



# PITHIA-NRF

Plasmasphere Ionosphere Thermosphere Integrated  
Research Environment and Access services:  
a Network of Research Facilities



## Workflows Registration

at PITHIA e-Science Centre

*User Guide*

Version 1.1

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## 1. Terminology and Abbreviations

API	Application Programming Interface
DAG	Directed Acyclic Graph
eSC	e-Science Centre
URL	Uniform Resource Locator
Data Collection	[ <i>standard PITHIA vocabulary</i> ]: top-level metadata document for registration of provided measurements and model computations (final Step #12 of the registration)
Data Resource	Single data service item and its associated metadata, available through the PITHIA-NRF system.
Dataset	Pre-computed or pre-processed data resource available for download.
ISO	International Standards Organisation
Metadata Model	[ <i>science-neutral</i> ]: Specification of different documents and their contents that are required for registration of data resources
Ontology	[ <i>science-specific</i> ]: A set of standard vocabularies for the selected domain of science
Phenomenon	[ <i>standard ISO vocabulary</i> ]: A physical observable (a.k.a. “Mother Nature”). Not to confuse with events; phenomena are not defined in time or space. The top-level phenomenon categories are Field, Particle, and Wave.
Workflows	[ <i>standard PITHIA vocabulary</i> ]: A combination of different interconnected data collections executed repeatedly in an orchestrated pattern to produce its output result. The pattern in its general form is a directed acyclic graph (DAG) and in its simplest form, a linear sequence of steps.

## 2. Introduction

This document provides detailed instructions on how users can register and publish Workflows at the PITHIA e-Science Centre (eSC).


As mentioned in the related interface in the eSC, a Workflow is “*a combination of different interconnected data collections executed repeatedly in an orchestrated pattern to produce its output result. The pattern in its general form is a directed acyclic graph (DAG) and in its simplest form, a linear sequence of steps.*”.

### **3. Publishing Workflows**


After logging in, registered users are presented with a landing page similar to the one shown in Figure 1. At the bottom of Figure 1, the user can see the institution they are a member of and select to manage their registrations (Figure 2), i.e. register new Data Collections, Workflows, and Static Datasets and/or edit the existing ones.

## PITHIA e-Science Centre


### Data Collections




Search by Content



Simple Search




All Data Collections




Data Collection-related Metadata

### Workflows




Search by Content




All Workflows

### Static Datasets




Search by Content




All Static Datasets


### Space Physics Ontology and Metadata Model



Space Physics Ontology Guide




Space Physics Ontology Browser



Space Physics Metadata Model

### Registration Help



Data Resource Registration Guide

### Features of Interest

Real-world object that carries the property which is observed or modelled to produce a Data Collection.

[SolarSystem](#)  
75 Data Collections

[SolarSystem: Celestial Body](#)  
72 Data Collections

[SolarSystem: Heliosphere](#)  
1 Data Collection

[SolarSystem: Sun](#)  
5 Data Collections

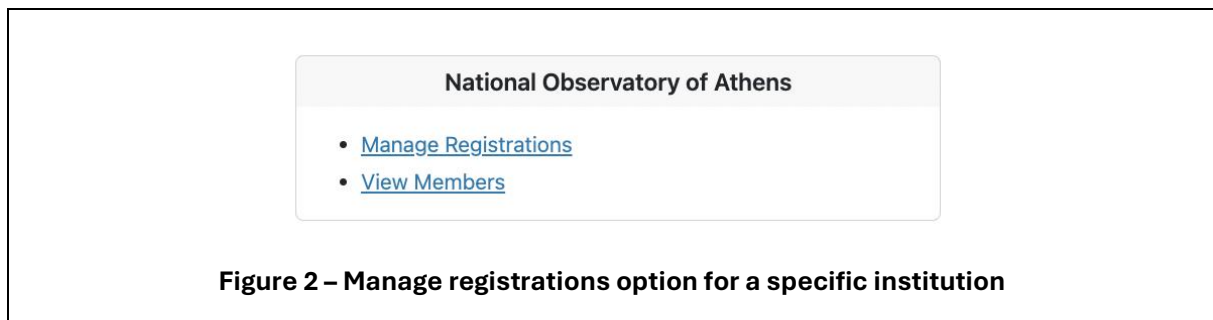
### National Observatory of Athens

- [Manage Registrations](#)
- [View Members](#)

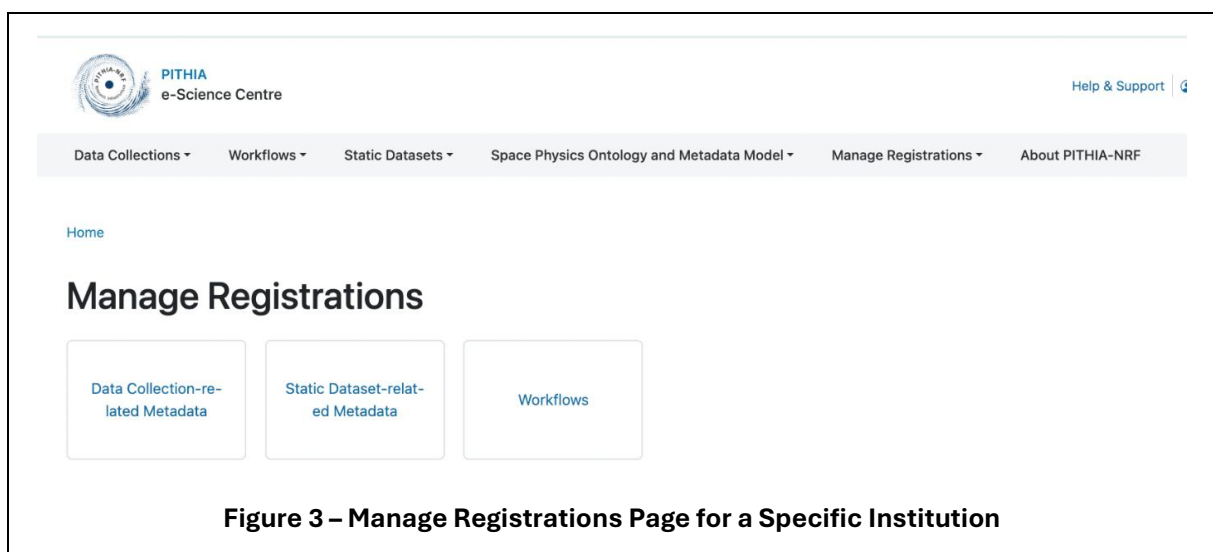
### e-Science Centre Institutions

- [Register a New Institution](#)
- [Join Another Institution](#)

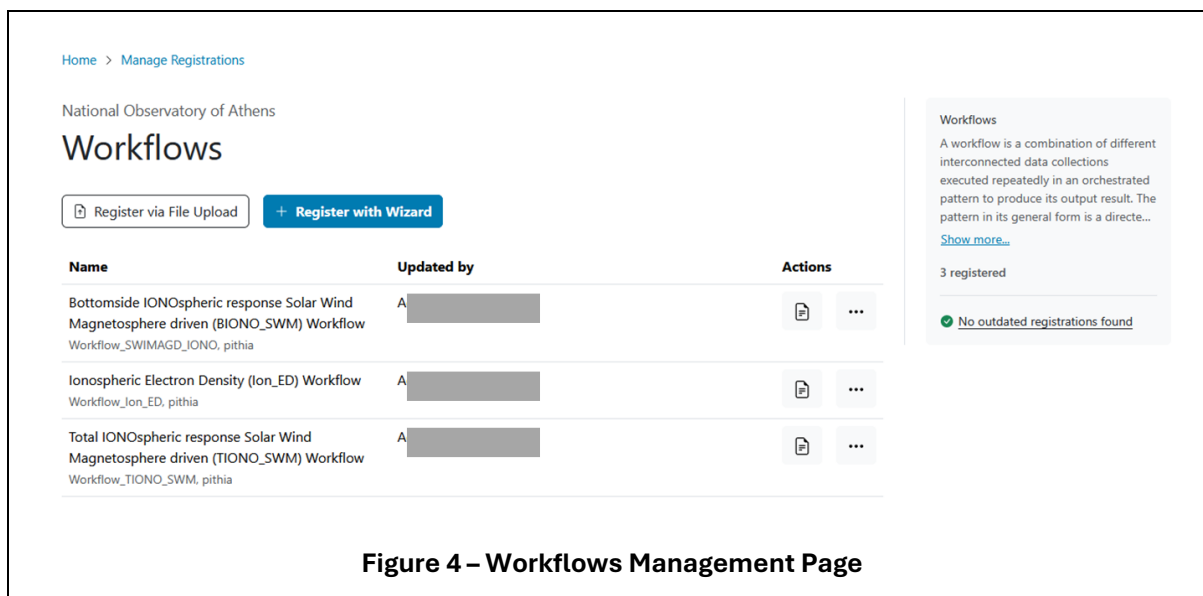
**Figure 1 – Landing page of a registered user with an active membership in an institution**



For users to publish Workflows, they must choose the "Manage Registrations" option, which directs them to the corresponding page, as shown in Figure 3.



As this guide focuses only on Workflows, the user must choose the option "Workflows". This action directs users to the Workflow management page (Figure 4), where a user can register a new Workflow or update an existing one. This guide focuses on new registrations, specifically through the "Register with Wizard" option, which offers a graphical user interface.



Having selected the “Register with Wizard” option (Figure 4), users see a form where they must enter all related information. The mandatory fields are indicated by a red asterisk.

The information is divided into the following categories:

- New Workflow** (Figure 5), where users must:
  - Provide the name of the Workflow.
  - Select from the drop-down list the associated organisation.
- Identifier** (Figure 6), which includes dynamically generated information specifically for the eSC. Here, the users can only modify the metadata version.
- Description** (Figure 7), where the user describes the registration that will be shown when someone finds and reads the specific registration-related information.
- Data Collections** (Figure 8), where you select the Data Collections associated with the Workflow from a drop-down list, namely those that comprise the Workflow. A full list of the eSC registered Data Collections can be found at <https://esc.pithia.eu/data-collections/>.
- Link to an OpenAPI Specification** (Figure 9), where users must:
  - Provide an OpenAPI Specification URL, through which the Workflow runs.
  - Provide a brief description of what the API can do.
- Workflow Details** (Figure 10), where a file with further details on the Workflow, including a graph diagram of the flow, must be provided either by uploading a pdf file or by providing a link to the file.

7. **Validate and Register** (Figure 11), once all the above options are complete the user clicks the “Validate and Register” button, and the eSC completes the registration providing a confirmation message.

Home > Manage Registrations > Workflows

National Observatory of Athens

## New Workflow

\* indicates a required field

Workflow Full Name \*

Organisation Associated With the Workflow \*

Wizard Menu

Changes are automatically saved in your browser (except for files).

Save

Reset

Metadata Sections

Full Name and Organisation

Identifier

Description

Data Collections

Link to an OpenAPI Specification

Workflow Details

**Figure 5 – Workflow: Full Name and Associated Organisation**

Metadata Sections

## Identifier

Metadata Version \*

The version number of the object being identified.

1

Local ID and Namespace

Wizard Menu

Changes are automatically saved in your browser (except for files).

Save

Reset

Full Name and Organisation

Identifier

Description

Data Collections

Link to an OpenAPI Specification

Workflow Details

**Figure 6 – Workflow: Identifier**

Metadata Sections

## Description

A free-text description of the workflow: list of individual data collections that are included in the graph. The workflow designer will also upload the diagram of the graph of undertaken execution steps using the workflow registration page at e-Science Centre. The description and the graph diagram will be reviewed for implementation by the system engineers. Only this description text will be searchable at eSC, not the graph diagram.

Wizard Menu

Changes are automatically saved in your browser (except for files).

Save

Reset

Full Name and Organisation

Identifier

Description

Data Collections

Link to an OpenAPI Specification

Workflow Details

**Figure 7 – Workflow: Description**



Metadata Sections
Full Name and Organisation
Identifier
Description
Data Collections
Link to an OpenAPI Specification
Workflow Details

## Data Collections

Data collections contributing to the workflow.

Data Collection 1 \*

Data Collection 2 and others \*

### Wizard Menu

Changes are automatically saved in your browser (except for files).

Save

Reset

**Figure 8 – Workflow: Data Collections**

Metadata Sections
Full Name and Organisation
Identifier
Description
Data Collections
Link to an OpenAPI Specification
Workflow Details

## Link to an OpenAPI Specification

OpenAPI Specification URL \*

Description

E.g. a brief description of what the API can do

### Wizard Menu

Changes are automatically saved in your browser (except for files).

Save

Reset

**Figure 9 – Workflow: Link to an OpenAPI Specification**

Metadata Sections
Full Name and Organisation
Identifier
Description
Data Collections
Link to an OpenAPI Specification
Workflow Details

## Workflow Details \*

A file with further details, including a graph diagram of the flow. Choose below whether to upload the file or to provide a link to it.

☒ File Upload

Browse... No file selected.

Accepted formats: PDF

☐ Link to the Workflow Details File

https://

Use this option if you would like to link to a workflow details file outside the e-Science Centre. If choosing this option, we recommend:

- The workflow details file is in PDF format.
- The link points directly to the workflow details file.

### Wizard Menu

Changes are automatically saved in your browser (except for files).

Save

Reset

**Figure 10 – Workflow: Workflow Details**

Validate and Register

**Figure 11 – Workflow: Validate and Register**