

# How to Obtain Cassini Image Data: A Guide for Using the Image Atlas of the Planetary Data System

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## 1. Introduction

The goal of this document is to explain to science data users how to obtain Cassini mission image data using the Planetary Image Atlas (the "Atlas"). The Planetary Image Atlas is the official distribution portal for Cassini image data and can be accessed through the following website:

<http://pds-imaging.jpl.nasa.gov/search/search>.

**Planetary Image Atlas**

NEW SEARCH MULTI MISSION SEARCH DATA PORTAL ABOUT HELP FEEDBACK HOME

Select Mission(s):

- 2001 Mars Odyssey
- Cassini
- Chandrayaan-1
- Clementine
- Galileo
- LCROSS
- Lunar Reconnaissance Orbiter
- MESSENGER

Select Instrument(s):

- THEMIS-VIS
- THEMIS-IR
- ISS
- VIMS
- RADAR
- MOON\_MINERALOGY\_MAPPER
- A-STAR
- B-STAR

Product Search:

Get Count

Get Results

Reset Tab

Reset All

Records Found: 0

Current Constraints:

There are no constraints applied to your search.

TEXT AND FORM SEARCH CRITERIA ARE COMBINED  
TEXT BASED SEARCH

(Type text, select suggested text, hit enter/return key, add value if needed, then mouse click 'Add Constraint'.)  
(Repeat these steps to add additional criteria.)

Add Constraint

FORM BASED SEARCH

Intro QuickSearch Product Geometry Instrument Time Map Results

Quick Search

- Criteria selected on all forms combine to formulate your search.
- Selecting nothing returns ALL products.
- Click Get Count to evaluate the query without retrieving results.
- Click Get Results to submit your query.
- All tabs do not need to be filled out.

Instrument Name		Observation ID	
Eye	BOTH LEFT MONO N/A REAR RIGHT	Filter Names	A A, B, C, D, E A, NULL, NULL, NULL, NULL B BB1 BB2
Filter Number	0 1 2 3 4 5	Frame Type	<input type="checkbox"/> MONO <input type="checkbox"/> N/A <input type="checkbox"/> STEREO <input type="checkbox"/> UNK
Image Type	COL_SUM HISTOGRAM N/A REF PIXELS	Instrument Host ID	<input type="checkbox"/> MERA/MER2/Spirit <input type="checkbox"/> MERB/MER1/Opportunity

The Atlas is part of the Planetary Data System (PDS), an archive that includes data products from all NASA planetary missions. This archive is comprised of 8 teams, called nodes, which encompass a variety of disciplines, including Atmospheres, Geosciences, Imaging, etc. More information on the Planetary Data System can be obtained at the PDS website (<http://pds.jpl.nasa.gov/>).

The Planetary Image Atlas is the main data delivery service of the PDS Imaging Node, whose mission is to collect, archive, and make accessible all data from NASA's planetary missions and research programs. The node also serves as a bridge between mission/instrument teams and the science users, providing mission and instrument-specific information, documentation, and tutorials. Information for the Cassini mission and its imaging instruments can be accessed at the PDS Imaging Node's Cassini-Huygens Mission page ([http://img.pds.nasa.gov/portal/cassini\\_mission.html](http://img.pds.nasa.gov/portal/cassini_mission.html)).

The "PDS Lead Node" for the Cassini mission is the Atmospheres Node. All Cassini data, not just image data, can be accessed through their Cassini Archive Page:

<http://atmos.nmsu.edu>

From the Atmospheres page, click on Cassini Archive page. Links for image data generally lead to the Planetary Image Atlas site.

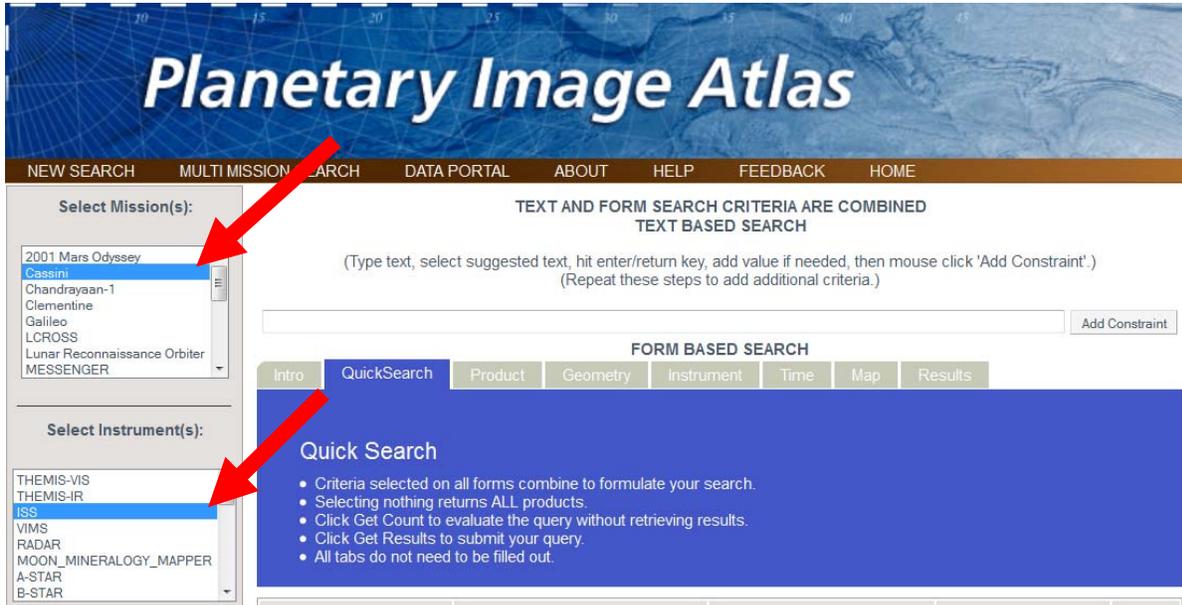
A quick and cursory introduction on how to search for data in the Planetary Image Atlas can be viewed by clicking the Intro tab on the Atlas web page. This manual will cover the same ground in much more detail.

The screenshot displays the Planetary Image Atlas website interface. At the top, a navigation bar includes links for NEW SEARCH, MULTI MISSION SEARCH, DATA PORTAL, ABOUT, HELP, FEEDBACK, and HOME. Below this, there are two main search sections: "TEXT AND FORM SEARCH CRITERIA ARE COMBINED TEXT BASED SEARCH" and "FORM BASED SEARCH". The "FORM BASED SEARCH" section features a series of tabs: Intro, QuickSearch, Product, Geometry, Instrument, Time, Map, and Results. A red arrow points to the "Intro" tab. Below the tabs, there is a green banner titled "Introduction" with a bullet point: "Click on QuickTime Icon to download plugin if video does not load automatically." Below this is an "ATLAS DEMO" section featuring usage of TEXT and FORM based search. At the bottom, there is a "Quick Search" section with a list of instructions: "Criteria selected on all forms combine to formulate your search.", "Selecting nothing returns ALL products.", "Click Get Count to evaluate the query without retrieving results.", "Click Get Results to submit your query.", and "All tabs do not need to be filled out." On the left side of the page, there are two dropdown menus: "Select Mission(s)" with options like 2001 Mars Odyssey, Cassini, Chandrayaan-1, Clementine, Galileo, LCROSS, Lunar Reconnaissance Orbiter, and MESSENGER; and "Select Instrument(s)" with options like THEMIS-VIS, THEMIS-IR, ISS, VIMS, RADAR, MOON\_MINERALOGY\_MAPPER, A-STAR, and B-STAR. Below these are "Product Search" buttons (Get Count, Get Results, Reset Tab, Reset All) and a "Records Found: 0" indicator.

## 2. Defining the Search

### 2.1 Selecting a Mission and Instrument

The first step of any search in the Planetary Image Atlas is to select a **Mission** and **Instrument** from the appropriate sections in the left panel. Selections are made by clicking with the left mouse button.



The Mission and Instrument options are dynamically linked to each other. Selecting a mission highlights the appropriate instrument(s), while selecting an instrument highlights the appropriate mission.

You can select more than one instrument or mission to search on at the same time. Simply click the left mouse button and hold it over several selections before releasing. Alternatively, holding the CTRL button on your keyboard will allow more than one option to be selected with left mouse clicks.



In some cases (if, for example, you come to the Atlas through the Imaging Node's Cassini-Huygens Mission page) the Mission and/or Instrument may already be selected for you.



If you wish to change the Mission or Instrument in this case, click on the Multi Mission Search option from the top menu. This will give you the general Mission and Instrument selection options.



## 2.2 Setting Search Parameters

Search parameters can be specified using various forms, which are organized into tabs. The **QuickSearch** tab contains the most common parameter forms and many simple searches can be accomplished using only this tab.

**Planetary Image Atlas**

NEW SEARCH MULTI MISSION SEARCH DATA PORTAL ABOUT HELP FEEDBACK HOME

Select Mission(s):

- 2001 Mars Odyssey
- Cassini**
- Chandrayaan-1
- Clementine
- Galileo
- LCROSS
- Lunar Reconnaissance Orbiter
- MESSENGER

Select Instrument(s):

- THEMIS-VIS
- THEMIS-IR
- ISS**
- VIMS
- RADAR
- MOON\_MINERALOGY\_MAPPER
- A-STAR
- B-STAR

Product Search:

Get Count

Get Results

Reset Tab

Reset All

Records Found: 0

Current Constraints:

There are no constraints applied to your search.

Sample Atlas Image:

TEXT AND FORM SEARCH CRITERIA ARE COMBINED  
TEXT BASED SEARCH

(Type text, select suggested text, hit enter/return key, add value if needed, then mouse click 'Add Constraint'.)  
(Repeat these steps to add additional criteria.)

Add Constraint

FORM BASED SEARCH

Intro QuickSearch Product Geometry Instrument Time Map Results

**Quick Search**

- Criteria selected on all forms combine to formulate your search.
- Selecting nothing returns ALL products.
- Click Get Count to evaluate the query without retrieving results.
- Click Get Results to submit your query.
- All tabs do not need to be filled out.

Filter Names	BL1, CL2 BL1, GRN BL1, UV3 CB2, CL2 CB2, IR1 CB2, IRP0	Instrument ID	<input type="checkbox"/> ISSNA - Narrow Ang. Cam. <input type="checkbox"/> ISSWA - Wide Ang. Cam.	
Product Type	<input type="checkbox"/> EDR <input type="checkbox"/> RDR (Maps)	Rings Flag	<input type="checkbox"/> NO <input type="checkbox"/> YES	
Target Name	AEGAEON, SATURN-GRING ALBIORIX, SATURN ANTHE, CONSTANT I/F ANTHE, PROMETHEUS ANTHE, ROCKS ANTHE, SATURN-RINGS			
Lat/Lon Bounding Box Coordinates in Positive East Longitude				
	Northernmost Latitude (-90 to 90)			
Westernmost Longitude (0 to 360)		Easternmost Longitude (0 to 360)		
	Southernmost Latitude (-90 to 90)			
	Min	Max	Valid Range	Units
Emission Angle			0.0 to 180.0	degrees
Image Mid Time			0000-00-00 00:00:00 to 2011-09-30 11:51:18 or 0000-000T00:00:00 to 2011-273T11:51:18	N/A

The contents of the tabs are affected by the instrument selection. Only parameters that are searchable for a specific instrument (or set of instruments) have their forms displayed.

**Select Instrument(s):**

- THEMIS-VIS
- THEMIS-IR
- ISS
- VIMS**
- RADAR
- MOON\_MINERALOGY\_MAPPER
- A-STAR
- B-STAR

**Product Search:**

Get Count  
Get Results  
Reset Tab  
Reset All

**Records Found:** 0

**Current Constraints:**  
There are no constraints applied to your search.

**Sample Atlas Image:**



**Quick Search**

- Criteria selected on all forms combine to formulate your search.
- Selecting nothing returns ALL products.
- Click Get Count to evaluate the query without retrieving results.
- Click Get Results to submit your query.
- All tabs do not need to be filled out.

Instrument ID	<input type="checkbox"/> VIMS - Spectrometer	Product Type	<input type="checkbox"/> EDR	
Target Name	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>AEGAEON</li> <li>ATLAS</li> <li>CALYPSO</li> <li>DAPHNIS</li> <li>DARK SKY</li> <li>DIONE</li> </ul>		
<b>Lat/Lon Bounding Box</b> Coordinates in Positive East Longitude				
	Northernmost Latitude (-90 to 90)			
Westernmost Longitude (0 to 360)		Easternmost Longitude (0 to 360)		
	Southernmost Latitude (-90 to 90)			
	Min	Max	Valid Range	Units
Emission Angle			0.0 to 180.0	degrees
Incidence Angle			0.0 to 180.0	degrees
Phase Angle			0.0 to 180.0	degrees

**Cassini VIMS QuickSearch Tab**

**Select Instrument(s):**

- THEMIS-VIS
- THEMIS-IR
- ISS
- VIMS
- RADAR**
- MOON\_MINERALOGY\_MAPPER
- A-STAR
- B-STAR

**Product Search:**

Get Count  
Get Results  
Reset Tab  
Reset All

**Records Found:** 0

**Current Constraints:**  
There are no constraints applied to your search.

**Sample Atlas Image:**



**Quick Search**

- Criteria selected on all forms combine to formulate your search.
- Selecting nothing returns ALL products.
- Click Get Count to evaluate the query without retrieving results.
- Click Get Results to submit your query.
- All tabs do not need to be filled out.

Instrument ID	<input type="checkbox"/> RADAR	Target Name		
	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>DIONE</li> <li>EARTH</li> <li>ENCELADUS</li> <li>HYPERION</li> <li>IAPETUS</li> <li>JUPITER</li> </ul>		
<b>Lat/Lon Bounding Box</b> Coordinates in Positive East Longitude				
	Northernmost Latitude (-90 to 90)			
Westernmost Longitude (0 to 360)		Easternmost Longitude (0 to 360)		
	Southernmost Latitude (-90 to 90)			
	Min	Max	Valid Range	Units
Start Time			1999-08-18 03:32:57 to 2011-07-08 19:05:01 or 1999-230T03:32:57 to 2011-189T19:05:01	N/A
Stop Time			1999-08-18 03:49:01 to 2011-07-09 00:18:53 or	N/A

**Cassini RADAR QuickSearch Tab**

Search parameters are represented by several types of forms. Some parameters are specified by selecting a checkbox. Others are selected from menus. Most are specified by filling out text fields.

**Quick Search**

- Criteria selected on all forms combine to formulate your search.
- Selecting nothing returns ALL products.
- Click Get Count to evaluate the query without retrieving results.
- Click Get Results to submit your query.
- All tabs do not need to be filled out.

**Select Instrument(s):**

- THEMIS-VIS
- THEMIS-IR
- ISS**
- VIMS
- RADAR
- MOON\_MINERALOGY\_MAPPER
- A-STAR
- B-STAR

**Product Search:**

Get Count

Get Results

Reset Tab

Reset All

**Records Found:** 0

**Current Constraints:**

There are no constraints applied to your search.

**Sample Atlas Image:**

**Filter Names:** BL1, CL2; BL1, GRN; BL1, UV3; CB2, CL2; CB2, IR1; CB2, IRP0

**Instrument ID:**  ISSNA - Narrow Ang. Cam.;  ISSWA - Wide Ang. Cam.

**Product Type:**  EDR;  RDR (Maps); Rings Tag;  NO;  YES

**Target Name:** TETHYS, STAR; THRYM, CONSTANT I/F; THRYM, SATURN; **TITAN**; TITAN, CONSTANT I/F; TITAN, ENCELADUS

**Lat/Lon Bounding Box:** Cassini in Positive East Longitude

**Northernmost Latitude (-90 to 90):** 45

**Westernmost Longitude (0 to 360):** 310

**Easternmost Longitude (0 to 360):** 50 **text field**

**Southernmost Latitude (-90 to 90):** -45

	Min	Max	Valid Range	Units
Emission Angle	<input type="text"/>	<input type="text"/>	0.0 to 180.0	degrees
Image Mid Time	2005-03-31 14:09:00.0	<input type="text"/>	0000-00-00 00:00:00 to 2011-09-30 11:51:18 or 0000-0000T00:00:00 to 2011-273T11:51:18	N/A
Incidence Angle	10	75 <b>text field</b>	0.0 to 180.0	degrees
Phase Angle	<input type="text"/>	<input type="text"/>	0.0 to 180.0	degrees

**Checkbox** parameter forms can be toggled on and off by clicking the appropriate checkbox with the left mouse button.

**Menu** parameter forms allow values to be selected with a click of the left mouse button. Multiple values can also be specified by clicking the left mouse button and holding it over several selections before releasing. Alternatively, holding the CTRL button on your keyboard will allow more than one value to be selected with left mouse clicks.

**Text field** parameter forms allow values to be typed in a text field. Entered values must fall within a **valid range**, which is specified for each parameter. The displayed value range also demonstrates the accepted format for the values being input.

Lat/Lon Bounding Box Cassini in Positive East Longitude				
	Northernmost Latitude (-90 to 90) 45			
Westernmost Longitude (0 to 360) 310		Easternmost Longitude (0 to 360) 50		
	Southernmost Latitude (-90 to 90) -45			
	Min	Max	Valid Range	Units
Emission Angle			0.0 to 180.0	degrees
Image Mid Time	2005-03-31 14:09:00.0		0000-00-00 00:00:00 to 2011-09-30 11:51:18 or 0000-000T00:00:00 to 2011-273T11:51:18	N/A
Incidence Angle	10	75	0.0 to 180.0	degrees

Blank text fields assume the appropriate maximum or minimum range value as their default. For example, the blank Max text field for the **Image Mid Time** parameter has a default value of "2011-09-30 11:31:18" and it is this value that will be used in the search.

Additional parameters can be specified using forms in the **Product**, **Geometry**, **Instrument**, and **Time** tabs. The parameters set in each tab are remembered when a different tab is selected. Tabs that are not currently displayed, but which have specified parameters, are highlighted in red, to remind the user that parameters have been set there.

Intro **QuickSearch** Product Geometry Instrument Time Map Results

**Advanced Search Related to Geometry Information**

- All tabs do not need to be filled out.
- Use advanced tabs with caution.
- Click Get Count to evaluate the query without retrieving results.
- Click Get Results to submit your query.

Spice Product ID	<input type="text"/>			
Coordinate System Name	<input type="checkbox"/> PLANETOGRAPHIC	Coordinate System Type	<input type="checkbox"/> BODY-FIXED ROTATING	
	<b>Min</b>	<b>Max</b>	<b>Valid Range</b>	<b>Units</b>
A Axis Radius	<input type="text"/>	<input type="text"/>	106.800 to 764.100	km
B Axis Radius	<input type="text"/>	<input type="text"/>	106.800 to 764.100	km
Minimum Ring Radius	<input type="text"/>	<input type="text"/>	0.0 to 1.01e+10	km
North Azimuth Clock Angle	<input type="text"/>	<input type="text"/>	0.0 to 360.0	degrees
Pixel Scale	<input type="text"/>	10	0 to 14737.600	km/pixel
PositiveLongitudeDirection	<input type="text"/>	<input type="text"/>	0.000 to 0.000	N/A

Intro QuickSearch Product **Geometry** Instrument Time Map Results

**Advanced Search Related to Time Information**

- All tabs do not need to be filled out.
- Use advanced tabs with caution.
- Click Get Count to evaluate the query without retrieving results.
- Click Get Results to submit your query.

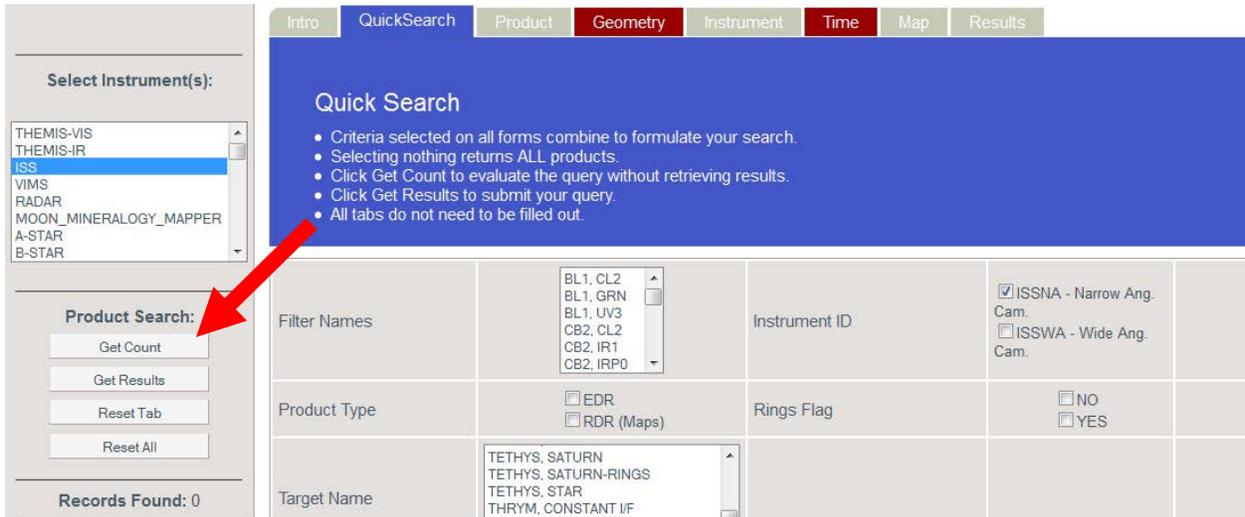
	Min	Max	Valid Range	Units
Earth Received Start Time	<input type="text"/>	<input type="text"/>	0000-00-00 00:00:00 to 2011-09-30 18:16:13 or 0000-000T00:00:00 to 2011-273T18:16:13	N/A
Earth Received Stop Time	<input type="text"/>	<input type="text"/>	0000-00-00 00:00:00 to 2011-09-30 18:16:39 or 0000-000T00:00:00 to 2011-273T18:16:39	N/A
Image Time	2005-03-31 14:09:00	2010-11-25 22:30:16	0000-00-00 00:00:00 to 2011-09-30 11:51:18 or 0000-000T00:00:00 to 2011-273T11:51:18	N/A

All set parameters, from all the tabs, are combined to formulate a search.

## 2.3 Understanding Your Search

Once the search parameters are specified, it may be useful to get a feel for how well constrained your search is before proceeding. A large number of results may be undesirable, requiring that the user sift through hundreds or thousands of records. In such cases, it may be useful to further refine your search.

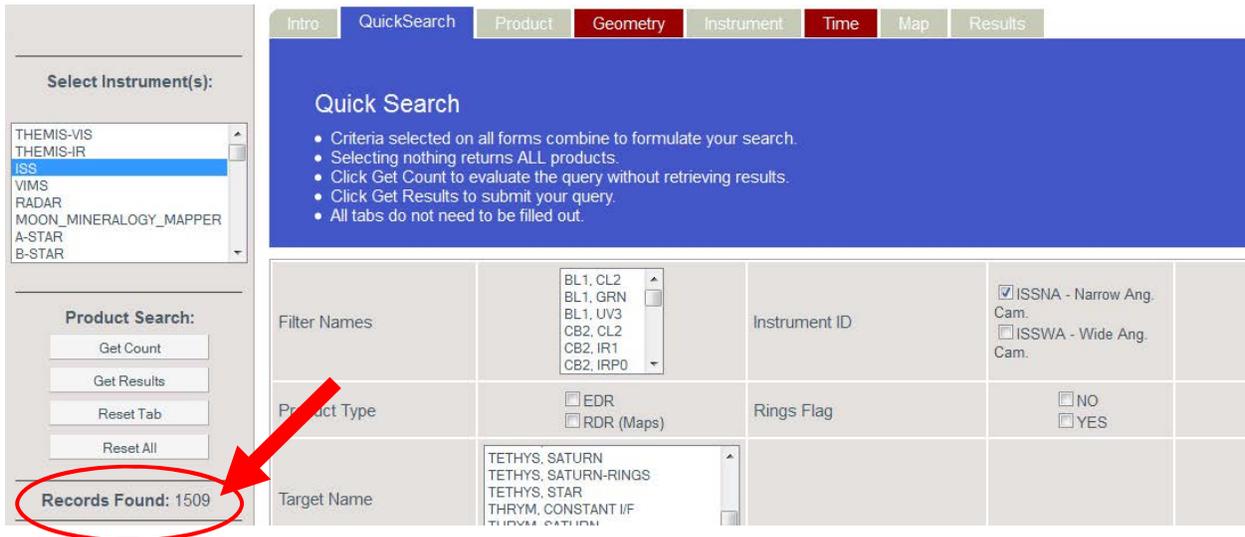
The **Get Count** button in the **Product Search** section provides a quick look at how many records your search would return, without actually retrieving any products.



The screenshot shows the 'Quick Search' interface with the 'Geometry' tab selected. On the left, the 'Product Search' section has a 'Get Count' button highlighted with a red arrow. Below the search controls, the 'Records Found' value is 0. The main search area contains a blue header with instructions and a table of search criteria.

Filter Names	Instrument ID	ISSNA - Narrow Ang. Cam.	ISSWA - Wide Ang. Cam.
BL1, CL2 BL1, GRN BL1, UV3 CB2, CL2 CB2, IR1 CB2, IRP0		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Product Type	<input type="checkbox"/> EDR <input type="checkbox"/> RDR (Maps)	Rings Flag	<input type="checkbox"/> NO <input type="checkbox"/> YES
Target Name	TETHYS, SATURN TETHYS, SATURN-RINGS TETHYS, STAR THRYM, CONSTANT I/F		

The **Records Found** value shows how many records match the current search criteria. This value is updated each time you click the **Get Count** button or run a full search.



The screenshot shows the same 'Quick Search' interface, but the 'Records Found' value is now 1509, which is circled in red. A red arrow points from the 'Get Count' button to the updated value. The search criteria table is identical to the previous screenshot.

Filter Names	Instrument ID	ISSNA - Narrow Ang. Cam.	ISSWA - Wide Ang. Cam.
BL1, CL2 BL1, GRN BL1, UV3 CB2, CL2 CB2, IR1 CB2, IRP0		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Product Type	<input type="checkbox"/> EDR <input type="checkbox"/> RDR (Maps)	Rings Flag	<input type="checkbox"/> NO <input type="checkbox"/> YES
Target Name	TETHYS, SATURN TETHYS, SATURN-RINGS TETHYS, STAR THRYM, CONSTANT I/F		

The **Current Constraints** section displays all the parameters of your current search, which can be very useful when conducting complex searches. This section is always displayed on the left side of the web page, regardless of which tab you are viewing. The constraints are updated each time you change the tab you are on, click the **Get Count** button, or run a search.

**Product Search:**

Get Count

Get Results

Reset Tab

Reset All

---

**Records Found:** 1509

**Current Constraints:**

The following constraints are applied to your search.

TARGET\_NAME = TITAN

INSTRUMENT\_ID = ISSNA - Narrow Ang. Cam.

IMAGE\_MID\_TIME >= 2005-03-31 14:09:00

INCIDENCE\_ANGLE >= 10

INCIDENCE\_ANGLE <= 75

CENTER\_LATITUDE <= 45

CENTER\_LONGITUDE >= 310

CENTER\_LONGITUDE <= 50

CENTER\_LATITUDE >= -45

PIXEL\_SCALE <= 10

IMAGE\_TIME >= 2005-03-31 14:09:00

IMAGE\_TIME <= 2010-11-25 22:30:16

Filter Names	<input type="checkbox"/> BL1, CL2 <input type="checkbox"/> BL1, GRN <input type="checkbox"/> BL1, UV3 <input type="checkbox"/> CB2, CL2 <input type="checkbox"/> CB2, IR1 <input type="checkbox"/> CB2, IRP0	Instrument ID	<input checked="" type="checkbox"/> ISSNA - Narrow Ang. Cam. <input type="checkbox"/> ISSWA - Wide Ang. Cam.	
Product Type	<input type="checkbox"/> EDR <input type="checkbox"/> RDR (Maps)	Rings Flag	<input type="checkbox"/> NO <input type="checkbox"/> YES	
Target Name	<input type="text" value="TETHYS, SATURN"/> <input type="text" value="TETHYS, SATURN-RINGS"/> <input type="text" value="TETHYS, STAR"/> <input type="text" value="THRYM, CONSTANT I/F"/> <input type="text" value="THRYM, SATURN"/> <input type="text" value="TITAN"/>			
<b>Lat/Lon Bounding Box</b> Cassini in Positive East Longitude				
	Northernmost Latitude (-90 to 90)			
	<input type="text" value="45"/>			
Westernmost Longitude (0 to 360)		Easternmost Longitude (0 to 360)		
<input type="text" value="310"/>		<input type="text" value="50"/>		
	Southernmost Latitude (-90 to 90)			
	<input type="text" value="-45"/>			
	<b>Min</b>	<b>Max</b>	<b>Valid Range</b>	<b>Units</b>
Emission Angle	<input type="text"/>	<input type="text"/>	0.0 to 180.0	degrees
Image Mid Time	<input type="text" value="2005-03-31 14:09:00"/>	<input type="text"/>	0000-00-00 00:00:00 to 2011-09-30 11:51:18 or 0000-000T00:00:00 to 2011-273T11:51:18	N/A
Incidence Angle	<input type="text" value="10"/>	<input type="text" value="75"/>	0.0 to 180.0	degrees

## 2.4 Modifying your Search

You can build upon your search simply by specifying more parameters. The previously set parameters are remembered and newly set parameters are added to the search constraints.

<p><b>Records Found:</b> 1423</p> <p><b>Current Constraints:</b> The following constraints are applied to your search.</p> <p>TARGET_NAME = TITAN</p> <p>INSTRUMENT_ID = ISSNA - Narrow Ang. Cam.</p> <p>IMAGE_MID_TIME &gt;= 2005-03-31 14:09:00</p> <p>INCIDENCE_ANGLE &gt;= 10</p> <p>EMISSION_ANGLE &lt;= 60</p> <p>INCIDENCE_ANGLE &lt;= 75</p> <p>CENTER_LATITUDE &lt;= 45</p> <p>CENTER_LONGITUDE &gt;= 310</p> <p>CENTER_LONGITUDE &lt;= 50</p> <p>CENTER_LATITUDE &gt;= -45</p> <p>PIXEL_SCALE &lt;= 10</p> <p>IMAGE_TIME &gt;= 2005-03-31 14:09:00</p> <p>IMAGE_TIME &lt;= 2010-11-25 22:30:16</p>	<p><b>Lat/Lon Bounding Box</b> Cassini in Positive East Longitude</p> <p>Northernmost Latitude (-90 to 90) 45</p> <p>Westernmost Longitude (0 to 360) 310</p> <p>Southernmost Latitude (-90 to 90) -45</p> <p>Easternmost Longitude (0 to 360) 50</p>	<p>Min</p> <p>Max</p> <p>Valid Range</p> <p>Units</p>	<p>Emission Angle</p> <p>Image Mid Time</p> <p>Incidence Angle</p>	<p>60</p> <p>2005-03-31 14:09:00</p> <p>10</p>	<p>added to constraints list</p> <p>added constraint</p> <p>modified constraint</p>	<p>0.0 to 180.0</p> <p>0000-00-00 00:00:00 to 2011-09-30 11:51:18 or 0000-000T00:00:00 to 2011-273T11:51:18</p> <p>0.0 to 180.0</p> <p>degrees</p> <p>N/A</p> <p>degrees</p>
--	---	---	--	--	---	--

Similarly, you can modify already set parameter values by changing them as desired.

<p><b>Records Found:</b> 1086</p> <p><b>Current Constraints:</b> The following constraints are applied to your search.</p> <p>TARGET_NAME = TITAN</p> <p>INSTRUMENT_ID = ISSNA - Narrow Ang. Cam.</p> <p>IMAGE_MID_TIME &gt;= 2005-03-31 14:09:00.0</p> <p>INCIDENCE_ANGLE &gt;= 10</p> <p>EMISSION_ANGLE &lt;= 60</p> <p>INCIDENCE_ANGLE &lt;= 60</p> <p>CENTER_LATITUDE &lt;= 45</p> <p>CENTER_LONGITUDE &gt;= 310</p> <p>CENTER_LONGITUDE &lt;= 50</p> <p>CENTER_LATITUDE &gt;= -45</p> <p>PIXEL_SCALE &lt;= 10</p> <p>IMAGE_TIME &gt;= 2005-03-31 14:09:00</p> <p>IMAGE_TIME &lt;= 2010-11-25 22:30:16</p>	<p><b>Lat/Lon Bounding Box</b> Cassini in Positive East Longitude</p> <p>Northernmost Latitude (-90 to 90) 45</p> <p>Westernmost Longitude (0 to 360) 310</p> <p>Southernmost Latitude (-90 to 90) -45</p> <p>Easternmost Longitude (0 to 360) 50</p>	<p>Min</p> <p>Max</p> <p>Valid Range</p> <p>Units</p>	<p>Emission Angle</p> <p>Image Mid Time</p> <p>Incidence Angle</p>	<p>60</p> <p>2005-03-31 14:09:00.0</p> <p>10</p>	<p>constraints list modified</p> <p>modified constraint</p>	<p>0.0 to 180.0</p> <p>0000-00-00 00:00:00 to 2011-09-30 11:51:18 or 0000-000T00:00:00 to 2011-273T11:51:18</p> <p>0.0 to 180.0</p> <p>degrees</p> <p>N/A</p> <p>degrees</p>
--	---	---	--	--	---	--

In addition, most unwanted constraints can be removed. Checkbox parameter forms can be toggled off to deselect the parameter. Text fields can be cleared to eliminate parameters from the specified search.

<p><b>Records Found:</b> 1165</p> <p><b>Current Constraints:</b></p> <p>The following constraints are applied to your search.</p> <p>TARGET_NAME = TITAN</p> <p>INSTRUMENT_ID = ISSNA - Narrow Ang. Cam.</p> <p>IMAGE_MID_TIME &gt;= 2005-03-31 14:09:00.0</p> <p>INCIDENCE_ANGLE &gt;= 10</p> <p>INCIDENCE_ANGLE &lt;= 60</p> <p>CENTER_LATITUDE &lt;= 45</p> <p>CENTER_LONGITUDE &gt;= 310</p> <p>CENTER_LONGITUDE &lt;= 50</p> <p>CENTER_LATITUDE &gt;= -45</p> <p>PIXEL_SCALE &lt;= 10</p> <p>IMAGE_TIME &gt;= 2005-03-31 14:09:00</p> <p>IMAGE_TIME &lt;= 2010-11-25 22:30:16</p>	<p><b>Lat/Lon Bounding Box</b> Cassini in Positive East Longitude</p> <p>Northernmost Latitude (-90 to 90) 45</p> <p>Westernmost Longitude (0 to 360) 310</p> <p>Southernmost Latitude (-90 to 90) -45</p> <p>Easternmost Longitude (0 to 360) 50</p>	<p>Min</p> <p>Max</p>	<p>Valid Range</p> <p>0.0 to 180.0</p> <p>0000-00-00 00:00:00 to 2011-09-30 11:51:18 or 0000-000T00:00:00 to 2011-273T11:51:18</p> <p>0.0 to 180.0</p>	<p>Units</p> <p>degrees</p> <p>N/A</p> <p>degrees</p>
			<p><b>removed constraint</b></p>	
			<p><b>removed constraint</b></p>	

Parameters selected through menu forms cannot be cleared this way, but a different value for that parameter can be selected.

If you are completely unhappy with the specified search constraints, you can clear your parameters and start again. There are several ways to do this.

The **Reset Tab** button clears all search parameters from the tab that is currently displayed. All previously set checkboxes are unselected, text fields cleared, and menu selections reset. The affected parameters are removed from the **Current Constraints** list. However, parameters set in other tabs are not affected. Tabs with set parameters remain highlighted in red and the specified parameters remain listed in the **Current Constraints** section. It should be noted that the **Reset Tab** button does not clear the **Records Found** value.

The screenshot shows the 'Quick Search' interface with the 'Geometry' tab selected. The interface includes a sidebar with instrument selection, search buttons, and current constraints. The main area contains a search form with various parameters and a table of constraints.

**Product Search:**

- Get Count
- Get Results
- Reset Tab** (indicated by a red arrow)
- Reset All

**Records Found:** 1165

**Current Constraints:**

The following constraints are applied to your search.

PIXEL\_SCALE <= 10

IMAGE\_TIME >= 2005-03-31 14:09:00.0

IMAGE\_TIME <= 2010-11-25 22:30:16.0

**Sample Atlas Image:**

**Search Form Parameters:**

- Filter Names: BL1, CL2; BL1, GRN; BL1, UV3; CB2, CL2; CB2, IR1; CB2, IRP0
- Instrument ID:  ISSNA - Narrow Ang. Cam.;  ISSWA - Wide Ang. Cam.
- Product Type:  EDR;  RDR (Maps)
- Rings Flag:  NO;  YES
- Target Name: AEGAEON, SATURN-GRING; ALBIORIX, SATURN; ANTHE, CONSTANT I/F; ANTHE, PROMETHEUS; ANTHE, ROCKS; ANTHE, SATURN-RINGS

**Lat/Lon Bounding Box**  
Coordinates in Positive East Longitude

	Min	Max	Valid Range	Units
Northernmost Latitude (-90 to 90)	<input type="text"/>	<input type="text"/>	0.0 to 180.0	degrees
Westernmost Longitude (0 to 360)	<input type="text"/>	<input type="text"/>		
Eastermost Longitude (0 to 360)	<input type="text"/>	<input type="text"/>		
Southernmost Latitude (-90 to 90)	<input type="text"/>	<input type="text"/>		

The **Reset All** button clears all search parameters from all tabs, allowing for a new search. All parameter forms are reset, all tabs revert to their default grey colour, and the **Records Found** value is cleared to zero. It should be noted that the **Reset All** button does not reset the Mission or Instrument selections.

**Select Mission(s):**

- 2001 Mars Odyssey
- Cassini
- Chandrayaan-1
- Clementine
- Galileo
- LCROSS
- Lunar Reconnaissance Orbiter
- MESSENGER

**Select Instrument(s):**

- THEMIS-VIS
- THEMIS-IR
- ISS
- VIMS
- RADAR
- MOON\_MINERALOGY\_MAPPER
- A-STAR
- B-STAR

**Product Search:**

Get Count

Get Results

Reset Tab

Reset All

**Records Found: 0**

**Current Constraints:**

There are no constraints applied to your search.

**Sample Atlas Image:**



**FORM BASED SEARCH**

Intro QuickSearch Product Geometry Instrument Time Map Results

**Quick Search**

- Criteria selected on all forms combine to formulate your search.
- Selecting nothing returns ALL products.
- Click Get Count to evaluate the query without retrieving results.
- Click Get Results to submit your query.
- All tabs do not need to be filled out.

Filter Names	<ul style="list-style-type: none"> <li>BL1, CL2</li> <li>BL1, GRN</li> <li>BL1, UV3</li> <li>CB2, CL2</li> <li>CB2, IR1</li> <li>CB2, IRP0</li> </ul>	Instrument ID	<input type="checkbox"/> ISSNA - Narrow Ang. Cam. <input type="checkbox"/> ISSWA - Wide Ang. Cam.
Product Type	<input type="checkbox"/> EDR <input type="checkbox"/> RDR (Maps)	Rings Flag	<input type="checkbox"/> NO <input type="checkbox"/> YES
Target Name	<ul style="list-style-type: none"> <li>AEGAEON, SATURN-GRING</li> <li>ALBIORIX, SATURN</li> <li>ANTHE, CONSTANT I/F</li> <li>ANTHE, PROMETHEUS</li> <li>ANTHE, ROCKS</li> <li>ANTHE, SATURN-RINGS</li> </ul>		
<b>Lat/Lon Bounding Box</b> Coordinates in Positive East Longitude			
	Northernmost Latitude (-90 to 90)		
Westernmost Longitude (0 to 360)		Easternmost Longitude (0 to 360)	
	Southernmost Latitude (-90 to 90)		

The **New Search** option, in the menu bar at the top of the page, will clear all settings, including the mission and instrument selections.



However, if you are on a search page where the mission and/or instrument(s) are pre-set, you need to click **Multi-Mission Search** to clear the mission and instrument selections.



### 3. Reviewing Search Results

When you are satisfied with your search parameters, you can retrieve the data and look at it.

Clicking **Get Results** with the left mouse button updates the **Records Found** value and retrieves the data products specified by your search.

**Select Instrument(s):**

- THEMIS-VIS
- THEMIS-IR
- ISS
- VIMS
- RADAR
- MOON\_MINERALOGY\_MAPPER
- A-STAR
- B-STAR

**Product Search:**

Get Count

**Get Results**

Reset Tab

Reset All

---

**Records Found:** 1165

**Current Constraints:**

The following constraints are applied to your search.

TARGET\_NAME = TITAN

INSTRUMENT\_ID = ISSNA - Narrow Ang. Cam.

IMAGE\_MID\_TIME >= 2005-03-31 14:09:00.0

INCIDENCE\_ANGLE >= 10

INCIDENCE\_ANGLE <= 60

CENTER\_LATITUDE <= 45

CENTER\_LONGITUDE >= 310

CENTER\_LONGITUDE <= 50

CENTER\_LATITUDE >= -45

PIXEL\_SCALE <= 10

IMAGE\_TIME >= 2005-03-31 14:09:00.0

IMAGE\_TIME <= 2010-11-25 22:30:16

---

**Sample Atlas Image:**

Intro
QuickSearch
Product
Geometry
Instrument
Time
Map
Results

**Quick Search**

- Criteria selected on all forms combine to formulate your search.
- Selecting nothing returns ALL products.
- Click Get Count to evaluate the query without retrieving results.
- Click Get Results to submit your query.
- All tabs do not need to be filled out.

Filter Names	<input type="checkbox"/> BL1, CL2 <input type="checkbox"/> BL1, GRN <input type="checkbox"/> BL1, UV3 <input type="checkbox"/> CB2, CL2 <input type="checkbox"/> CB2, IR1 <input type="checkbox"/> CB2, IRP0	Instrument ID	<input checked="" type="checkbox"/> ISSNA - Narrow Ang. Cam. <input type="checkbox"/> ISSWA - Wide Ang. Cam.
Product Type	<input type="checkbox"/> EDR <input type="checkbox"/> RDR (Maps)	Rings Flag	<input type="checkbox"/> NO <input type="checkbox"/> YES
Target Name	<input type="checkbox"/> TETHYS, SATURN <input type="checkbox"/> TETHYS, SATURN-RINGS <input type="checkbox"/> TETHYS, STAR <input type="checkbox"/> THRYM, CONSTANT I/F <input type="checkbox"/> THRYM, SATURN <input checked="" type="checkbox"/> TITAN		
<b>Lat/Lon Bounding Box</b> Coordinates in Positive East Longitude			
	Northernmost Latitude (-90 to 90) 45		
Westernmost Longitude (0 to 360) 310		Easternmost Longitude (0 to 360) 50	
	Southernmost Latitude (-90 to 90) -45		
	<b>Min</b>	<b>Max</b>	<b>Valid Range</b>
Emission Angle			0.0 to 180.0
Image Mid Time	2005-03-31 14:09:00.0		0000-00-00 00:00:00 to 2011-09-30 11:51:18 or 0000-000T00:00:00 to 2011-273T11:51:18
Incidence Angle	10	60	0.0 to 180.0

The products are displayed in the **Results** tab, which is automatically opened when the **Records Found** value is not zero. Loading of the tab may take a while, especially if the **Records Found** value is large.



Once loaded, a table of data is displayed in the **Results** tab. As before, the search parameters remain visible in the Current Constraints section on the left.

A screenshot of the application interface showing the 'Results' tab. The 'Results' tab is highlighted in the navigation bar with a red arrow. On the left, the 'Current Constraints' section is circled in red. The main area displays a table of 12 product records. On the right, there are options to 'SELECT PARAMETERS FOR REPORT OR TABLE COLUMNS', 'DOWNLOAD REPORT', and 'DOWNLOAD PRODUCTS'.

**Select Instrument(s):**  
 THEMIS-VIS  
 THEMIS-IR  
**ISS**  
 VIMS  
 RADAR  
 MOON\_MINERALOGY\_MAPPER  
 A-STAR  
 B-STAR

**Product Search:**  
 Get Count  
 Get Results  
 Reset Tab  
 Reset All

**Records Found:** 1165

**Current Constraints:**  
 The following constraints are applied to your search.  
 TARGET\_NAME = TITAN  
 INSTRUMENT\_ID = ISSNA - Narrow Ang. Cam.  
 IMAGE\_MID\_TIME >= 2005-03-31 14:09:00  
 INCIDENCE\_ANGLE >= 10  
 INCIDENCE\_ANGLE <= 60  
 CENTER\_LATITUDE <= 45  
 CENTER\_LONGITUDE >= 310  
 CENTER\_LONGITUDE <= 50  
 CENTER\_LATITUDE >= -45  
 PIXEL\_SCALE <= 10  
 IMAGE\_TIME >= 2005-03-31 14:09:00  
 IMAGE\_TIME <= 2010-11-25 22:30:16

**Sample Atlas Image:**

Select	Item #	Thumbnail (Click to View Browse Image)	Download Data View Label View Volume	Product ID	Mission	Instrument
<input type="checkbox"/>	1		  	1_N1490971008.125	Cassini	ISS
<input type="checkbox"/>	2		  	1_N1490971264.123	Cassini	ISS
<input type="checkbox"/>	3		  	1_N1490971478.118	Cassini	ISS
<input type="checkbox"/>	4		  	1_N1490971548.122	Cassini	ISS
<input type="checkbox"/>	5		  	1_N1490971708.125	Cassini	ISS
<input type="checkbox"/>	6		  	1_N1490971964.123	Cassini	ISS
<input type="checkbox"/>	7		  	1_N1490972178.118	Cassini	ISS
<input type="checkbox"/>	8		  	1_N1490971118.118	Cassini	ISS
<input type="checkbox"/>	9		  	1_N1490971208.122	Cassini	ISS
<input type="checkbox"/>	10		  	1_N1490971368.125	Cassini	ISS
<input type="checkbox"/>	11		  	1_N1490971604.123	Cassini	ISS
<input type="checkbox"/>	12		  	1_N1490971818.118	Cassini	ISS

**SELECT PARAMETERS FOR REPORT OR TABLE COLUMNS**  
 ANTIBLOOMING\_STATE\_FLAG  
 A\_AXIS\_RADIUS  
 BIAS\_STRIP\_MEAN  
 B\_AXIS\_RADIUS  
 CALIBRATION\_LAMP\_STATE\_FLAG  
 CENTER\_LATITUDE  
 CENTER\_LONGITUDE  
 CENTRAL\_BODY\_DISTANCE  
 COMMAND\_FILE\_NAME  
 COMMAND\_SEQUENCE\_NUMBER  
 COORDINATE\_SYSTEM\_NAME  
 COORDINATE\_SYSTEM\_TYPE  
 C\_AXIS\_RADIUS  
 DARK\_STRIP\_MEAN  
 DATA\_CONVERSION\_TYPE  
 DATA\_SET\_ID  
 DATA\_SET\_NAME  
 DECLINATION  
 DELAYED\_READOUT\_FLAG  
 DESCRIPTION  
 DETECTOR\_TEMPERATURE  
 EARTH\_RECEIVED\_START\_TIME  
 EARTH\_RECEIVED\_STOP\_TIME  
 EASTERNMOST\_LONGITUDE  
 ELECTRONICS\_BIAS

**DOWNLOAD REPORT**  
 CSV  TAB  
 Download

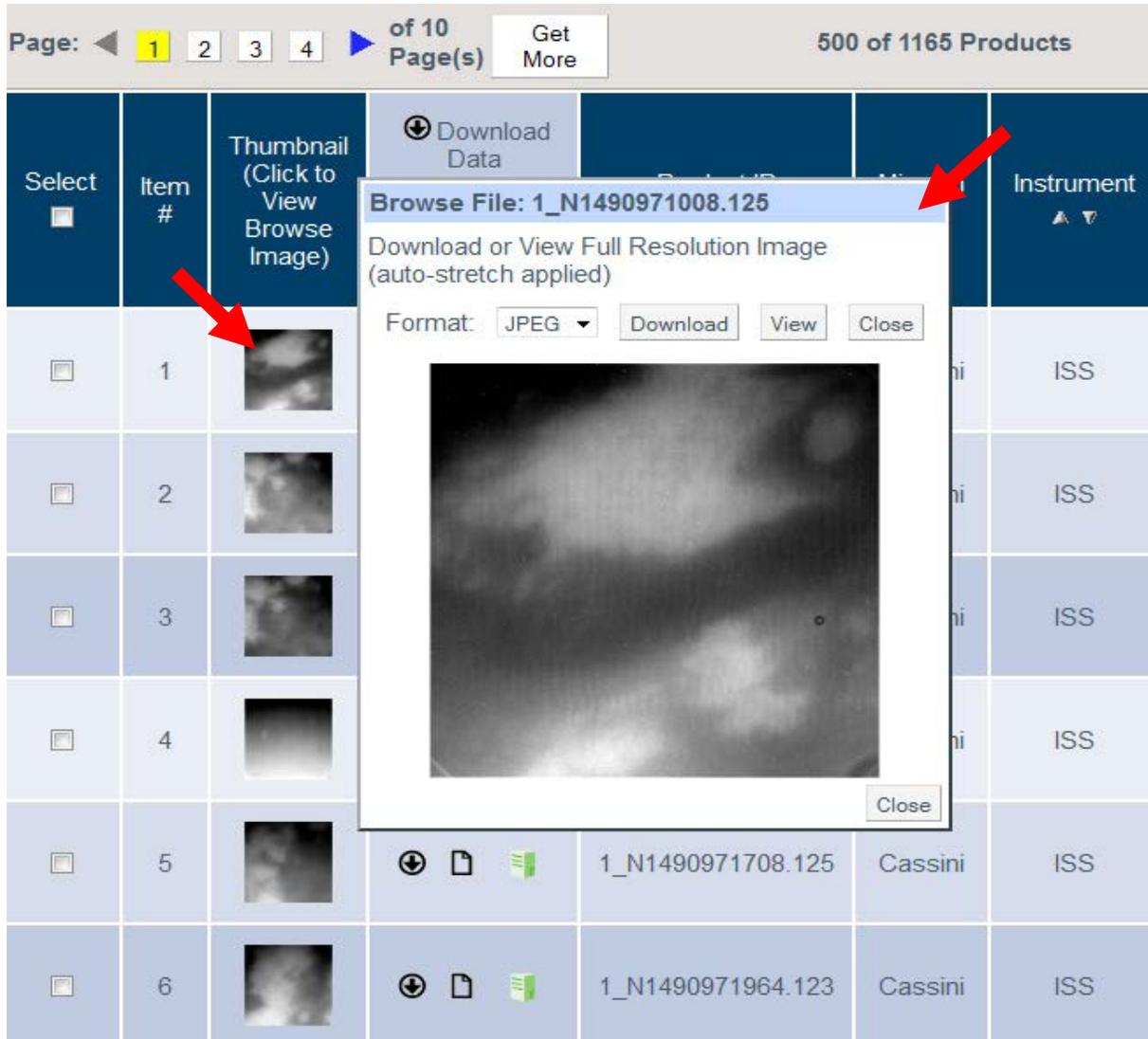
**DOWNLOAD PRODUCTS**  
 WGET  ZIP  
 Download

**Download Report:** Select CSV or TAB and click the 'Download' button to generate and download either comma delimited report or tab delimited report.

**Download Products, WGET File:** Select WGET and click 'Download' button to generate and download a wget file for Unix based operating systems (Solaris, Linux, Mac OSX). Source the wget file in a terminal window to download products that have been checked under WGET Select. Windows users will need to install wget before executing each wget command from the command prompt. NOTE: Secured access will require a .wgetrc file for authorization. Refer to documentation for further information.

### 3.1 Browsing the Results

The table of data can be skimmed visually using the displayed **Thumbnails**. A pop-up window, showing a larger view of a specified thumbnail, can be seen by clicking on the thumbnail image.



The screenshot shows a web interface for browsing data. At the top, there is a pagination control showing 'Page: 1 of 10 Page(s)' and a 'Get More' button. To the right, it says '500 of 1165 Products'. Below this is a table with columns: 'Select', 'Item #', 'Thumbnail (Click to View Browse Image)', 'Download Data', 'Instrument', and 'Data File Name'. The table contains six rows of data. A red arrow points to the thumbnail of the first row (Item # 1). A pop-up window titled 'Browse File: 1\_N1490971008.125' is overlaid on the table. The window contains the text 'Download or View Full Resolution Image (auto-stretch applied)', a 'Format' dropdown menu set to 'JPEG', and buttons for 'Download', 'View', and 'Close'. A larger, full-resolution image of the thumbnail is displayed in the center of the pop-up window. Another red arrow points to the 'View' button in the pop-up window.

Select	Item #	Thumbnail (Click to View Browse Image)	Download Data	Instrument	Data File Name
<input type="checkbox"/>	1			ISS	1_N1490971008.125
<input type="checkbox"/>	2			ISS	1_N1490971708.125
<input type="checkbox"/>	3			ISS	1_N1490971964.123
<input type="checkbox"/>	4			ISS	
<input type="checkbox"/>	5			Cassini	
<input type="checkbox"/>	6			Cassini	

From the pop-up window, a full resolution browse image of the data (but not the actual data) can be downloaded by clicking the **Download** button. The image can be obtained in a variety of formats, specified from the **Format** drop-down menu. Clicking the **View** button displays the browse image in full resolution. The pop-up window is dismissed using either of the **Close** buttons.

Information about each file can be found in the product label. The label is displayed in a pop-up window when the **View Label** icon is clicked.

Select	Item #	Thumbnail (Click to View Browse Image)	Download Data	View Label	View Volume
<input type="checkbox"/>	1				
<input type="checkbox"/>	2				
<input type="checkbox"/>	3				
<input type="checkbox"/>	4				
<input type="checkbox"/>	5				
<input type="checkbox"/>	6				
<input type="checkbox"/>	7				
<input type="checkbox"/>	8				
<input type="checkbox"/>	9				

**PDS Label: 1\_N1490971008.125** Close

PDS\_VERSION\_ID = PDS3

/\* FILE CHARACTERISTICS \*/

RECORD\_TYPE = FIXED\_LENGTH  
RECORD\_BYTES = 1048  
FILE\_RECORDS = 516

/\* POINTERS TO DATA OBJECTS \*/

^IMAGE\_HEADER = ("N1490971008\_2.IMG",1)  
^TELEMETRY\_TABLE = ("N1490971008\_2.IMG",4)  
^LINE\_PREFIX\_TABLE = ("N1490971008\_2.IMG",5)  
^IMAGE = ("N1490971008\_2.IMG",5)

/\* IDENTIFICATION DATA ELEMENTS \*/

ANTIBLOOMING\_STATE\_FLAG = "OFF"  
BIAS\_STRIP\_MEAN = 100.256363  
CALIBRATION\_LAMP\_STATE\_FLAG = "N/A"  
COMMAND\_FILE\_NAME = "trigger\_5253\_2.ioi"  
COMMAND\_SEQUENCE\_NUMBER = 5253  
DARK\_STRIP\_MEAN = 90.450981  
DATA\_CONVERSION\_TYPE = "12BIT"  
DATA\_SET\_ID = "CO-S-ISSNA/ISSWA-2-EDR-V1.0"  
DELAYED\_READOUT\_FLAG = "NO"  
DESCRIPTION = "N/A"  
DETECTOR\_TEMPERATURE = -89.243546 <DEGC>  
EARTH\_RECEIVED\_START\_TIME = 2005-091T17:49:16.551  
EARTH\_RECEIVED\_STOP\_TIME = 2005-091T17:49:28.983  
ELECTRONICS\_BIAS = 112  
EXPECTED\_MAXIMUM = (45.399300,65.145798)  
EXPECTED\_PACKETS = 273  
EXPOSURE\_DURATION = 82000.000000  
FILTER\_NAME = ("IRP0","CB3")  
FILTER\_TEMPERATURE = -0.468354  
FLIGHT\_SOFTWARE\_VERSION\_ID = "1.3"  
GAIN\_MODE\_ID = "95 ELECTRONS PER DN"  
IMAGE\_MID\_TIME = 2005-090T14:09:18.722  
IMAGE\_NUMBER = "1490971008"  
IMAGE\_OBSERVATION\_TYPE = {"SCIENCE"}  
IMAGE\_TIME = 2005-090T14:09:59.722  
INSTRUMENT\_DATA\_RATE = 182.783997  
INSTRUMENT\_HOST\_NAME = "CASSINI ORBITER"  
INSTRUMENT\_ID = "ISSNA"  
INSTRUMENT\_MODE\_ID = "SUM2"  
INSTRUMENT\_NAME = "IMAGING SCIENCE SUBSYSTEM NARROW ANGLE"

The label can be very long. To view it in its entirety, scroll up and down the length of the web page. The label pop-up window is dismissed by clicking the **Close** button at the top of the window (or a similar button at the bottom of the window). At present, there is no way to save the product label from this window other than to copy and paste the contents into a text editor.

### 3.2 Downloading Data

Individual data products are obtained by clicking the **Download Data** icon for the desired product.

The screenshot shows a table of data products. At the top, there is a pagination control showing 'Page: 1 of 10 Page(s)' and a 'Get More' button. The table has columns for 'Select', 'Item #', 'Thumbnail (Click to View Browse Image)', 'Download Data', 'View Label', 'View Volume', 'Product ID', 'Mission', and 'Instrument'. A red arrow points to the 'Download Data' icon in the first row.

Select	Item #	Thumbnail (Click to View Browse Image)	Download Data View Label View Volume	Product ID	Mission	Instrument
<input type="checkbox"/>	1			1_N1490971008.125	Cassini	ISS
<input type="checkbox"/>	2			1_N1490971264.123	Cassini	ISS
<input type="checkbox"/>	3			1_N1490971478.118	Cassini	ISS

Multiple data products can be downloaded together by using the **Select** checkboxes and the **Download** button in the **Download Products** section at right.

The screenshot shows the same table as above, but with checkboxes selected for items 7 and 8. A red arrow points to the 'Download Data' icon for item 7. On the right side, there is a 'SELECT PARAMETERS FOR REPORT OR TABLE COLUMNS' section with a list of parameters. Below that is a 'DOWNLOAD PRODUCTS' section with radio buttons for 'WGET' and 'ZIP', and a 'Download' button. A red arrow points to the 'Download' button.

Select	Item #	Thumbnail (Click to View Browse Image)	Download Data View Label View Volume	Product ID	Mission	Instrument
<input type="checkbox"/>	1			1_N1490971008.125	Cassini	ISS
<input checked="" type="checkbox"/>	7			1_N1490972178.118	Cassini	ISS
<input checked="" type="checkbox"/>	8			1_N1490971118.118	Cassini	ISS

**SELECT PARAMETERS FOR REPORT OR TABLE COLUMNS**

- ANTIBLOOMING\_STATE\_FLAG
- A\_AXIS\_RADIUS
- BIAS\_STRIP\_MEAN
- B\_AXIS\_RADIUS
- CALIBRATION\_LAMP\_STATE\_FLAG
- CENTER\_LATITUDE
- CENTER\_LONGITUDE
- CENTRAL\_BODY\_DISTANCE
- ...

**DOWNLOAD PRODUCTS**

WGET  ZIP

Download

Two options are provided for downloading the multiple data products; **WGET** and **ZIP**.

When you select the **WGET** radio button and click **Download**, a script file is generated and downloaded onto your computer. This script file can be used for running the wget process in Unix-based operating systems (Solaris, Linux, Mac OSX) to download the selected data files and their labels. Details on this process are provided near the bottom of the **Results** tab page.

Select	Item #	Thumbnail (Click to View Browse Image)	Download Data View Label View Volume	Product ID	Mission	Instrument
<input type="checkbox"/>	1			1_N1490971008.125	Cassini	ISS
<input checked="" type="checkbox"/>	7			1_N1490972178.118	Cassini	ISS
<input checked="" type="checkbox"/>	8			1_N1490971118.118	Cassini	ISS
<input checked="" type="checkbox"/>	9			1_N1490971208.122	Cassini	ISS
<input checked="" type="checkbox"/>	10			1_N1490971368.125	Cassini	ISS
<input type="checkbox"/>	11			1_N1490971604.123	Cassini	ISS

**SELECT PARAMETERS FOR REPORT OR TABLE COLUMNS**

ANTIBLOOMING\_STATE\_FLAG  
A\_AXIS\_RADIUS  
BIAS\_STRIP\_MEAN  
B\_AXIS\_RADIUS  
CALIBRATION\_LAMP\_STATE\_FLAG  
CENTER\_LATITUDE  
CENTER\_LONGITUDE  
CENTRAL\_BODY\_DISTANCE  
COMMAND\_FILE\_NAME  
COMMAND\_SEQUENCE\_NUMBER  
...

---

**DOWNLOAD PRODUCTS**

WGET  ZIP

**Download Report:** Select CSV or TAB and click the 'Download' button to generate and download either comma delimited report or tab delimited report.

**Download Products, WGET File:** Select WGET and click 'Download' button to generate and download a wget file for Unix based operating systems (Solaris, Linux, Mac OSX). Source the wget file in a terminal window to download products that

...

When you select the **ZIP** radio button and click **Download**, a zip file is generated containing the selected data files. Note that the generation process may take a while. When completed, the name of the generated file is displayed just below the **Download** button. Click on this name to download the zip file. Details on this process are provided near the bottom of the **Results** tab page.

Select	Item #	Thumbnail (Click to View Browse Image)	Download Data View Label View Volume	Product ID	Mission	Instrument
<input type="checkbox"/>	1			1_N1490971008.125	Cassini	ISS
<input checked="" type="checkbox"/>	7			1_N1490972178.118	Cassini	ISS
<input checked="" type="checkbox"/>	8			1_N1490971118.118	Cassini	ISS
<input checked="" type="checkbox"/>	9			1_N1490971208.122	Cassini	ISS
<input checked="" type="checkbox"/>	10			1_N1490971368.125	Cassini	ISS
<input type="checkbox"/>	11			1_N1490971604.123	Cassini	ISS

**SELECT PARAMETERS FOR REPORT OR TABLE COLUMNS**

ANTIBLOOMING\_STATE\_FLAG  
A\_AXIS\_RADIUS  
BIAS\_STRIP\_MEAN  
B\_AXIS\_RADIUS  
CALIBRATION\_LAMP\_STATE\_FLAG  
CENTER\_LATITUDE  
CENTER\_LONGITUDE  
CENTRAL\_BODY\_DISTANCE  
...

---

**DOWNLOAD PRODUCTS**

WGET  ZIP

PDSdata-2012-08-17T18-02-46.zip

**Download Report:** Select CSV or TAB  
...

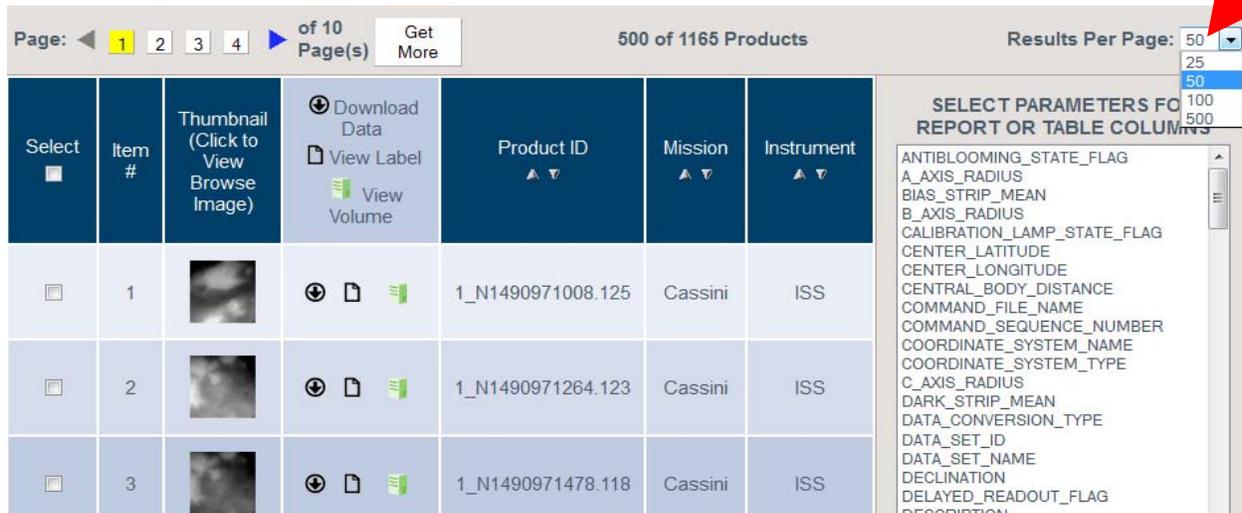
**Download Products, ZIP File:** Select ZIP and click the 'Download' button to download data files within a zip bundle. A link will be displayed when the zip file is ready for download. Click on the link to download the zip file. NOTE: Do NOT use this method for downloading large files, i.e. HiRISE and MEX. Larger files are best downloaded using the WGET method, or clicking the 'Download Data' icon for each file.

Zip is the default download process. If the **Download** button is clicked when neither the **WGET** nor the **ZIP** radio buttons are selected, a zip file with the selected data will automatically be generated.

### 3.3 Controlling the Results Table

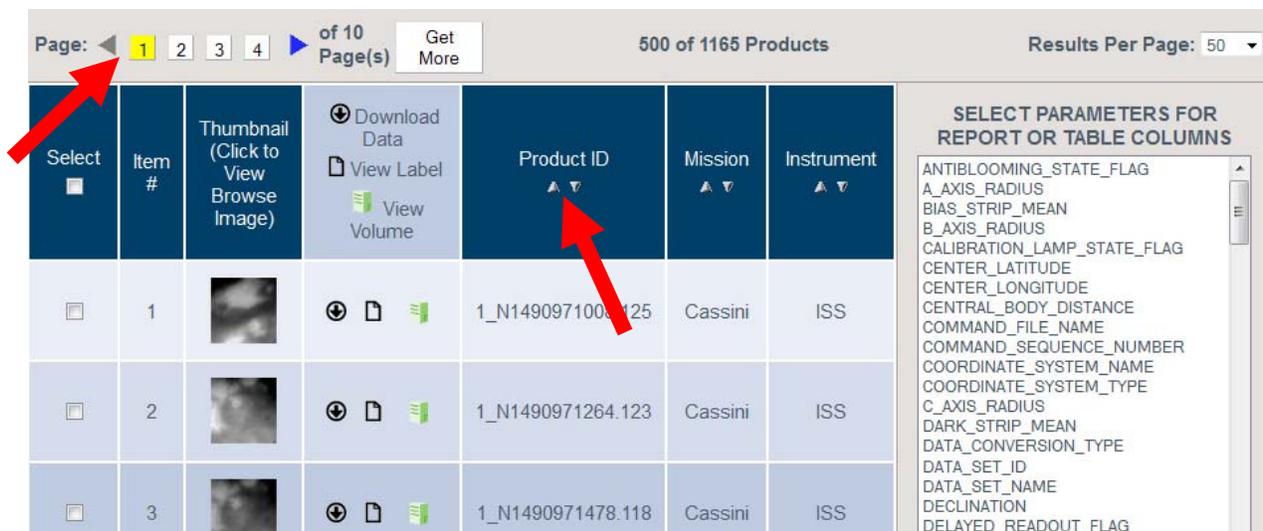
A number of options are provided for controlling how the results table is displayed.

The **Results Per Page** drop-down menu on the right specifies the total number of products that are displayed per page in the results table. Clicking on the drop-down menu reveals the options and clicking on the desired selection loads the appropriate number of products on the page. More products per page results in longer to loading times.



The screenshot shows the top navigation bar with 'Page: 1 of 10 Page(s)', '500 of 1165 Products', and 'Results Per Page: 50'. A red arrow points to the 'Results Per Page' dropdown menu, which is open and shows options 25, 50, 100, and 500. Below the navigation bar is a table with columns: Select, Item #, Thumbnail, Download Data, View Label, View Volume, Product ID, Mission, and Instrument. The table contains three rows of data. To the right of the table is a 'SELECT PARAMETERS FOR REPORT OR TABLE COLUMNS' panel with a list of parameters.

The **Page** buttons allow for navigation between the pages of data. Clicking on a number button takes you to the appropriate page number. Clicking on the arrow buttons shifts the offered number buttons by 1 (either forwards or backwards depending on the arrow clicked) and loads the maximum (forward button) or minimum (backward button) page from the displayed range. If it is not possible to move the displayed range of number buttons, the affected arrow button will be inactive and shown in grey.



The screenshot shows the same interface as above, but with a red arrow pointing to the 'Page: 1' button and another red arrow pointing to the upward arrow icon in the 'Product ID' column header. The 'Product ID' column header also has a downward arrow icon.

The results table can be **sorted** on the basis of any column with either text or numerical values. In the column of interest, click the **upward** arrow for an ascending sort (1,2,3, etc.) and the **downward** arrow for a descending sort (z, y, x, etc.).

If the number of results found in a search is greater than 500, only the first 500 will be loaded into the **Results** table (in order to reduce loading times). More of the data can be loaded into the table, 500 products at a time, by clicking the **Get More** button. The number of products currently loaded in the table, and the total number of records found is specified to the right of the **Get More** button.

Page: 1 of 10 Page(s) **Get More** 1000 of 1165 Products Results Per Page: 50

Select	Item #	Thumbnail (Click to View Browse Image)	Download Data View Label View Volume	Product ID	Mission	Instrument
<input type="checkbox"/>	1		  	1_N1490971008.125	Cassini	ISS
<input type="checkbox"/>	2		  	1_N1490971264.123	Cassini	ISS
<input type="checkbox"/>	3		  	1_N1490971478.118	Cassini	ISS

**SELECT PARAMETERS FOR REPORT OR TABLE COLUMNS**

- ANTIBLOOMING\_STATE\_FLAG
- A\_AXIS\_RADIUS
- BIAS\_STRIP\_MEAN
- B\_AXIS\_RADIUS
- CALIBRATION\_LAMP\_STATE\_FLAG
- CENTER\_LATITUDE
- CENTER\_LONGITUDE
- CENTRAL\_BODY\_DISTANCE
- COMMAND\_FILE\_NAME
- COMMAND\_SEQUENCE\_NUMBER
- COORDINATE\_SYSTEM\_NAME
- COORDINATE\_SYSTEM\_TYPE
- C\_AXIS\_RADIUS
- DARK\_STRIP\_MEAN
- DATA\_CONVERSION\_TYPE
- DATA\_SET\_ID
- DATA\_SET\_NAME
- DECLINATION
- DELAYED\_READOUT\_FLAG

Note that it is necessary to load all the data in order for it to be considered by the sorting feature.

Additional parameters can be added to the report table by selecting them from the **Select Parameters for Report of Table Columns** menu and clicking the **Change Table Columns** button. Multiple parameters can be selected by clicking the left mouse button and holding it over several selections or by holding the CTRL button on your keyboard while clicking the selections.

Page: 1 of 10 Page(s) **Get More** 500 of 1165 Products Results Per Page: 50

Select	Item #	Thumbnail (Click to View Browse Image)	Download Data View Label View Volume	Product ID	Mission	Instrument
<input type="checkbox"/>	1		  	1_N1490971008.125	Cassini	ISS
<input type="checkbox"/>	2		  	1_N1490971264.123	Cassini	ISS
<input type="checkbox"/>	3		  	1_N1490971478.118	Cassini	ISS
<input type="checkbox"/>	4		  	1_N1490971548.122	Cassini	ISS
<input type="checkbox"/>	5		  	1_N1490971708.125	Cassini	ISS

**SELECT PARAMETERS FOR REPORT OR TABLE COLUMNS**

- ANTIBLOOMING\_STATE\_FLAG
- A\_AXIS\_RADIUS
- BIAS\_STRIP\_MEAN
- B\_AXIS\_RADIUS
- CALIBRATION\_LAMP\_STATE\_FLAG
- CENTER\_LATITUDE
- CENTER\_LONGITUDE
- CENTRAL\_BODY\_DISTANCE
- COMMAND\_FILE\_NAME
- COMMAND\_SEQUENCE\_NUMBER
- COORDINATE\_SYSTEM\_NAME
- COORDINATE\_SYSTEM\_TYPE
- C\_AXIS\_RADIUS
- DARK\_STRIP\_MEAN
- DATA\_CONVERSION\_TYPE
- DATA\_SET\_ID
- DATA\_SET\_NAME
- DECLINATION
- DELAYED\_READOUT\_FLAG
- DESCRIPTION
- DETECTOR\_TEMPERATURE
- EARTH\_RECEIVED\_START\_TIME
- EARTH\_RECEIVED\_STOP\_TIME
- EASTERNMOST\_LONGITUDE
- ELECTRONICS\_BIAS

Change Table Columns  
Clear Selection

Only parameters available for the selected mission and instrument are included in the columns menu.

If you are unhappy with the selections made, they can be cleared using the **Clear Selection** button.

Page: 1 2 3 4 of 10 Page(s) Get More 500 of 1165 Products Results Per Page: 50

Select	Item #	Thumbnail (Click to View Browse Image)	Download Data View Label View Volume	Product ID	Mission	Instrument
<input type="checkbox"/>	1		  	1_N1490971008.125	Cassini	ISS
<input type="checkbox"/>	2		  	1_N1490971264.123	Cassini	ISS
<input type="checkbox"/>	3		  	1_N1490971478.118	Cassini	ISS
<input type="checkbox"/>	4		  	1_N1490971548.122	Cassini	ISS
<input type="checkbox"/>	5		  	1_N1490971708.125	Cassini	ISS

**SELECT PARAMETERS FOR REPORT OR TABLE COLUMNS**

- ANTIBLOOMING\_STATE\_FLAG
- A\_AXIS\_RADIUS
- BIAS\_STRIP\_MEAN
- B\_AXIS\_RADIUS
- CALIBRATION\_LAMP\_STATE\_FLAG
- CENTER\_LATITUDE
- CENTER\_LONGITUDE
- CENTRAL\_BODY\_DISTANCE
- COMMAND\_FILE\_NAME
- COMMAND\_SEQUENCE\_NUMBER
- COORDINATE\_SYSTEM\_NAME
- COORDINATE\_SYSTEM\_TYPE
- C\_AXIS\_RADIUS
- DARK\_STRIP\_MEAN
- DATA\_CONVERSION\_TYPE
- DATA\_SET\_ID
- DATA\_SET\_NAME
- DECLINATION
- DELAYED\_READOUT\_FLAG
- DESCRIPTION
- DETECTOR\_TEMPERATURE
- EARTH\_RECEIVED\_START\_TIME
- EARTH\_RECEIVED\_STOP\_TIME
- EASTERNMOST\_LONGITUDE
- ELECTRONICS\_BIAS



When the **Change Table Columns** button is clicked, the selected parameters are added to the table.

Page: 1 2 3 4 of 10 Page(s) Get More 500 of 1165 Products Results Per Page: 50

Select	Item #	Thumbnail (Click to View Browse Image)	Download Data View Label View Volume	Product ID	Mission	Instrument	Center Latitude	Center Longitude
<input type="checkbox"/>	1		  	1_N1490971008.125	Cassini	ISS	-7.34151	323.066
<input type="checkbox"/>	2		  	1_N1490971264.123	Cassini	ISS	9.55695	315.039
<input type="checkbox"/>	3		  	1_N1490971478.118	Cassini	ISS	9.64547	315.144
<input type="checkbox"/>	4		  	1_N1490971548.122	Cassini	ISS	12.5601	333.182
<input type="checkbox"/>	5		  	1_N1490971708.125	Cassini	ISS	12.57	333.09

**SELECT PARAMETERS FOR REPORT OR TABLE COLUMNS**

- ANTIBLOOMING\_STATE\_FLAG
- A\_AXIS\_RADIUS
- BIAS\_STRIP\_MEAN
- B\_AXIS\_RADIUS
- CALIBRATION\_LAMP\_STATE\_FLAG
- CENTER\_LATITUDE
- CENTER\_LONGITUDE
- CENTRAL\_BODY\_DISTANCE
- COMMAND\_FILE\_NAME
- COMMAND\_SEQUENCE\_NUMBER
- COORDINATE\_SYSTEM\_NAME
- COORDINATE\_SYSTEM\_TYPE
- C\_AXIS\_RADIUS
- DARK\_STRIP\_MEAN
- DATA\_CONVERSION\_TYPE
- DATA\_SET\_ID
- DATA\_SET\_NAME
- DECLINATION
- DELAYED\_READOUT\_FLAG
- DESCRIPTION
- DETECTOR\_TEMPERATURE
- EARTH\_RECEIVED\_START\_TIME
- EARTH\_RECEIVED\_STOP\_TIME
- EASTERNMOST\_LONGITUDE
- ELECTRONICS\_BIAS



Selected parameters are not remembered after the **Change Table Columns** button is clicked. Further additions to the table require that all the desired columns (except for the ones originally loaded by default in the **Results** tab) be selected again. Clicking the **Change Table Columns** button with no parameters selected in the menu reverts the table to the originally loaded default.

At any time, the information in the table can be downloaded as a **CSV** or **Tab**-delimited report. The format is controlled by clicking the appropriate radio button in the **Download Report** section. Clicking the **Download** button initiates the generation and download of the table report file.

Page: 1 of 10 Page(s) Get More 500 of 1165 Products Results Per Page: 50

Select	Item #	Thumbnail (Click to View Browse Image)	Download Data View Label View Volume	Product ID	Mission	Instrument	Center Latitude	Center Longitude
<input type="checkbox"/>	1			1_N1490971008.125	Cassini	ISS	-7.34151	323.066
<input type="checkbox"/>	2			1_N1490971264.123	Cassini	ISS	9.55695	315.039
<input type="checkbox"/>	3			1_N1490971478.118	Cassini	ISS	9.64547	315.144
<input type="checkbox"/>	4			1_N1490971548.122	Cassini	ISS	12.5601	333.182
<input type="checkbox"/>	5			1_N1490971708.125	Cassini	ISS	12.57	333.09
<input type="checkbox"/>	6			1_N1490971964.123	Cassini	ISS	-5.3895	335.085

**SELECT PARAMETERS FOR REPORT OR TABLE COLUMNS**

- ANTIBLOOMING\_STATE\_FLAG
- A\_AXIS\_RADIUS
- BIAS\_STRIP\_MEAN
- B\_AXIS\_RADIUS
- CALIBRATION\_LAMP\_STATE\_FLAG
- CENTER\_LATITUDE
- CENTER\_LONGITUDE
- CENTRAL\_BODY\_DISTANCE
- COMMAND\_FILE\_NAME
- COMMAND\_SEQUENCE\_NUMBER
- COORDINATE\_SYSTEM\_NAME
- COORDINATE\_SYSTEM\_TYPE
- C\_AXIS\_RADIUS
- DARK\_STRIP\_MEAN
- DATA\_CONVERSION\_TYPE
- DATA\_SET\_ID
- DATA\_SET\_NAME
- DECLINATION
- DELAYED\_READOUT\_FLAG
- DESCRIPTION
- DETECTOR\_TEMPERATURE
- EARTH\_RECEIVED\_START\_TIME
- EARTH\_RECEIVED\_STOP\_TIME
- EASTERMOST\_LONGITUDE
- ELECTRONICS\_BIAS

Change Table Columns

Clear Selection

---

**DOWNLOAD REPORT**

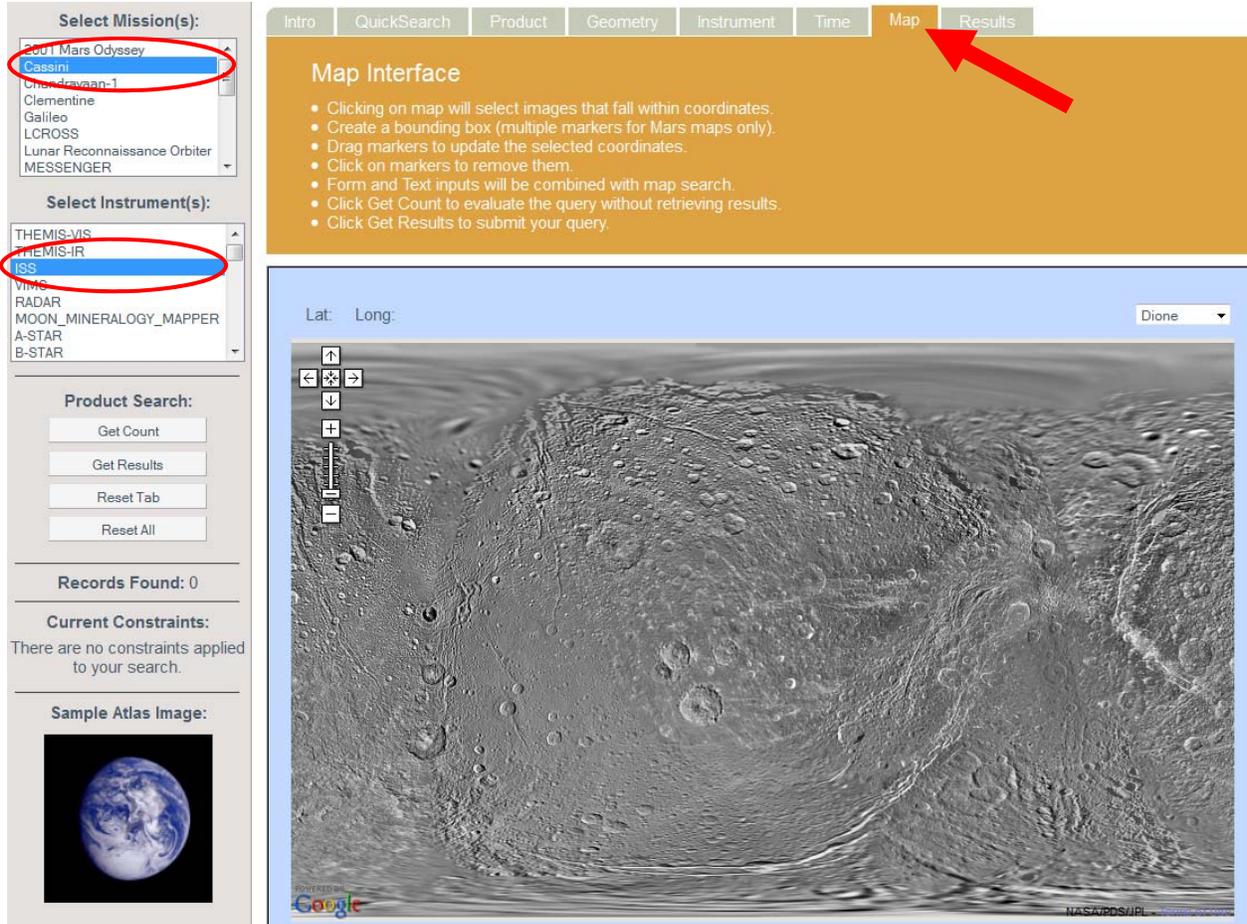
CSV  TAB

Download



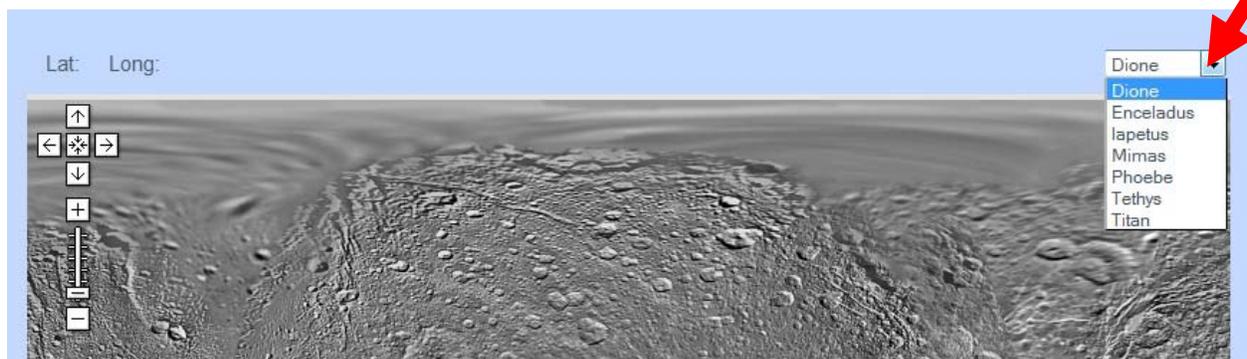
## 4. Map Searches

Searches for some targets can also be accomplished using a visual map interface, presented in the **Map** tab. These searches use the **Mission** and **Instrument** selections from the left panel, and the contents of the **Map** tab are dependent on these settings.



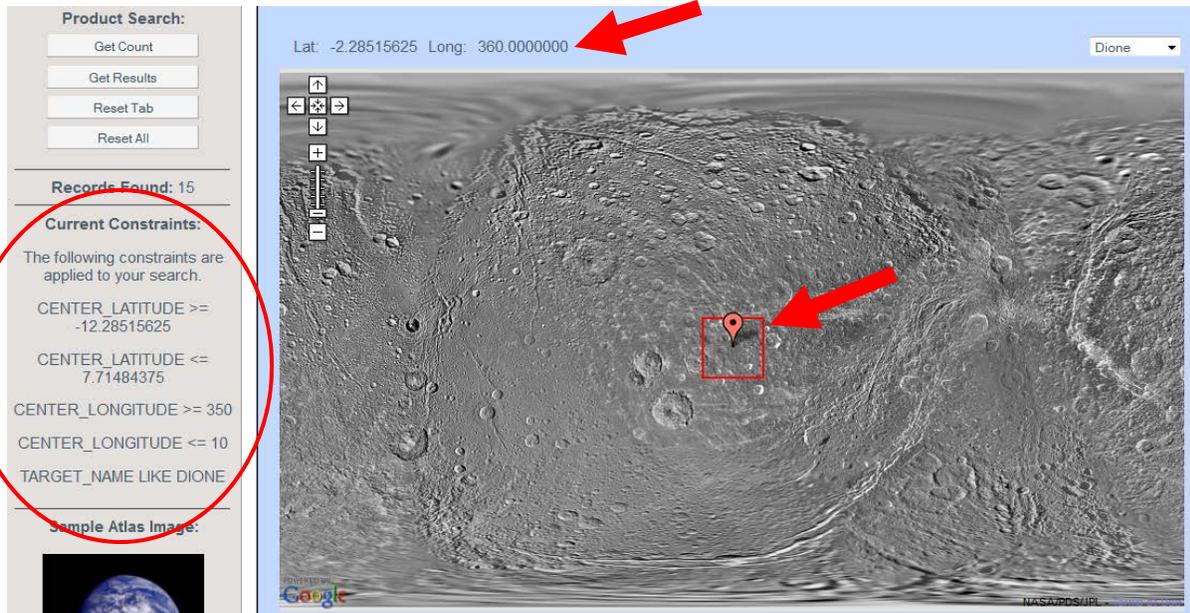
The screenshot displays the 'Map Interface' section of a software application. On the left, there are two dropdown menus: 'Select Mission(s):' with 'Cassini' selected and circled in red, and 'Select Instrument(s):' with 'ISS' selected and circled in red. Below these are buttons for 'Product Search' (Get Count, Get Results, Reset Tab, Reset All) and a 'Records Found: 0' indicator. The main area shows a 'Map Interface' header with a list of instructions: clicking on the map to select images, creating a bounding box, dragging markers, clicking markers to remove them, combining form and text inputs, clicking 'Get Count', and clicking 'Get Results'. A red arrow points to the 'Map' tab in the top navigation bar. Below the instructions is a large map of a planetary surface with navigation controls (directional arrows, zoom in/out, and a 'Dione' dropdown menu in the top right corner).

For the Cassini mission, a number of target options are available in the **Map** tab. These are the same for all the Cassini instruments that are available in the **Select Instrument(s)** menu. The desired planetary target can be selected from the **target** drop-down menu in the upper right corner.



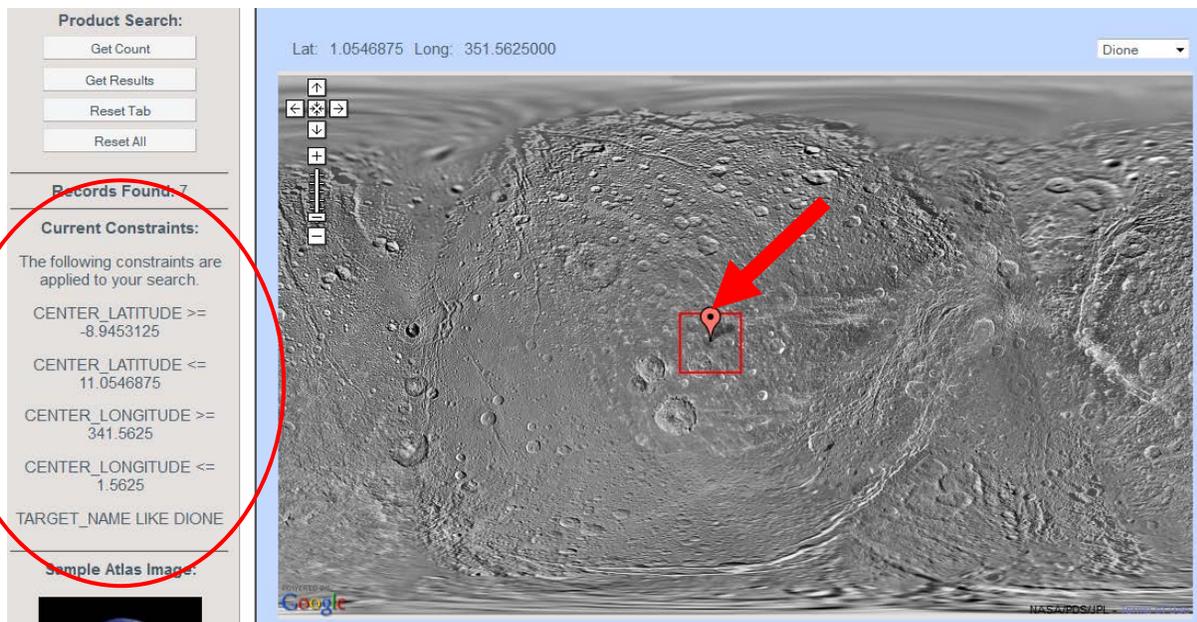
This close-up view shows the 'target' drop-down menu in the upper right corner of the map interface. The menu is open, displaying a list of planetary targets: Dione, Enceladus, Iapetus, Mimas, Phoebe, Tethys, and Titan. A red arrow points to the dropdown arrow icon in the top right corner of the menu.

Location search parameters are selected by clicking on the map. A box spanning 20 degrees latitude and longitude is drawn on the map, and the centre latitude and longitude values of this box are displayed in the upper left corner above the map.



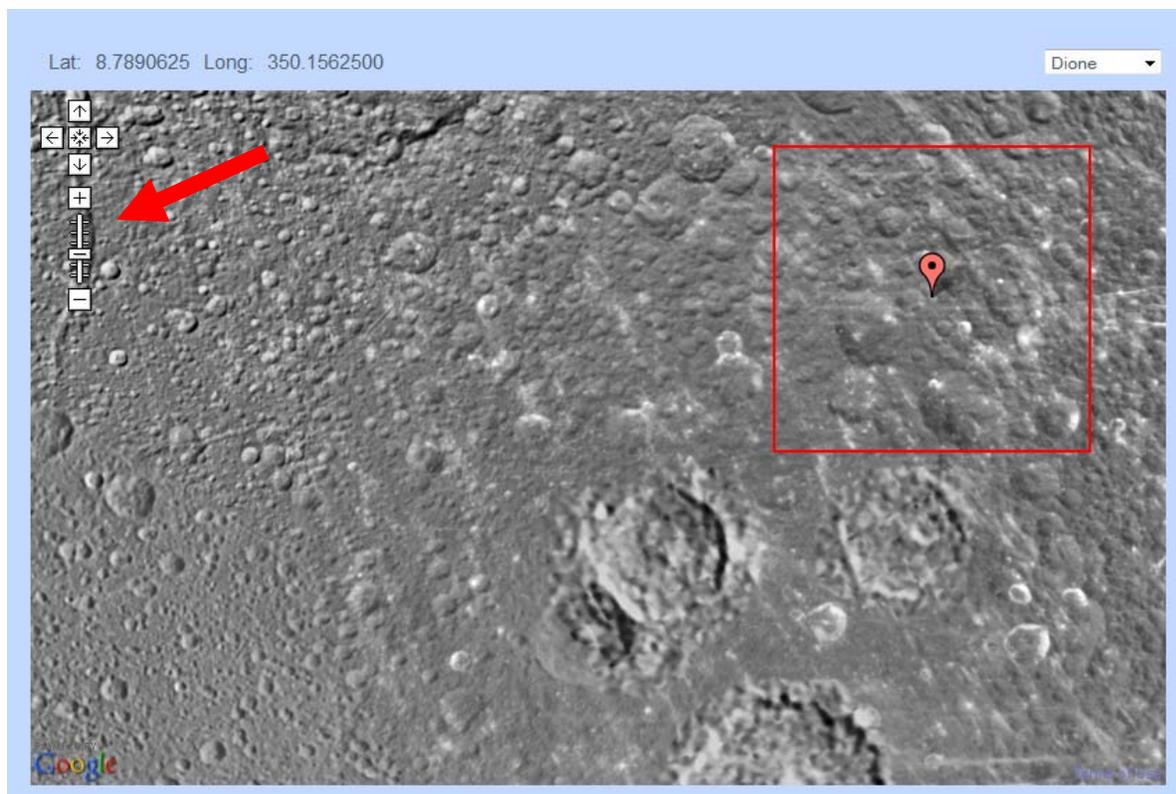
Clicking on the **Get Count** button will display the maximum/minimum latitude and longitude values represented by the box in the **Current Constraints** section. These are the parameters and values that are used in the Map Search.

If you are unsatisfied with the box's placement on the map, simply click on a new location, or drag the box's grip (inverted tear-drop marker) to fine-tune its position.



Changing the box's location overwrites any previous box settings, so Map searches aren't cumulative.

The map can be zoomed in and out, using the **Zoom Control** slider or the +/- buttons. Navigating the map is done using the **Pan** buttons above the Zoom slider, or by grabbing the map with a left mouse click and dragging. The button at the centre of the **Pan** buttons reverts the map to the previous view.



Constraints specified outside the **Map** tab (in other tabs or through text) build upon the latitude and longitude values specified in **Map** tab, and are included in the search.

Intro QuickSearch **Product** **Geometry** Instrument Time **Map** Results

### Map Interface

- Clicking on map will select images that fall within coordinates.
- Create a bounding box (multiple markers for Mars maps only).
- Drag markers to update the selected coordinates.
- Click on markers to remove them.
- Form and Text inputs will be combined with map search.
- Click Get Count to evaluate the query without retrieving results.
- Click Get Results to submit your query.

Lat: 1.0546875 Long: 351.5625000 Dione

**Current Constraints:**  
The following constraints are applied to your search.  
IMAGE\_OBSERVATION\_TYPE = SCIENCE  
PIXEL\_SCALE <= 1  
CENTER\_LATITUDE >= -8.9453125  
CENTER\_LATITUDE <= 11.0546875  
CENTER\_LONGITUDE >= 341.5625  
CENTER\_LONGITUDE <= 1.5625  
TARGET\_NAME LIKE DIONE

To clear the **Map** tab settings, it is necessary to use the **Reset All** button (at present, the **Reset Tab** button doesn't work for the **Map** tab).

**Product Search:**  
Get Count  
Get Results  
Reset Tab  
**Reset All**

Records Found: 0

**Current Constraints:**  
There are no constraints applied to your search.

Sample Atlas Image:

Lat: Long: Dione

## 5. Text Searches

Search parameters can also be set using the **Text Search** field near the top of the page.

The screenshot shows the 'Planetary Image Atlas' search interface. At the top, there is a navigation bar with links: NEW SEARCH, MULTI MISSION SEARCH, DATA PORTAL, ABOUT, HELP, FEEDBACK, HOME. Below this, the main search area is titled 'TEXT AND FORM SEARCH CRITERIA ARE COMBINED TEXT BASED SEARCH'. A red arrow points to the 'Select Mission(s):' dropdown menu, which lists various missions including 2001 Mars Odyssey, Cassini, Chandrayaan-1, Clementine, Galileo, LCROSS, Lunar Reconnaissance Orbiter, and MESSENGER. Another red arrow points to the 'Select Instrument(s):' dropdown menu, which lists instruments like THEMIS-VIS, THEMIS-IR, ISS, VIMS, RADAR, MOON\_MINERALOGY\_MAPPER, A-STAR, and B-STAR. The text search field contains the instruction: '(Type text, select suggested text, hit enter/return key, add value if needed, then mouse click 'Add Constraint'.) (Repeat these steps to add additional criteria.)'. Below the text search field is the 'FORM BASED SEARCH' section with tabs for Intro, QuickSearch, Product, Geometry, Instrument, Time, Map, and Results. The 'Quick Search' section provides instructions: 'Criteria selected on all forms combine to formulate your search.', 'Selecting nothing returns ALL products.', 'Click Get Count to evaluate the query without retrieving results.', 'Click Get Results to submit your query.', and 'All tabs do not need to be filled out.'

To set a parameter in the **Text Search** field, start typing the desired parameter. A drop-down list will be generated, showing the possible matches. Which matches are displayed depends on the **Mission** and **Instrument(s)** selected. Click on the desired parameter match to select it.

This screenshot shows the search interface with a dropdown list of target names. A red arrow points to the 'Select Mission(s):' dropdown menu, which is set to 'Cassini'. Another red arrow points to the 'Select Instrument(s):' dropdown menu, which is set to 'VIMS'. The text search field contains the text 'Ta' and a dropdown list of target names. A red arrow points to the 'TARGET\_NAME = MIMAS' option in the list. The 'FORM BASED SEARCH' section is visible, showing a table with columns for 'VIMS - Spectrometer', 'Product Type', and 'EDR'. The table contains several rows of data, including 'AEGAEON', 'ATLAS', 'CALYPSO', 'DAPHNIS', 'DARK SKY', 'DIONE', 'EUROPA', 'FOMALHAUT', 'GANYMEDE', 'HELENE', 'HIMALIA', 'HYPERION', 'IAPETUS', 'IO', 'JANUS', 'JUPITER', 'METHONE', 'MIMAS', and 'PALLENE'. The 'MIMAS' row is highlighted in blue.

There are two types of text search parameters. The example above shows a parameter that requires no further input.

**TEXT BASED SEARCH**

(Type text, select suggested text, hit enter/return key, add value if needed, then mouse click 'Add Constraint'.)  
(Repeat these steps to add additional criteria.)

TARGET\_NAME = MIMAS Add Constraint

Other parameters require that an additional value be input.

**TEXT BASED SEARCH**

(Type text, select suggested text, hit enter/return key, add value if needed, then mouse click 'Add Constraint'.)  
(Repeat these steps to add additional criteria.)

PIXEL\_SCALE <= Add Constraint

After selecting such a parameter from the drop-down list, click inside the text field and type the desired value.

When the parameter is appropriately specified, click the **Add Constraints** button to set the parameter and add it to the **Current Constraints** section in the left panel.

**Select Mission(s):**  
⋮

**Current Constraints:**  
The following constraints are applied to your search.  
TARGET\_NAME = MIMAS  
PIXEL\_SCALE <= 20

**TEXT BASED SEARCH**

(Type text, select suggested text, hit enter/return key, add value if needed, then mouse click 'Add Constraint'.)  
(Repeat these steps to add additional criteria.)

PIXEL\_SCALE <= 20 Add Constraint

**FORM BASED SEARCH**

QuickSearch Product Geometry Instrument Time Map Results

You can build your search by adding multiple constraints through the text search in this way.

More complex search expressions can be constructed by using the **OR** logic operator.

**Select Mission(s):**  
⋮

**Current Constraints:**  
The following constraints are applied to your search.  
TARGET\_NAME = MIMAS  
PIXEL\_SCALE <= 20  
PHASE\_ANGLE <= 50 OR PHASE\_ANGLE >= 75

**TEXT BASED SEARCH**

(Type text, select suggested text, hit enter/return key, add value if needed, then mouse click 'Add Constraint'.)  
(Repeat these steps to add additional criteria.)

PHASE\_ANGLE <= 50 OR PHASE\_ANGLE >= 75 Add Constraint

**FORM BASED SEARCH**

Intro QuickSearch Product Geometry Instrument Time Map Results

Quick Search

For such expressions, only the first constraint generates a drop-down list. Subsequent constraints need to be typed out manually, or they can be copied and pasted from a text editor.

Constraints specified in the forms based tabs, including the **Map** tab, combine with the text constraints in your search.

**Select Mission(s):**

- 2001 Mars Odyssey
- Cassini**
- Chandrayaan-1
- Clementine
- Galileo
- LCROSS
- Lunar Reconnaissance Orbiter
- MESSENGER

**Select Instrument(s):**

- THEMIS-VIS
- THEMIS-IR
- ISS
- VIMS**
- RADAR
- MOON\_MINERALOGY\_MAPPER
- A-STAR
- B-STAR

**Product Search:**

Get Count

Get Results

Reset Tab

Reset All

**Records Found:** 10

**Current Constraints:**

The following constraints are applied to your search.

CENTER\_LATITUDE <= 20

CENTER\_LONGITUDE >= 220

CENTER\_LONGITUDE <= 270

CENTER\_LATITUDE >= -20

TARGET\_NAME = MIMAS

PIXEL\_SCALE <= 20

PHASE\_ANGLE <= 50 OR PHASE\_ANGLE >= 75

**TEXT AND FORM SEARCH CRITERIA ARE COMBINED**

**TEXT BASED SEARCH**

(Type text, select suggested text, hit enter/return key, add value if needed, then mouse click 'Add Constraint'.)  
(Repeat these steps to add additional criteria.)

PHASE\_ANGLE <= 50 OR PHASE\_ANGLE >= 75 Add Constraint

**FORM BASED SEARCH**

Intro **QuickSearch** Product Geometry Instrument Time Map Results

**Quick Search**

- Criteria selected on all forms combine to formulate your search.
- Selecting nothing returns ALL products.
- Click Get Count to evaluate the query without retrieving results.
- Click Get Results to submit your query.
- All tabs do not need to be filled out.

Instrument ID	<input type="checkbox"/> VIMS - Spectrometer	Product Type	<input type="checkbox"/> EDR
Target Name	<div style="border: 1px solid gray; padding: 2px;">             AEGAEON              ATLAS              CALYPSO              DAPHNIS              DARK SKY              DIONE           </div>		
<b>Lat/Lon Bounding Box</b> Coordinates in Positive East Longitude			
	Northernmost Latitude (-90 to 90) 20		
Westernmost Longitude (0 to 360) 220		Easternmost Longitude (0 to 360) 270	
	Southernmost Latitude (-90 to 90) -20		
	<b>Min</b>	<b>Max</b>	<b>Valid Range</b>
Emission Angle			0.0 to 180.0 degrees

Constraints specified through the **Text Search** field can be removed from a search by clearing the **Text Search** field and clicking **Add Constraints**. All other constraints will **NOT** be removed.

Select Mission(s):

- 2001 Mars Odyssey
- Cassini
- Chandrayaan-1
- Clementine
- Galileo
- LCROSS
- Lunar Reconnaissance Orbiter
- MESSENGER

Records Found: 10

**Current Constraints:**

The following constraints are applied to your search.

- CENTER\_LATITUDE <= 20
- CENTER\_LONGITUDE >= 220
- CENTER\_LONGITUDE <= 270
- CENTER\_LATITUDE >= -20

TEXT AND FORM SEARCH CRITERIA ARE COMBINED  
TEXT BASED SEARCH

(Type text, select suggested text, hit enter/return key, add value if needed, then mouse click 'Add Constraint'.)  
(Repeat these steps to add additional criteria.)

FORM BASED SEARCH

Intro QuickSearch Product Geometry Instrument Time Map Results

Northernmost Latitude (-90 to 90)			
20			
Westernmost Longitude (0 to 360)	Easternmost Longitude (0 to 360)		
220	270		
Southernmost Latitude (-90 to 90)			
-20			

When text search constraints are removed this way, they can be returned to the search specifications by adding a new text constraint.

Select Mission(s):

- 2001 Mars Odyssey
- Cassini
- Chandrayaan-1
- Clementine
- Galileo
- LCROSS
- Lunar Reconnaissance Orbiter
- MESSENGER

Records Found: 10

**Current Constraints:**

The following constraints are applied to your search.

- CENTER\_LATITUDE <= 20
- CENTER\_LONGITUDE >= 220
- CENTER\_LONGITUDE <= 270
- CENTER\_LATITUDE >= -20
- TARGET\_NAME = MIMAS
- PIXEL\_SCALE <= 20
- PHASE\_ANGLE <= 50 OR PHASE\_ANGLE >= 75
- INCIDENCE\_ANGLE >= 30

TEXT AND FORM SEARCH CRITERIA ARE COMBINED  
TEXT BASED SEARCH

(Type text, select suggested text, hit enter/return key, add value if needed, then mouse click 'Add Constraint'.)  
(Repeat these steps to add additional criteria.)

INCIDENCE\_ANGLE >= 30

FORM BASED SEARCH

Intro QuickSearch Product Geometry Instrument Time Map Results

	Min	Max	Valid Range	Units
Emission Angle			0.0 to 180.0	degrees
Incidence Angle			0.0 to 180.0	degrees

To completely clear all parameters (text and form) from the search, click the **Reset All** button.

## 6. Search Tricks and Tips

The Atlas site is continually evolving to better suit the needs of the user base. However, some parts are still under construction and can present challenges to the user. In this section, the most common known issues are presented, and suggestions are made for how to work around them. Information on how to report additional problems, or to request help, is provided in **Appendix E**.

### 6.1 Target Name Searches for the ISS Instrument can be Tricky

For the ISS instrument, the **Target Name** parameter has multiple options for many of the targets. This is related to the fact that multiple targets can sometimes be present in an image. If it is important for your search to find all the instances of a target of interest, then the search needs to be defined appropriately.

There are two ways to accomplish this. The simplest is to select all the variants of the desired target in the **Target Name** menu (in the **QuickSearch** tab).



The screenshot shows the 'QuickSearch' interface. On the left, there is a 'Select Instrument(s):' dropdown menu with 'ISS' selected. To the right, there is a 'Target Name' dropdown menu with the following options: MIMAS, MIMAS, CONSTANT I/F, MIMAS, DIONE, MIMAS, GENERIC-SATELLITE, MIMAS, PANDORA, and MIMAS, ROCKS. A red arrow points to the 'MIMAS, CONSTANT I/F' option. There are also checkboxes for 'EDR', 'RDR (Maps)', 'Rings Flag', 'NO', and 'YES'.

Alternatively, you can use the LIKE operator in the **Text Search** field.



The screenshot shows the 'TEXT BASED SEARCH' field. The text '(Type text, select suggested text, hit enter/return key, add value if needed, then mouse click 'Add Constraint'.) (Repeat these steps to add additional criteria.)' is displayed above the input field. A red arrow points to the input field, which contains the text 'TARGET\_NAME LIKE MIMAS'. To the right of the input field is an 'Add Constraint' button.

Either option will include all the instances for your target of interest.

## 6.2 Don't Change Instruments in the Middle of your Search

At present, all the selected parameters are reset when a different mission or instrument is chosen from the left panels. To avoid having to reset common parameters for searches using different instruments, it is best to conduct one search across multiple instruments. To do this, select all the desired instruments at the start of the search.

**Planetary Image Atlas**

NEW SEARCH MULTI MISSION SEARCH DATA PORTAL ABOUT HELP FEEDBACK HOME

Select Mission(s):  
2001 Mars Odyssey  
Cassini  
Chandrayaan-1  
Clementine  
Galileo  
LCROSS  
Lunar Reconnaissance Orbiter  
MESSENGER

Select Instrument(s):  
THEMIS-VIS  
THEMIS-IR  
ISS  
VIMS  
RADAR  
MOON\_MINERALOGY\_MAPPER  
A-STAR  
B-STAR

TEXT AND FORM SEARCH CRITERIA ARE COMBINED  
TEXT BASED SEARCH  
(Type text, select suggested text, hit enter/return key, add value if needed, then mouse click 'Add Constraint'.)  
(Repeat these steps to add additional criteria.)

FORM BASED SEARCH  
Intro QuickSearch Product Geometry Instrument Time Map Results

Quick Search

- Criteria selected on all forms combine to formulate your search.
- Selecting nothing returns ALL products.
- Click Get Count to evaluate the query without retrieving results.
- Click Get Results to submit your query.
- All tabs do not need to be filled out.

If you find yourself deciding you want data from an additional instrument in the middle of your search, it is probably best to finish the current search first. Noting the constraints that were used, you can then conduct a separate search for the additional instrument(s)

## 6.3 Specify Max and Min Values in Searches

For parameters that take numerical values, extremely high positive or negative numbers are sometimes used to indicate that the value of this parameter is not known for this data file.

Intro QuickSearch Product Geometry Instrument Time Map Results

Results

Page: 1 2 3 4 of 10 Page(s) Get More 500 of 1877 Products

Select	Item #	Thumbnail (Click to View Browse Image)	Download Data View Label View Volume	Product ID	Mission	Instrument	Westernmost Longitude
<input type="checkbox"/>	1	Thumbnail not available.		LBDR_02_D034_V01	Cassini	RADAR	-1000.0
<input type="checkbox"/>	2	Thumbnail not available.		SBDR_03_D034_V01	Cassini	RADAR	-1000.0

Select Instrument(s):  
THEMIS-VIS  
THEMIS-IR  
ISS  
VIMS  
RADAR  
MOON\_MINERALOGY\_MAPPER  
A-STAR  
B-STAR

Product Search:  
Get Count  
Get Results  
Reset Tab  
Reset All

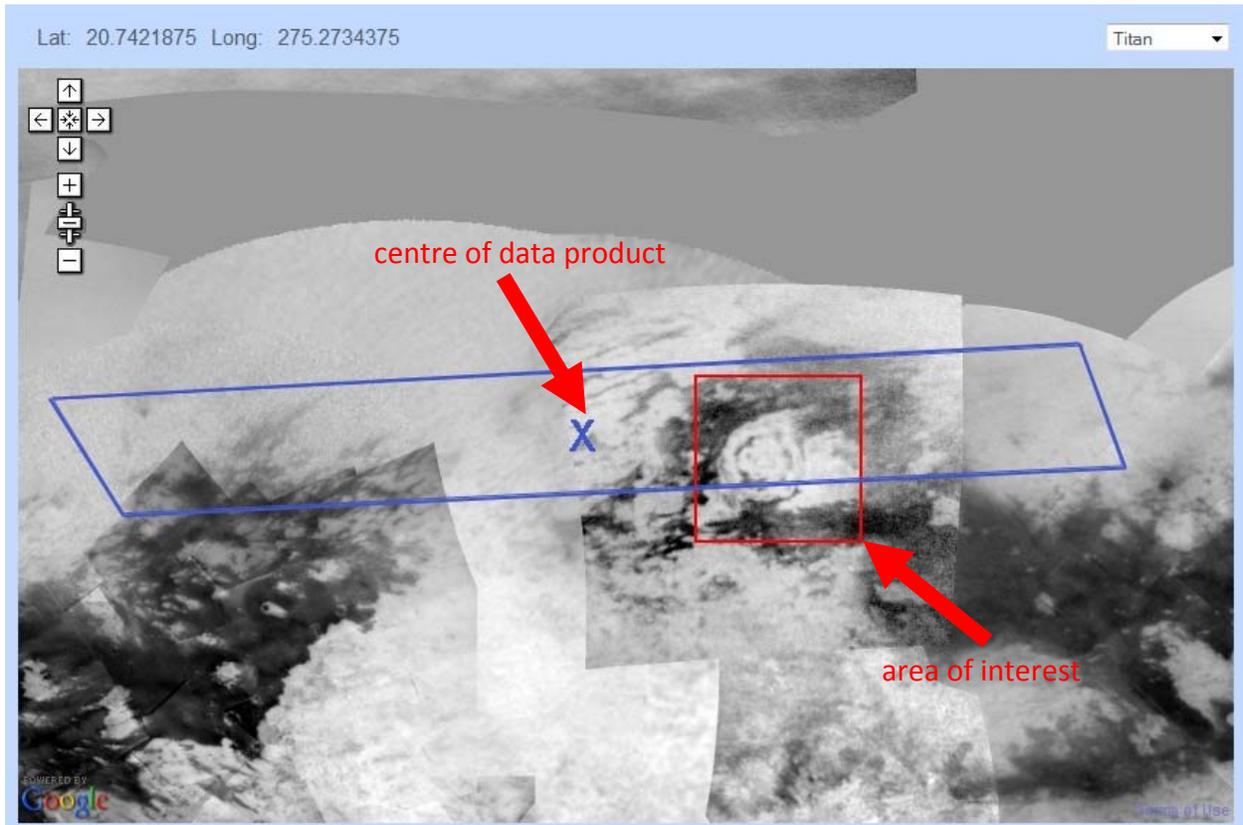
Records Found: 1877

Current Constraints:  
The following constraints are applied to your search.  
TARGET\_NAME = TITAN

To avoid having these products returned as valid results to a search, it is best to always specify both a reasonable **Maximum** and **Minimum** value for your important search parameters.

#### 6.4 Searches using Center Longitude or Center Latitude may not produce Expected Results

Often, latitude and longitude parameters actually search on the center latitude and longitude of a data image. In some cases, this can result in appropriate data being missed. If the center latitude and longitude of a product is beyond the limits of your search criteria, the product will not be found by the search, even though the area of interest may be included in a segment of the product. This is especially true for long data strips.



There are two ways to work around this issue. One option is to add some padding to the latitude and longitude range used in your search, in order to catch products that are only a little outside the desired range. Another option is to specify Northernmost and Southernmost Latitude, Easternmost and Westernmost Longitude using the **Text Search** field.

## 6.5 Long Text in Parameter Values can cause Trouble in Searches

Some search parameters that take text values do not handle complex strings well. Text strings that are particularly long, or contain special characters (like semicolons), may show **Records Found: 0** when in fact several valid results exist, according to the labels of the products.

**Select Instrument(s):**

- THEMIS-VIS
- THEMIS-IR
- ISS
- VIMS
- RADAR
- MOON\_MINERALOGY\_MAPPER
- A-STAR
- B-STAR

**Product Search:**

Get Count  
Get Results  
Reset Tab  
Reset All

**Records Found: 0**

**Current Constraints:**

The following constraints are applied to your search.

TARGET\_NAME = HYPERION

METHOD\_DESC LIKE  
SSPT2.5.3;Hyperion;ISS\_000OT\_ENHYTE001\_PRIME\_8

**Advanced Search Related to Instrument Information**

- All tabs do not need to be filled out.
- Use advanced tabs with caution.
- Click Get Count to evaluate the query without retrieving results.
- Click Get Results to submit your query.

Method Description	ISSPT2.5.3:Hyperion:ISS_000OT		
Antiblooming State Flag	<input type="checkbox"/> OFF <input type="checkbox"/> ON	Calibration Lamp State Flag	<input type="checkbox"/> N/A <input type="checkbox"/> OFF <input type="checkbox"/> ON
Data Conversion Type	<input type="checkbox"/> 12BIT <input type="checkbox"/> 8LSB <input type="checkbox"/> TABLE	Delayed Readout Flag	<input type="checkbox"/> NO <input type="checkbox"/> YES
Gain Mode ID	<input type="checkbox"/> 12 ELECTRONS PER DN <input type="checkbox"/> 215 ELECTRONS PER DN <input type="checkbox"/> 29 ELECTRONS PER DN <input type="checkbox"/> 95 ELECTRONS PER DN	Instrument Compression Type	<input type="checkbox"/> LOSSLESS <input type="checkbox"/> LOSSY <input type="checkbox"/> NOTCOMP
Instrument Mode ID	<input type="checkbox"/> FULL <input type="checkbox"/> SUM2	Light Flood State Flag	<input type="checkbox"/> OFF <input type="checkbox"/> ON

If you suspect this may be occurring in your search, especially if your search results in 0 records found, consider truncating the string to something shorter and without special characters.

**Select Instrument(s):**

- THEMIS-VIS
- THEMIS-IR
- ISS
- VIMS
- RADAR
- MOON\_MINERALOGY\_MAPPER
- A-STAR
- B-STAR

**Product Search:**

Get Count  
Get Results  
Reset Tab  
Reset All

**Records Found: 15**

**Current Constraints:**

The following constraints are applied to your search.

TARGET\_NAME = HYPERION

METHOD\_DESC LIKE  
ISS\_000OT\_ENHYTE001\_PRIME\_8

**Advanced Search Related to Instrument Information**

- All tabs do not need to be filled out.
- Use advanced tabs with caution.
- Click Get Count to evaluate the query without retrieving results.
- Click Get Results to submit your query.

Method Description	ISS_000OT_ENHYTE001_PRIM		
Antiblooming State Flag	<input type="checkbox"/> OFF <input type="checkbox"/> ON	Calibration Lamp State Flag	<input type="checkbox"/> N/A <input type="checkbox"/> OFF <input type="checkbox"/> ON
Data Conversion Type	<input type="checkbox"/> 12BIT <input type="checkbox"/> 8LSB <input type="checkbox"/> TABLE	Delayed Readout Flag	<input type="checkbox"/> NO <input type="checkbox"/> YES
Gain Mode ID	<input type="checkbox"/> 12 ELECTRONS PER DN <input type="checkbox"/> 215 ELECTRONS PER DN <input type="checkbox"/> 29 ELECTRONS PER DN <input type="checkbox"/> 95 ELECTRONS PER DN	Instrument Compression Type	<input type="checkbox"/> LOSSLESS <input type="checkbox"/> LOSSY <input type="checkbox"/> NOTCOMP
Instrument Mode ID	<input type="checkbox"/> FULL <input type="checkbox"/> SUM2	Light Flood State Flag	<input type="checkbox"/> OFF <input type="checkbox"/> ON

## 6.6 Searches involving Time and DayT format are Tricky

Searches that involve time parameters must be very carefully constructed when using the "DayT" (e.g., 2007-291T19:46:00) format. You need to be particularly mindful of formatting issues, such as:

- no spaces between year, day, and time portions.
- seconds must be included, even if they are zero values.
- all time components (hours, minutes, and seconds) must be expressed using two digits.

**Select Instrument(s):**

THEMIS-VIS  
THEMIS-IR  
**ISS**  
VIMS  
RADAR  
MOON\_MINERALOGY\_MAPPER  
A-STAR  
B-STAR

**Product Search:**

Get Count  
Get Results  
Reset Tab  
Reset All

**Records Found:** 1085

**Current Constraints:**  
The following constraints are applied to your search.

TARGET\_NAME = TITAN  
EARTH\_RECEIVED\_START\_TIME >= 2009-173T23:59:00  
EARTH\_RECEIVED\_START\_TIME <= 2009-288T01:09:00

Intro **QuickSearch** Product Geometry Instrument **Time** Map Results

### Advanced Search Related to Time Information

- All tabs do not need to be filled out.
- Use advanced tabs with caution.
- Click Get Count to evaluate the query without retrieving results.
- Click Get Results to submit your query.

	Min	Max	Valid Range	Units
Earth Received Start Time	2009-173T23:59:00	2009-288T01:09:00	0000-00-00 00:00:00 to 2011-09-30 18:16:13 or 0000-000T00:00:00 to 2011-273T18:16:13	N/A
Earth Received Stop Time			0000-00-00 00:00:00 to 2011-09-30 18:16:39 or 0000-000T00:00:00 to 2011-273T18:16:39	N/A

Any deviation from the accepted format may produce erroneous results.

**Select Instrument(s):**

THEMIS-VIS  
THEMIS-IR  
**ISS**  
VIMS  
RADAR  
MOON\_MINERALOGY\_MAPPER  
A-STAR  
B-STAR

**Product Search:**

Get Count  
Get Results  
Reset Tab  
Reset All

**Records Found:** 0

**Current Constraints:**  
The following constraints are applied to your search.

TARGET\_NAME = TITAN  
EARTH\_RECEIVED\_START\_TIME >= 2009-173T23:59  
EARTH\_RECEIVED\_START\_TIME <= 2009-288T01:09

Intro **QuickSearch** Product Geometry Instrument **Time** Map Results

### Advanced Search Related to Time Information

- All tabs do not need to be filled out.
- Use advanced tabs with caution.
- Click Get Count to evaluate the query without retrieving results.
- Click Get Results to submit your query.

	Min	Max	Valid Range	Units
Earth Received Start Time	2009-173T23:59	2009-288T01:09	0000-00-00 00:00:00 to 2011-09-30 18:16:13 or 0000-000T00:00:00 to 2011-273T18:16:13	N/A
Earth Received Stop Time			0000-00-00 00:00:00 to 2011-09-30 18:16:39 or 0000-000T00:00:00 to 2011-273T18:16:39	N/A

One solution is to use the "Month-Day" format (e.g., 2009-06-22 23:59), which doesn't seem to be as particular about such issues.

## 6.7 Map Tab Searches Close to Edges of Map may give Inconsistent Bounding Boxes

Strange things can happen when you click close to the edge of a map in the **Map** tab. In some cases, the deviation from normal behaviour is intentional and desired. For example, when you choose an area near the poles, the latitude range is reduced to 10 degrees (as opposed to the usual 20), to accommodate the compression between longitude lines that occurs at these latitudes.

**Current Constraints:**  
The following constraints are applied to your search.

CENTER\_LATITUDE >= 71.34570240974426  
CENTER\_LATITUDE <= 81.34570240974426  
CENTER\_LONGITUDE >= 326.796875  
CENTER\_LONGITUDE <= 346.796875  
TARGET\_NAME LIKE ENCÉLADUS

Intro QuickSearch Product Geometry Instrument Time **Map** Results

Lat: 81.34570241 Long: 336.7968750 Enceladus

In other cases, the unexpected behaviour is undesired and misleading. For example, clicking near the left or right edges of the defined map may cause one of two odd behaviours. For some target bodies (where the map centre is 0 degrees longitude), the bounding box may be displayed as unusually wide, not centred on the area selected, and not consistent with what is listed in the current constraints.

**Current Constraints:**  
The following constraints are applied to your search.

CENTER\_LATITUDE >= -1.0761725902557373  
CENTER\_LATITUDE <= 18.923827409744263  
CENTER\_LONGITUDE >= 172.4609375  
CENTER\_LONGITUDE <= 192.4609375  
TARGET\_NAME LIKE ENCÉLADUS

Intro QuickSearch Product Geometry Instrument Time **Map** Results

Lat: 8.92382741 Long: 182.4609375 Enceladus

For other target bodies (where the map centre is 180 degrees longitude), the longitude range is reduced to 10 degrees (as opposed to the usual 20, which in this case is not desirable), and the bounding box is shifted to one side of the specified centre.

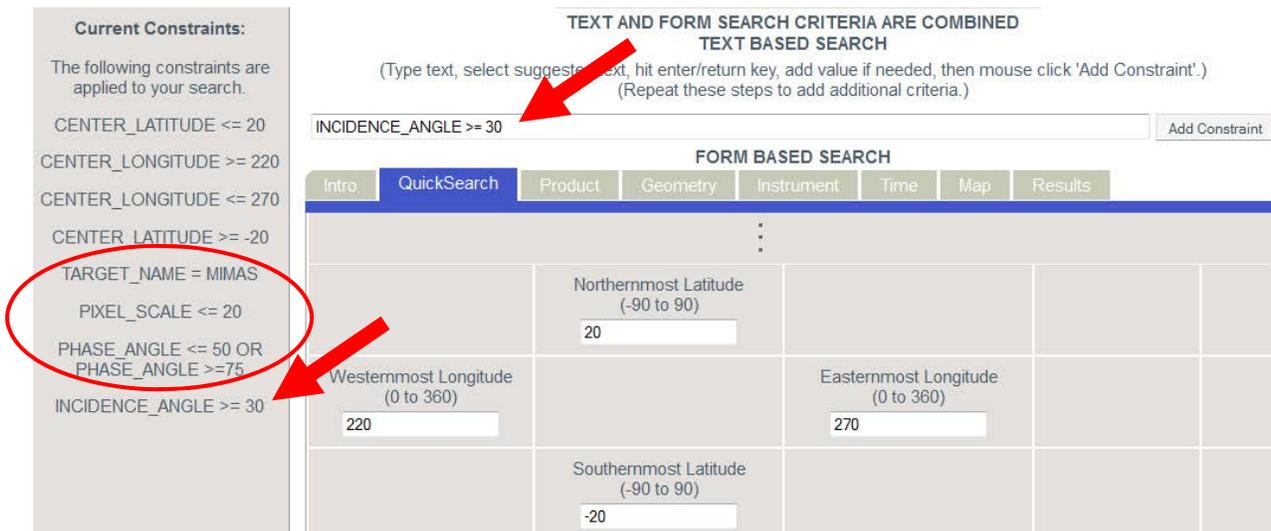


In addition, clicking off the edge of a map (in the grey area) places the bounding box on the other side of the map. Since the lowest available zoom setting does not display the entire map range, this looks as if the bounding box is not being displayed.

The best solution to these issues is to use the Forms or Text search options when searching near the edges of the defined map areas. If the **Map** tab must be used, it is advisable to pay close attention to the **Current Constraints** section. Update the **Current Constraints** section frequently (by clicking the **Get Count** button) and be aware of which search parameters are actually being considered.

### 6.8 Text Search Constraints cannot be Cleared Individually

Individual text constraints cannot be cleared from the search. All constraints specified through the **Text Search** field can be cleared together by clicking the **Add Constraint** button when the **Text Search** field is blank (as described in section 5 above), but when a new text constraint is added, all the previously cleared constraints return.



To completely remove the text-specified parameters, you need to click the **Reset All** button. However, this will also remove all the form-specified constraints, which may not be desirable. There is no way to remove one specific text-specified search constraint.

Because of these limitations, it is important to think carefully about your search before you begin. It may be worthwhile to consider organizing your search in a text editor and copying and pasting relevant parts to avoid making mistakes that can't be easily fixed.

## 6.9 Sometimes your Search Results will include Unknowns

Many products have at least one parameter value that is Unknown, meaning it is not known, valid, or applicable. Products with these "Unknown" parameter values may come up in your search, even though "Unknown" is not a valid fit to your search criteria.

The screenshot shows a search results page with a sidebar on the left and a main results table. The sidebar includes a 'Select Instrument(s):' dropdown menu with 'ISS' selected, a 'Product Search:' section with buttons for 'Get Count', 'Get Results', 'Reset Tab', and 'Reset All', and a 'Records Found: 13' section. Below this, 'Current Constraints:' are listed: 'TARGET\_NAME = ENCELADUS', 'CENTER\_LATITUDE <= 30', 'CENTER\_LONGITUDE >= 200', 'CENTER\_LONGITUDE <= 250', 'CENTER\_LATITUDE >= 0', and 'PIXEL\_SCALE <= 0.5'. A red arrow points to the 'PIXEL\_SCALE <= 0.5' constraint. The main results table has a header with columns: 'Select', 'Item #', 'Thumbnail (Click to View Browse Image)', 'Download Data', 'View Label', 'View Volume', 'Product ID', 'Mission', 'Instrument', and 'Pixel Scale'. The table shows two rows of results, both with 'UNK' in the 'Pixel Scale' column. A red arrow points to the 'UNK' value in the first row.

Select	Item #	Thumbnail (Click to View Browse Image)	Download Data	View Label	View Volume	Product ID	Mission	Instrument	Pixel Scale
<input type="checkbox"/>	1					SE_500K_43N_135_LAMBERT.IMG	Cassini	ISS	UNK
<input type="checkbox"/>	2					SE_500K_43S_135_LAMBERT.IMG	Cassini	ISS	UNK

At present, the only way to manage these "Unknowns" is through the results table display options. In the **Results** tab, select the parameters of interest and click the **Change Table Columns** button. Then sort the parameter of interest so that the Unknown values are at the bottom of the list, where they can be ignored.

## 6.10 Sorting the Results Table produces an Interesting Order

At the moment, sorts on numerical values are not executed correctly in the **Results Table**. When a sort arrow button is clicked, numerical values are sorted as text, so that  $2.0 < 22.0 < 3.0$ .

The screenshot shows a web interface with a 'Results' tab. On the left, there is a 'Select Instrument(s):' dropdown menu with 'ISS' selected, and a 'Product Search:' section with buttons for 'Get Count', 'Get Results', 'Reset Tab', and 'Reset All'. Below that, it shows 'Records Found: 8' and 'Current Constraints:' including 'TARGET\_NAME = ENCELADUS', 'CENTER\_LATITUDE <= 30', 'CENTER\_LONGITUDE >= 200', 'CENTER\_LONGITUDE <= 240', 'CENTER\_LATITUDE >= 1', and 'PIXEL\_SCALE <= 1'. A 'Sample Atlas Image:' of Earth is also visible.

The main 'Results' table has the following columns: Select, Item #, Thumbnail, Download Data, View Label, View Volume, Product ID, Mission, Instrument, and Center Latitude. The table contains 8 rows of data, all from the Cassini mission using the ISS instrument. The 'Center Latitude' values are: 2.06632, 2.51018, 2.9743, 22.1318, 22.2296, 23.0364, 3.36729, and 3.45302. Red arrows point to the 'Center Latitude' column header and the values 2.06632 and 3.36729, indicating that the sorting is based on text rather than numerical values.

On the right side of the table, there is a 'SELECT PARAMETERS FOR REPORT OR TABLE COLUMNS' panel with a list of parameters and buttons for 'Change Table Columns', 'Clear Selection', 'DOWNLOAD REPORT' (with CSV and TAB options), and 'DOWNLOAD PRODUCTS' (with WGET and ZIP options). A red arrow points to the 'Download' button under 'DOWNLOAD PRODUCTS'.

This is a known bug that is currently being addressed. Such sort behaviour can also be seen in numerical menus in the search forms.

## 6.11 Add Parameters to Results Table before you Get More data

If your search returns more than 500 products and you intend to sort all of those based on some added parameter(s), then the order in which you do this is important. If you add all the data first, by clicking the **Get More** button, and then add parameters to the results table, the total number of listed products will revert back to 500 and you will need to **Get More** data again.

The screenshots show the following steps:

- Initial State:** The interface shows 500 of 798 products. The 'Get More' button is highlighted with a red arrow.
- Adding Parameter:** The user has added 'Center Longitude' to the table headers. A red arrow points to the 'Center Longitude' header, and another red arrow points to the 'Get More' button.
- Final State:** After clicking 'Get More', the interface shows 500 of 798 products again, indicating that the data was reset to the first 500 items.

Select	Item #	Thumbnail (Click to View Browse Image)	Download Data View Label View Volume	Product ID	Mission	Instrument	Center Longitude
<input type="checkbox"/>	1		  	1_N1466514299.122	Cassini	ISS	-1e+32

To avoid this, add all the desired parameters to the results table first and then add the data by clicking the **Get More** button.

## Appendices

### **Appendix A. Cassini Image Data Overview**

The Planetary Image Atlas is the official data delivery portal for Cassini image data. This includes data from the following Cassini instruments:

- Imaging Science Subsystem (ISS)
- Visual and Infrared Mapping Spectrometer (VIMS)
- RADAR

**Imaging Science System (ISS)** data is collected using two cameras, a narrow-angle and a wide-angle camera. The data from these consists of fine-resolution monochromatic images, encompassing all wavelengths between blue and near-infrared. More details on the ISS data set can be obtained through the Planetary Rings Node Cassini ISS web page (<http://pds-rings.seti.org/cassini/iss/index.html>) or in the Cassini Imaging Science Subsystem (ISS) Data User's Guide ([http://pds-imaging.jpl.nasa.gov/documentation/ISS\\_Data\\_User\\_Guide\\_120703.pdf](http://pds-imaging.jpl.nasa.gov/documentation/ISS_Data_User_Guide_120703.pdf)).

**Visual and Infrared Mapping Spectrometer (VIMS)** data is collected using a pair of imaging grating spectrometers designed to measure reflected and emitted radiation. The data ranges in wavelength from visible to infrared (0.3 - 0.51 microns), and includes 352 spectral bands. More details on the VIMS data set can be obtained through the Planetary Rings Node Cassini ISS web page (<http://pds-rings.seti.org/cassini/vims/index.html>).

**RADAR** data is collected in several different modes, including Imaging, Altimetry, Scatterometry, and Radiometry modes. The resulting data is processed to create a number of data products, including Short Burst Data Records (SBDR), Long Burst Data Records (LBDR), Altimeter Burst Data Records (ABDR), and Basic Image Data Records (BIRD). More details on the RADAR data set can be obtained in the Cassini RADAR Users Guide ([http://pds-imaging.jpl.nasa.gov/documentation/Cassini\\_RADAR\\_Users\\_Guide.pdf](http://pds-imaging.jpl.nasa.gov/documentation/Cassini_RADAR_Users_Guide.pdf))

More information on the instruments, including documentation and tutorials, is available at the PDS Imaging Node's Cassini-Huygens Mission page ([http://img.pds.nasa.gov/portal/cassini\\_mission.html](http://img.pds.nasa.gov/portal/cassini_mission.html)). Detailed descriptions of the various data products and how they were generated can be found at the Node's Documentation page (<http://pds-imaging.jpl.nasa.gov/documentation/documentation.html>).

The status of the Cassini mission is still active as of September 18, 2012, and Cassini data is still being collected as of this date. To see updates on Cassini's status, as well as information on its next encounter, go to the Cassini Mission page (<http://saturn.jpl.nasa.gov/>).

Cassini data is made available to the public in quarterly installments (starting from July 2005 onward), and released about 9-12 months after it was obtained. A data release calendar (for all missions) is available at the PDS Data Release Calendar (<http://pds-imaging.jpl.nasa.gov/calendar/>). To get personalized notifications of new releases, sign up for the PDS Subscription Service ([https://pds.jpl.nasa.gov/tools/subscription\\_service/top.cfm](https://pds.jpl.nasa.gov/tools/subscription_service/top.cfm)).

A number of Cassini products can also be obtained through other websites:

- **Raw images:** <http://saturn.jpl.nasa.gov/photos/raw/>
- **Press release images:** <http://photojournal.jpl.nasa.gov/targetFamily/Saturn>
- **All Cassini data** (including non-image data):

- <http://starbrite.jpl.nasa.gov/pds/index.jsp>
- [http://atmos.pds.nasa.gov/data\\_and\\_services/atmospheres\\_data/Cassini/Cassini.html](http://atmos.pds.nasa.gov/data_and_services/atmospheres_data/Cassini/Cassini.html)  
(soon to be migrated to <http://atmos.nmsu.edu/~itrejo/cassini/cassini.html>)

This guide does not address these websites.

## Appendix B. PDS Data Structures

The Planetary Data System (PDS) has developed a series of nomenclatures, standards, and structures for planetary data, designed to provide consistency across discipline boundaries and ensure long-term readability and usability of all stored data. Data is stored in either binary or ASCII format, as defined by instrument teams, and has a PDS label (in ASCII format) that describes the data, using standard PDS nomenclature. More information on the PDS data system can be found at the PDS Standards Reference web page (<http://pds.nasa.gov/tools/standards-reference.shtml>).

Cassini image data is stored in binary format. Each binary image data file is accompanied by a PDS label file in ASCII format. PDS label files use a simple "parameter = value" format that is readable by both humans and computers. Pre-defined parameters are used to describe the data file structure as well as provide details about the observations.

```

PDS_VERSION_ID          = PDS3

/*      PRODUCT DESCRIPTION */

DATA_SET_ID             = "CO-V/E/J/S-RADAR-3-LBDR-V1.0"
DATA_SET_NAME           = "CASSINI RADAR LONG BURST DATA RECORD"
PRODUCER_INSTITUTION_NAME = "JET PROPULSION LABORATORY"
PRODUCER_ID             = JPL
PRODUCER_FULL_NAME      = "Inst Lead Charles Elachi contact Bryan Stiles"
PRODUCT_ID              = LBDR_02_D034_V01
PRODUCT_VERSION_ID      = 01
INSTRUMENT_HOST_NAME    = "CASSINI ORBITER"
INSTRUMENT_HOST_ID     = CO
INSTRUMENT_NAME         = "CASSINI RADAR"
INSTRUMENT_ID           = RADAR
TARGET_NAME             = TITAN
START_TIME              = 2004-299T04:34:06.526
STOP_TIME               = 2004-299T05:42:57.800
SPACECRAFT_CLOCK_START_COUNT = 1477371567
SPACECRAFT_CLOCK_STOP_COUNT = 1477375698
PRODUCT_CREATION_TIME   = 2005-272T18:24:30.000
MISSION_NAME            = "CASSINI-HUYGENS"
SOFTWARE_VERSION_ID     = "V1.0"
DESCRIPTION              = "CASSINI RADAR LONG BURST DATA RECORD FOR THE
PROCESSING_HISTORY_TEXT = "NONE"

/*      DESCRIPTION OF COMPRESSED AND UNCOMPRESSED FILES */

OBJECT                  = COMPRESSED_FILE
FILE_NAME               = "LBDR_02_D034_V01.ZIP"
RECORD_TYPE             = UNDEFINED
ENCODING_TYPE           = ZIP
INTERCHANGE_FORMAT      = BINARY
UNCOMPRESSED_FILE_NAME  = "LBDR_02_D034_V01.TAB"
REQUIRED_STORAGE_BYTES  = 564711848
^DESCRIPTION            = "SOFTWARE/SOFTINFO.TXT"
END_OBJECT              = COMPRESSED_FILE

```

Descriptions and usage details for each parameter can be found at the Data Dictionary Lookup web page ([http://pds.nasa.gov/tools/ddlookup/data\\_dictionary\\_lookup.cfm](http://pds.nasa.gov/tools/ddlookup/data_dictionary_lookup.cfm)).

By historical convention, data is organized into archive volumes. This is a hold-over from a time when data was distributed on CD's and was held in limited-capacity storage media that required multiple volumes to accommodate the entire data set. However, even with current storage capacities, the large quantities of managed data require that they be partitioned into smaller volumes.

Cassini archive volumes follow a standardized naming convention. All volume names are in the form:

**COxxxx\_nnnn** where CO = "Cassini Orbiter"  
 xxxx = Instrument ID (ISS, VIMS, RADR, and  
 nnnn = a 4-digit sequence number.

Thus, an example of a valid volume name would be "**CORADR\_0034**".

In addition to data, each archive volume contains documentation on the data and structure of the volume. This information is organized in a number of standard components:

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
 <a href="#">Parent Directory</a>		-	- AAREADME.TXT - overview of archive volume.
 <a href="#">AAREADME.TXT</a>	05-Jul-2006 18:55	26K	- CATALOG - directory containing text files describing the mission, instrument, data set, etc.
 <a href="#">CATALOG/</a>	05-Jul-2006 18:55	-	- DATA - directory of image and label files.
 <a href="#">DATA/</a>	05-Jul-2006 18:55	-	- DOCUMENT - directory with detailed descriptions of volume structure and file formats.
 <a href="#">DOCUMENT/</a>	05-Jul-2006 18:55	-	- ERRATA.TXT - a summary of any known errors.
 <a href="#">ERRATA.TXT</a>	05-Jul-2006 18:55	4.7K	- INDEX - directory containing data index files.
 <a href="#">INDEX/</a>	05-Jul-2006 18:55	-	- VOLDESC.CAT - computer-readable description of the volume.
 <a href="#">SOFTWARE/</a>	05-Jul-2006 18:55	-	
 <a href="#">VOLDESC.CAT</a>	05-Jul-2006 18:55	2.3K	

Other files and directories may also be present in the volume, depending on the instrument and data set needs. For example, if calibration or analysis programs are available for the data set, they will be found in either a CALIB or SOFTWARE directory within the archive volume. A list of all Cassini image archive volumes can be found at [http://pds-imaging.jpl.nasa.gov/data/cassini/cassini\\_orbiter/](http://pds-imaging.jpl.nasa.gov/data/cassini/cassini_orbiter/)

### Appendix C. Available Software

A number of software options are available for processing and reviewing the Cassini image data sets.

Calibration software is provided for all raw data sets. This software is generally located in the CALIB or SOFTWARE directory of each archive volume (see Appendix B - Cassini image archive volumes can be found at [http://pds-imaging.jpl.nasa.gov/data/cassini/cassini\\_orbiter/](http://pds-imaging.jpl.nasa.gov/data/cassini/cassini_orbiter/)). However, it should be noted that not all platforms are necessarily supported by these software products.

Many of the Cassini data sets can be analyzed using the Integrated System for Imagers and Spectrometers (ISIS) software. ISIS is a specialized image processing package developed by the USGS to process NASA planetary image data, including hyperspectral cubes. The main advantage of ISIS software

is that it makes use of mission-specific instrument information and spacecraft navigation data in the calibration process. More information on the ISIS package, as well as download and installation instructions, can be found at the ISIS home page (<http://isis.astrogeology.usgs.gov/index.html>).

Another image analysis package that can be used with Cassini data is VICAR, a multi-mission data processing and management software application, developed at the Jet Propulsion Laboratory (JPL). Mission-specific components allow for product-based processing of NASA planetary data, compliant with the PDS system. VICAR software and tools are available for all investigators who are NASA funded. More information about the VICAR software system is available at JPL's Multi-Mission Instrument Processing Laboratory page (<http://www-mipl.jpl.nasa.gov/mipex.html>).

In addition, a Windows-based Cassini image viewer (CassiniOrbiterView) is available for ISS data at the Cassini Orbiter Image Viewer web page (<http://petermasek.tripod.com/cassini.html>).

#### **Appendix D. Navigation and Ancillary Data**

Navigation and ancillary data for the Cassini mission is available through NASA's Navigation and Ancillary Information Facility (NAIF). The NAIF team provides this information within a system called "SPICE" (Spacecraft, Planet, Instrument, Camera-matrix, and Events). Data on target ephemeris, pointing, instrument field-of-view, timing, planetary body properties, etc. is organized into stable file types called "SPICE kernels". More information on NAIF and SPICE is available at the NAIF web page (<http://naif.jpl.nasa.gov/naif/>). Cassini kernels can be downloaded from the NAIF PDS SPICE Archives page ([http://naif.jpl.nasa.gov/naif/data\\_archived.html](http://naif.jpl.nasa.gov/naif/data_archived.html)).

The NAIF team also provides the SPICE Toolkit. This is a suite of programs designed to let programmers easily access SPICE information. The Toolkit is available in several programming languages (C, Fortran, IDL, and MatLab), which can operate on a number of platform systems (e.g., Linux, Windows, Mac OS, Solaris, etc.). The Toolkit can be downloaded from The SPICE Toolkit web page (<http://naif.jpl.nasa.gov/naif/toolkit.html>). Links to tutorials on how to use the Toolkit and hands-on programming lessons are also available at this page.

#### **Appendix E. Reporting Problems and Getting Help**

Expert help on any aspect of the Planetary Image Atlas is available on request. An overview of the Atlas's functionality can be reached through the Help link on the web site's top menu bar.



If the information you need cannot be found there, please e-mail the web page curator, currently Karen Boggs ([Karen.Boggs@jpl.nasa.gov](mailto:Karen.Boggs@jpl.nasa.gov)), with your questions.

If you find that something in the Atlas does not work as expected, please send a bug report to the project programmer, Alice Stanboli ([Alice.Stanboli@jpl.nasa.gov](mailto:Alice.Stanboli@jpl.nasa.gov)), or click on the Feedback link on the web site's top menu bar.



Users are also encouraged to send feedback (through the Feedback link on site's top menu bar) if there are suggestions on how the Atlas site or this guide can be improved.