. Add image

Proper configuration of observing blocks ensures that data files are correctly associated with their targets and runs, and that access permissions can be assigned effectively to researchers and groups.

4.2.6 Targets

Targets are the astronomical objects of study in the project. Each target has associated coordinates (right ascension and declination), apparent magnitude, redshift, angular size, visibility semester, and links to observing runs, instruments, and data files.

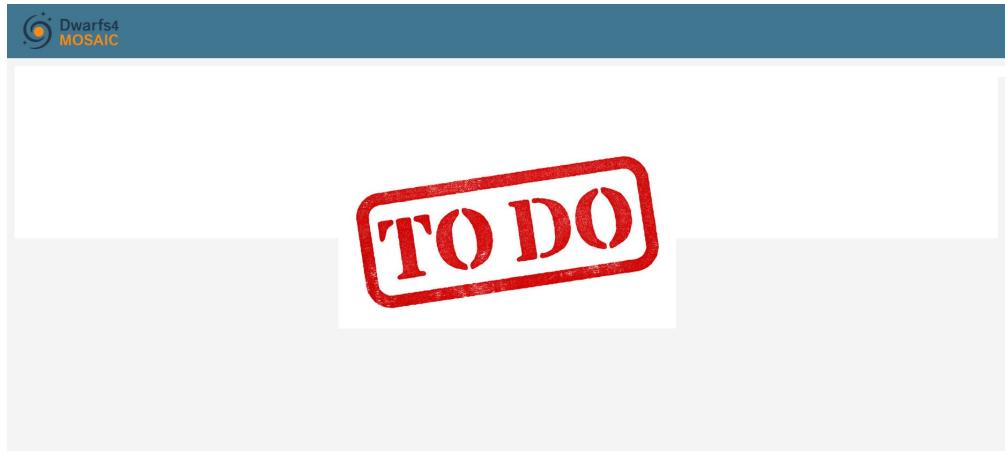


Fig II.24. Add image

Correct configuration of targets allows for accurate organization of observations, data management, and control of user access permissions for each object.

4.3 Authentication and Authorization

4.3.1 User/Researcher Management

Every member involved in the project is represented by two linked records: a **User** and a **Researcher**.

The *User* account manages the basic login credentials and general access settings, such as password and group membership. The *Researcher* record extends this information by adding specific details about the person as a scientist, such as role, PhD status, and permissions to access observing blocks.

When creating a new member, the process always begins with the *User* account. Once the account is saved, the corresponding *Researcher* information can be added and configured.

Creating a new user/researcher

Create account

First, *add user* or *add researcher* from the corresponding category. In both cases, the *Add User* form will be opened.

In this initial form, you must enter the username for the new account and set a password. The password can be typed manually twice for confirmation, or it can be generated automatically by the system. If generated, the password will be displayed so that you can share it with the new user by email.

Add user

The screenshot shows the 'Add user' form with the following fields:

- Username:** agil (input field)
- Password-based authentication:** Enabled Disabled (radio buttons)
Description: Whether the user will be able to authenticate using a password or not. If disabled, they may still be able to authenticate using other backends, such as Single Sign-On or LDAP.
- Generate password** button (button)
- Password:** vb~wV&WiU[t5] (input field)
Validation messages:
 - Your password can't be too similar to your other personal information.
 - Your password must contain at least 8 characters.
 - Your password can't be a commonly used password.
 - Your password can't be entirely numeric.
- Password confirmation:** vb~wV&WiU[t5] (input field)
Description: Enter the same password as before, for verification.

Fig II.25. Creating a new user.

Add user information

After saving, you will be redirected to the user details page. In this second step, you can complete the personal information fields (first name, last name, and email), assign staff status if needed, and manage groups and permissions to control access to targets, blocks, and administrative features. To allow the user to access the platform, the **Staff status** option must be checked.

The screenshot shows the 'Permissions' section of a user profile. At the top, there are two checked checkboxes: 'Active' (which designates the user as active) and 'Staff status' (which allows the user to log into the Dwarfs4MOSAIC site). Below these are two lists for managing groups. The left list, 'Available groups', contains 'megara-group' and 'weave-group'. The right list, 'Chosen groups', is currently empty. At the bottom of the section, there are buttons for 'Choose all' and 'Remove all', with a note explaining that selecting both will grant all permissions from all chosen groups.

Fig II.26. User permissions.

This page also displays additional information automatically managed by the system, such as the dates when the user account was created (**Date joined**) and the last time the user logged in (**Last login**).

The screenshot shows the 'Important dates' section of a user profile. It displays two sets of timestamped information: 'Last login' and 'Date joined'. For 'Last login', the date is 2025-08-23 and the time is 10:47:41. For 'Date joined', the date is 2025-08-23 and the time is 10:29:14. Both entries include a 'Today' button with a calendar icon. Below each set of timestamps is a note stating 'Note: You are 2 hours ahead of server time.'

Fig II.27. User dates.

Add researcher information

Finally, the researcher information can be added either directly from the user page by clicking **Open Researcher**, or by selecting an existing researcher from the **Researchers** category.

In this form, you can complete all fields related to the researcher's role, PhD status, and permissions for observing blocks. This ensures that the account is fully linked to its corresponding researcher profile and that all relevant access rights are properly assigned.

Use the Role field to assign *Core Team* or *Collaborator* status. Core Team members have full access to all targets and observing blocks, while Collaborators are restricted to the targets and blocks assigned to their group. The *Denied blocks* field specifies which observing blocks the researcher does not have permission to access.

Change Researcher

Armando Gil de Paz

Username:	agil
Role:	<div style="border: 1px solid #ccc; padding: 2px;">Core Team</div> <div style="background-color: #0070C0; color: white; padding: 2px;">Core Team</div> <div style="border: 1px solid #ccc; padding: 2px;">Collaborator</div>
General Information	
<input checked="" type="checkbox"/> Is PhD	
Institution:	Universidad Complutense de Madrid, Spain

Fig II.28. Researcher information.

From the researcher form, you can also access the corresponding user account by clicking on the username link, allowing you to view or edit the account information directly.

Deleting a user/researcher

When a user account is deleted, the login credentials are removed, but the researcher record remains in the database. This ensures that the researcher's participation and history in past observing campaigns are preserved. However, once the associated user account is deleted, the researcher record becomes read-only and can no longer be edited.

⚠ Conversely, if a researcher record is deleted, both the researcher and the linked user account are permanently removed.

4.3.2 Groups Management

Groups are used to organize users according to their roles and responsibilities within the project. By assigning users to a group, you can efficiently manage permissions and control access to targets, observing blocks, and administrative features.

Creating a new group is a two-step process. First, *add group* and enter the group name. After saving, you will be redirected to the group details page.

In a second step, the Authorization section appears, where you can assign the group access to specific observing blocks. This specifies which observing blocks the users in the group are allowed to access or modify.

Change group

megara-group

Name: megara-group

Authorization

Available Observing Blocks ?

Filter

◀▶↑↓

Chosen Observing Blocks ?

Filter

◀▶↑↓

Choose all ?
Authorized blocks for users belonging to the group. Hold down "Control", or "Command" on a Mac, to select more than one.

Remove all ?

Fig II.29. Group information.

Users can then be assigned to the group when creating or editing their accounts.

5. Logging Out

The *Administrator* user should refer to chapter [Logging Out](#) in [Part I](#) for general instructions for guidance on logging out.

6. Support

For any support-related issues, the *Administrator* user should refer to chapter [Support](#) in Part I, which provides guidance for contacting the project coordinator and requesting assistance.