



ESPAS User's Manual

July 2015

Contents

Table of Contents

Contents.....	2
1. ESPAS Portal.....	3
1.1 Home page.....	4
1.2 Log in.....	5
1.2.1 Forgot Password.....	7
1.3 Register (user).....	10
1.4 ESPAS Project.....	12
1.5 Contact Us.....	13
1.6 Search menu.....	15
1.6.1 Time Period.....	17
1.6.2 Assets.....	19
1.6.3 Observed Properties.....	23
1.6.4 Observation Collections.....	27
1.6.5 Time/Location.....	32
1.7 Browse menu.....	33
1.7.1 ESPAS Metadata.....	33
1.7.2 ESPAS Space Physics Ontology.....	37
1.7.3 ESPAS Supporting Vocabularies.....	40
1.8 ESPAS Policies menu.....	43
1.9 Support menu.....	45
1.9.1 About ESPAS.....	45
1.9.2 ESPAS Data Model.....	46
1.9.3 ESPAS Space Physics Ontology.....	47
1.9.4 Glossary.....	48
1.9.5 For Data Providers.....	49
1.9.6 Contact Us.....	51
1.10 My Account menu.....	53
1.10.1 My Personal Information.....	53
1.10.2 My Dataset File Downloads.....	55
1.10.3 My Data Values Downloads.....	59
1.11 News.....	65
1.12 Events.....	66
1.13 Partners.....	67
1.14 Data Providers.....	68
2. Metadata Search.....	69
2.1 Progressive Search.....	69
2.3 Time/Location Search.....	69
3. Download of Data Files.....	69
4. Download of Data Values.....	69

1. ESPAS Portal

The ESPAS Portal has been developed in the framework of the ESPAS project (<http://www.espas-fp7.eu/>) and is available at the following url address:

<https://www.espas-fp7.eu/portal/index.html>

ESPAS is a data e-infrastructure facilitating access to observations and model predictions of the near-Earth space environment, a region extending from the Earth's atmosphere up to the outer radiation belts. Through the ESPAS portal the user can have access to a large number of repositories with heterogeneous data from ground and space, in situ and remote sensors. The user can perform searches for observations using specific criteria (e.g. time, instrument) and then (s)he can download data files or data values.

More precisely, the ESPAS portal provides the following services to the user:

1. Metadata search for observations that satisfy the following specific criteria:
 - Time period: the time period when the observations were acquired
 - Assets: the Instruments and Models that were used for the generation of the observations
 - Observed properties: the observed properties that were measured in the observations
 - Observation collections: the collections that the observations belong to
 - Location: the location of the platforms (ground-based observatories or satellites) on which the instruments are mounted and used for the generation of the observations

The metadata search is open to all users with no registration required.

2. Download of data files: The result of a metadata search is a list of the observation collections (that contain the observations) that satisfy the query criteria. Then, the user can proceed to download data files originating to the ESPAS data providers. The data files Note that user registration and login to ESPAS portal is required for this service.
3. Download of data values: The result of a metadata search is a list of the observation collections (that contain the observations) that satisfy the query criteria. Then, the user can request to download data values from specific observed properties, as extracted from the data files. A subset of the observed properties is available for download as extracted data values. After a data value download request, the user gets as a result a text file (in txt or XML format) that contains the values of the selected observed properties. Note that user registration and login to ESPAS portal is required for this service.
 - Plot of the data values: After a data value download request, the user can view

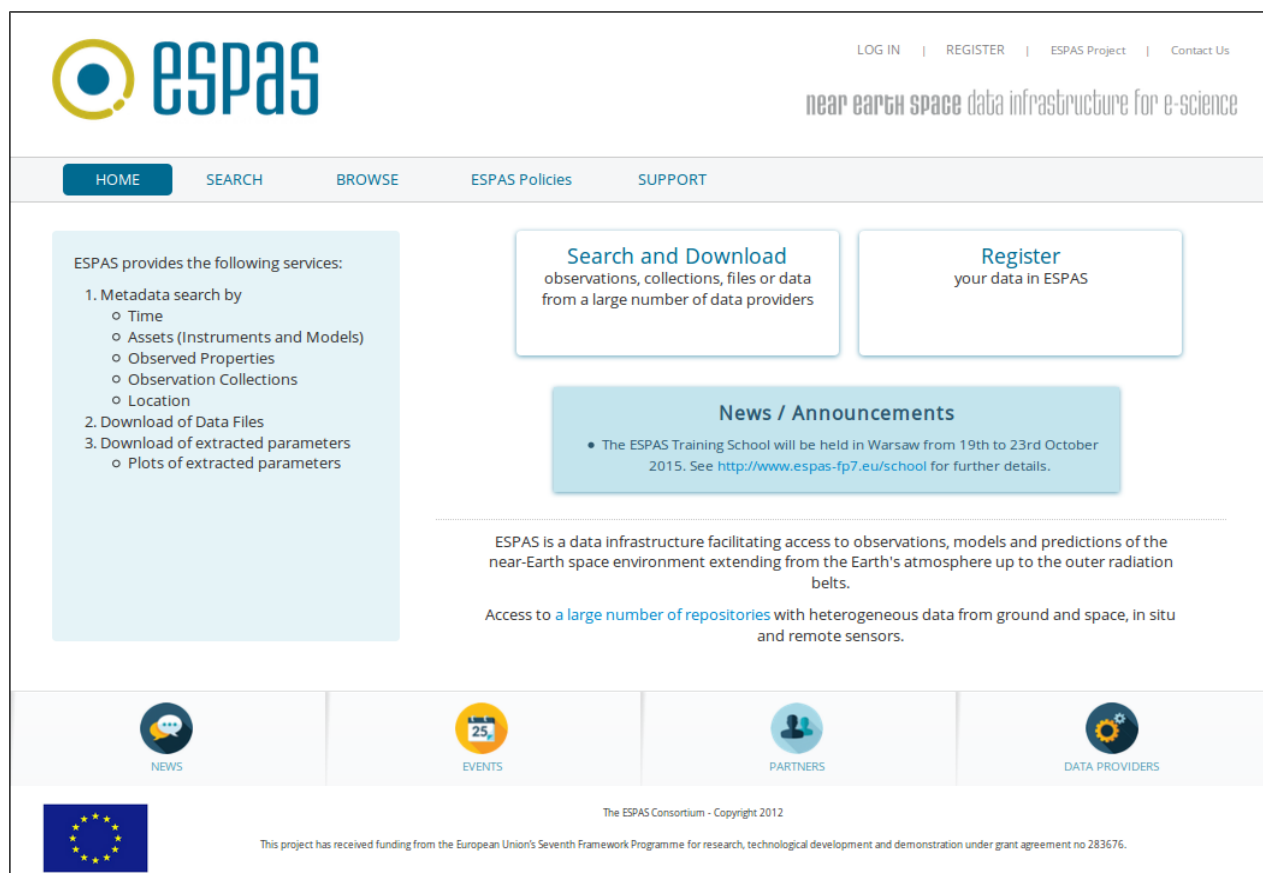
or download a plot that presents the values of the selected observed properties.

All the data in ESPAS portal are provided by the ESPAS Data Providers. The ESPAS Data Providers are special users of the ESPAS portal that have some added functionalities comparing to a user of ESPAS (e.g. register metadata).

This manual presents a description of the ESPAS portal and its functionalities with examples and screen shots for the user.

1.1 Home page

The home page of the ESPAS Portal is presented below and consists of the following areas:

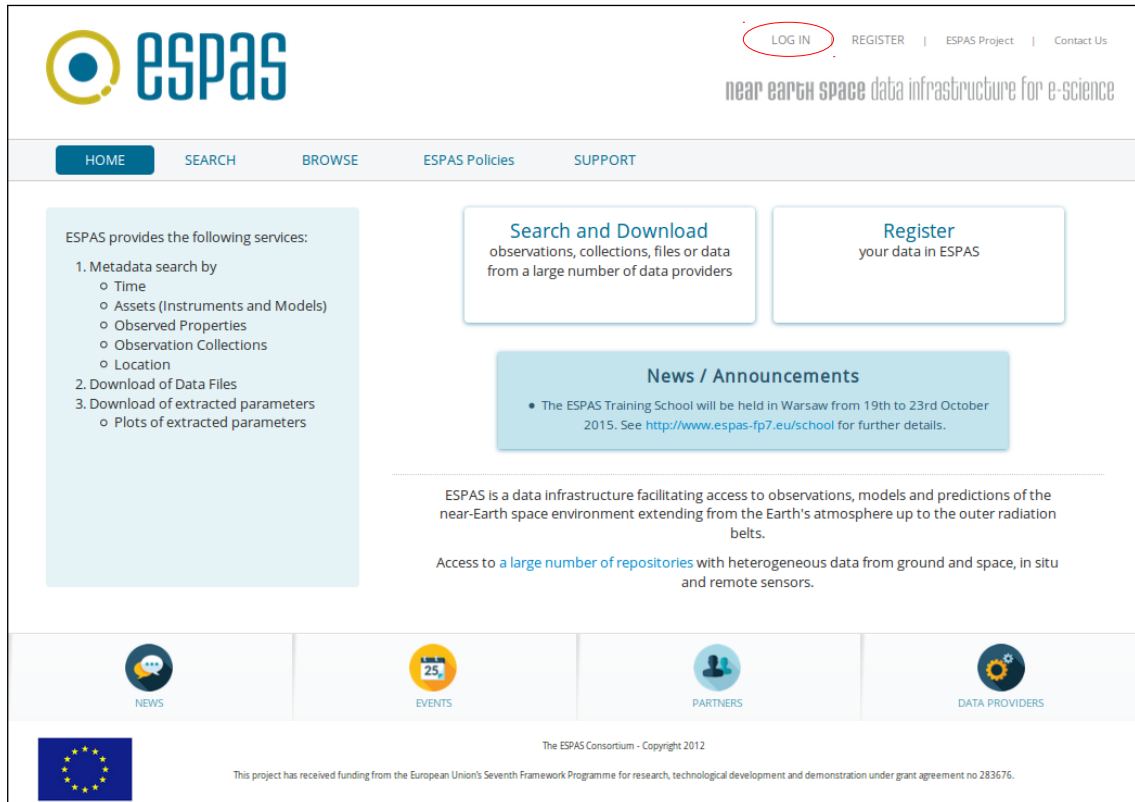


1. Top right menu: provides the links for the Login, Registration, the ESPAS project and Contact page.
2. Main menu: provides the links for the Search, Browse, ESPAS Policies, Support and My account pages
3. An overview of the ESPAS services
4. A link to the main Search and Download page
5. Data Providers: a link to the Manage Data Source page, Users: a link to the Support → For Data Providers
6. News and announcements area
7. A brief description of ESPAS portal
8. Bottom menu: provides links for the News, Events, Partners and Data Providers pages of ESPAS project website

1.2 Log in

In order the user to download data files or data values, user login to the ESPAS portal is required.

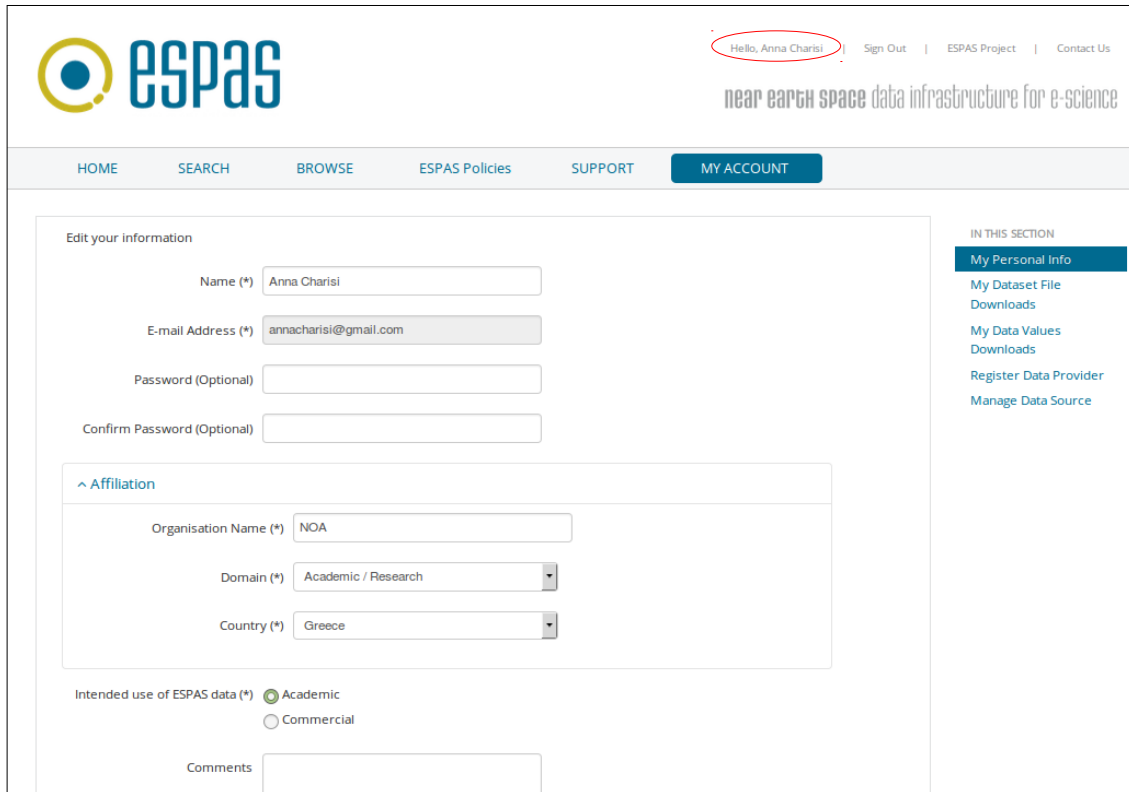
1. Click the **LOG IN** link located at the top right menu bar.



2. Provide your credentials: email address and password, and click **Login**.

The image shows the ESPAS portal login page. It features a login form with two input fields: 'ESPAS Account (E-mail Address *)' containing the email 'annacharisi@gmail.com' and 'Password (*)' with masked characters. Below the password field is a blue 'Login' button. A link for 'Forgot your password?' is located below the login button. The page layout is consistent with the homepage, featuring the ESPAS logo, navigation bar, and footer.

3. You are redirected to the **My Account** → **My personal info** page, in case you want to edit your information. Note the “Hello, name” that is presented on the top right menu, that confirms your logged in status.



The screenshot displays the ESPAS (European Space Policy Analysis and Support) website's 'My Account' page. The top navigation bar includes the ESPAS logo, a user greeting 'Hello, Anna Charisi' (circled in red), and links for 'Sign Out', 'ESPAS Project', and 'Contact Us'. Below this is a secondary navigation bar with links for 'HOME', 'SEARCH', 'BROWSE', 'ESPAS Policies', 'SUPPORT', and 'MY ACCOUNT' (highlighted in blue). The main content area is titled 'Edit your information' and contains several form fields: 'Name (*)' (filled with 'Anna Charisi'), 'E-mail Address (*)' (filled with 'annacharisi@gmail.com'), 'Password (Optional)', and 'Confirm Password (Optional)'. A section titled '^ Affiliation' contains 'Organisation Name (*)' (filled with 'NOA'), 'Domain (*)' (a dropdown menu showing 'Academic / Research'), and 'Country (*)' (a dropdown menu showing 'Greece'). Below this, there are radio buttons for 'Intended use of ESPAS data (*)', with 'Academic' selected and 'Commercial' unselected. A 'Comments' text area is at the bottom. On the right side, a sidebar titled 'IN THIS SECTION' lists links: 'My Personal Info' (highlighted in blue), 'My Dataset File Downloads', 'My Data Values Downloads', 'Register Data Provider', and 'Manage Data Source'.

ESPAS

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HOME SEARCH BROWSE ESPAS Policies SUPPORT MY ACCOUNT

Edit your information

Name (*) Anna Charisi

E-mail Address (*) annacharisi@gmail.com

Password (Optional)

Confirm Password (Optional)

^ Affiliation

Organisation Name (*) NOA

Domain (*) Academic / Research

Country (*) Greece

Intended use of ESPAS data (*) ☒ Academic ☐ Commercial

Comments

IN THIS SECTION

My Personal Info

My Dataset File Downloads

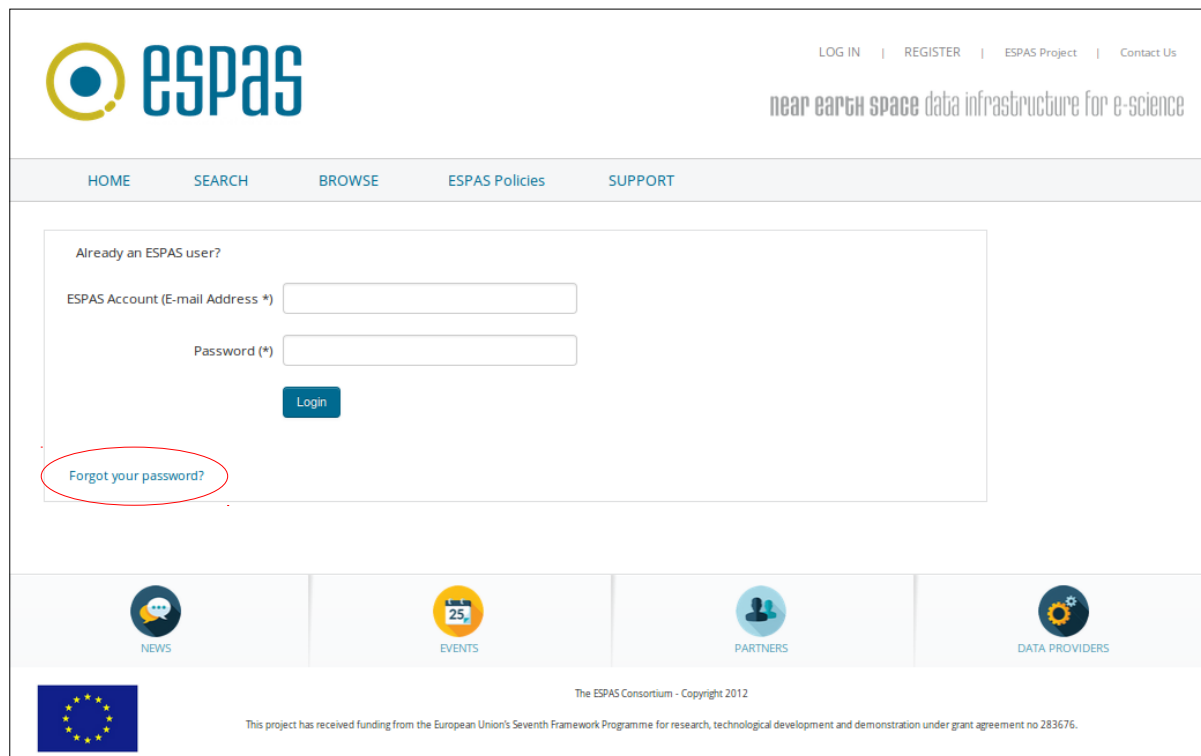
My Data Values Downloads

Register Data Provider

Manage Data Source

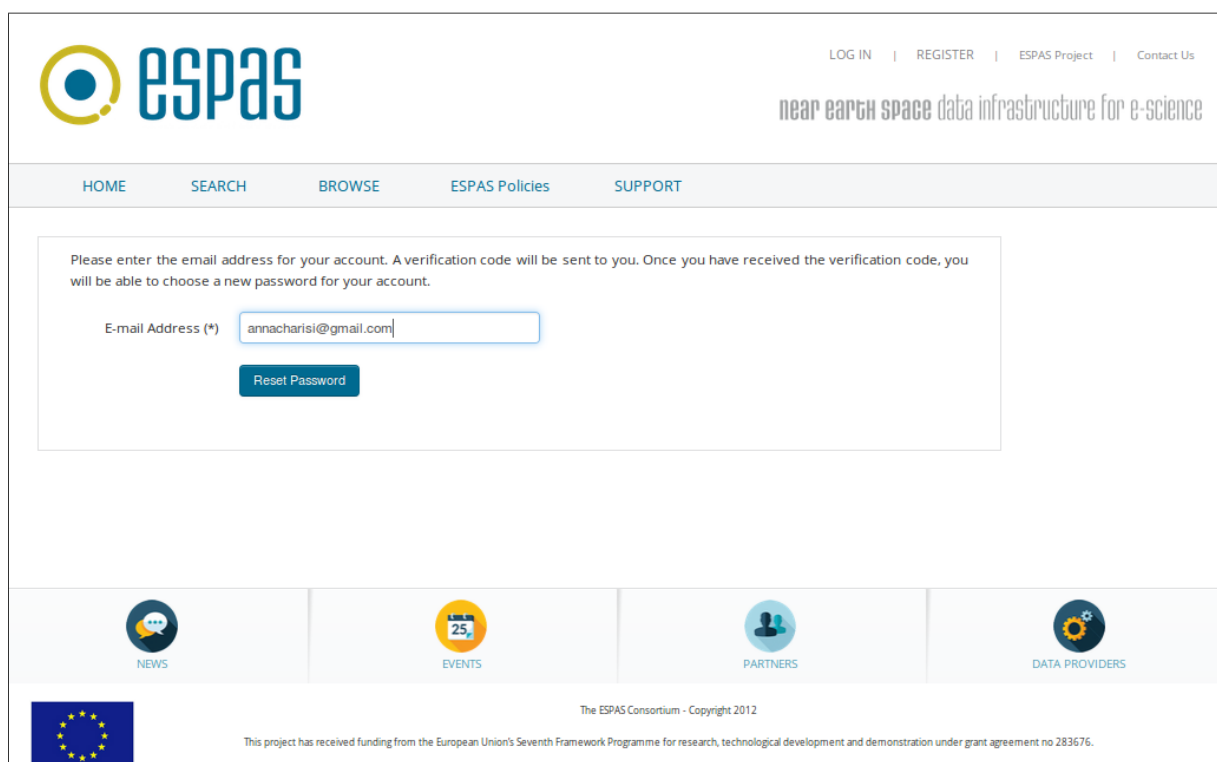
1.2.1 Forgot Password

1. If you have forgotten your password, then go to the Home page and click the **LOG IN** link located at the top right menu bar. At the login page click the **Forgot your password?** link.



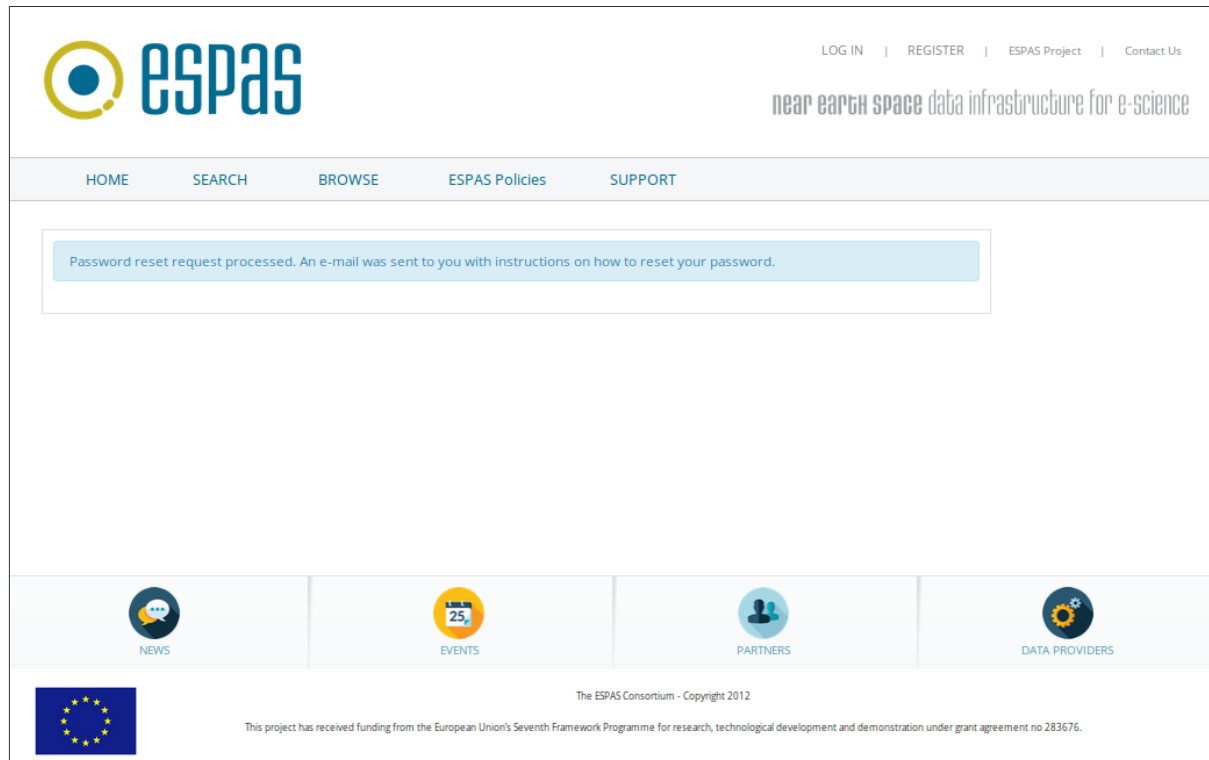
The screenshot shows the ESPAS website's login interface. At the top, the ESPAS logo is on the left, and navigation links (LOG IN, REGISTER, ESPAS Project, Contact Us) are on the right. Below the logo is the tagline "near earth space data infrastructure for e-science". A horizontal menu bar contains links: HOME, SEARCH, BROWSE, ESPAS Policies, and SUPPORT. The main content area is titled "Already an ESPAS user?" and contains two input fields: "ESPAS Account (E-mail Address *)" and "Password (*)", followed by a "Login" button. A red circle highlights the "Forgot your password?" link located below the password field. At the bottom, there are four icons: NEWS, EVENTS, PARTNERS, and DATA PROVIDERS. The footer includes the European Union flag, the text "The ESPAS Consortium - Copyright 2012", and a funding acknowledgment from the European Union's Seventh Framework Programme.

2. Provide your e-mail address and click **Reset Password**.

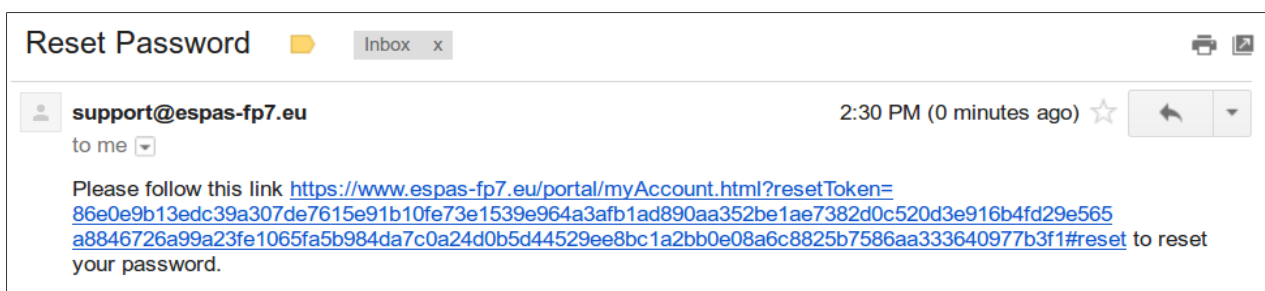


The screenshot shows the ESPAS website's "Forgot Password" page. The layout is identical to the login page, but the main content area is titled "Please enter the email address for your account. A verification code will be sent to you. Once you have received the verification code, you will be able to choose a new password for your account." It features a single input field for "E-mail Address (*)" containing the text "annacharisi@gmail.com", and a "Reset Password" button below it. The rest of the page, including the header, navigation bar, footer icons, and funding information, remains the same.

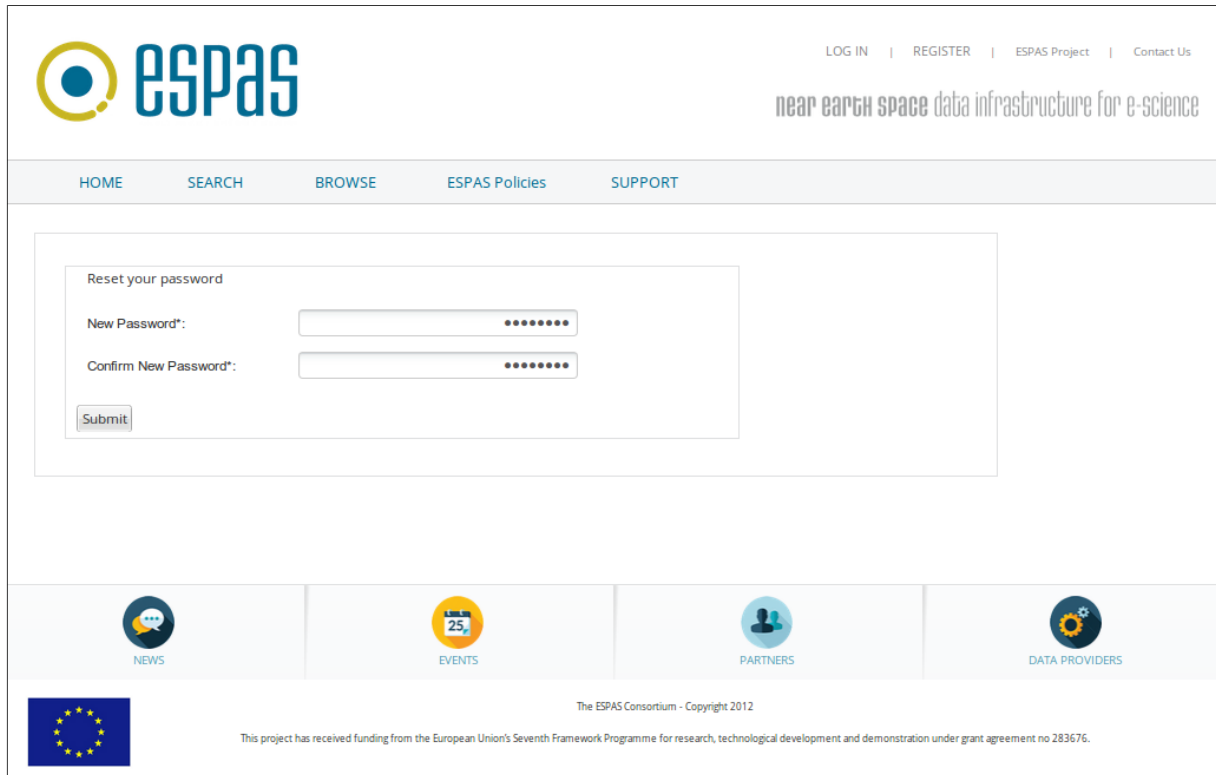
3. A message is presented that confirms your password reset request and an e-mail has been sent to you with instructions on how to reset your password.



4. Check your e-mail. An e-mail from the sender "support@espas-fp7.eu" has been sent that has a link in order to reset your password. Click on that link.

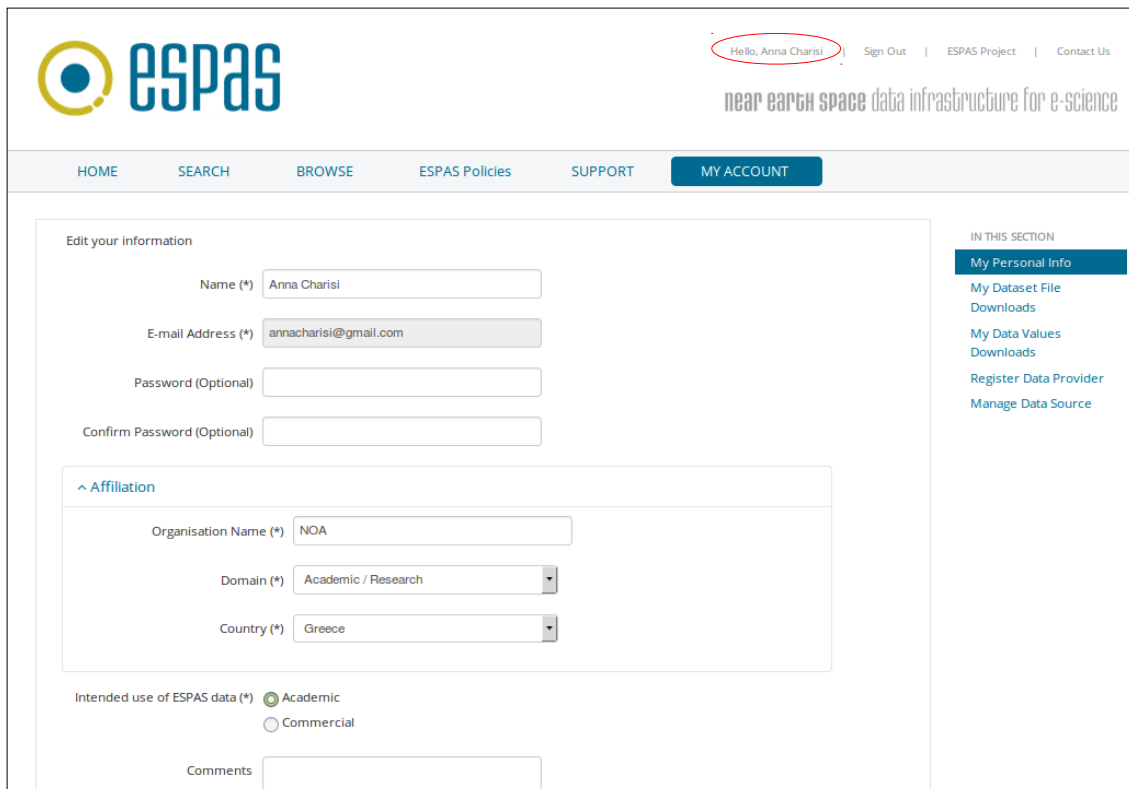


5. In the reset password page, give your new password twice in the appropriate fields and press **Submit**.



The screenshot shows the ESPAS website's 'Reset your password' page. The header includes the ESPAS logo, navigation links (LOG IN, REGISTER, ESPAS Project, Contact Us), and the tagline 'near earth space data infrastructure for e-science'. A secondary navigation bar contains HOME, SEARCH, BROWSE, ESPAS Policies, and SUPPORT. The main content area features a form titled 'Reset your password' with two password input fields labeled 'New Password*' and 'Confirm New Password*', each with a masked password display (dots). A 'Submit' button is located below the fields. The footer contains icons for NEWS, EVENTS, PARTNERS, and DATA PROVIDERS, along with the European Union flag and copyright information: 'The ESPAS Consortium - Copyright 2012' and 'This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 283676.'

6. Your password has been reset and you are automatically logged in the ESPAS and redirected to the **My Account** → **My personal info** page, in case you want to edit your information. Note the “Hello, name” that is presented on the top right menu, that confirms your logged in status.

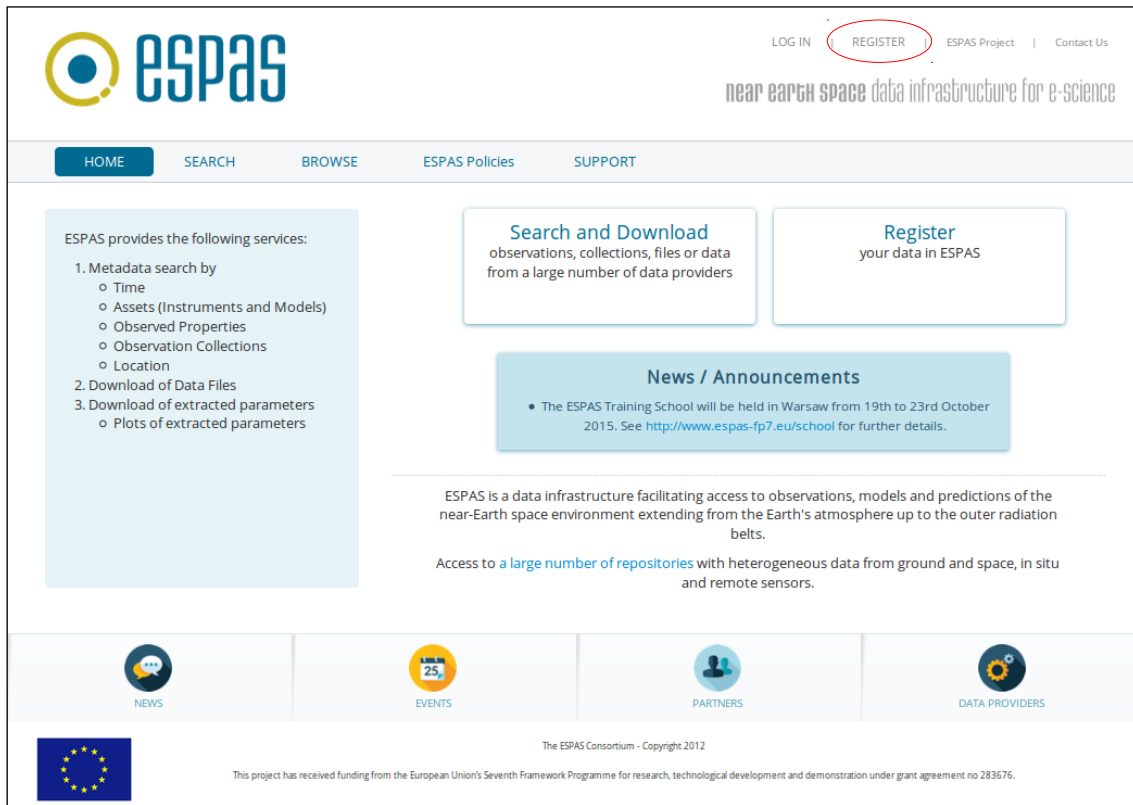


The screenshot shows the 'My Account' page on the ESPAS website, specifically the 'My Personal Info' section. The header includes the ESPAS logo, navigation links (HOME, SEARCH, BROWSE, ESPAS Policies, SUPPORT, MY ACCOUNT), and a user greeting 'Hello, Anna Charisi' circled in red. The tagline 'near earth space data infrastructure for e-science' is also present. The main content area is titled 'Edit your information' and contains several form fields: 'Name (*)' (Anna Charisi), 'E-mail Address (*)' (annacharisi@gmail.com), 'Password (Optional)', 'Confirm Password (Optional)', and an 'Affiliation' section with 'Organisation Name (*)' (NOA), 'Domain (*)' (Academic / Research), and 'Country (*)' (Greece). Below these are radio buttons for 'Intended use of ESPAS data (*)' (Academic selected, Commercial unselected) and a 'Comments' field. A sidebar on the right titled 'IN THIS SECTION' lists links: 'My Personal Info' (highlighted), 'My Dataset File', 'Downloads', 'My Data Values', 'Downloads', 'Register Data Provider', and 'Manage Data Source'.

1.3 Register (user)

In order the user to download data files or data values, user registration and login to the ESPAS portal is required. In order to register to ESPAS portal, please follow the next steps:

1. Click the **REGISTER** link located at the top right menu bar.



2. Provide the required information and click **Register**. Note that the fields marked with an asterisk (*) are mandatory.

Are you new to the ESPAS platform? Register to participate to the ESPAS platform or gain access to the ESPAS data.

Name (*)

E-mail Address (*)

Password (*)

Confirm Password (*)

^ Affiliation

Organisation Name (*)

Domain (*)

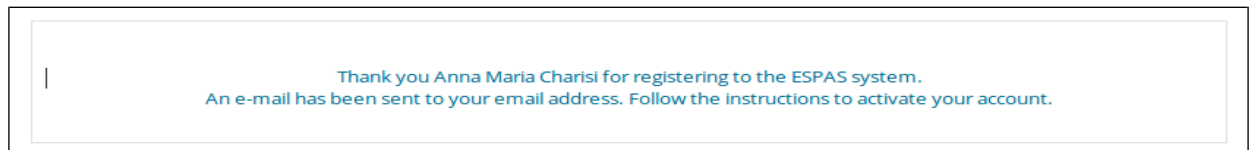
Country (*)

Intended use of ESPAS data (*) ☒ Academic ☐ Commercial

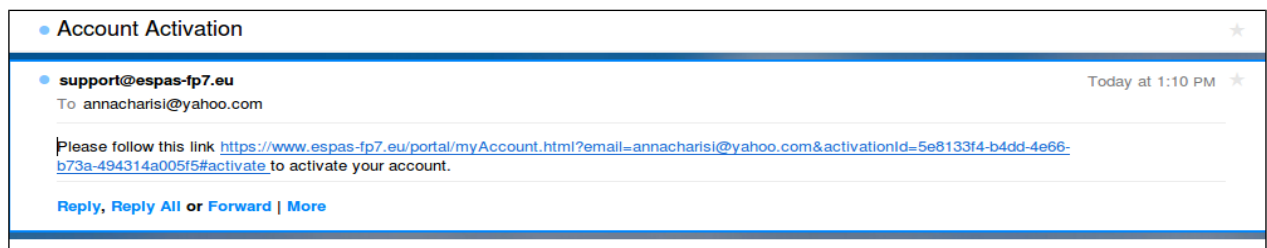
Comments

Data Provider ☐ Check if you are a data provider administrator

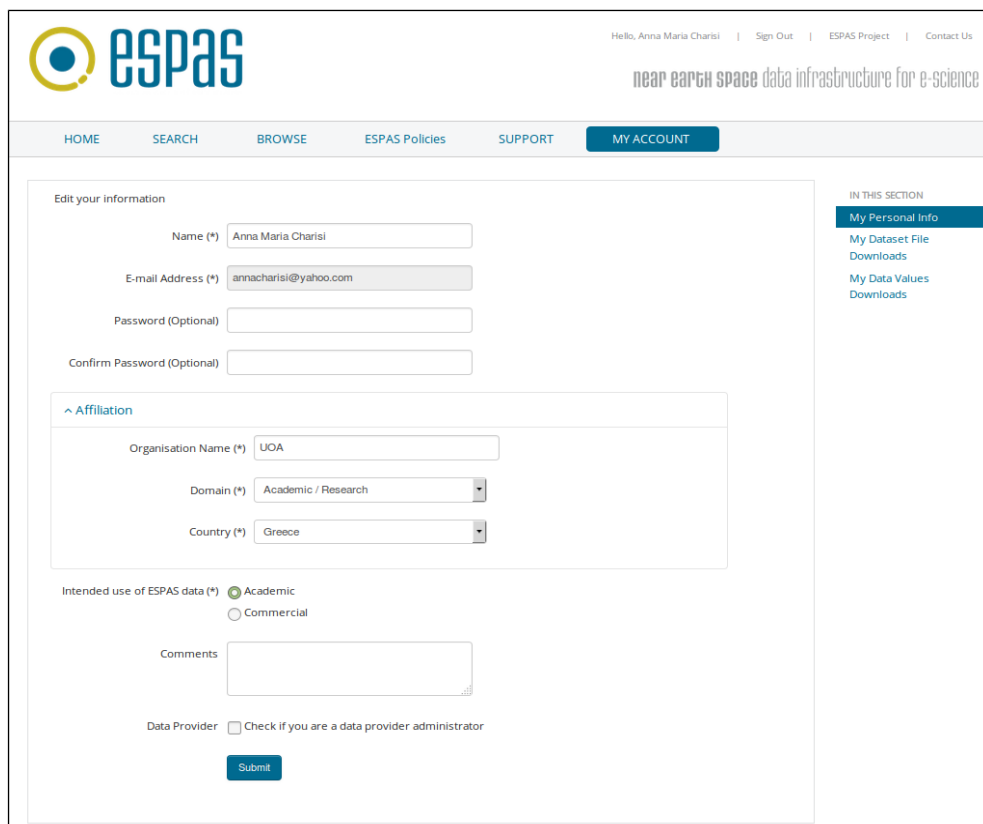
3. A message is presented that confirms your registration to the ESPAS system and an e-mail has been sent to your email address with instructions on how to activate your account.



4. Check your e-mail. An e-mail from the sender "support@espas-fp7.eu" has been sent that has a link in order to activate your account. Click on that link.

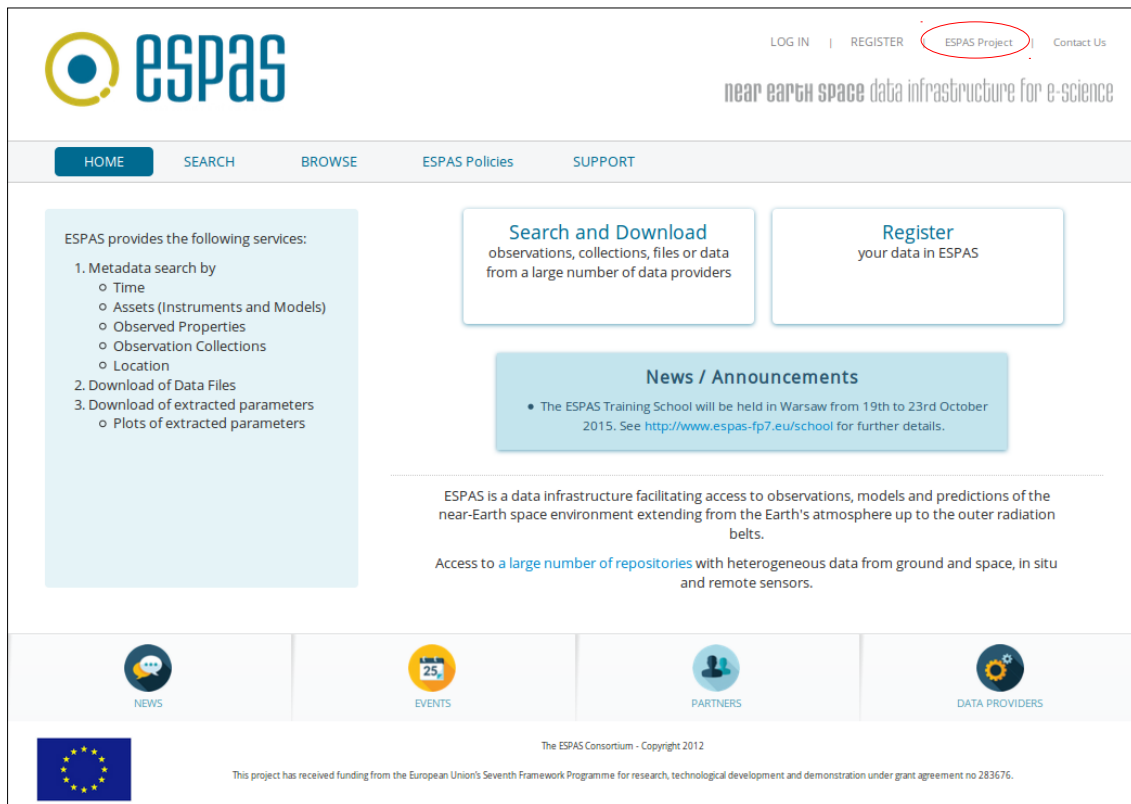


5. Your account has been activated and you are automatically logged in the ESPAS and redirected to the **My Account** → **My Personal Info** page, in case you want to edit your information. Note the "Hello, name" that is presented on the top right menu, that confirms your logged in status.

A screenshot of the ESPAS "My Account" page. The page features a blue header with the ESPAS logo and the text "near earth space data infrastructure for e-science". The main content area is titled "Edit your information" and contains several form fields for user details. The "Affiliation" section is expanded, showing fields for Organisation Name, Domain, and Country. The "Intended use of ESPAS data" section has radio buttons for "Academic" and "Commercial". A "Comments" text area and a "Data Provider" checkbox are also present. A "Submit" button is at the bottom. The right sidebar shows a "My Personal Info" section with links to "My Dataset File Downloads" and "My Data Values Downloads". The top right of the page displays the user's name "Hello, Anna Maria Charisi" and links for "Sign Out", "ESPAS Project", and "Contact Us".

1.4 ESPAS Project

1. If you want more information about ESPAS Project, click the **ESPAS Project** link located at the top right menu bar.



2. The ESPAS project website (<http://www.espas-fp7.eu/>) will open in a new tab/window.



3. A message is presented that confirms that your email was successfully sent to the ESPAS administrator.

Email to administrator was successfully sent

1.6 Search menu

ESPAS portals provides metadata searches for observations based on the following search criteria:

- Time period: the time period when the observations were acquired
- Assets: the instruments and models that were used for the generation of the observations
- Observed properties: the observed properties that were measured in the observations
- Observation collections: the collections that the observations belong to
- Location: the location of the platforms (ground-based observatories or satellites) on which the instruments are mounted and used for the generation of the observations

The metadata search is open to all users with no registration required.

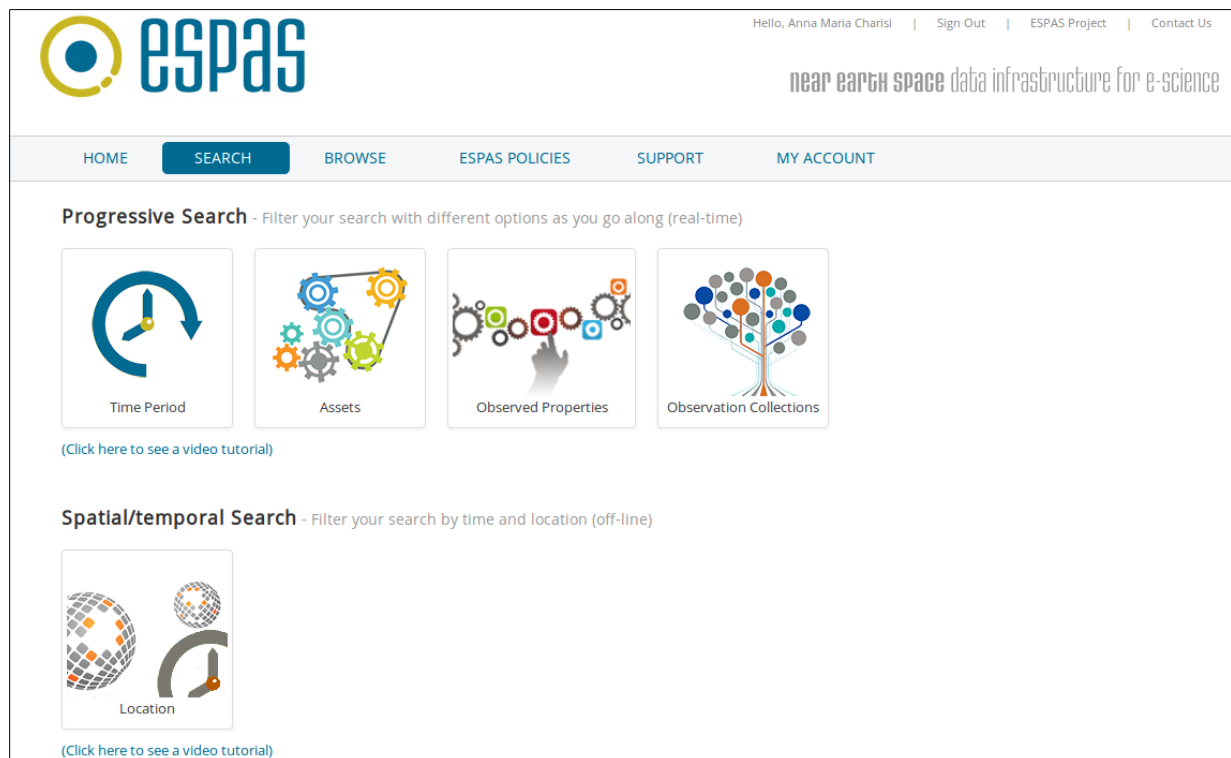
In order to perform a query for observations, ESPAS portal supports the progressive search that helps you to construct a metadata search using criteria from: Time Period, Assets (instruments and/or models), Observed Properties and Observation Collections (please visit Support → ESPAS Data Model and ESPAS Space Physics Ontology for more explanation). You can start your query with any of these criteria by clicking one of the options of the search menu and then continue with any other to filter further your results. This means that at each step the available options that are presented are filtered by the previous selections. For example, if the Athens Digisonde has been selected in the Assets page, and then you click on the Observed Properties page, only the observed properties that are related with the Athens Digisonde instrument will be available for selection. You can submit your query at any stage of the progressive search.

Moreover, the Assets, Observed Properties and Observation Collections search pages are enriched with some extra filters presented at the left that can be used to narrow down or facilitate your selection of the entities presented at the right. The definition of each filter is available at Support → Glossary section. You can select one or more options from each filter and use one or more filters at the same time. Note that the “OR” relationship is implied among the options of the same filter, and an “AND” relationship is implied between the filters. For example, in the Assets search page there are the filters: assets type, platform type and project. If one selects the sounder and magnetometer as asset type, then the assets of type sounder OR magnetometer are presented at the right. A high level query could be represented as: *asset type=sounder OR asset type=magnetometer*. But, if also the DIAS project is selected at the project filter, then the assets that are of type sounder OR magnetometer AND also belong to the DIAS project are presented. A high level query could be represented as: *project=DIAS AND (asset type=sounder OR asset type=magnetometer)*.

At the top part of each of the Search pages there is the **Current Selections** area where the current selected criteria by the user are presented. For example, the time period from 2013-01-01 00:00 to 2013-31-01 23:59 UTC and the Athens Digisonde has been selected so far in the picture below. At the right there are the buttons (B) that link to the remaining search criteria in order to continue building your query. The buttons for the criteria that have already been selected are deactivated. Below these buttons, there is the **Back** button (C) that returns you in the previous selected criteria to refine your selection. But, note that in that case your selections for the current criterion will be lost. You can submit your query anytime by clicking the **Submit** button (D). If you want to start a new search, click the **Start New Search** link (E) below the Submit button.

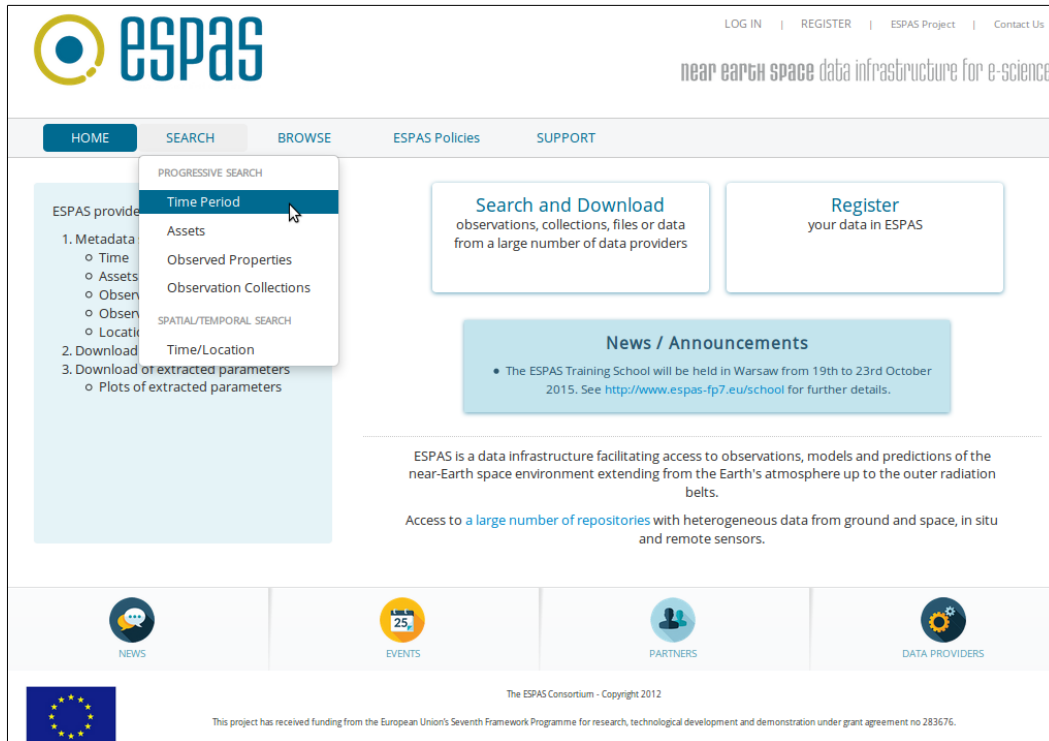


You can start a metadata query by selecting any of the criteria (time period, assets, observed properties, observation collections and time/location) using the Search menu (main menu) or by clicking the **Search and Download** button at the home page.



1.6.1 Time Period

1. In order to start a metadata search (progressive search) using as the first criterion the time period, click **Search** → **Time Period** from the main menu. You can also click **Search and Download** at the home page, and then click the **Time Period** button.



2. At the top part of the Search by time period page, there is the **Current Selections** area (see the section 1.6 Search menu for more information) where your selected criteria are presented. Below this area, there are the **From date**, **To date** fields (A) to define your time period of interest in UTC timezone. Moreover, you can specify the subset of day in UTC (B) (this will apply for all days in the selected time period) by using the fields **Subset start** and **Subset end**. So, you can specify a time period of 1st to 10th January 2014, but also a subset of day 10:00 to 12:00 (UTC). This selection will return the observations that were acquired between the times 10:00 and 12:00 in UTC for the days from 1st to 10th January 2014. If you don't want to define any subset of day, leave the default values (00:00 to 23:59) for these fields.

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HOME SEARCH BROWSE ESPAS Policies SUPPORT

Current Selections
none

Back Submit
Start New Search

Search by time period

Select a period of the observations [Option: specify the time of day to narrow down your results]

Clear

Time period [start to end]

Subset of day [if any]

From date 2015/07/09 09:51

To date 2015/07/09 09:51

Subset start 00:00

Subset end 23:59

NEWS EVENTS PARTNERS DATA PROVIDERS

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3. Using the buttons at the right of the **From date** and **To date** fields, you can select the dates and times at the appropriate pop up windows.

Search by time period

Select a period of the observations [Option: specify the time of day to narrow down your results]

Clear

Time period [start to end]

Subset of day [if any]

From date 2015/07/14 10:15

To date 2015/07/14 10:15

Subset start 00:00

Subset end 23:59

NEWS EVENTS PARTNERS DATA PROVIDERS

4. If you want to define also a subset of day, click on the **Subset start** and **Subset end** fields and using the up and down arrows specify the start and end time (UTC).

Search by time period

Select a period of the observations [Option: specify the time of day to narrow down your results]

Clear

Time period [start to end]

Subset of day [if any]

From date 2013/01/01 00:00

To date 2013/01/31 23:59

Subset start 10:00

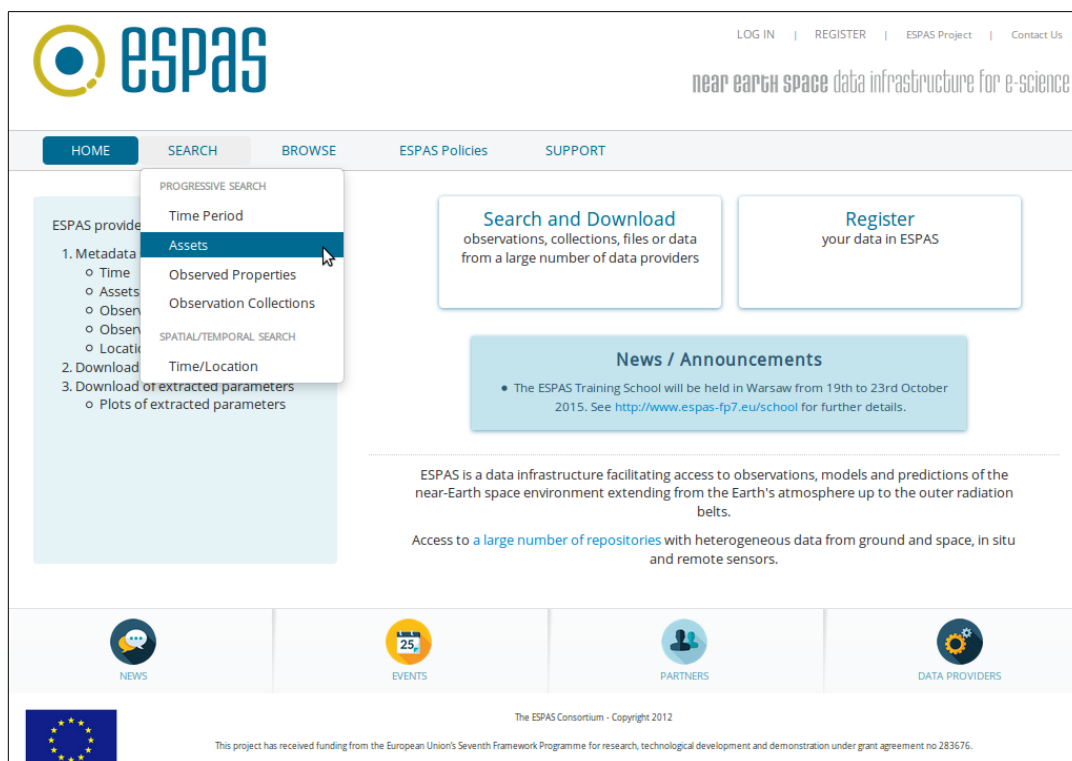
Subset end 12:00

5. When you have finished with the Time period selection, your selected time period and subset of day is presented at the **Current Selections** area. You can continue your metadata query by clicking on any of the activated buttons at the right (Assets, Observed Properties, Observation Collections), finish your query by clicking the **Submit** button or start a new search by clicking the **Start New Search** link.



1.6.2 Assets

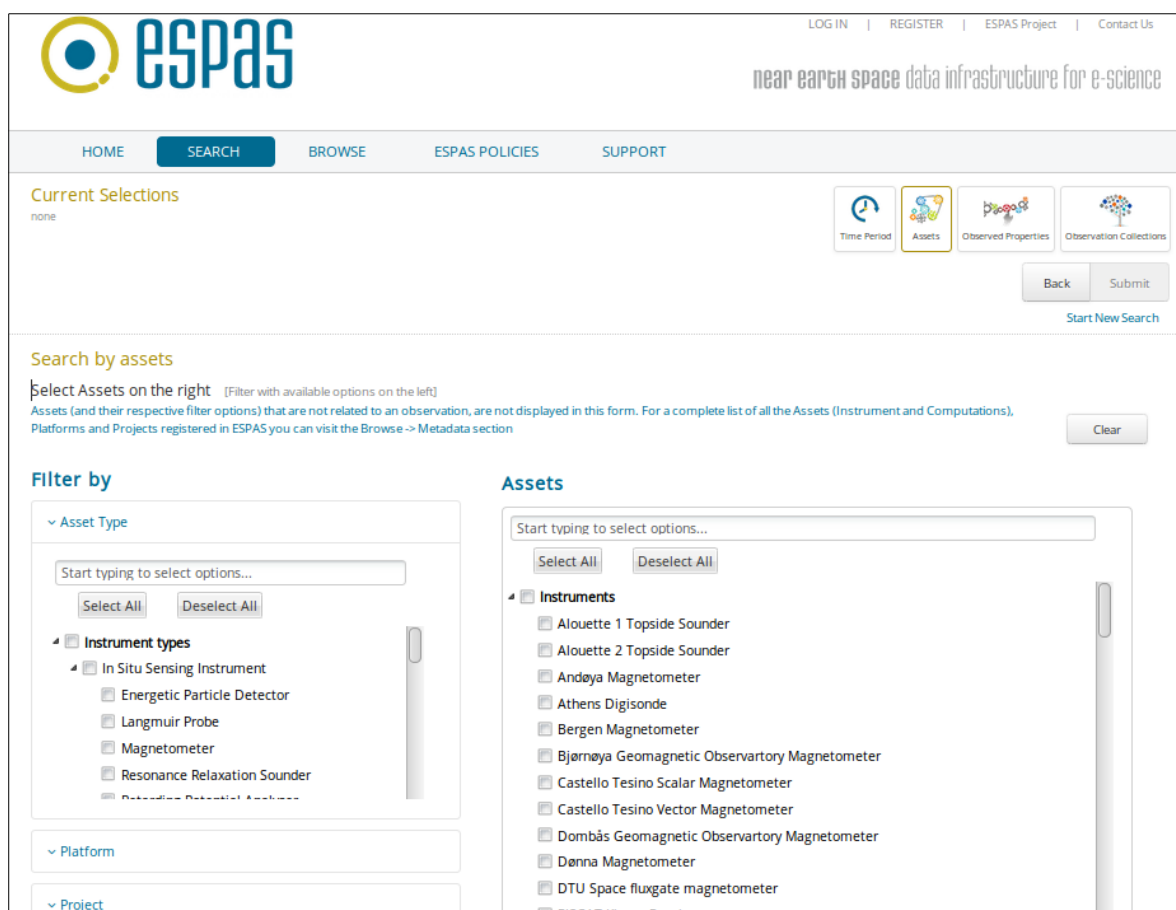
1. According to ESPAS terminology, an asset corresponds to an Instrument or a numerical Model or other software that was used to generate the observation. In order to start a metadata search (progressive search) using as the first criterion the assets, click **Search** → **Assets** from the main menu. You can also click **Search and Download** at the home page, and then click the **Assets** button.



2. At the top part of the Search by assets page, there is the **Current Selections** area (see the section 1.6 Search menu for more information) where your selected criteria are presented. Below this area, at the right part (A) there is a list of all the assets (in alphabetical order) that are associated with observations grouped as Instruments and Models. You can scroll down this list and select the assets you want to include in your metadata query. You can also use the **Select All** button or **Deselect All** to select and deselect all the options respectively. If you hover the mouse pointer over a specific instrument, a pop up window presents its description. The **Clear** button clears all the selections (including the filters).

At the left part (B) there are some filters (Instrument type, Platform, Project) that you can use to narrow down or facilitate your selection of assets presented at the right part. A hierarchical view of each filter is provided. Note also that the selection of an option, automatically selects all its siblings in the hierarchy. You can manually select or deselect the options by clicking the appropriate check boxes. The definition of each filter is available at Support → Glossary section. You can select one or more options from each filter and use one or more filters at the same time.

Note that the “OR” relationship is implied among the options of the same filter, and an “AND” relationship is implied between the filters. If one selects the “sounder” and “magnetometer” as asset type, then the assets of type “sounder” OR “magnetometer” is presented at the right. A high level query could be represented as: *asset type=“sounder” OR asset type=“magnetometer”*. But, if also the “DIAS project” is selected at the project filter, then the assets that are of type “sounder” OR “magnetometer” AND also belong to the “DIAS project” are presented. A high level query could be represented as: *project=“DIAS” AND (asset type=“sounder” OR asset type=“magnetometer”)*.



ESPAS

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HOME SEARCH BROWSE ESPAS POLICIES SUPPORT

Current Selections

none

Time Period Assets Observed Properties Observation Collections

Back Submit

Start New Search

Search by assets

Select Assets on the right [Filter with available options on the left]

Assets (and their respective filter options) that are not related to an observation, are not displayed in this form. For a complete list of all the Assets (Instrument and Computations), Platforms and Projects registered in ESPAS you can visit the Browse -> Metadata section

Clear

Filter by

Asset Type

Start typing to select options...

Select All Deselect All

Instrument types

In Situ Sensing Instrument

Energetic Particle Detector

Langmuir Probe

Magnetometer

Resonance Relaxation Sounder

Radio Frequency Antenna

Platform

Project

Assets

Start typing to select options...

Select All Deselect All

Instruments

Alouette 1 Topside Sounder

Alouette 2 Topside Sounder

Andøya Magnetometer

Athens Digisonde

Bergen Magnetometer

Bjørnøya Geomagnetic Observatory Magnetometer

Castello Tesino Scalar Magnetometer

Castello Tesino Vector Magnetometer

Dombås Geomagnetic Observatory Magnetometer

Dønna Magnetometer

DTU Space fluxgate magnetometer

FISCAT Kiruna Receiver

3. The following example presents the use of the Asset Type filter, which defines the type of the asset (instrument or model) according to a corresponding controlled vocabulary (check also the Instrument and Computation type at the Browse → ESPAS Space Physics Ontology page). The filter presents in a hierarchical view all the assets types that are related with at least one observation. Using the buttons **Select All** or **Deselect All** you can select or deselect all the options respectively.

In this example, the Sounder option has been selected from the Asset Type filter (and all the children) and on the right only the Assets (instruments in this case) that are of type sounder, ionosonde or vertical ionosonde are presented. If you are happy with the list of assets presented at the right, select the ones you want to be included in your metadata query by clicking the check boxes. Otherwise, you can use the other filters: Platform and/or Project.

The screenshot shows the 'Search by assets' interface. On the left, under 'Filter by', the 'Asset Type' filter is expanded, showing a hierarchical list of options. The 'Sounder' option is selected, and its sub-options 'Ionosonde' and 'Vertical Ionosonde' are also selected. On the right, under 'Assets', a list of instruments is displayed. The 'Athens Digisonde' is selected, and a tooltip provides details about it: 'Athens Digisonde is an ionospheric station produced by Lowell Digisonde International, capable of making measurements of the overhead ionosphere, and provides real-time on-site processing and analysis to characterize radio signal propagation in support of communications or surveillance operations, and enhance ionospheric research efforts. Athens Digisonde is installed in Palaia Penteli (38.03 lat, 23.52 lon). Athens Digisonde data can be accessed through http://www.iono.noa.gr'.

4. Click on the Platform on the left to view all the options for this filter, which defines the platform type where the instruments are mounted on (check also the Platform type vocabulary at the Browse → ESPAS Supporting Vocabularies page). Clicking on an option at the left, the list of assets is updated at the right to reflect the selections. You can choose the options for the platform according to your preferences. Then, select your assets of interest by clicking the check boxes at the right.

The screenshot shows the 'Search by assets' interface. On the left, under 'Filter by', the 'Platform' filter is expanded, showing a list of options. The 'Ground based station' option is selected, and its sub-options 'Adventdalen Auroral Station (AAS)', 'Attu (A)', 'Castelle', 'EISCAT', and 'EISCAT Site Tromsø (Tromsø)' are also selected. On the right, under 'Assets', a list of instruments is displayed. The 'UCL FPI Svalbard Red and Green Lines' is selected.

5. Click on the Project filter on the left to view all the options. This filter defines the project that the instruments/models are associated with (check also the Project entries at the Browse → ESPAS Metadata page). Clicking on an option at the left, the list of assets is updated at the right to reflect the selections. You can choose the options for the project according to your preferences. In the example below, the DIAS project has been selected and at the right all the assets (instruments and models) that are associated with this project are presented. Select your assets of interest by clicking the check boxes.

Search by assets

Select Assets on the right [Filter with available options on the left]
Assets (and their respective filter options) that are not related to an observation, are not displayed in this form. For a complete list of all the Assets (Instrument and Computations), Platforms and Projects registered in ESPAS you can visit the Browse -> Metadata section

Filter by

- Asset Type
- Platform
- Project
 - Start typing to select options...
 - Select All Deselect All
 - ☐ Electron Density Assimilative Model (EDAM)
 - ☐ electronic Space Weather upper atmosphere (eSWua)
 - ☒ European Digital Upper Atmosphere Server (DIAS)
 - ☐ Space Weather Application Center Ionosphere (SWACI)
 - ☐ SuperDARN (sdarn)

Assets

Start typing to select options...

Select All Deselect All

- ☒ Instruments
 - ☐ Athens Digisonde
- ☒ Models
 - ☐ ARTIST
 - ☐ DIAS Ne3D
 - ☐ Lockwood Formula
 - ☐ SIRM
 - ☐ SIRMUP
 - ☐ TaD (Topside Sounders Model assisted by Digisonde)

6. When you have finished with the Assets selection, your selected assets are presented at the **Current Selections** area. You have now the following options:
- continue your metadata query by clicking on any of the activated buttons at the right (Time Period, Observed Properties, Observation Collections)
 - finish your query by clicking the **Submit** button or
 - start a new search by clicking the **Start New Search** link.

Current Selections

Assets: Alouette 1 Topside Sounder, Alouette 2 Topside Sounder, Rome AIS INGV Ionosonde

Assets

Alouette 1 Topside Sounder, Alouette 2 Topside Sounder, Athens Digisonde, Rome AIS INGV Ionosonde

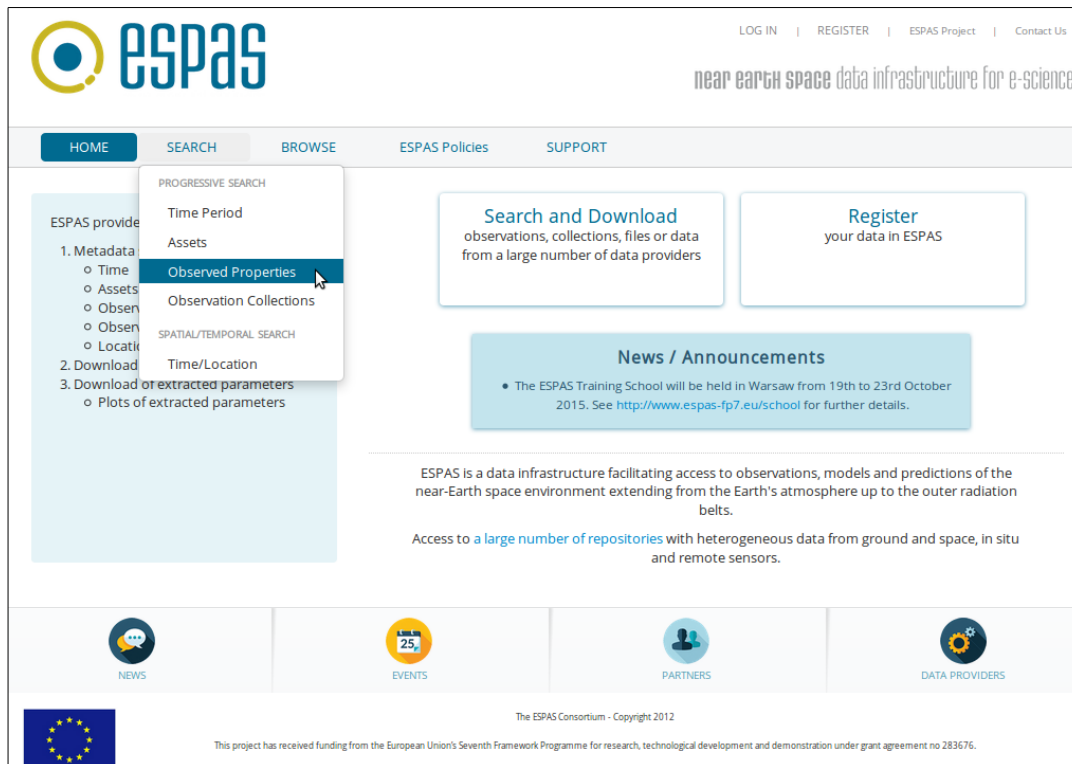
Time Period Assets Observed Properties Observation Collections

Back Submit

Start New Search

1.6.3 Observed Properties

1. In order to start a metadata search (progressive search) using as the first criterion the observed properties, click **Search** → **Observed Properties** from the main menu. You can also click **Search and Download** at the home page, and then click the **Observed Properties** button. For more information on the “observed property” term, please visit Support → ESPAS Data Model page and Support → ESPAS Space Physics Ontology.



2. At the top part of the Search by observed properties page, there is the **Current Selections** area (see also the section “1.6 Search menu” for more information) where your selected criteria are presented. Below this area, at the right part (A) there is a list of all the observed properties (in alphabetical order) that are associated with observations. You can scroll down this list and select the observed properties you want to include in your metadata query. You can also use the **Select All** button or **Deselect All** to select and deselect all the options respectively. If you hover the mouse pointer over a specific observed property, a pop up window presents its description. The **Clear** button clears all the selections (including the filters).

At the left part (B) there are some filters (Phenomenon, Measurand, Qualifier) that you can use to narrow down or facilitate your selection of observed properties presented at the right part. A hierarchical view of each filter is provided. Note also that the selection of an option, automatically selects all its siblings in the hierarchy. You can manually select or deselect the options by clicking the appropriate check boxes. The definition of each filter is available at Support → ESPAS Space Physics Ontology page. You can select one or more options from each filter and use one or more filters at the same time.

Note that the “OR” relationship is implied among the options of the same filter, and an “AND”

relationship is implied between the filters. If one selects the “ion” and “electron” as phenomenon, then the observed properties with phenomenon “ion” OR “electron” are presented at the right. A high level query could be represented as: *phenomenon=“ion” OR phenomenon=“electron”*. But, if also the “temperature” is selected at the measurand filter, then the observed properties with phenomenon “ion” OR “electron” AND measurand equal to “temperature” are presented. A high level query could be represented as: *measurand=“temperature” AND (phenomenon=“ion” OR phenomenon=“electron”)*.

The screenshot shows the ESPAS web interface. At the top, there is a header with the ESPAS logo and navigation links: LOG IN, REGISTER, ESPAS Project, and Contact Us. Below the header is a navigation bar with links: HOME, SEARCH, BROWSE, ESPAS POLICIES, and SUPPORT. The main content area is divided into two sections. The top section, titled "Current Selections", shows "none" and has buttons for "Time Period", "Assets", "Observed Properties", and "Observation Collections". The bottom section, titled "Search by observed properties", has a "Clear" button and a "Start New Search" link. The "Filter by" section on the left has three expandable filters: "Phenomenon", "Measurand", and "Qualifier". The "Phenomenon" filter is expanded, showing a search bar and a list of options: Field (Electric Field, Magnetic Field), Particle (Charged Particle, Ion), and Wave. The "Observed Properties" section on the right has a search bar and a list of properties: Electron Density (Ne), Total Electron Content (I), Total Vertical Electron Content (I), Magnetic Field (B), Magnetic Field NED Eastward Component (Y), Magnetic Eastward NED Field Strength Variation (dBy), Magnetic Field NED Northward Component (X), Magnetic Northward NED Field Strength Variation (dBx), Magnetic Field Vertical Component (Z), Magnetic Vertical Field Strength Variation (dBz), Minimum frequency of Reflections from Plasma Layer (fmin), Minimum frequency of ionospheric reflections in E region (fminE), and Minimum frequency of ionospheric reflections in Es layer (fminEs). Each property has a checkbox to select or deselect it.

3. The following example presents the use of the Phenomenon filter (check also the Phenomenon vocabulary at the Browse → ESPAS Space Physics Ontology page). The filter presents in a hierarchical view all the phenomenon entries of the observed properties that are related with at least one observation. Using the buttons **Select All** or **Deselect All** you can select or deselect all the options respectively.

In this example, the “Wave” option has been selected from the Phenomenon filter (and all its siblings) and on the right the observed properties that are of wave phenomenon are presented. If you hover the mouse pointer over a specific observed property, a pop up window presents its description. If you are happy with the list of observed properties presented at the right, select the ones you want to be included in your metadata query by clicking the check boxes. Otherwise, you can use the other filters: Measurand and/or Qualifier.

Search by observed properties

Select Observed Properties on the right [Filter with available options on the left] Clear

Filter by

~ Phenomenon

Start typing to select options...

Select All Deselect All

☐ Electron

☐ Neutral Particle

☒ Photon

☐ Optical

☒ Wave

☒ Electromagnetic Wave

☒ Plasma Wave

~ Measurand

~ Qualifier

Observed Properties

Start typing to select options...

Select All Deselect All

- ☒ Minimum frequency of Reflections from Plasma Layer (fmin)
 - ☐ Minimum frequency of ionospheric reflections in E region (fminE)
 - ☐ Minimum frequency of ionospheric reflections in Es layer (fminEs)
 - ☐ Minimum frequency of ionospheric reflections in F region (fminF)
- ☐ Auroral (particle) E-layer Critical Frequency (foEa)
- ☐ E-layer Critical Frequency (foE)
- ☐ E-layer X-Mode Critical Frequency (fxE)
- ☐ E-layer Z-mode Critical Frequency (fzE)
- ☐ Es-layer Blanketing Frequency (fbEs)
- ☐ Es-layer Critical Frequency (foEs)
- ☐ F1-layer Critical Frequency (foF1)
- ☐ F2-layer Critical Frequency (foF2)
- ☐ F2-layer X-Mode Critical Frequency (fxF2)

F2-layer Critical Frequency (foF2)
The ordinary wave critical frequency of the highest stratification in the F region of ionosphere

4. Click on the Measurand on the left to view all the options for this filter (check also the Measurand vocabulary at the Browse → ESPAS Space Physics Ontology page). Clicking on an option at the left, the list of the observed properties is updated at the right to reflect the selections. You can choose the options for the measurand according to your preferences. Then, select the observed properties you want to be included in your metadata query by clicking the check boxes.

Search by observed properties

Select Observed Properties on the right [Filter with available options on the left] Clear

Filter by

~ Phenomenon

~ Measurand

Start typing to select options...

Select All Deselect All

☒ Frequency (f)

☐ Blanketing Frequency (fb)

☐ Collision Frequency (v)

☒ Critical Frequency (f)

☐ Frequency Band (df)

☐ Maximum Usable Frequency (f)

~ Qualifier

Observed Properties

Start typing to select options...

Select All Deselect All

- ☐ Auroral (particle) E-layer Critical Frequency (foEa)
- ☒ E-layer Critical Frequency (foE)
- ☐ E-layer X-Mode Critical Frequency (fxE)
- ☐ E-layer Z-mode Critical Frequency (fzE)
- ☐ Es-layer Critical Frequency (foEs)
- ☒ F1-layer Critical Frequency (foF1)
- ☒ F2-layer Critical Frequency (foF2)
- ☐ F2-layer X-Mode Critical Frequency (fxF2)
- ☐ F2-layer Z-Mode Critical Frequency (fzF2)
- ☐ M-Factor of F2-layer at 3000 km (M(3000)F2)

5. Click on the Qualifier on the left to view all the options for this filter (check also the Qualifier vocabulary at the Browse → ESPAS Space Physics Ontology page). Clicking on an option at the left, the list of the observed properties is updated at the right to reflect the selections. You can choose the options for the qualifier according to your preferences. Then, select the observed properties you want to be included in your metadata query by clicking the check boxes.

Search by observed properties

Select Observed Properties on the right (Filter with available options on the left)

Clear

Filter by

Phenomenon

Measurand

Qualifier

Start typing to select options...

Select All Deselect All

☐ Vector Magnitude
 ☐ 2D Vector
 ☐ At Half Maximum Output
 ☐ At Maximum Output
 ☒ Average
 ☐ Maximum

...

Observed Properties

Start typing to select options...

Select All Deselect All

☐ Frequency Spread of E layer trace (FE)
 ☐ Frequency Spread of F layer trace (FF)
 ☐ Range Spread of E layer trace (QE)
 ☐ Range Spread of F layer trace (QF)

6. When you have finished with the Observed Properties selection, your selected observed properties are presented at the **Current Selections** area. You have now the following options:

- continue your metadata query by clicking on any of the activated buttons at the right (Time Period, Assets, Observation Collections)
- finish your query by clicking the **Submit** button or
- start a new search by clicking the **Start New Search** link.

Current Selections

Observed Properties: E-layer Critical Frequency, F1-layer Critical Frequency...

Observed Properties

E-layer Critical Frequency, F1-layer Critical Frequency, F2-layer Critical Frequency

Time Period

Assets

Observed Properties

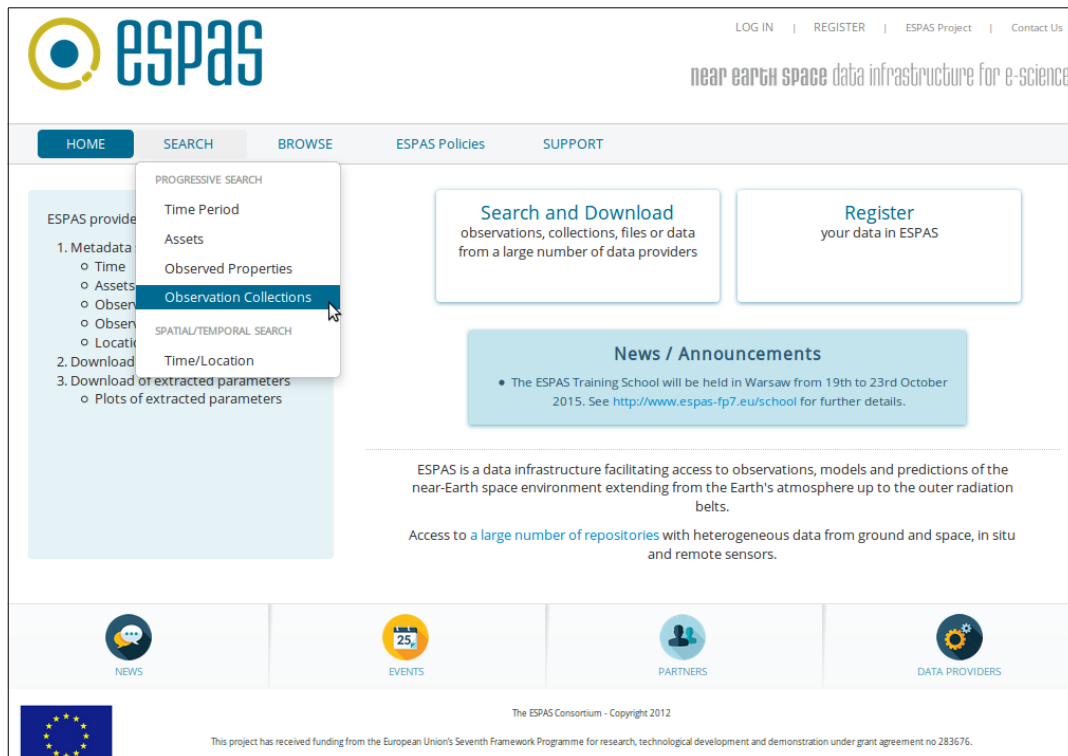
Observation Collections

Back Submit

Start New Search

1.6.4 Observation Collections

1. In order to start a metadata search (progressive search) using as the first criterion the observation collections, click **Search** → **Observation Collections** from the main menu. You can also click **Search and Download** at the home page, and then click the **Observation Collections** button. According to ESPAS terminology, an observation collection corresponds to any set of existing observations. For more information, please visit Support → Glossary page.



2. At the top part of the “Search by observation collections” page, there is the **Current Selections** area (see also the section “1.6 Search menu” for more information) where your selected criteria are presented. Below this area, at the right part (A) there is a list of all the observation collections (in alphabetical order) that are associated with at least one observation. You can scroll down this list and select the observation collections you want to include in your metadata query. You can also use the **Select All** button or **Deselect All** to select and deselect all the options respectively. If you hover the mouse pointer over a specific observation collection, a pop up window presents its description. The **Clear** button clears all the selections (including the filters).

At the left part (B) there are some filters (Region of Space, Dimensionality) that you can use to narrow down or facilitate your selection of observation collections presented at the right part. A hierarchical view of each filter is provided. Note also that the selection of an option, automatically selects all its siblings in the hierarchy. You can manually select or deselect the options by clicking the appropriate check boxes. The definition of each filter is available at Support → Glossary page. You can select one or more options from each filter and use one or more filters at the same time.

Note that the “OR” relationship is implied among the options of the same filter, and an “AND” relationship is implied between the filters. If one selects the “ionosphere” and “thermosphere” as region of space, then the observation collections with region of space “ionosphere” OR “thermosphere” are presented at the right. A high level query could be represented as: *region of space=“ionosphere” OR region of space=“thermosphere”*. But, if also the “1D profile” is selected at the dimensionality filter, then the observation collections with region of space “ionosphere” OR “thermosphere” AND dimensionality equal to “1D profile” are presented. A high level query could be represented as: *dimensionality=“1D profile” AND (region of space=“ionosphere” OR region of space=“thermosphere”)*.

The screenshot shows the ESPAS web interface. At the top, there is a header with the ESPAS logo and navigation links: LOG IN, REGISTER, ESPAS Project, and Contact Us. Below the header is a navigation bar with links: HOME, SEARCH, BROWSE, ESPAS POLICIES, and SUPPORT. The main content area is titled "Current Selections" and shows "none". There are four icons representing different search criteria: Time Period, Assets, Observed Properties, and Observation Collections. Below these icons are "Back" and "Submit" buttons, and a "Start New Search" link. The "Search by observation collections" section is active, showing a filter by "Region of Space". The "Filter by" section has two expandable filters: "Region of Space" and "Dimensionality". The "Region of Space" filter is expanded, showing a search bar and a list of options: Earth (selected), Earth's Near Surface (expanded), Ionosphere (selected), Thermosphere, and Earth's Magnetosphere. The "Observation Collection" section on the right shows a search bar and a list of observation collections, including Alouette 1 and 2 Electron Density Profiles, Andenes Magnetometer Data, Athens Digisonde SAO files, Bergen Magnetometer Data, Bjørnøya Magnetometer Data, CTS 1 minute XYZF variations, DEMETER IAP and ISL data, and Langmuir Probe Results.

- The following example presents the use of the Region of Space filter (check also the Feature Of Interest vocabulary at the Browse → ESPAS Space Physics Ontology page). The filter presents in a hierarchical view all the region of space entries of the observation collections that are related with at least one observation. Using the buttons **Select All** or **Deselect All** you can select or deselect all the options respectively.
- In this example, the “Ionosphere” option has been selected from the Region of Space filter and on the right the corresponding observation collections are presented. If you hover the mouse pointer over a specific observation collection, a pop up window presents its description. If you are happy with the list of observation collections presented at the right, select the ones you want to be included in your metadata query by clicking the check

boxes. Otherwise, you can use the other filter: Dimensionality.

Search by observation collections

Select Observation Collections on the right [Filter with available options on the left]
 Observation Collections that are not related to an observation, are not displayed in this form. For a complete list of all the Observation Collections registered in ESPAS you can visit the Browse -> Metadata section

Filter by

Region of Space

Start typing to select options...

Select All Deselect All

- Earth
 - Earth's Near Surface
 - ☒ Ionosphere
 - ☐ Thermosphere
 - Earth's Magnetosphere

Dimensionality

Observation Collection

Start typing to select options...

Select All Deselect All

- ☐ Alouette 1 Electron Density Profiles
- ☐ Alouette 2 Electron Density Profiles
- ☐ Andenes Magnetometer Data
- ☐ Athens Digisonde SAO files (autoscaled)
- ☐ Bergen Magnetometer Data
- ☐ Bjørnøya Magnetometer Data
- ☐ DEMETER IAP - Characteristics of Low En
- ☐ DEMETER IAP - Characteristics of Low En
- ☐ DEMETER ISL - Langmuir Probe Results (DMT_N1_1143)
- ☐ DEMETER ISL - Langmuir Probe Results (DMT_N1_1144)
- ☐ DIAS Bottomside Electron Density Nowcasting Maps
- ☐ DIAS daily f-plots of fmin,foF2 from Athens Digisonde

Athens Digisonde SAO files (autoscaled)
 This collection contains the SAO (text) files produced by Athens Digisonde (38.03 degrees " N, 23.52 degrees W). Each SAO file contains the autoscaled characteristics for one ionogram including the echo traces h'(f), echo amplitudes, frequency and range spread and most of the important ionospheric characteristics together with the electron density profile (where available). SAO stands for Standard Archiving Output format. A description of the SAO format (versions 4.2 and 4.3) can be found at: <http://ulcar.uml.edu/digisonde.html>

4. Click on the Dimensionality on the left to view all the options for this filter (check also the Dimensionality vocabulary at the Browse → ESPAS Supporting Vocabularies page). Clicking on an option at the left, the list of the observation collections is updated at the right to reflect the selections. You can choose the options for the dimensionality according to your preferences. Then, select the observation collections you want to be included in your metadata query by clicking the check boxes.

Search by observation collections

Select Observation Collections on the right [Filter with available options on the left]
 Observation Collections that are not related to an observation, are not displayed in this form. For a complete list of all the Observation Collections registered in ESPAS you can visit the Browse -> Metadata section

Filter by

Region of Space

Dimensionality

Start typing to select options...

Select All Deselect All

- 1D
 - ☒ 1D Profile
 - ☒ 1D Altitude Profile
 - ☒ 1D Vertical Altitude Profile
 - 2D
 - ☐ 2D Cross Section
 - ☐ 2D Geomagnetic Cross Section

Observation Collection

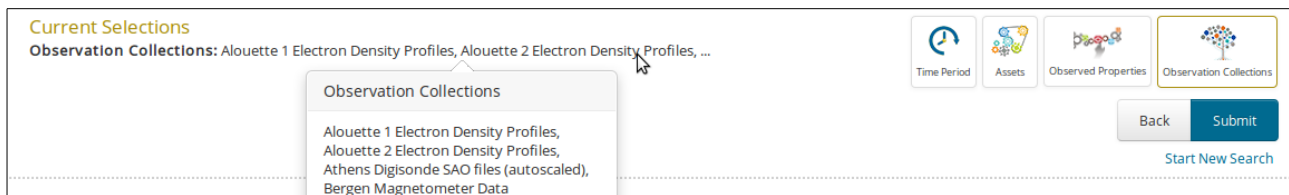
Start typing to select options...

Select All Deselect All

- ☒ Alouette 1 Electron Density Profiles
- ☒ Alouette 2 Electron Density Profiles
- ☐ Andenes Magnetometer Data
- ☒ Athens Digisonde SAO files (autoscaled)
- ☒ Bergen Magnetometer Data
- ☐ Bjørnøya Magnetometer Data
- ☐ Dombås Magnetometer Data
- ☐ Dønna Magnetometer Data
- ☐ EISCAT Ionosonde observations
- ☐ Hopen Magnetometer Data
- ☐ ISIS 1 Electron Density Profiles
- ☐ ISIS 2 Electron Density Profiles
- ☐ Jäckvik Magnetometer Data

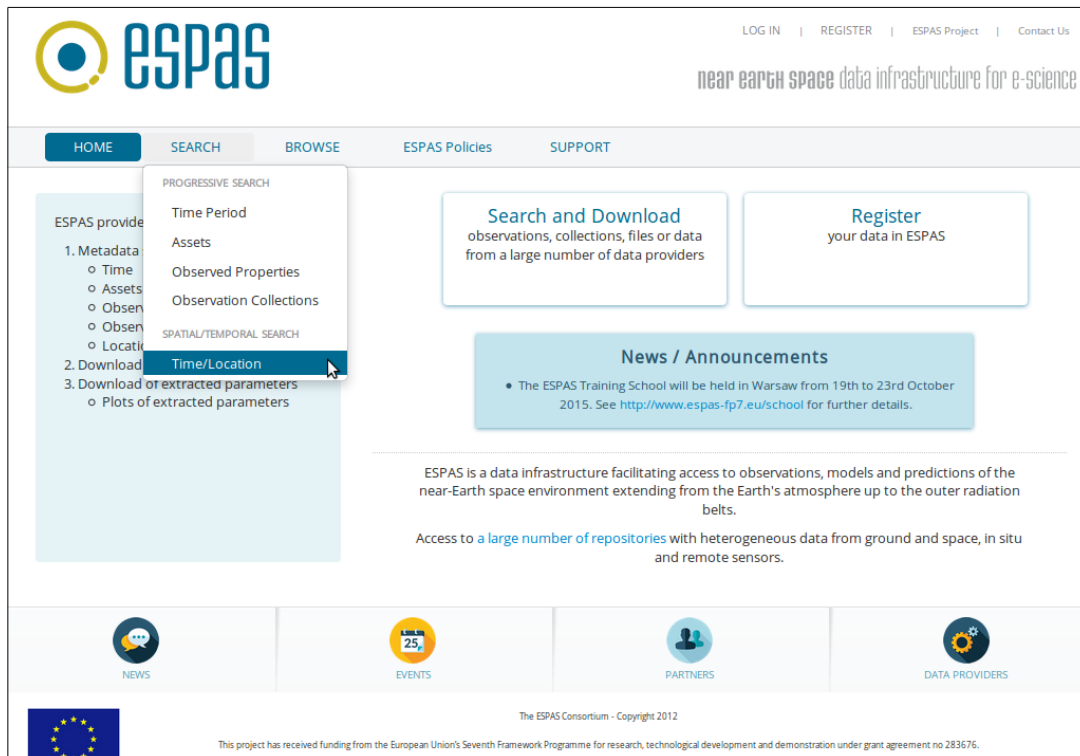
5. When you have finished with the selection of the observation collections, your selections are presented at the **Current Selections** area. You have now the following options:

- continue your metadata query by clicking on any of the activated buttons at the right (Time Period, Assets, Observed Properties)
- finish your query by clicking the **Submit** button or
- start a new search by clicking the **Start New Search** link.



1.6.5 Time/Location

1. In order to perform a metadata search using as criteria the time and location, click **Search** → **Time/Location** from the main menu. You can also click **Search and Download** at the home page, and then click the **Location** button under the Spatial/temporal search header.



1.7 Browse menu

The Browse menu provides information regarding the ESPAS metadata, the ESPAS Space Physics Ontology and the ESPAS Supporting Vocabularies.

1.7.1 ESPAS Metadata

ESPAS provides access to observations (data) of the Near-Earth Space using relevant information (metadata), such as the assets (instruments and models) that generated the observation, the observed properties that were measured during the observation, etc. All this information that characterizes an observation (e.g. when the observation took place, what it was measured, by which instrument, etc.) is called metadata and is organised according to the ESPAS data model. For more information on the ESPAS data model, please visit the **Support** → **ESPAS Data Model** page.



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near earth space data infrastructure for e-science

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ESPAS Data Model

The ESPAS data model is built entirely on ISO 19100 series geographic information standards, particularly the ISO 19156 Observations and Measurements (O&M) standard. This standardisation facilitates interoperability with other information systems and provides freedom to mix and match information system components without compromising overall success [ISO 19101:2002].

The general structure of the ESPAS data model gives a central place to the concept of "**observation**". According to [Fowler,1998] an observation is an act that results in the estimation of the value of a feature property using a designated procedure, such as a sensor, instrument, algorithm or process chain. An observation is associated with a discrete time instant or period through which a number, term or other symbol is assigned to a phenomenon. The result of an observation is an estimate of the value of a property of some feature, so the details of the observation are metadata concerning the value of the feature property.

EXAMPLE Measuring (the act of the observation) the F2-layer Critical Frequency (foF2) of the Ionosphere above Athens at 1/1/2015 16:00 GMT. The *featureOfInterest* is the Ionosphere, the *observedProperty* is the foF2, the *procedure/process* is the acquisition made by the Athens Digisonde mounted on NOA platform and the *result* is 5.2 MHz.

Following this approach the data which ESPAS data model is aimed at describing is always considered as observation results and the observation together with its properties provide relevant metadata.

Besides the main concept of Observation, the other related concepts that are used in ESPAS data model are listed below, while a high level overview of the relationships among them is presented at Figure 1.



```
graph TD
    ObservedProperty["Observed Property  
(e.g. Electron Density)"]
    FeatureOfInterest["Feature Of Interest  
(e.g. Ionosphere)"]
    Project
    Process
    ObservationCollection["Observation Collection"]
    Result
    Individual
    Acquisition
    Computation["Computation  
(e.g. IRI Model)"]
    Instrument["Instrument  
(e.g. Athens Digisonde)"]
    Platform["Platform  
(e.g. NOA Observatory)"]
    Operation["Operation  
(for satellites)"]
    Organisation

    Observation((Observation))
    Observation --> ObservedProperty
    Observation --> FeatureOfInterest
    Observation --> Project
    Observation --> Process
    Observation --> ObservationCollection
    Observation --> Result
    Observation --> Individual
    Observation --> Acquisition
    Observation --> Computation
    Observation --> Instrument
    Observation --> Platform
    Observation --> Operation
    Observation --> Organisation

    Process --> CompositeProcess["Composite Process"]
    CompositeProcess --> Acquisition
    Acquisition --> Instrument
    Acquisition --> Platform
    Acquisition --> Operation
```

IN THIS SECTION

About ESPAS

ESPAS Data Model

ESPAS Space Physics Ontology

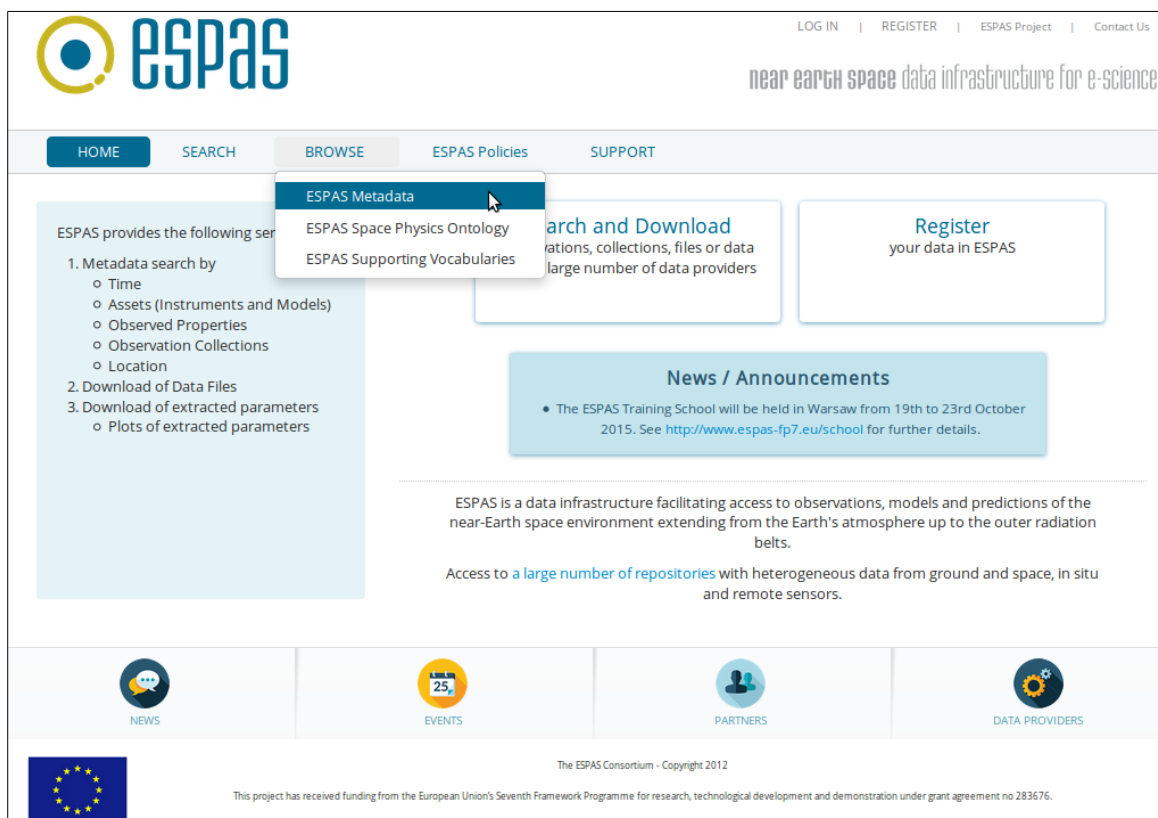
Glossary

For Data Providers

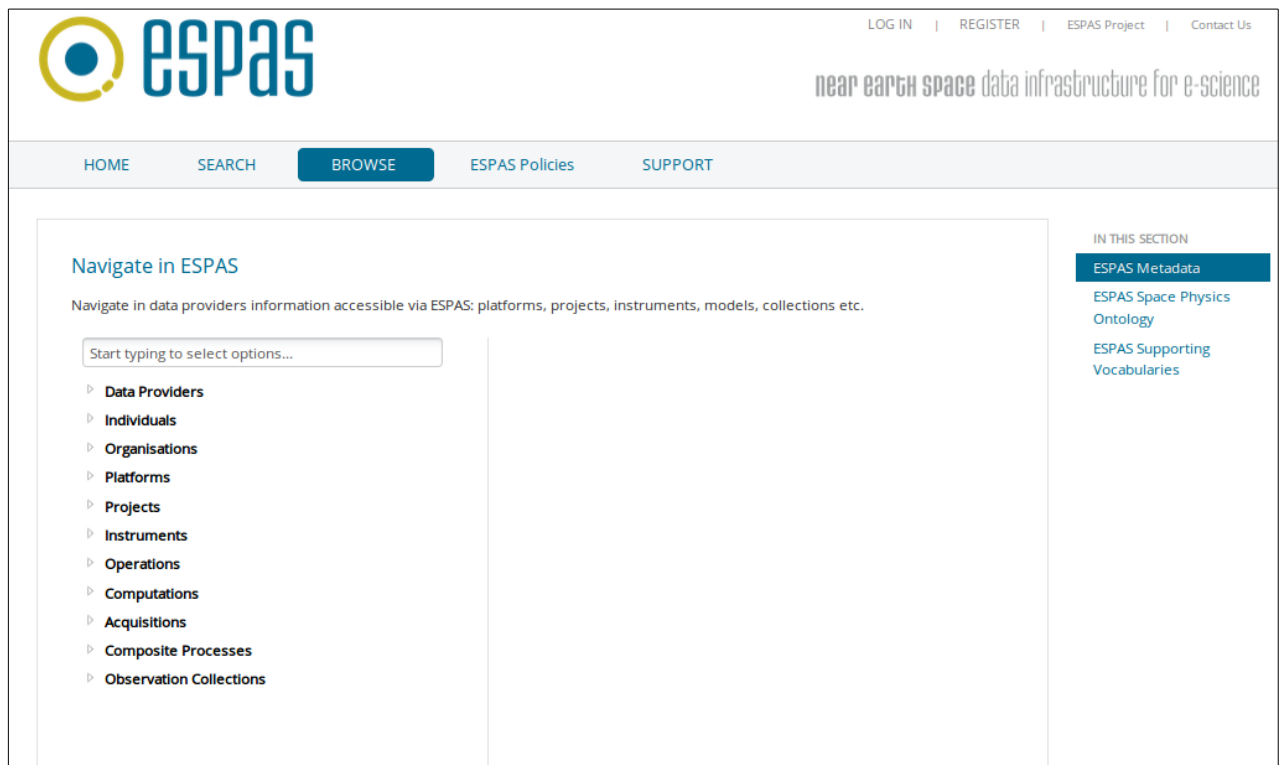
Contact Us

The ESPAS metadata browser provides information for all the metadata that is registered in the ESPAS system grouped by the main concepts of the ESPAS Data Model. Note that the metadata browser presents entities even if there are no observations related to them, while in the search pages only the entities with related observations are presented. For example, suppose that an ESPAS data provider has registered the Instrument A in the ESPAS system, but there are no observations related with this specific instrument in the system. In this case, the Instrument A will be visible in the metadata browser, under the Instruments category, but this instrument won't be presented at the **Search → Assets** page.

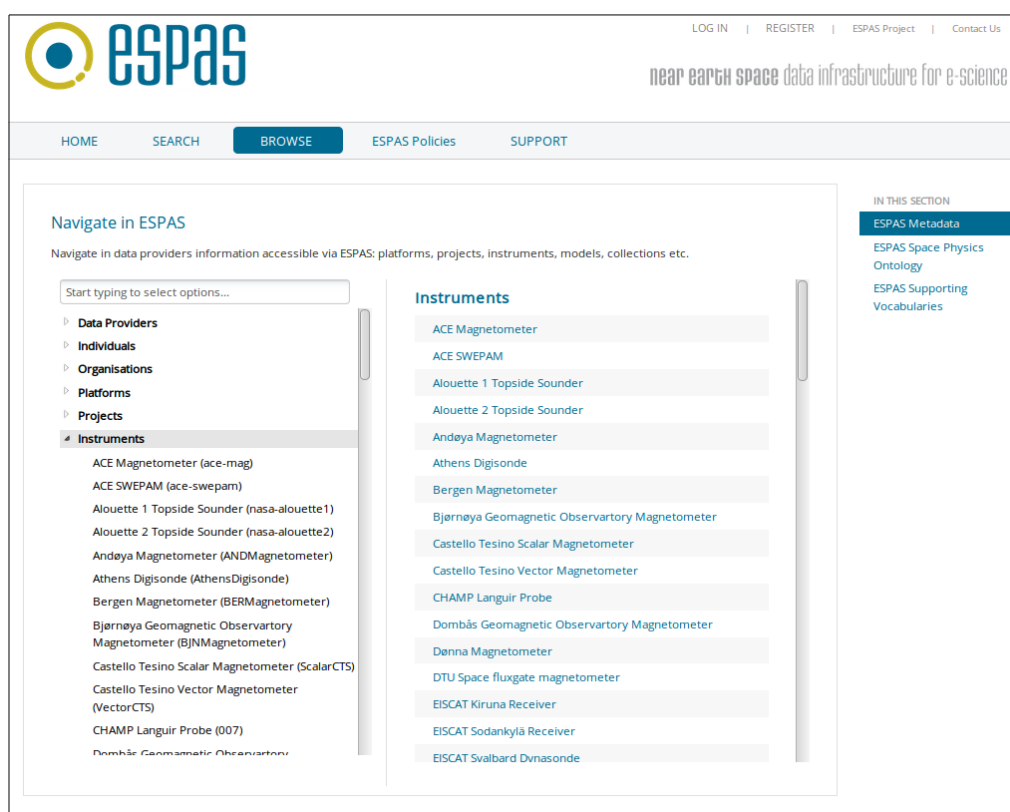
1. In order to browse the ESPAS metadata, click on the **Browse → ESPAS Metadata** menu item.



2. The metadata browser is presented, where you can navigate to all ESPAS metadata by clicking at the main categories (ESPAS data model concepts) that are presented on the left column. Clicking at a specific instance on the left, detailed information for this entity are presented on the right side.



3. For example, if you click on the **Instruments** (on the left column), a list of all the instruments registered in ESPAS is presented at the right side. Note that the name that appears inside the parenthesis in all instances at the left column represents their “localId” (a unique identifier for the ESPAS system) and is mainly useful for the ESPAS data providers.



4. Click on a specific instance either on the left column or the right side and detailed information is presented for this instance. For this example, click on the **Athens Digisonde** and detailed information (such as description, instrument type, etc.) is presented at the right side. Note that the links that are presented at the right will point you to the corresponding entries.

Navigate in ESPAS

Navigate in data providers information accessible via ESPAS: platforms, projects, instruments, models, collections etc.

- Data Providers
- Individuals
- Organisations
- Platforms
- Projects
- Instruments
 - ACE Magnetometer (ace-mag)
 - ACE SWEPAM (ace-swepam)
 - Alouette 1 Topside Sounder (nasa-alouette1)
 - Alouette 2 Topside Sounder (nasa-alouette2)
 - Andøya Magnetometer (ANDMagnetometer)
 - Athens Digisonde (AthensDigisonde)**
 - Bergen Magnetometer (BERMagnetometer)
 - Bjørnøya Geomagnetic Observatory Magnetometer (BJNMagnetometer)
 - Castello Tesino Scalar Magnetometer (ScalarCTS)
 - Castello Tesino Vector Magnetometer (VectorCTS)
 - CHAMP Languir Probe (007)
 - Dombås Geomagnetic Observatory

Athens Digisonde

Athens Digisonde is an ionospheric station produced by Lowell Digisonde International, capable of making measurements of the overhead ionosphere, and provides real-time on-site processing and analysis to characterize radio signal propagation in support of communications or surveillance operations, and enhance ionospheric research efforts. Athens Digisonde is installed in Palala Penteli (38.03 lat, 23.52 lon). Athens Digisonde data can be accessed through <http://www.iono.noa.gr>

<http://www.iono.noa.gr>

Instrument Version: DPS4

Instrument Type: Vertical Ionosonde

Responsible parties

[Anna Belehaki](#) - Point of contact
[National Observatory of Athens](#) - Holder

Operational modes

Drift Ionogram - This is similar to the Doppler Ionogram in that higher Doppler resolution is achieved by extending the integration period. In addition to multiplexing frequencies the receive antennas are also multiplexed. This provides a raw data file which records the relative phase of all Doppler lines of all

IN THIS SECTION

- ESPAS Metadata**
- ESPAS Space Physics Ontology
- ESPAS Supporting Vocabularies

5. As another example, click on **Observation Collections** at the left column. A list of all the observation collections registered in ESPAS are presented at the right side.

Navigate in ESPAS

Navigate in data providers information accessible via ESPAS: platforms, projects, instruments, models, collections etc.

- Data Providers
- Individuals
- Organisations
- Platforms
- Projects
- Instruments
- Operations
- Computations
- Acquisitions
- Composite Processes
- **Observation Collections**
 - Alouette 1 Electron Density Profiles (nasa-alouette1)
 - Alouette 2 Electron Density Profiles (nasa-alouette2)
 - Andenes Magnetometer Data (ANDdata)
 - Athens Digisonde SAO files (autoscaled) (AthensSAO)
 - Bergen Magnetometer Data (BERdata)
 - Bjørnøya Magnetometer Data (BJNdata)

Observation Collections

- Alouette 1 Electron Density Profiles
- Alouette 2 Electron Density Profiles
- Andenes Magnetometer Data
- Athens Digisonde SAO files (autoscaled)
- Bergen Magnetometer Data
- Bjørnøya Magnetometer Data
- CHAMP-AI-3-NRT
- CHAMP Topside Ionosphere/Plasmasphere Reconstruction
- CTS 1 minute XYZF variations
- DEMETER IAP - Characteristics of Low Energy Ions in Burst Mode (DMT_N1_1139)
- DEMETER IAP - Characteristics of Low Energy Ions in Survey Mode (DMT_N1_1140)
- DEMETER ISL - Langmuir Probe Results (Plasma Parameters) in Burst Mode (DMT_N1_1143)
- DEMETER ISL - Langmuir Probe Results (Plasma Parameters) in Survey Mode (DMT_N1_1144)
- DIAS Bottomside Electron Density Nowcasting Maps

IN THIS SECTION

- ESPAS Metadata**
- ESPAS Space Physics Ontology
- ESPAS Supporting Vocabularies

6. Click on the **Athens Digisonde SAO files (autoscaled)** collection and detailed information is presented at the right side.

Navigate in ESPAS

Navigate in data providers information accessible via ESPAS: platforms, projects, instruments, models, collections etc.

Start typing to select options...

- Data Providers
- Individuals
- Organisations
- Platforms
- Projects
- Instruments
- Operations
- Computations
- Acquisitions
- Composite Processes
- Observation Collections
 - Alouette 1 Electron Density Profiles (nasa-alouette1)
 - Alouette 2 Electron Density Profiles (nasa-alouette2)
 - Andenes Magnetometer Data (ANDdata)
 - Athens Digisonde SAO files (autoscaled) (AthensSAO)**
 - Bergen Magnetometer Data (BERdata)
 - Björnøya Magnetometer Data (BJNdata)

Athens Digisonde SAO files (autoscaled)

This collection contains the SAO (text) files produced by Athens Digisonde (38.03 degrees ° N, 23.52 degrees W). Each SAO file contains the autoscaled characteristics for one ionogram including the echo traces h'(f), echo amplitudes, frequency and range spread and most of the important ionospheric characteristics together with the electron density profile (where available). SAO stands for Standard Archiving Output format. A description of the SAO format (versions 4.2 and 4.3) can be found at: <http://ulcar.uml.edu/digisonde.html>

Query

```
project="http://resources.espas-fp7.eu/project/nao/DIAS/1" AND process="http://resources.espas-fp7.eu/compositeProcess/nao/athDig-artist/1" AND observedProperty="http://ontology.espas-fp7.eu/compositeObservedProperty/nao-sao"
```

Responsible parties

Anna Belehaki - Point of contact
National Observatory of Athens - Data Provider

IN THIS SECTION

- ESPAS Metadata**
- ESPAS Space Physics Ontology
- ESPAS Supporting Vocabularies

7. Similarly, you can browse all the ESPAS metadata by navigating through the entries at the left column.

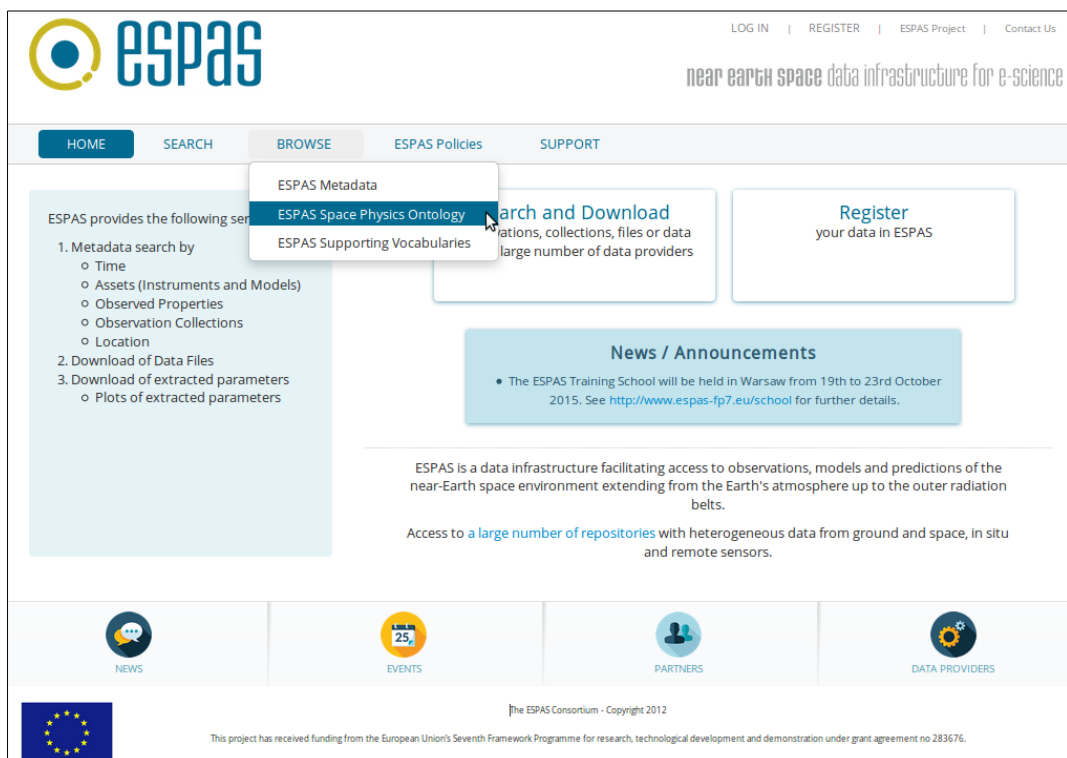
1.7.2 ESPAS Space Physics Ontology

The ESPAS data portal manages a set of vocabularies of Space Physics keywords that can be used to narrow down data searches to observations of specific physical content. These vocabularies constitute the ESPAS space physics ontology that is the cornerstone of the data search functions specific to the ESPAS domain.

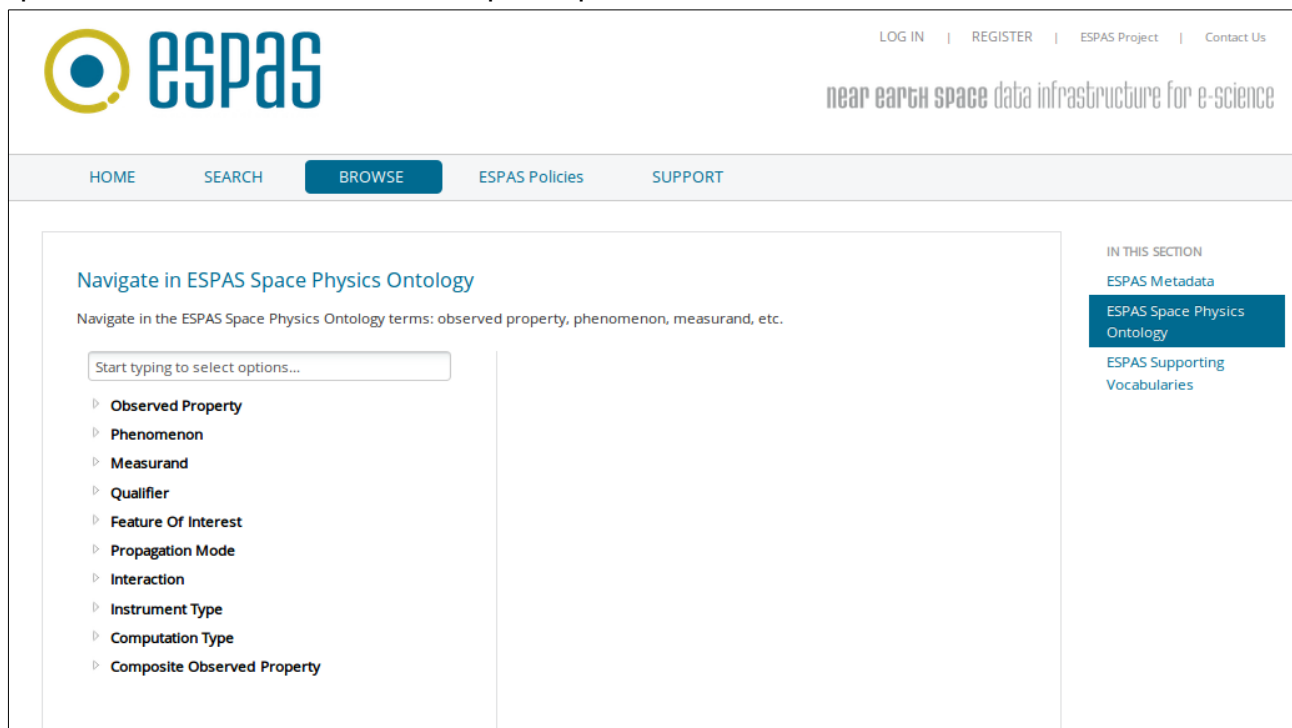
In order to simplify navigation through the wealth of ESPAS Space Physics vocabulary terms, the ontology is organized in several hierarchies of terms connected to each other via a “parent-child” relationship. Understanding the ontology hierarchies is critical for efficient data search and discovery in ESPAS. For more information on the ESPAS space physics ontology, please visit the **Support** → **ESPAS Space Physics Ontology** page.

The ESPAS space physics ontology browser provides information for all the vocabularies that constitute the ontology presenting all the terms that exist in each vocabulary along with their description. The hierarchy of the ontology terms is presented at the left column by nesting the “children” terms under the “parent” term.

1. In order to browse the ESPAS space physics ontology, click on the **Browse** → **ESPAS Space Physics Ontology** menu item.



2. The ontology browser is presented, where you can navigate to all ESPAS space physics vocabularies by clicking at the vocabularies presented at the left column. The hierarchy of the ontology terms is presented at the left column by nesting the “children” terms under the “parent” term, like the windows explorer presents the folders and file structures.



3. For example, click on the **Observed Property** vocabulary at the left column, then click the **Critical Frequency**, **O-Mode Critical Frequency** and choose the **F2-layer Critical Frequency** entry. Information about this observed property (e.g. description, related concepts) is presented at the right side.

Navigate in ESPAS Space Physics Ontology

Navigate in the ESPAS Space Physics Ontology terms: observed property, phenomenon, measurand, etc.

Start typing to select options...

- Observed Property
 - Blanketing Frequency
 - Collision Frequency
 - Critical Frequency
 - O-Mode Critical Frequency
 - Auroral (particle) E-layer Critical Frequency
 - E2-layer Critical Frequency
 - E-layer Critical Frequency
 - Es-layer Critical Frequency
 - F1.5-layer Critical Frequency
 - F1.5-layer Critical Frequency
 - F1-layer Critical Frequency
 - F2-layer Critical Frequency**
 - X-Mode Critical Frequency
 - Z-Mode Critical Frequency
 - Cutoff Frequency
 - Electric Field
 - Electromagnetic Wave
 - Electron Density

F2-layer Critical Frequency (foF2)

The ordinary wave critical frequency of the highest stratification in the F region of ionosphere

Identifier

http://ontology.espas-fp7.eu/observedProperty/CriticalFrequency_F2-Layer

Phenomenon(s)
[Electromagnetic Wave](#)

Measurand(s)
[Critical Frequency \(f\)](#)

Interaction(s)
[Reflection \(R\)](#)

Propagation Mode
[Ordinary Wave \(O\)](#)

IN THIS SECTION

- ESPAS Metadata
- ESPAS Space Physics Ontology**
- ESPAS Supporting Vocabularies

4. Note that the links that are presented at the right will point you to the corresponding entries of the ontology browser. In this example, click on the **Electromagnetic Wave** under the Phenomenon title, and the information regarding this term are presented on the

Navigate in ESPAS Space Physics Ontology

Navigate in the ESPAS Space Physics Ontology terms: observed property, phenomenon, measurand, etc.

Start typing to select options...

- Virtual Height of a trace at given frequency
- Altitude of Constant Atmospheric Pressure
- Dummy Deprecated Term
- Electron Drift Velocity
- Electron Flux
- Electron Temperature
- International Sunspot Number
- LOCATION
- Neutral Temperature
- Phenomenon
 - Activity
 - Field
 - Particle
 - Photon
 - Wave
 - Electromagnetic Wave**
 - Plasma Wave
 - Electric Field Component of EM Wave
 - Magnetic Field Component of EM Wave

Electromagnetic Wave

A form of energy transmitted and absorbed by charged particles that exhibits wave-like behavior as it travels through space: its electric and magnetic fields oscillate in phase, perpendicular to each other, perpendicular to direction of energy and wave propagation, and with a fixed ratio of the electric to magnetic intensity

IDENTIFIER

http://ontology.espas-fp7.eu/phenomenon/ElectromagneticWave

IN THIS SECTION

- ESPAS Metadata
- ESPAS Space Physics Ontology**
- ESPAS Supporting Vocabularies

right.

5. Similarly, you can navigate through all the vocabularies of the ESPAS space physics ontology by clicking the appropriate terms at the left column.

1.7.3 ESPAS Supporting Vocabularies

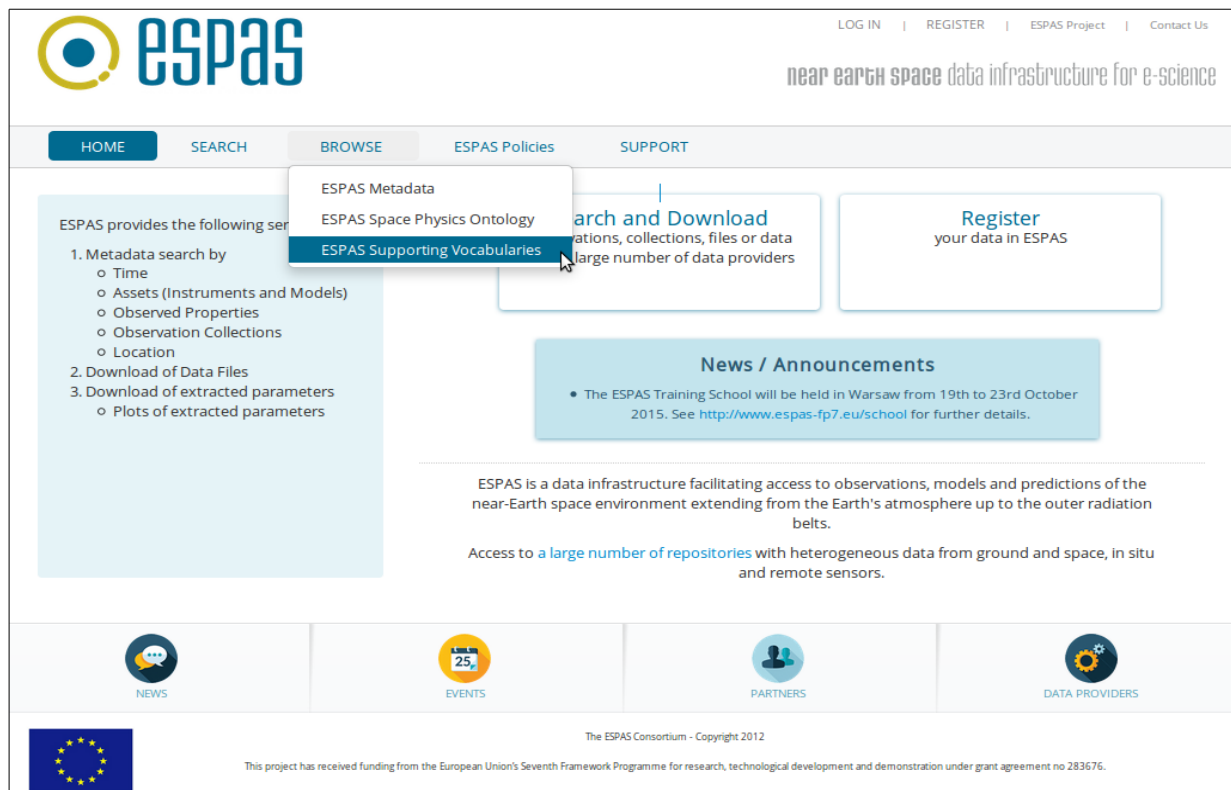
Many of the properties of the concepts of the ESPAS Data Model use values from controlled vocabularies and are referred as “supporting” vocabularies. The terms in these vocabularies are connected to each other via “parent-child” relationships (optional), as in the case of the ESPAS space physics ontology. The definition of each controlled vocabulary is given in the Glossary section (**Browse** → **Glossary**) of the ESPAS portal.



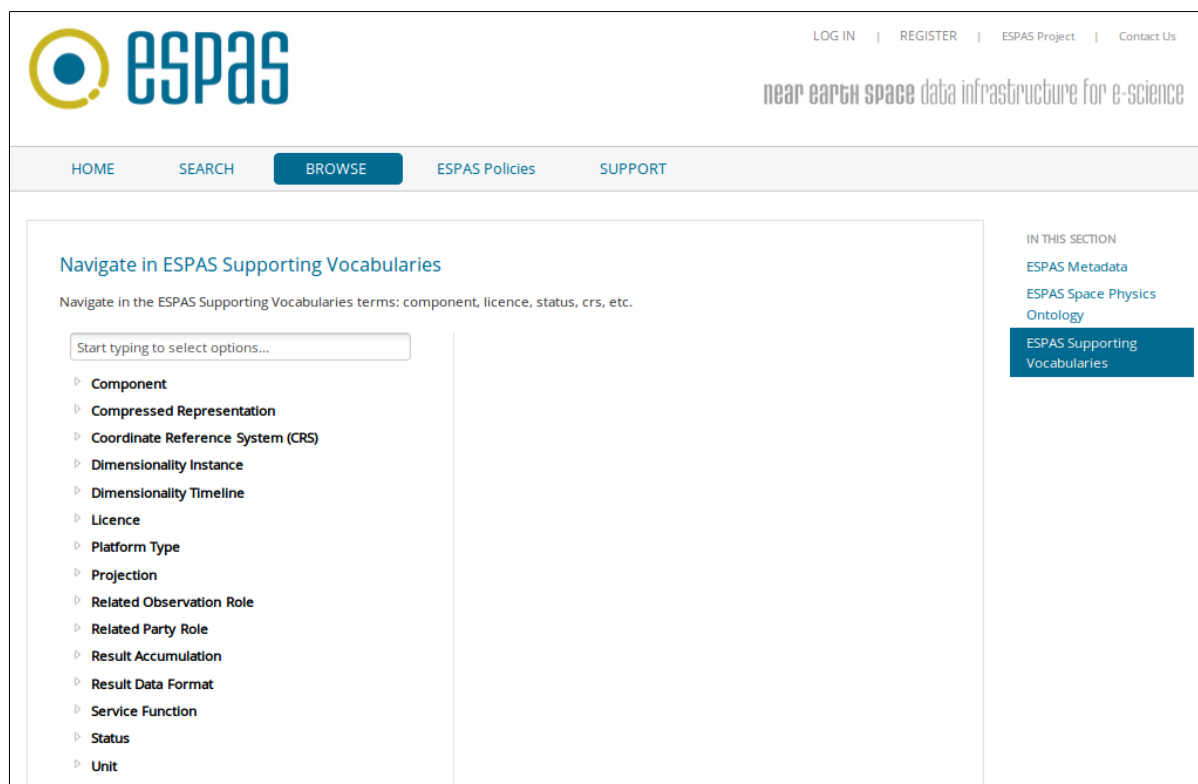
Acquisition	Corresponds to the process component that interacts with the feature of interest / sampling feature to provide a result. It involves the use of an Instrument which is mounted on a Platform that may have an Operation (for satellites, aircrafts).
Asset	Corresponds to an Instrument or a numerical Model or other software that was used to generate the observation.
Component	For vector properties, it describes which of the three components is provided in the data only in those cases when observation does not specify the vector property in full. Typical components are X, Y, Z. The Component has to be accompanied by a suitable description of the Coordinate Reference System (CrS). It takes values from the Component controlled vocabulary.
Composite Observed Property	Describes the group of simple observed properties whose values are estimated in the course of an observation. It takes values from the Composite Observed Property controlled vocabulary.
Composite Process	Represents the process that consists of more than one components of type Acquisition or Computation.
Compressed Representation	Describes the formalism of compressed representation of voluminous or complex 3D, 2D, and 1D data. Typical examples are spherical harmonics for 2D maps on the sphere, truncated Fourier transforms (harmonics) for diurnal time series, Empirical Orthogonal Functions (EOF). It takes values from the Compressed Representation controlled vocabulary.
Computation	Corresponds to the process component that involves only numerical computation (no Instrument is involved), as in the case of Models (e.g. EDAM, SIRMUP) or specific softwares (e.g. ARTIST for the autoscaling of the ionograms).
Computation Type	Describes the type of the Computation process (e.g. Mathematical model, software). It takes values from the Computation Type controlled vocabulary.
CrS	Corresponds to the Coordinate Reference Systems (e.g. GSE, GSM, ...) used to describe a vector Component (observed property definition), the location of a Platform and the geographic extent of an Observation. It takes values from the CrS controlled vocabulary.
Data Provider	Corresponds to an authorized Institution, Organisation or Individual that provides, at minimum metadata information and at several cases access to data.
Dimensionality Instance	Dimensionality is a compact description of the domain X spanned by the independent (input) variables $x_1, x_2, x_3 \dots$ of the Observation result (output dependent variable Y): $Y = f(x_1, x_2, x_3 \dots)$ The independent variables $x_1, x_2, x_3 \dots$ are tested in the course of the Observation to acquire values

The ESPAS supporting vocabularies page provides information for all these vocabularies presenting all the terms that exist in each vocabulary along with their description. The hierarchy of the ontology terms is presented at the left column by nesting the “children” terms under the “parent” term.

1. In order to browse the ESPAS supporting vocabularies, click on the **Browse** → **ESPAS Supporting Vocabularies** menu item.



2. The vocabularies browser is presented, where you can navigate to all ESPAS supporting vocabularies by clicking at the vocabularies presented at the left column. The hierarchy of the terms is presented at the left column by nesting the “children” terms under the “parent” term, like the windows explorer presents the folders and file structures.



3. For example, click on the **Coordinate Reference System (CRS)** vocabulary at the left column, then click the **Geocentric Spherical** term. The description of this term is presented at the right side.

Navigate in ESPAS Supporting Vocabularies

Navigate in the ESPAS Supporting Vocabularies terms: component, licence, status, crs, etc.

- ▶ **Component**
- ▶ **Compressed Representation**
- ▶ **Coordinate Reference System (CRS)**
 - Corrected GeoMagnetic
 - Geocentric Cartesian
 - Geocentric Equatorial Inertial system for epoch 1950 (cartesian)
 - Geocentric Equatorial Inertial system for epoch 1950 (spherical)
 - Geocentric Equatorial Inertial system for epoch 2000 (cartesian)
 - Geocentric Equatorial Inertial system for epoch 2000 (spherical)
 - Geocentric Solar Ecliptic
 - Geocentric Solar Equatorial
 - Geocentric Solar Magnetospheric
 - Geocentric Spherical**
 - Geographic East-North-Up Cartesian
 - Geographic North-East-Down Cartesian
 - Geomagnetic dipole coordinate system

Geocentric Spherical (GEO spherical)

Geocentric spherical (also known as Spherical Earth Centred Earth Fixed (ECEF)) in spherical representation (lat, lon, alt) where "alt" is the distance from the Earth center in km. (the mean Earth radius is 6371.2 km)

IDENTIFIER

`http://ontology.espas-fp7.eu/crs/GEOspherical`

IN THIS SECTION

- ESPAS Metadata
- ESPAS Space Physics
- Ontology
- ESPAS Supporting Vocabularies**

4. Similarly, you can navigate through all the ESPAS supporting vocabularies by clicking the appropriate terms at the left column.

1.8 ESPAS Policies menu

The ESPAS Policies menu provides information regarding the ESPAS policies and the data licenses defined by each ESPAS data provider. ESPAS provides access to metadata for free and no user registration is required. However, the download of data files and data values requires the following:

- user registration and login to the ESPAS portal
- user agreement to the data licenses as defined by each ESPAS Data Provider

1. Click on the **ESPAS Policies** menu. The ESPAS policies page will open that presents the ESPAS policy regarding the access to metadata along with the data licenses of the ESPAS data providers.



The screenshot shows the ESPAS website's 'ESPAS Policies' page. The header features the ESPAS logo (a stylized 'e' in a circle) and the tagline 'near earth space data infrastructure for e-science'. Navigation links include LOG IN, REGISTER, ESPAS Project, and Contact Us. A secondary navigation bar contains HOME, SEARCH, BROWSE, ESPAS Policies (highlighted), and SUPPORT. The main content area is titled 'ESPAS Polices' (note the typo) and includes sections for 'Access to Metadata' (stating no registration is required) and 'Data Licences By Data Provider' (explaining that users must register to download data and will be asked to agree to provider licenses). Below this is a list of data providers, each with a dropdown arrow: Belgian Institute for Space Aeronomy (BIRA-IASB), EDAM, EISCAT, Istituto Nazionale di Geofisica e Vulcanologia, National Observatory of Athens, ULEIC, and University College London. The footer contains four icons: NEWS, EVENTS, PARTNERS, and DATA PROVIDERS. At the bottom left is the European Union flag, and at the bottom right is the text 'The ESPAS Consortium - Copyright 2012' and 'This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 283676.'

2. In order to view the specific data license from a data provider, click on the name of the data provider. In the example below, you can see the data licences defined by the National Observatory of Athens (NOA) data provider.

Data Licences By Data Provider

Users must register to download data. On requesting data, users will be asked to agree to the data providers' licences. Below you can view a list of licences grouped by data provider.

▼ Belgian Institute for Space Aeronomy (BIRA-IASB)

▼ EDAM

▼ EISCAT

▼ Istituto Nazionale di Geofisica e Vulcanologia

^ National Observatory of Athens

NOA's Terms of Reference

The data acquired from this service may be used freely for educational and non-commercial academic research purposes by registered users only. Redistribution of the data is subject to the same conditions of use. A heavy investment of time, effort, expertise, and funds continues to be made to produce, collect, quality control, interpret, and store the data and products available from this service. It is important that the DIAS data suppliers and the service developers are appropriately acknowledged in scientific publications that involve analysis of data obtained from this service, making reference to the following basic citations: Belehaki et al., Space Weather, 4, S12002, doi:10.1029/2006SW000270, 2006; Belehaki et al., JASTP, 67, 1092-1099, 2005; Belehaki et al., Acta Geophysica, 55, 3, doi: 10.2478/s11600-007-0010-x, pp 398-409, 2007

IRI's Terms of Reference

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This license lets others remix, tweak, and build upon your work non-commercially, as long as they credit you and license their new creations under the identical terms.

▼ ULEIC

▼ University College London

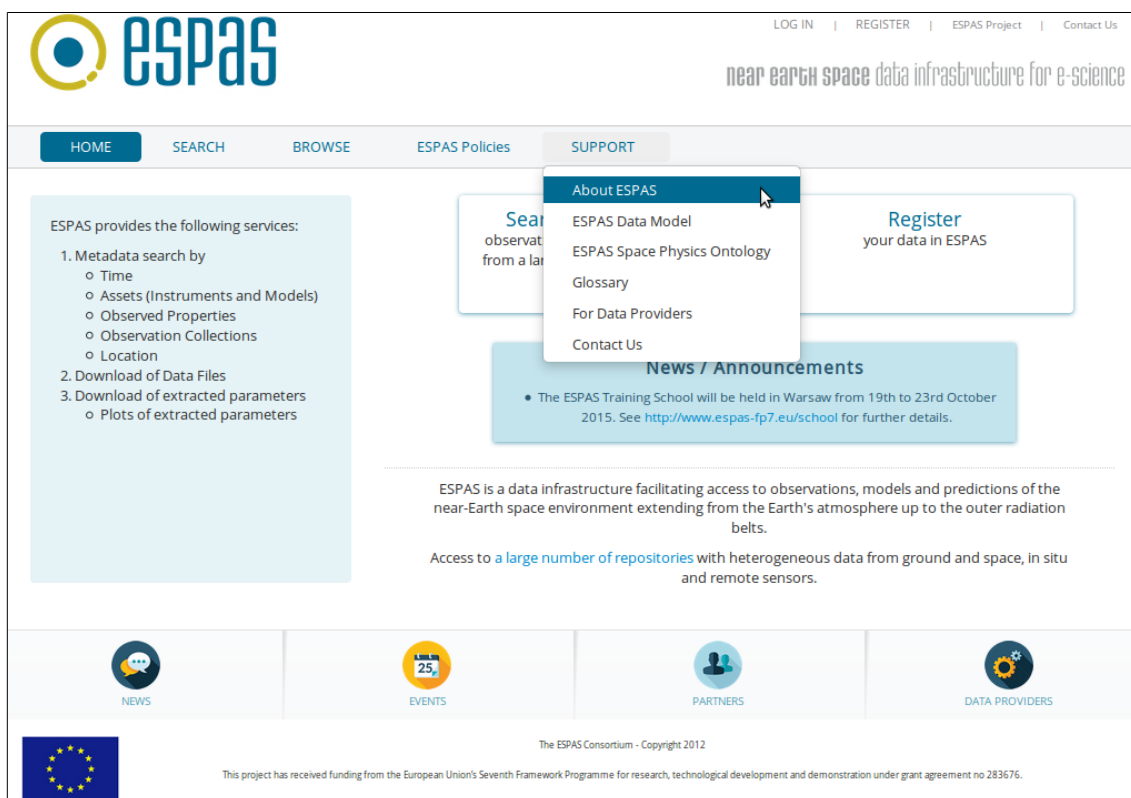
1.9 Support menu

The support menu provides supporting information to the user and data provider regarding the ESPAS portal and its basic components: the ESPAS data model and the ESPAS space physics ontology. It is highly suggested the users and data providers of ESPAS to read this material beforehand in order to understand the concepts and terms used in ESPAS portal and how these terms are used for the metadata searches. This will facilitate their interaction with ESPAS portal and maximize their potentials to perform queries for observations that satisfy more complex criteria.

Moreover, the glossary page gives the definitions for all the terms that are used in the ESPAS portal, and the contact page presents a contact form with the ESPAS administrator.

1.9.1 About ESPAS

1. In order to view information about ESPAS project, click on the **Support** → **About ESPAS** menu item.

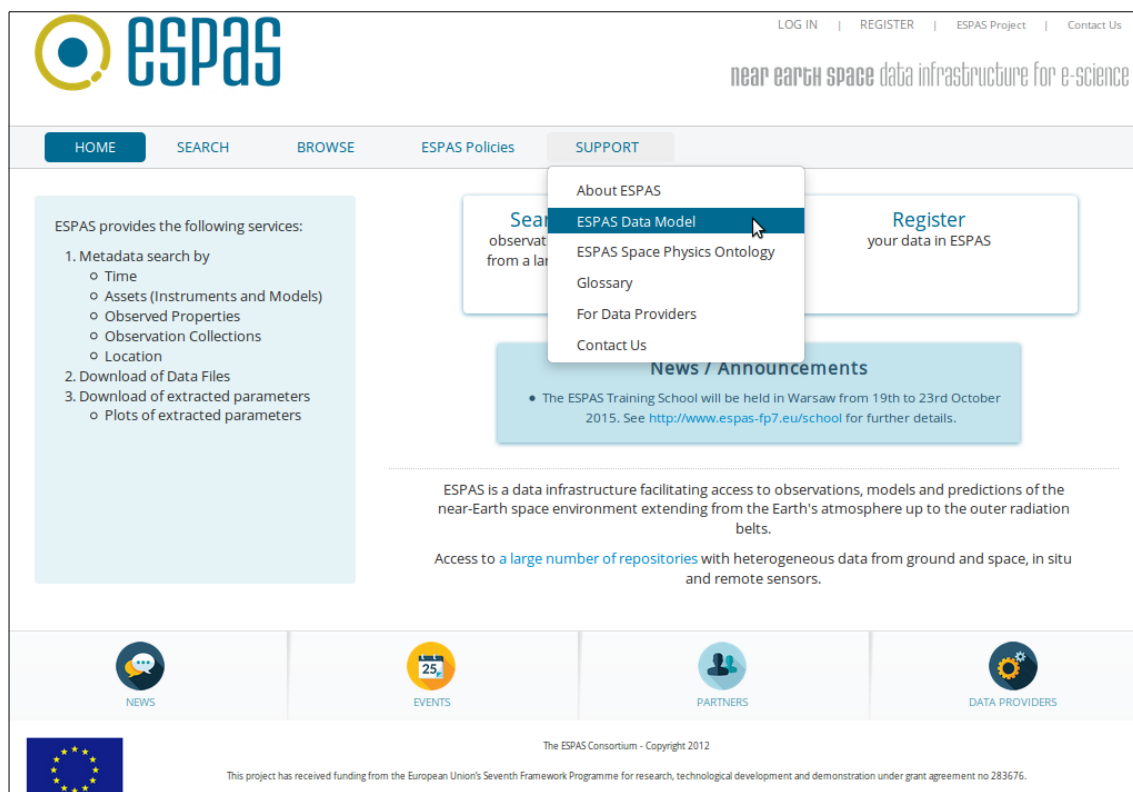


2. The “about ESPAS” page is presented that provides an overview of ESPAS project.



1.9.2 ESPAS Data Model

1. In order to view information about ESPAS Data Model, click on the **Support** → **ESPAS Data Model** menu item.



2. The ESPAS data model page provides a general overview of the ESPAS data model with a figure that presents the relationships among the major data model concepts. A link is provided at the end of this page for the detailed documentation of the ESPAS data model for an in-depth description.

ESPAS Data Model

The ESPAS data model is built entirely on ISO 19100 series geographic information standards, particularly the ISO 19156 Observations and Measurements (O&M) standard. This standardisation facilitates interoperability with other information systems and provides freedom to mix and match information system components without compromising overall success [ISO 19101:2002].

The general structure of the ESPAS data model gives a central place to the concept of **"observation"**. According to [Fowler,1998] an observation is an act that results in the estimation of the value of a feature property using a designated procedure, such as a sensor, instrument, algorithm or process chain. An observation is associated with a discrete time instant or period through which a number, term or other symbol is assigned to a phenomenon. The result of an observation is an estimate of the value of a property of some feature, so the details of the observation are metadata concerning the value of the feature property.

EXAMPLE Measuring (the act of the observation) the F2-layer Critical Frequency (foF2) of the Ionosphere above Athens at 1/1/2015 16:00 GMT. The FeatureOfInterest is the Ionosphere, the observedProperty is the foF2, the procedure/process is the acquisition made by the Athens Digisonde mounted on NOAA platform and the result is 5.2 MHz.

Following this approach the data which ESPAS data model is aimed at describing is always considered as observation results and the observation together with its properties provide relevant metadata.

Besides the main concept of Observation, the other related concepts that are used in ESPAS data model are listed below, while a high level overview of the relationships among them is presented at Figure 1.

```

graph TD
    OP[Observed Property  
e.g. Electron Density] --> O[Observation]
    FOI[Feature Of Interest  
e.g. Ionosphere] --> O
    P[Process] --> O
    OC[Observation Collection] --> O
    O --> R[Result]
    O --> I[Individual]
    O --> Org[Organisation]
    O --> Comp[Composite Process]
    Comp --> C[Computation  
e.g. IRI Model]
    Comp --> A[Acquisition]
    A --> I1[Instrument  
e.g. Athens Digisonde]
    A --> P1[Platform  
e.g. NOAA Observatory]
    A --> Op[Operation  
for satellites]
  
```

1.9.3 ESPAS Space Physics Ontology

1. In order to view information about ESPAS Data Model, click on the **Support** → **ESPAS Space Physics Ontology** menu item.

ESPAS near earth space data infrastructure for e-science

LOG IN | REGISTER | ESPAS Project | Contact Us

HOME SEARCH BROWSE ESPAS Policies **SUPPORT**

ESPAS provides the following services:

1. Metadata search by
 - Time
 - Assets (Instruments and Models)
 - Observed Properties
 - Observation Collections
 - Location
2. Download of Data Files
3. Download of extracted parameters
 - Plots of extracted parameters

Register
your data in ESPAS

News / Announcements

- The ESPAS Training School will be held in Warsaw from 19th to 23rd October 2015. See <http://www.espas-fp7.eu/school> for further details.

ESPAS is a data Infrastructure facilitating access to observations, models and predictions of the near-Earth space environment extending from the Earth's atmosphere up to the outer radiation belts.

Access to a [large number of repositories](#) with heterogeneous data from ground and space, in situ and remote sensors.

NEWS EVENTS PARTNERS DATA PROVIDERS

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This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 283676.

2. The ESPAS space physics ontology page provides a general overview of the ontology that has been developed for ESPAS. A link is provided at the end of this page for the detailed documentation of the ESPAS space physics ontology.

The screenshot shows the ESPAS website header with the logo and navigation links (LOG IN, REGISTER, ESPAS Project, Contact Us). The main navigation bar includes HOME, SEARCH, BROWSE, ESPAS Policies, and a highlighted SUPPORT button. The page title is "ESPAS Space Physics Ontology". The "Synopsis" section explains that the portal manages a vocabulary of Space Physics keywords for narrowing data searches. It states that the ontology is the cornerstone of data search functions specific to the ESPAS domain. The "Introduction: Data Model versus Domain Ontology" section clarifies the distinction between the Data Model (ISO-controlled) and the Domain Ontology (vocabulary-controlled). It notes that custom data elements were introduced to describe domain ontology concepts. The "Key Elements of ESPAS Space Physics Ontology" section explains that the ontology is organized in hierarchies of keywords connected by a "broader-narrower" relationship. A link is provided for a detailed description of the ontology.

IN THIS SECTION

- About ESPAS
- ESPAS Data Model
- ESPAS Space Physics Ontology**
- Glossary
- For Data Providers
- Contact Us

NEWS EVENTS PARTNERS DATA PROVIDERS

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1.9.4 Glossary

1. In order to view the ESPAS Glossary, click on the **Support** → **Glossary** menu item.

The screenshot shows the ESPAS website with the SUPPORT menu open. The menu options are: About ESPAS, ESPAS Data Model, ESPAS Space Physics Ontology, **Glossary** (highlighted), For Data Providers, and Contact Us. The main content area on the left lists services provided by ESPAS: Metadata search by Time, Assets (Instruments and Models), Observed Properties, Observation Collections, Location; Download of Data Files; and Download of extracted parameters and Plots of extracted parameters. The right side features a "Register your data in ESPAS" button. Below the menu, there is a "News / Announcements" section mentioning the ESPAS Training School in Warsaw. The footer includes the ESPAS logo, navigation links, and funding information from the European Union's Seventh Framework Programme.

HOME SEARCH BROWSE ESPAS Policies **SUPPORT**

ESPAS provides the following services:

- Metadata search by
 - Time
 - Assets (Instruments and Models)
 - Observed Properties
 - Observation Collections
 - Location
- Download of Data Files
- Download of extracted parameters
 - Plots of extracted parameters

Register your data in ESPAS

News / Announcements

- The ESPAS Training School will be held in Warsaw from 19th to 23rd October 2015. See <http://www.espas-fp7.eu/school> for further details.

ESPAS is a data infrastructure facilitating access to observations, models and predictions of the near-Earth space environment extending from the Earth's atmosphere up to the outer radiation belts.

Access to a large number of repositories with heterogeneous data from ground and space, in situ and remote sensors.

NEWS EVENTS PARTNERS DATA PROVIDERS

The ESPAS Consortium - Copyright 2012

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 283676.

2. The glossary page provides a list of terms and their definition that are used in the ESPAS portal.



LOG IN | REGISTER | ESPAS Project | Contact Us

near earth space data infrastructure for e-science

HOMESEARCHBROWSEESPAS PoliciesSUPPORT

Glossary

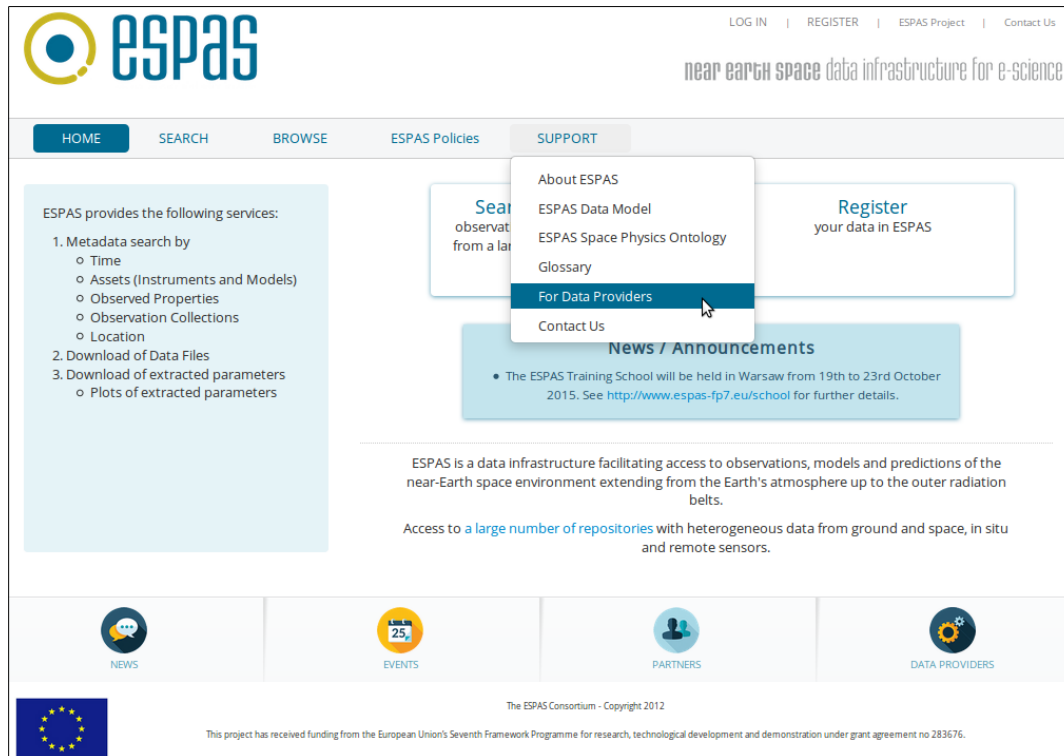
Acquisition	Corresponds to the process component that interacts with the feature of interest / sampling feature to provide a result. It involves the use of an Instrument which is mounted on a Platform that may have an Operation (for satellites, aircrafts).
Asset	Corresponds to an Instrument or a numerical Model or other software that was used to generate the observation.
Component	For vector properties, it describes which of the three components is provided in the data only in those cases when observation does not specify the vector property in full. Typical components are X, Y, Z. The Component has to be accompanied by a suitable description of the Coordinate Reference System (CrS). It takes values from the Component controlled vocabulary.
Composite Observed Property	Describes the group of simple observed properties whose values are estimated in the course of an observation. It takes values from the Composite Observed Property controlled vocabulary.
Composite Process	Represents the process that consists of more than one components of type Acquisition or Computation.
Compressed Representation	Describes the formalism of compressed representation of voluminous or complex 3D, 2D, and 1D data. Typical examples are spherical harmonics for 2D maps on the sphere, truncated Fourier transforms (harmonics) for diurnal time series, Empirical Orthogonal Functions (EOF). It takes values from the Compressed Representation controlled vocabulary.
Computation	Corresponds to the process component that involves only numerical computation (no Instrument is involved), as in the case of Models (e.g. EDAM, SIRMUP) or specific softwares (e.g. ARTIST for the autoscaling of the ionograms).
Computation Type	Describes the type of the Computation process (e.g. Mathematical model, software). It takes values from the Computation Type controlled vocabulary.
CrS	Corresponds to the Coordinate Reference Systems (e.g. GSE, GSM, ...) used to describe a vector Component (observed property definition), the location of a Platform and the geographic extent of an Observation. It takes values from the CrS controlled vocabulary.
Data Provider	Corresponds to an authorized Institution, Organisation or Individual that provides, at minimum metadata information and at several cases access to data.
Dimensionality Instance	Dimensionality is a compact description of the domain X spanned by the independent (input) variables $x_1, x_2, x_3 \dots$ of the Observation result (output dependent variable Y): $Y = f(x_1, x_2, x_3 \dots)$ The independent variables $x_1, x_2, x_3 \dots$ are tested in the course of the Observation to acquire values of the dependent variable Y. For example, an Observed Property "NeutralWindVelocity" is a vector field variable with a natural presentation as a Vector (magnitude and direction) defined in 3D space.

IN THIS SECTION

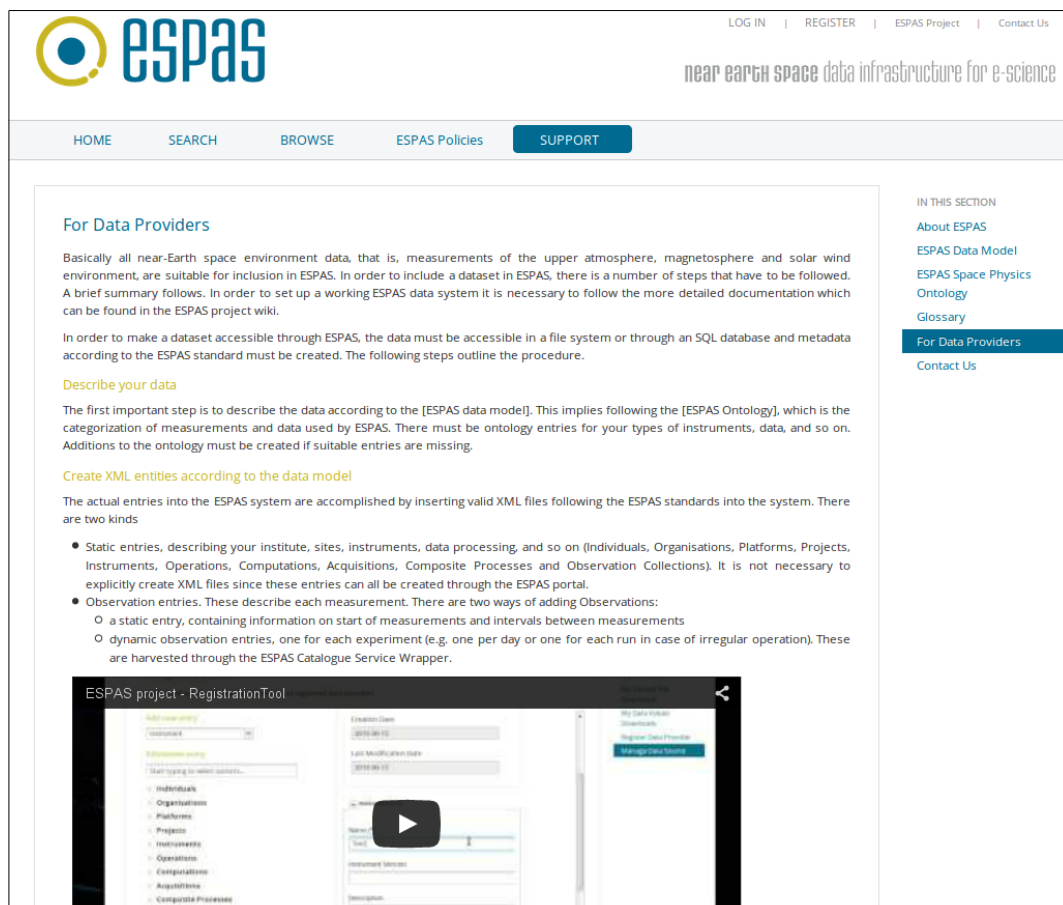
- About ESPAS
- ESPAS Data Model
- ESPAS Space Physics Ontology
- Glossary**
- For Data Providers
- Contact Us

1.9.5 For Data Providers

1. In order to view the information for the data providers, click on the **Support** → **For Data Providers** menu item.

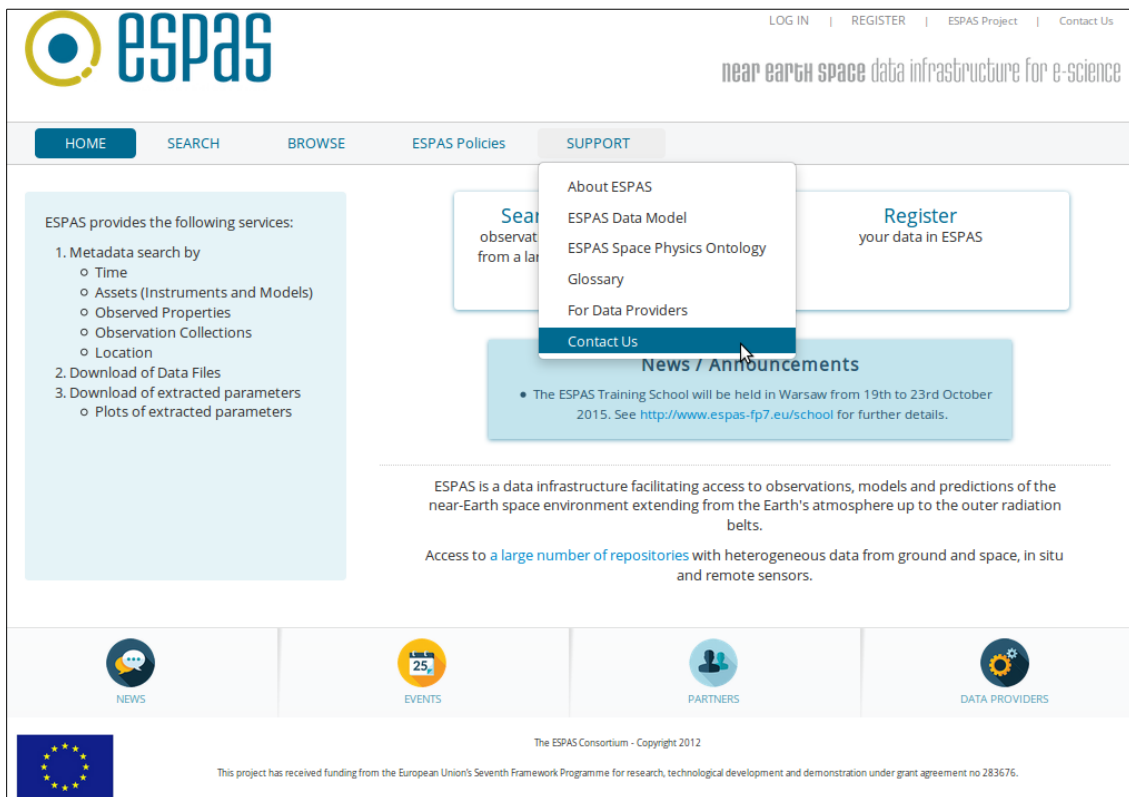


2. The “For Data Providers” page is addressed to the existing ESPAS data providers and the new ones wishing to participate in the ESPAS. It presents all the relevant information of the required steps to be performed by a data provider in order a dataset to be registered in ESPAS portal.



1.9.6 Contact Us

1. In order to contact ESPAS administrator, click on the **Support** → **Contact Us** menu item.



2. Provide the required information and the message you want to send to ESPAS administrator and click **Submit**. Note that the fields marked with an asterisk (*) are mandatory.

The screenshot shows the 'Contact Us' form on the ESPAS website. The form is titled 'Contact Us' and includes a sub-header 'Send an email to the system administrator. All fields with an * are required.' The form fields are: Name (*), E-mail Address (*), Subject (*), and Message (*). The 'Name' field contains 'Anna Charisi', the 'E-mail Address' field contains 'annacharisi@gmail.com', and the 'Subject' field contains 'Interest on participating at ESPAS as Data Provider'. The 'Message' field contains a pre-written message: 'Dear Sir/Madam, I would like to inform me about the necessary steps in order to become an official ESPAS Data provider. I am looking forward to hearing from you, Anna Charisi'. A 'Submit' button is located at the bottom of the form. On the right side of the form, there is a section titled 'IN THIS SECTION' with links to 'About ESPAS', 'ESPAS Data Model', 'ESPAS Space Physics Ontology', 'Glossary', 'For Data Providers', and 'Contact Us'. The footer includes the European Union flag, the ESPAS Consortium logo, and project funding information.

3. A message is presented that confirms that your email was successfully sent to the ESPAS administrator.

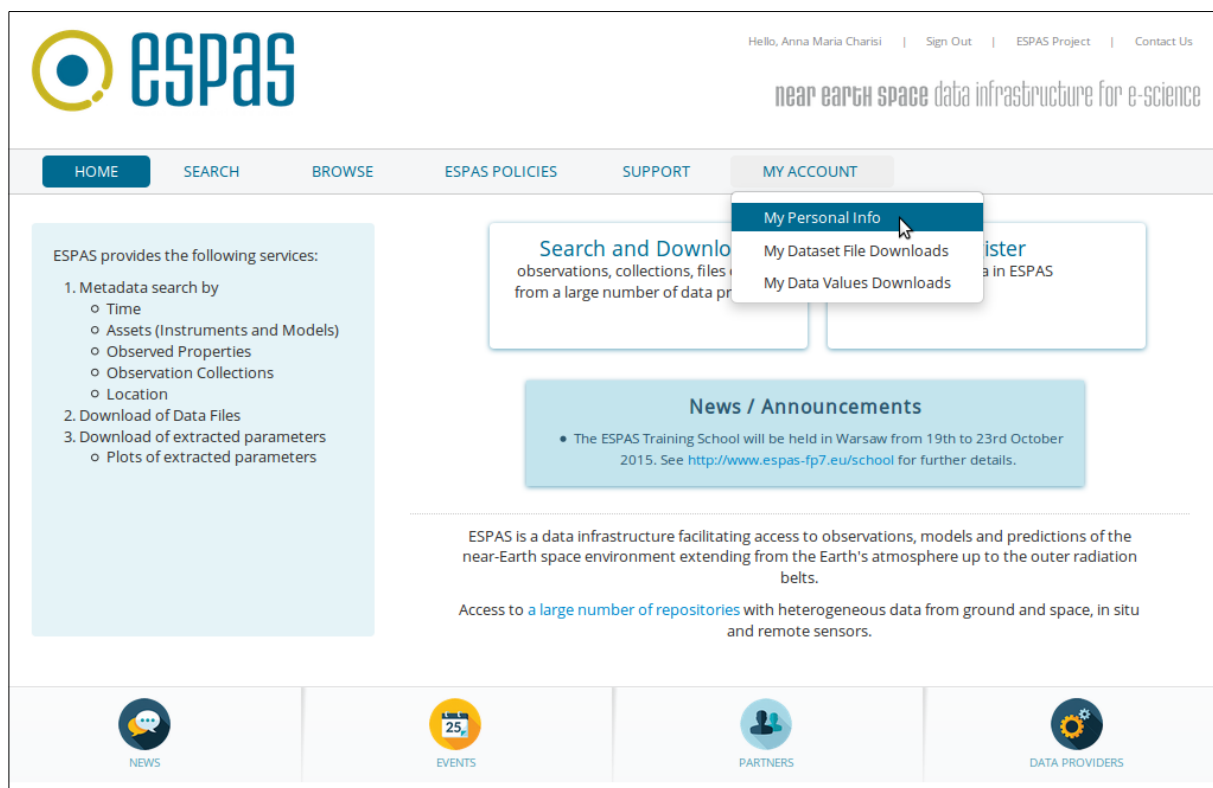
Email to administrator was successfully sent

1.10 My Account menu


The **My Account** menu provides information regarding the user's personal information, the dataset files download requests and the data values download requests. Moreover, for the users that are registered as data providers in the ESPAS portal, there are two extra options in this menu: the register data provider and manage data source (see Support → For Data Providers for more information). The **My Account** menu is displayed only after you have logged in the ESPAS Portal.

1.10.1 My Personal Information

1. If you want to edit your personal information (e.g. password, name), click **My Account** → **My Personal Info** from the main menu.



2. Update your personal information (name, password, organisation name, domain, country, the intended use of ESPAS data, comments) and click **Submit**. Note that the fields marked with an asterisk (*) are mandatory. If you want to become an ESPAS data provider and you have already contacted ESPAS administrator via the **Contact Us** page, check the box “Check if you are a data provider administrator”. The ESPAS administrator will review your request and upgrade your user status to become a data provider. As a data provider you can register metadata in the ESPAS portal.



near earth space data infrastructure for e-science

Hello, Anna Maria Charisi | [Sign Out](#) | [ESPAS Project](#) | [Contact Us](#)

[HOME](#) [SEARCH](#) [BROWSE](#) [ESPAS POLICIES](#) [SUPPORT](#) [MY ACCOUNT](#)

Edit your information

Name (*)

E-mail Address (*)

Password (Optional)

Confirm Password (Optional)

^ Affiliation

Organisation Name (*)

Domain (*)

Country (*)

Intended use of ESPAS data (*)

☒ Academic

☐ Commercial

Comments

Data Provider

☐ Check if you are a data provider administrator

IN THIS SECTION

[My Personal Info](#)

[My Dataset File Downloads](#)

[My Data Values Downloads](#)

3. A message is presented that confirms that your personal information has been updated successfully.

Success! Your information was updated successfully.

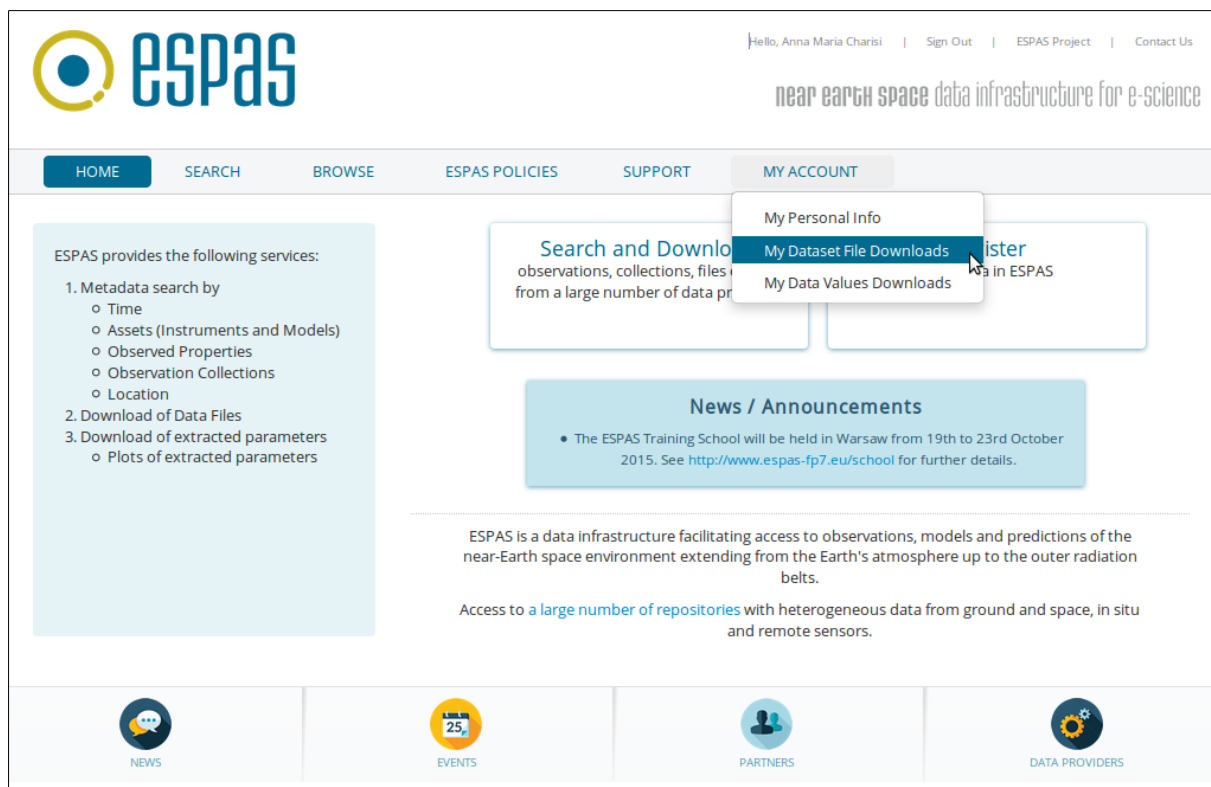
1.10.2 My Dataset File Downloads

The “My Dataset File Downloads” page presents the history and detailed information of your download requests (for dataset files). Note that for each completed download request you will be provided with a url to download the data files. This url is valid for a specific period of time, as defined by each ESPAS data provider. Afterwards, the request is expired and you cannot download the data files.

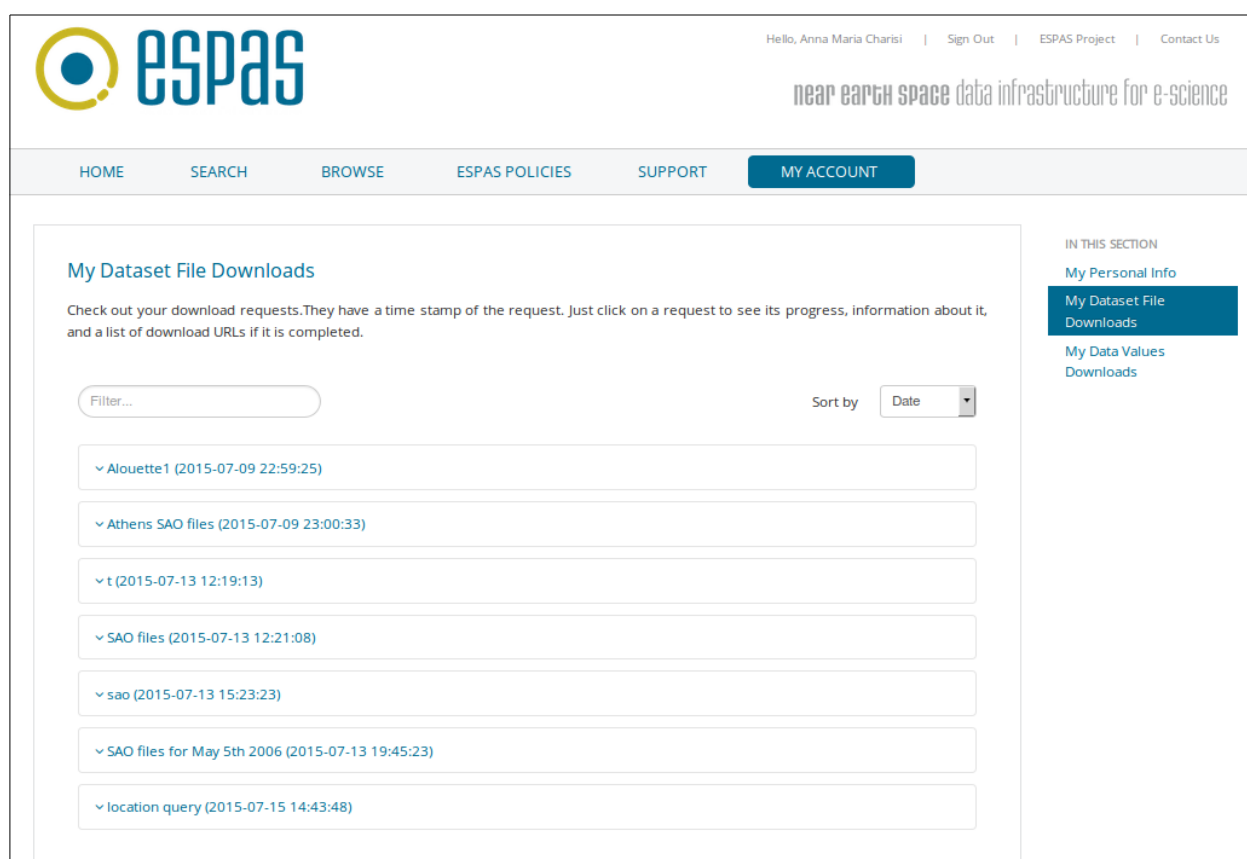
For each download request you can:

- view its status: A request is characterized by its status, which can have one of the following values:
 - Submitting: the request is being submitted to the ESPAS system. You should wait until the status becomes “Completed” to get the data files.
 - Running: the request is running. You should wait until the status becomes “Completed” to get the data files.
 - Completed: the request has completed successfully. You are provided with a url to download the data files. This url is valid for a specific period of time, as defined by each ESPAS data provider. Afterwards, the request is expired and you cannot download the data files.
 - Pending: the request is in a pending state and an appropriate message is displayed. You should wait until the status becomes “Completed”. If this takes too long you can cancel the request and resubmit it.
 - Expired: the request has expired. The url to download the data files is not available any more. You can resubmit the request to get the files again.
 - Canceled: the request has been canceled by the user. You can resubmit the request.
 - Failed: the request has failed and the reason of failure is presented. You can resubmit the request.
 - Undefined: The request is in undefined status. You should contact the ESPAS administrator (Home Page → Contact Us).
- refresh the status: You can refresh the status of a request that is in a submitting, pending or running status.
- cancel the request: You can cancel a request that is in a submitting, pending or running status (for example when the request takes too long to get completed or you realized that you made a mistake in the query parameters).
- resubmit the request: You can resubmit a request that is in a expired, failed or canceled status.

1. In order to view the history of your dataset file download requests, click **My Account** → **My Dataset File Downloads** from the main menu.



2. A list of all your download requests is presented in chronological order (oldest first). The name of the request is the name you have defined during the submission of the request (see also section 3: Download of data files). Inside the parenthesis the local time of the submission is presented. You can sort the requests by submission date or name (1) by clicking on the appropriate option of the **Sort by** drop down menu. Moreover, you can use the search box “filter” (2) to search for requests with a specif name or date.



3. If you want to check the status of a download request or view more information about it, click on the name of a specific request. In the following example the information about the download request with name: “SAO files (May 2006)” that was submitted on 2015-07-16 12:18:40 (local time) is presented.

The status of the request is shown (1) (which is “completed” in this example) along with the expiration date (2) (See also the section 1.10.2 for a description of the possible status values). Then, the download url (3) is provided. Click on this url to download the data files. Note that this url is valid until the expiration date (2). Afterwards, the request is expired and you cannot download the data files. You can resubmit the request to get the same data files.

At the right (4) there are the buttons to refresh the status of the request, to cancel it or resubmit it. Click on the appropriate button, according to your need.

At the bottom (5) click on the **View more** link to see information about your request.

[^ SAO files \(May 2006\) \(2015-07-16 12:18:40\)](#)

COMPLETED [Download requests have been successfully received and processed by the associated data providers.]
Expiration Date - 2015-08-20 12:18:35
Download URL
<https://www.espas-fp7.eu/portal/myAccount/downloadBundle?djobId=-2738053140445402155&user=annacharisi@yahoo.com>

[Refresh Status](#)
[Cancel Request](#)
[Resubmit Request](#)

Provider - National Observatory of Athens
COMPLETED
Expiration Date - 2015-08-20 12:18:35
Download URL
<https://www.espas-fp7.eu/portal/myAccount/downloadBundle?djobId=-2738053140445402155&user=annacharisi@yahoo.com&provider=http://resources.espas-fp7.eu/provider/noa>

[View more ...](#)

4. The query options of your request are presented. In this example, the query options of the request are “Observation Collections = Athens Digisonde SAO files (autoscaled) AND Time Periods = from 2006-05-10 to 2006-05-10 00:00 – 23:59 UTC”. Clicking on the **View less** this area closes.

[View less ...](#)

Query Options
Observation Collections Athens Digisonde SAO files (autoscaled)
Time Periods 2006-05-10 - 2006-05-10 00:00 - 23:59 UTC

5. In the following example, a request that has been canceled by the user is presented (Canceled status).

^ Athens SAO files (May 2006) (2015-07-16 11:32:51)

CANCELED [Download request has been canceled by user.]

Expiration Date - 2015-08-15 11:32:51

Provider - National Observatory of Athens

CANCELED [Download request has been canceled by user.]

[View more ...](#)

Refresh Status

Cancel Request

Resubmit Request

6. In the following example, a request that is in a pending state is presented (pending status). This happens for example when the download request is being processed. You should wait until the status becomes “Completed”. If this takes too long you can cancel the request and resubmit it.

^ Electron Density (SAO+Whisper) (2015-07-25 19:53:07)

PENDING [Download request is being processed]

Expiration Date - 2015-08-24 19:53:01

Provider - Belgian Institute for Space Aeronomy (BIRA-IASB)

SUBMITTING

[View more ...](#)

Refresh Status

Cancel Request

Resubmit Request

7. In the following example, a request that is running (running status) is presented. You should wait until the status becomes “Completed” to get the data files.

^ Electron Density (SAO+Whisper) (2015-07-25 19:53:07)

RUNNING [Processing of download request has started. Associated providers will be contacted to process the specified request.]

Expiration Date - 2015-08-24 19:53:01

Provider - National Observatory of Athens

SUBMITTING

Provider - Belgian Institute for Space Aeronomy (BIRA-IASB)

SUBMITTING

[View more ...](#)

Refresh Status

Cancel Request

Resubmit Request

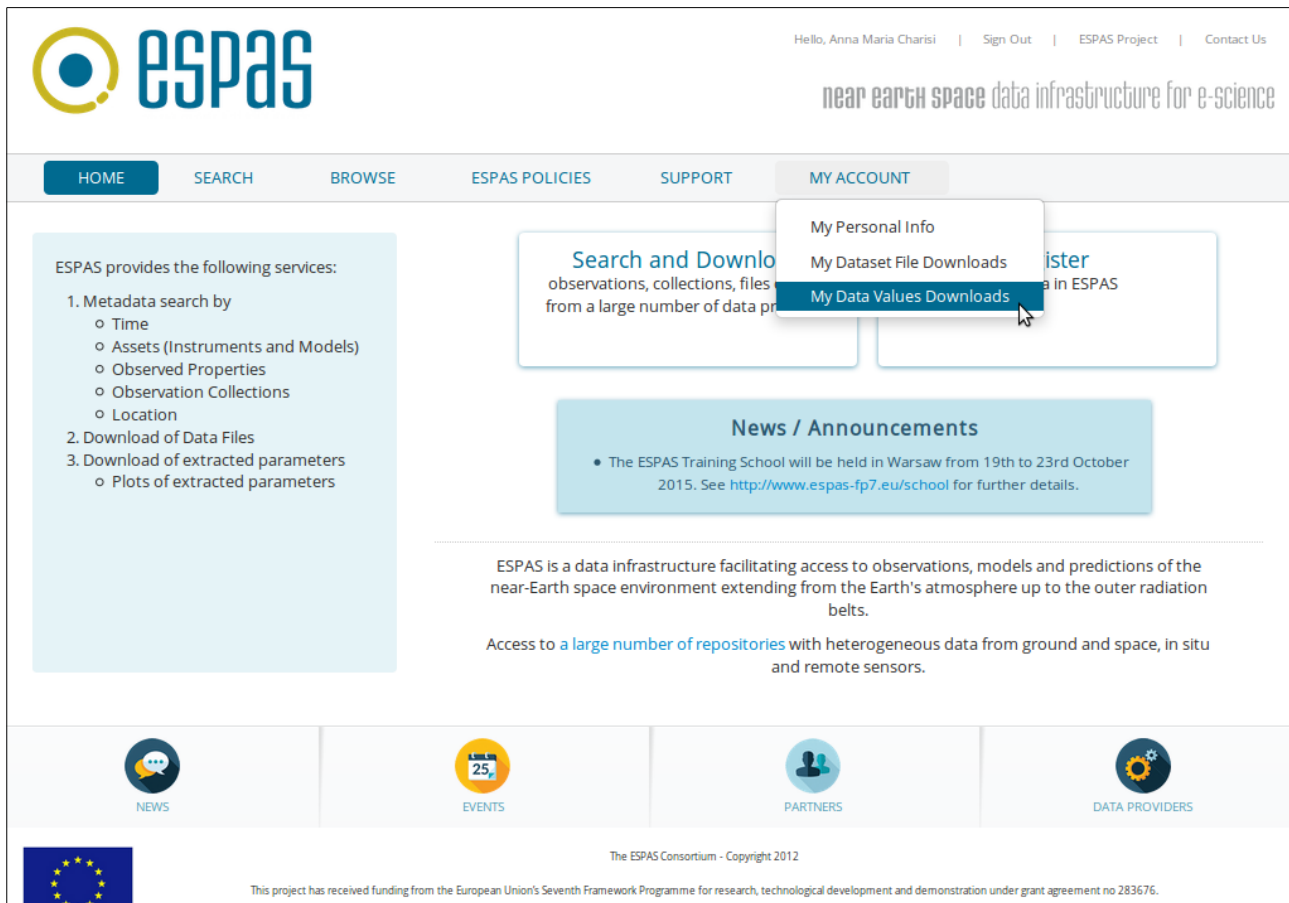
1.10.3 My Data Values Downloads

The “My Data Values Downloads” page presents the history and detailed information of your download requests (for data values). Note that for each completed download request you will be provided with the option to view/download the data values (in ASCII or XML format) or to plot them. These functionalities are valid for a specific period of time, as defined by each ESPAS data provider. Afterwards, the request is expired and you cannot view/download/plot the data values. Usually, the data values download requests are processed in a very short time period of time, since a maximum of 30 days can be selected as time period.

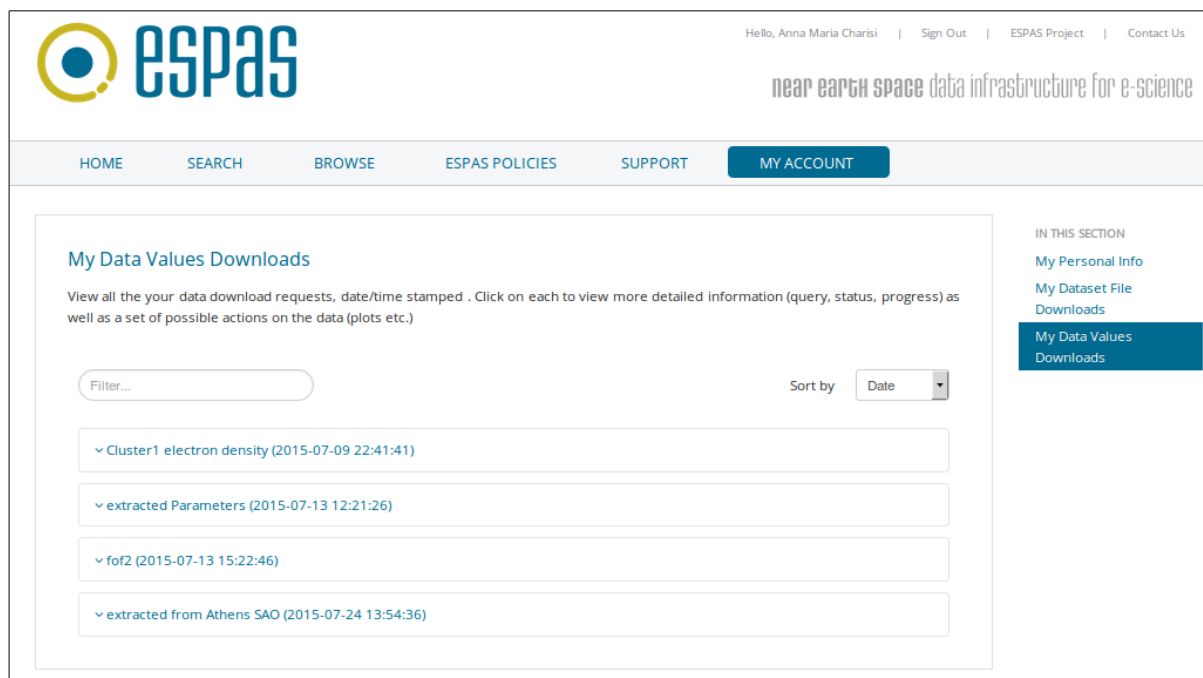
For each download request you can:

- view its status: A request is characterized by its status, which can have one of the following values:
 - Submitting: the request is being submitted to the ESPAS system. You should wait until the status becomes “Completed” to get the data values.
 - Running: the request is running. You should wait until the status becomes “Completed” to get the data values.
 - Completed: the request has completed successfully. You are provided with the option to view/download the data values (in ASCII or XML format) or to plot them. These functionalities are valid for a specific period of time, as defined by each ESPAS data provider. Afterwards, the request is expired and you cannot view/download/plot the data values.
 - Pending: the request is in a pending state and an appropriate message is displayed. You should wait until the status becomes “Completed”. If this takes too long you can cancel the request and resubmit it.
 - Expired: the request has expired. The url to download the data files is not available any more. You can resubmit the request to get the files again.
 - Failed: the request has failed and the reason of failure is presented. You can resubmit the request.
 - Unknown: The request is in unknown status. You should contact the ESPAS administrator (Home Page → Contact Us).
- refresh the status: You can refresh the status of a request that is in a submitting, pending or running status.
- resubmit the request: You can resubmit a request that has expired or failed.

1. In order to view the history of your data values download requests, click **My Account** → **My Data Values Downloads** from the main menu.



2. A list of all your download requests is presented in chronological order (oldest first). The name of the request is the name you have defined during the submission of the request (see also section 4: Download of data values). Inside the parenthesis the local time of the submission is presented. You can sort the requests by submission date or name (1) by clicking on the appropriate option of the **Sort by** drop down menu. Moreover, you can use the search box “filter” (2) to search for requests with a specific name or date.



3. If you want to check the status of a download request or view more information about it, click on the name of a specific request. In the following example the information about the download request with name: “extracted from Athens SAO” that was submitted on 2015-07-24 13:54:36 (local time) is presented.

The status of the request is shown (1) (which is “completed” in this example) along with the expiration date (2) (See also the section 1.10.3 for a description of the possible status values). Then, there is the **Get Data as** drop down menu (3) that provides access to the data values (ascii and xml format) and also the **Get Plot Data as** drop down menu (4) that provides a plot of the data values. Note that these menus are valid until the expiration date (2). Afterwards, the request is expired and you cannot view/download/plot the data values. You can resubmit the request to get the same data values.

At the right (4) there are the buttons to refresh the status of the request or resubmit it. Click on the appropriate button, according to your need.

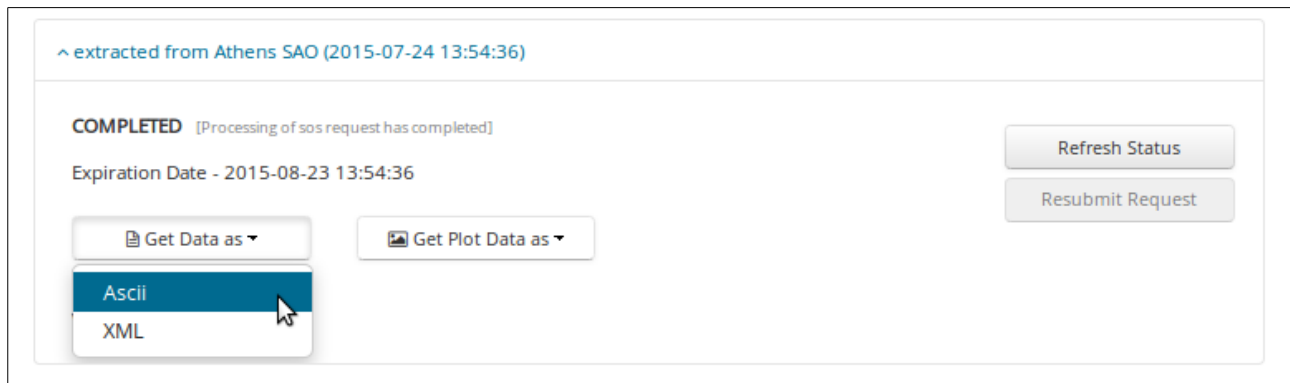
At the bottom (5) click on the **View more** link to see information about your request.

The screenshot shows a web interface for a request. At the top, the request name and timestamp are displayed: "extracted from Athens SAO (2015-07-24 13:54:36)". Below this, the status is "COMPLETED" with a subtext "[Processing of sos request has completed]". To the right of the status are two buttons: "Refresh Status" and "Resubmit Request". Below the status, the "Expiration Date" is shown as "2015-08-23 13:54:36". There are two dropdown menus: "Get Data as" and "Get Plot Data as". At the bottom left, there is a link "View more ...".

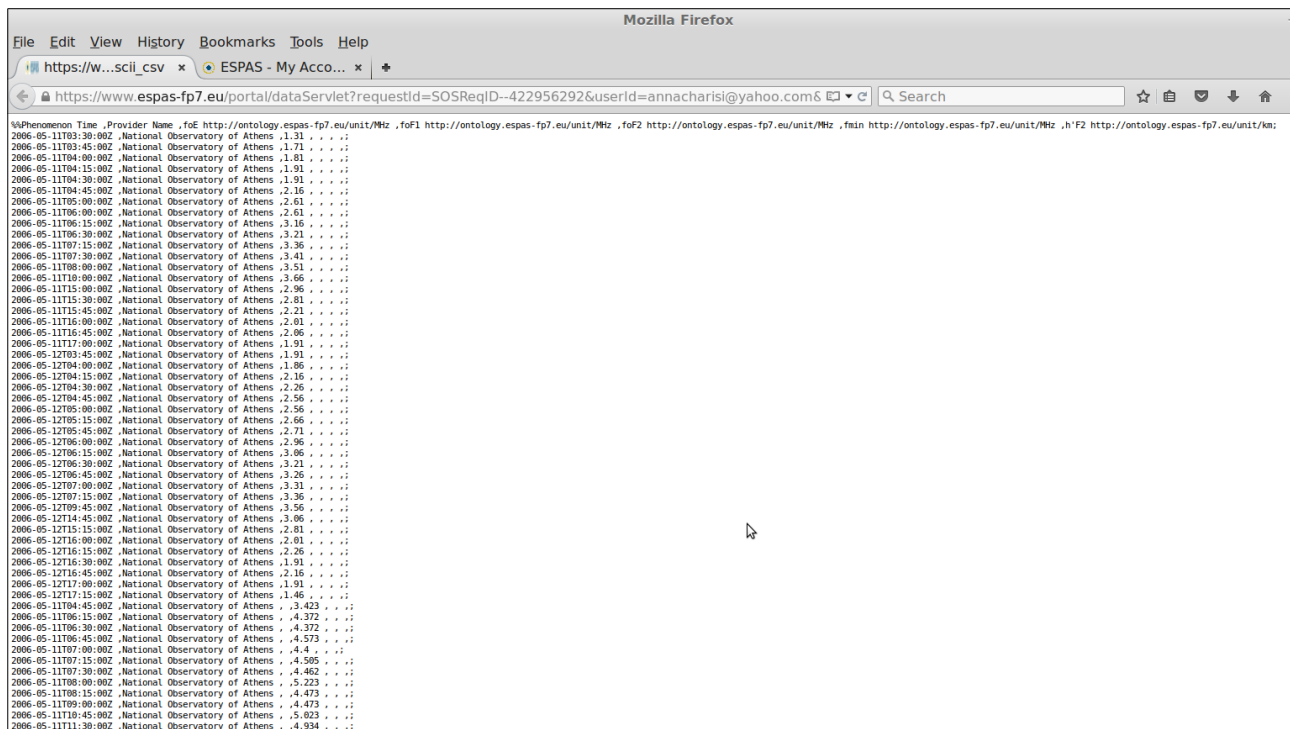
4. The query options of your request are presented. In this example, the query options of the request are “Observation Collections = Athens Digisonde SAO files (autoscaled) AND Time Periods = from 2006-05-10 to 2006-05-12 00:00 – 23:59 UTC AND Selected Observed Properties ='E-layer Critical Frequency, F1-layer Critical Frequency, F2-layer Critical Frequency, Minimum frequency of Reflections from Plasma Layer, Minimum Virtual Height of F2 layer'". Clicking on the **View less** this area closes.

The screenshot shows a section titled "Query Options" with a light blue background. It contains three main sections: "Observation Collections" with the value "Athens Digisonde SAO files (autoscaled)", "Time Periods" with the value "2006-05-10 - 2006-05-12 00:00 - 23:59 UTC", and "Selected Observed Properties" with the value "E-layer Critical Frequency, F1-layer Critical Frequency, F2-layer Critical Frequency, Minimum frequency of Reflections from Plasma Layer, Minimum Virtual Height of F2 layer". At the top left of the section, there is a link "View less ...".

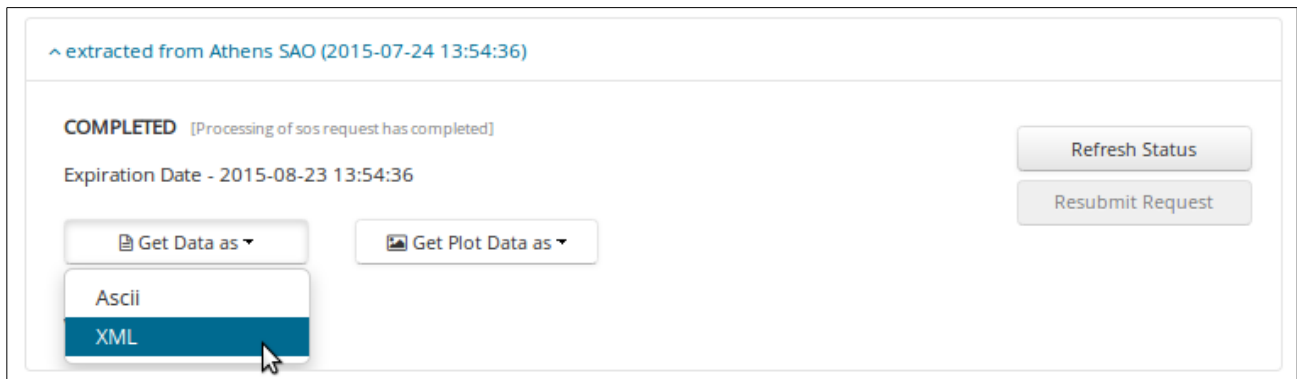
5. In order to view/download the data values in ascii format, click the **Ascii** option of the **Get Data as** drop down menu.



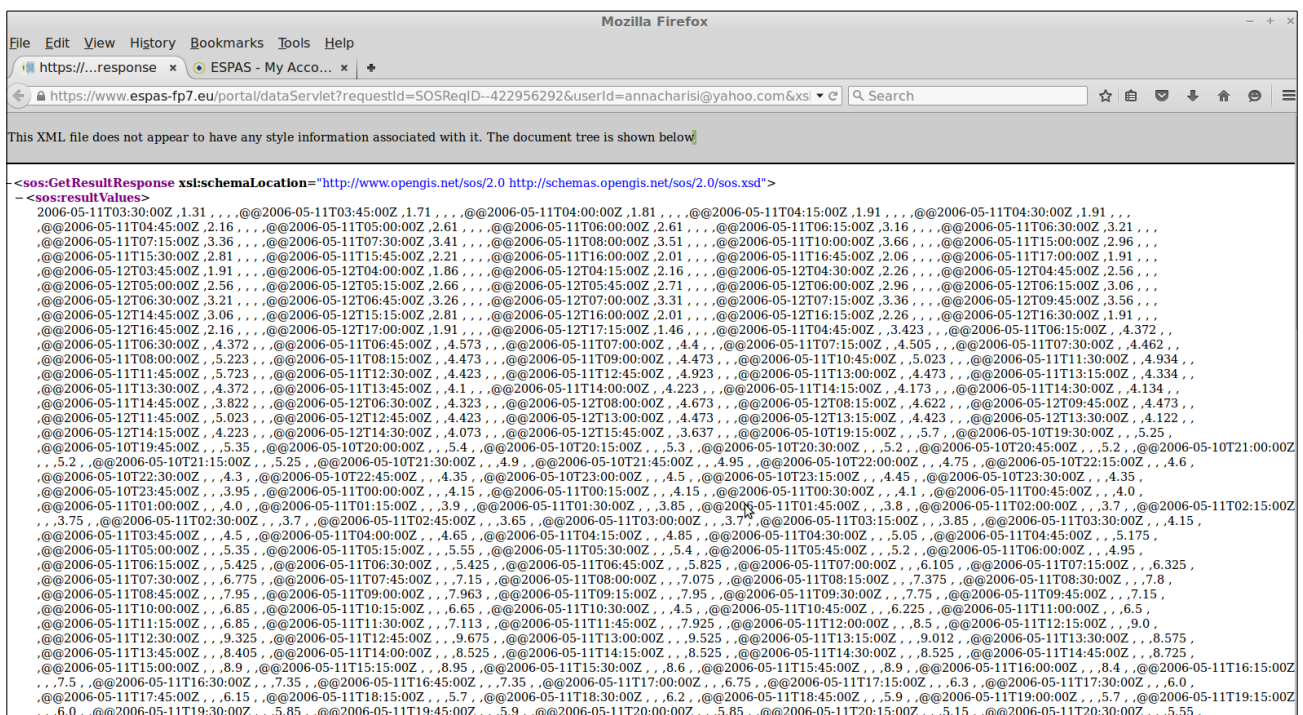
6. The data values (marked by a timestamp) are presented in a new tab/window of your browser in ascii format as comma separated values. The header line of the file is the description of the fields of the data values and the corresponding units. So, the first value corresponds to the time stamp (in UTC) of the measured observed property, while the second value is the name of the data provider. Afterwards, the extracted data values of measured observed properties are presented in the units defined in the header line and in the same order as described at the header line. The data values are grouped by data provider and extracted parameter. So, in this example, first the “foE” values of the “National Observatory of Athens” (data provider) are presented (lines 1 to 40), then the “foF1” values of the same data providers are presented (lines 41 to 80), etc. You can use the “Save Page as” of your browser to save this file locally on your computer.



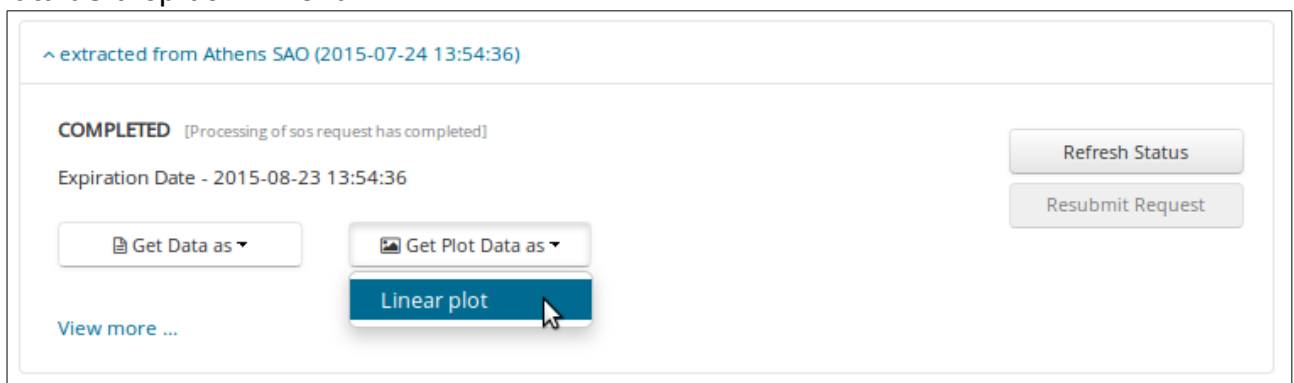
7. In order to view/download the data values in an XML, click the **XML** option of the **Get Data as** drop down menu.



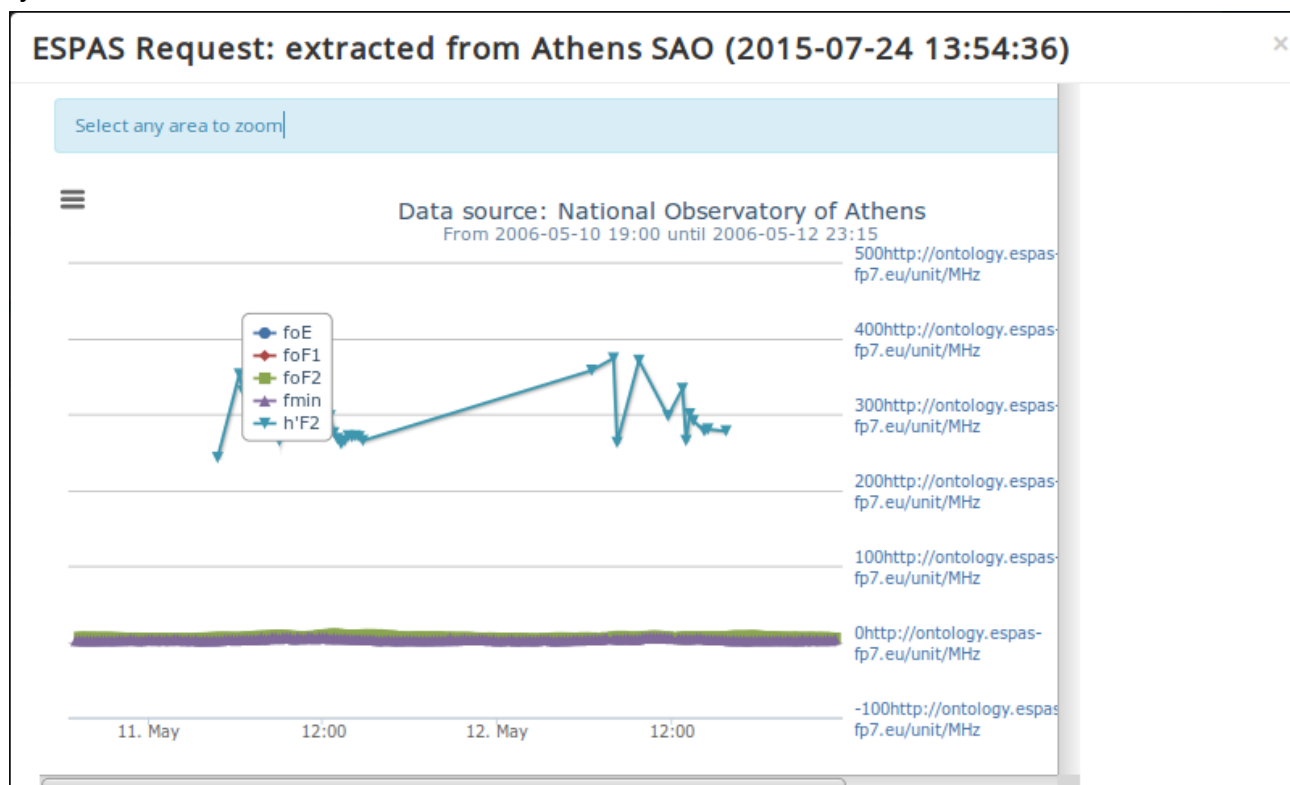
8. The data values are presented in a new tab/window of your browser (in XML format that corresponds to the SOS response). You can use the “Save Page as” of your browser to save this file locally on your computer.



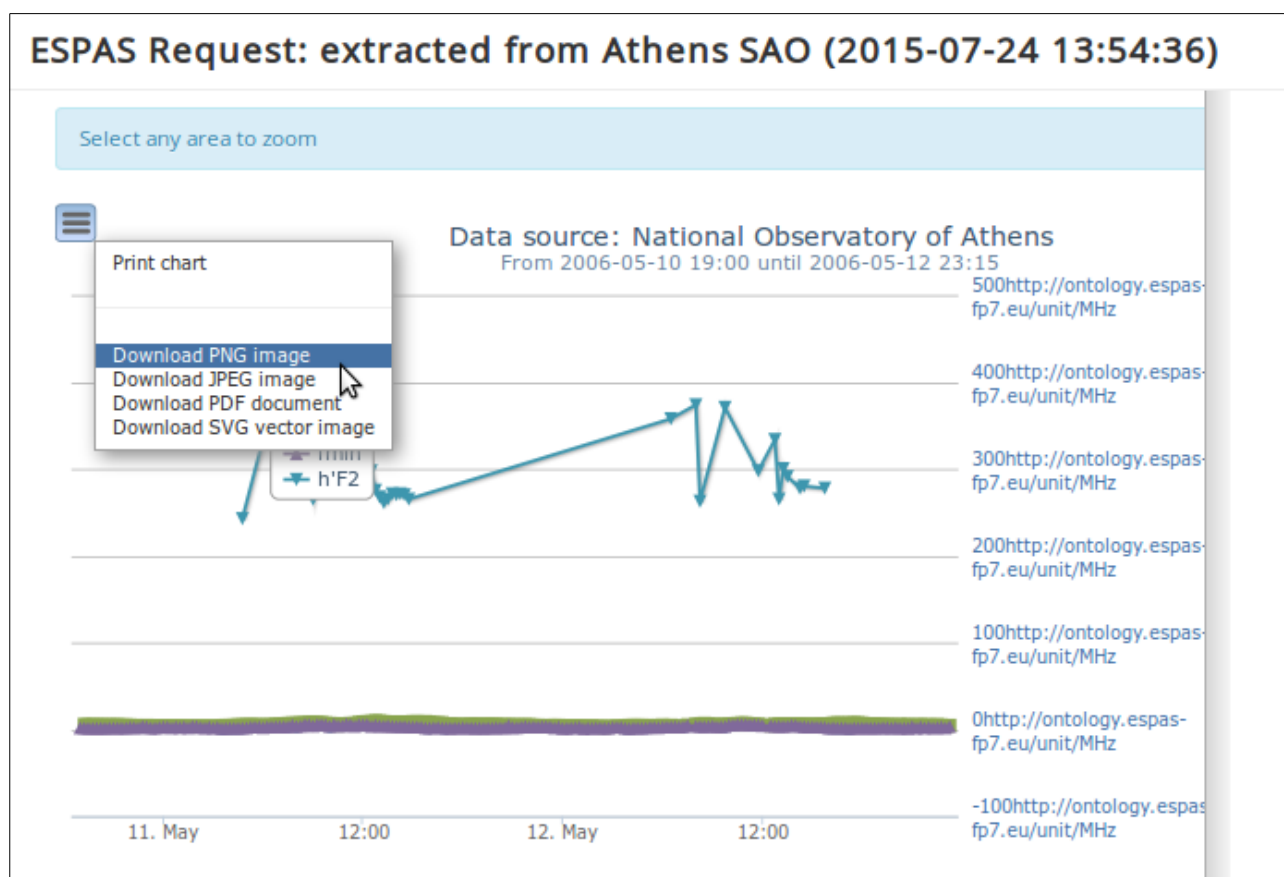
9. In order to view a plot of the data values, click the **Linear plot** option of the **Get Plot Data as** drop down menu.



10. The plot of the downloaded data values open in a new pop up window. You can select any are to zoom.



11. You can save the plot locally on your computer by clicking the button at the top left corner (1) and then selecting the appropriate format.

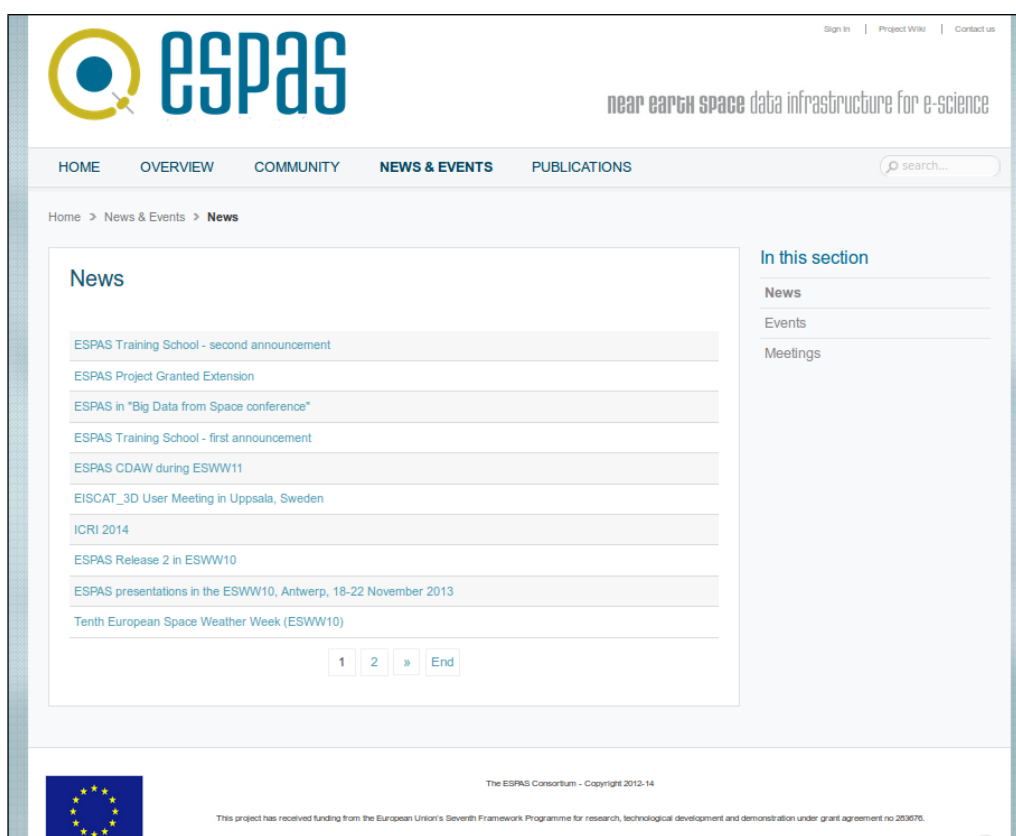


1.11 News

1. If you want to view News regarding ESPAS project, click on the **NEWS** located at the bottom menu bar.

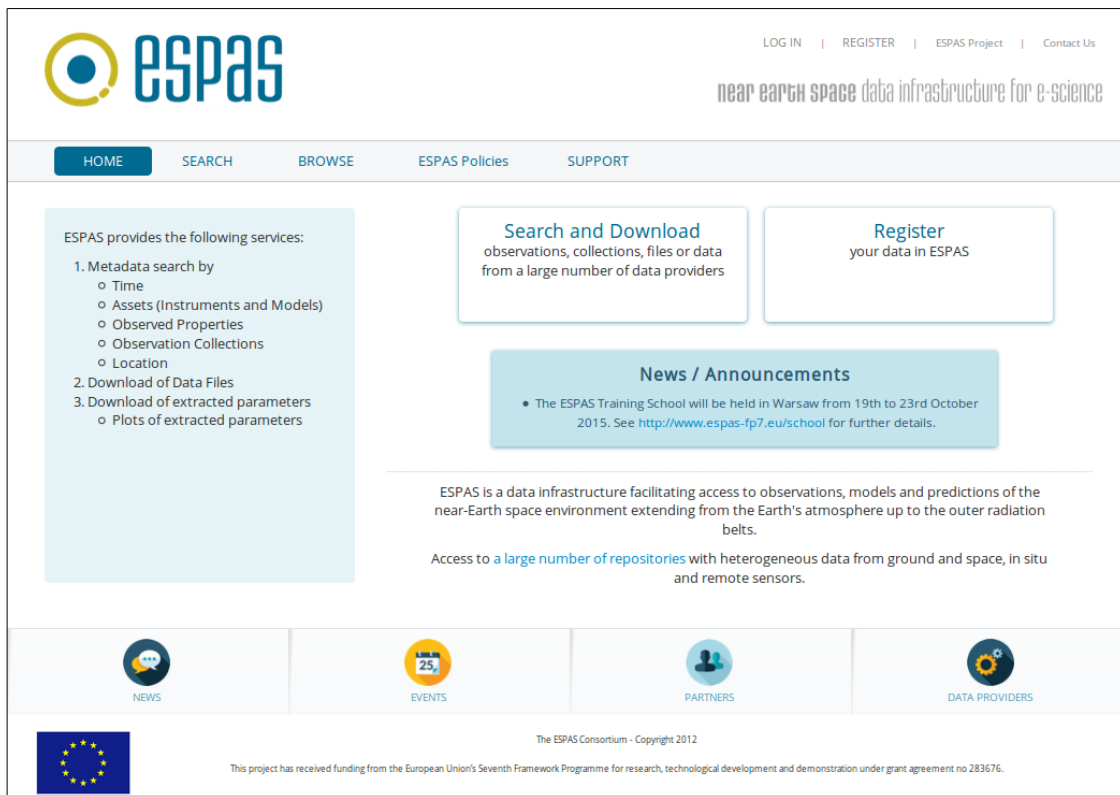


2. The News page of the ESPAS project website will open in a new tab/window.

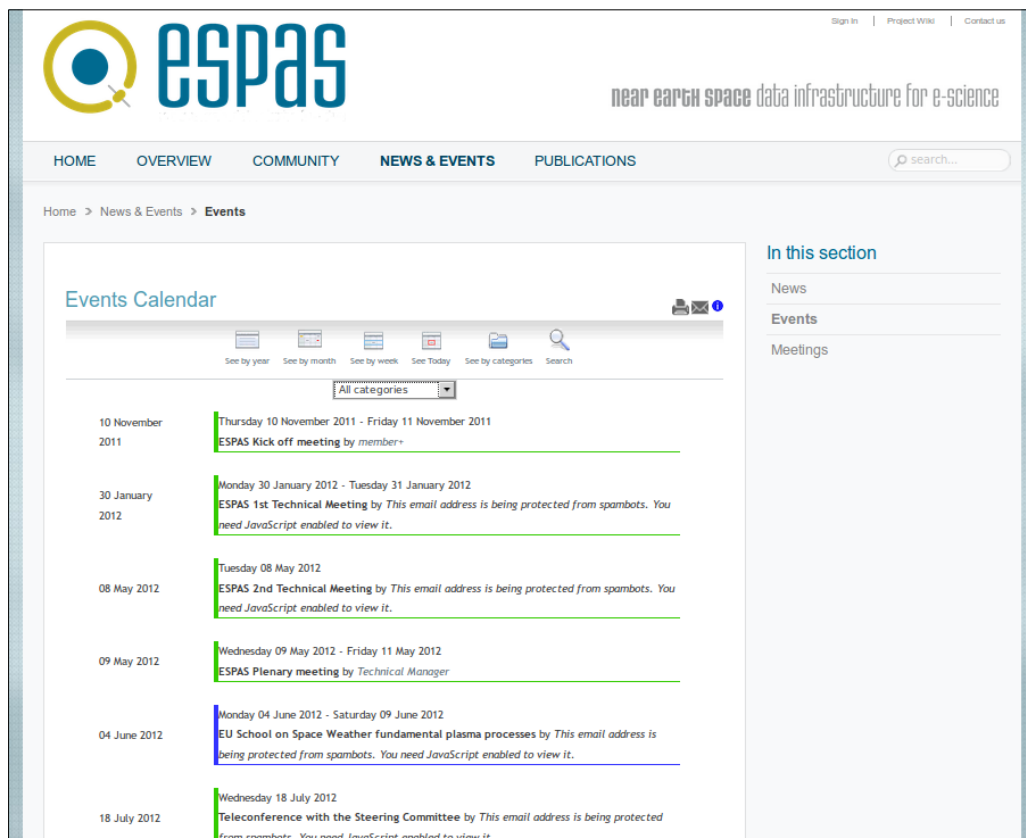


1.12 Events

1. If you want to view News regarding ESPAS project, click on the **EVENTS** located at the bottom menu bar.

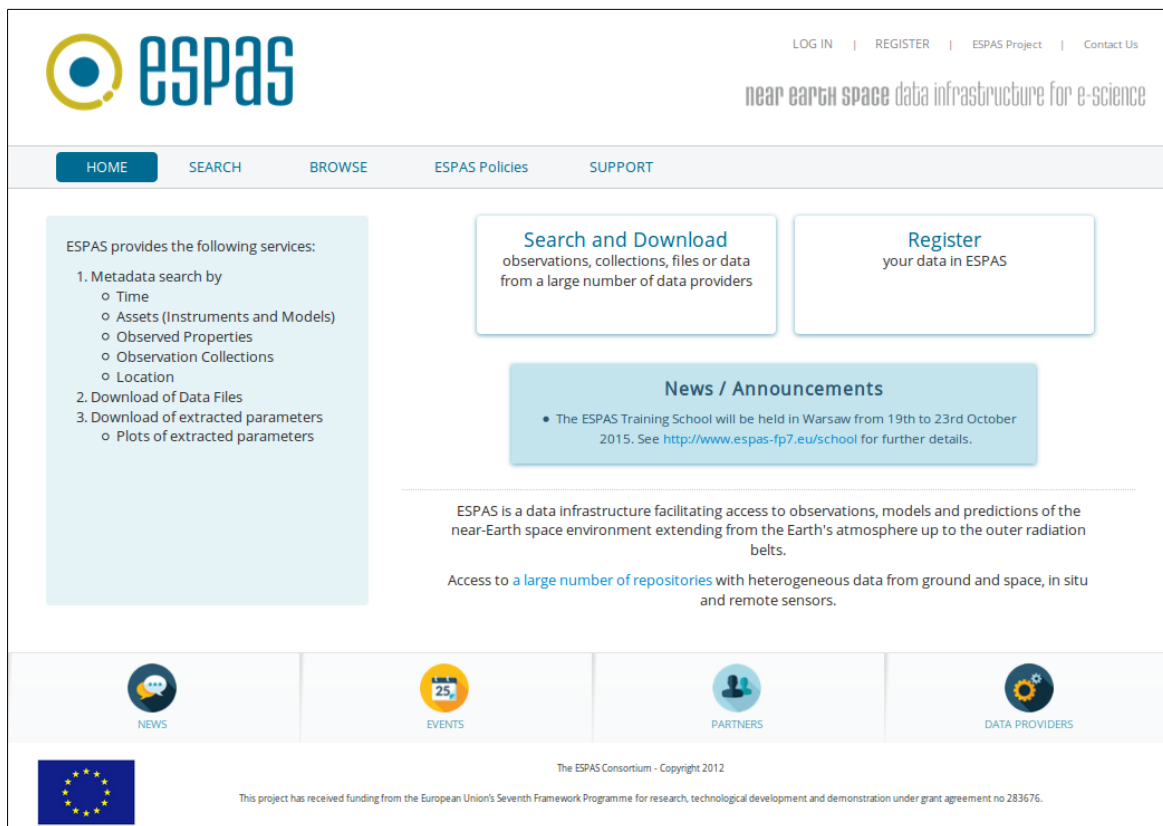


2. The Events page of the ESPAS project website will open in a new tab/window.



1.13 Partners

1. If you want to view the Partners of ESPAS project, click on the **PARTNERS** located at the bottom menu bar.

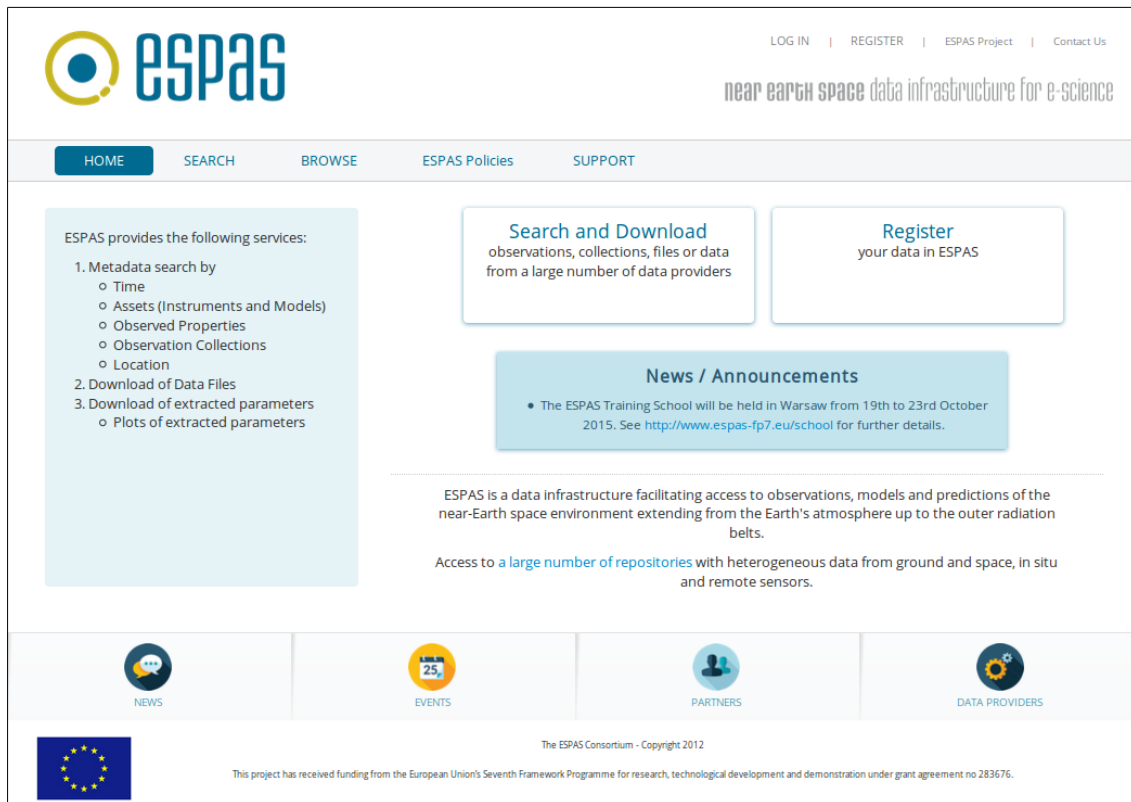


2. The Partners page of the ESPAS project website will open in a new tab/window.

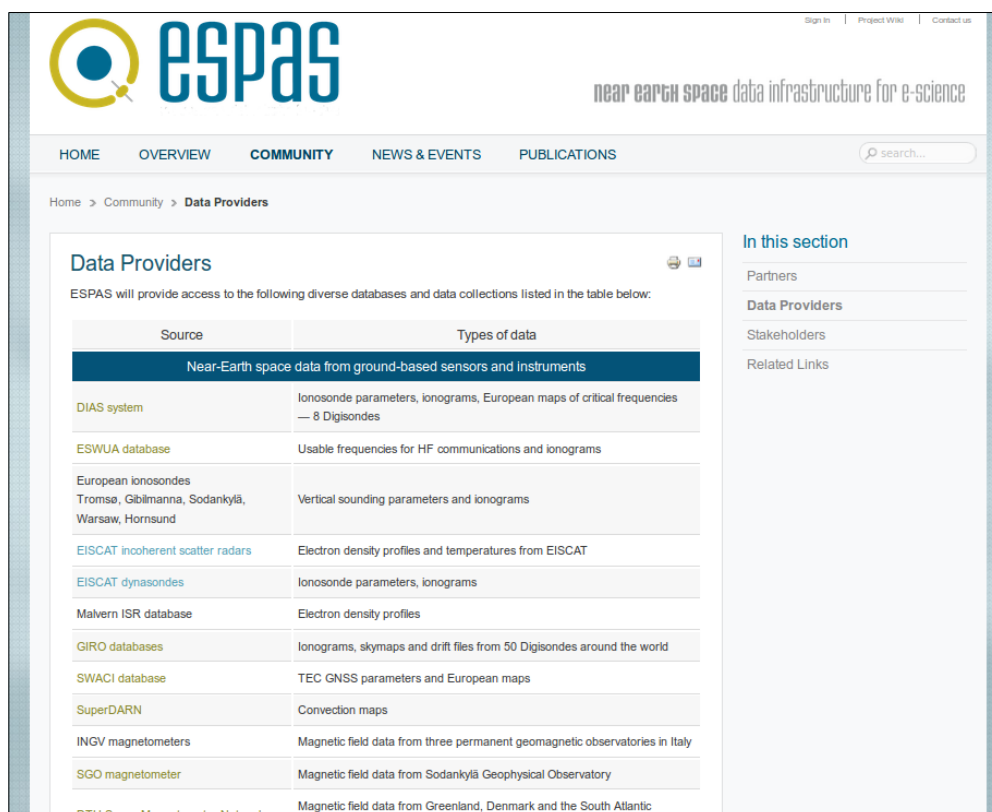


1.14 Data Providers

1. If you want to view the Data Providers of ESPAS project, click on the **DATA PROVIDERS** located at the bottom menu bar.



2. The Data Providers page of the ESPAS project website will open in a new tab/window.



2. Metadata Search

2.1 Progressive Search

2.3 Time/Location Search

3. Download of Data Files

4. Download of Data Values