

Calculating Distance between ALOS Orbits

Users Guide

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1. ABOUT THIS SOFTWARE

This software calculates the distance between ALOS orbit scene center. This software calculates the distance for every pair of orbit scenes with the same scene conditions (same Observation Path Number, same Center Frame Number, same Observation Mode, same Orbit Direction).

2. PLATFORM

We tested this binary module software on the following platforms.

- SuSE Linux 7.3(Kernel 2.4.40) Xeon 32bit
- RedHat Linux 9 (Kernel 2.4.40) Pentium4 32bit
- Windows XP SP2 Pentium4 32bit
- Macintosh OS X PowerPC G4

3. SOFTWARE FILE NAME

Linux : CalcBp_linux.tar.gz (about 1MByte)

Windows : CalcBp_win.zip (about 26KByte)

Macintosh : CalcBp_mac.zip (about 30KByte)

4. INSTALATION

Place the software tar file in a directory of you choosing, and unzip and untar.

Example for Linux:

```
$ tar zxvf CalcBp.tar.gz
CalcBp/
CalcBp/work/
CalcBp/inventory/
CalcBp/lib/
CalcBp/lib/Calc_Bp_core
CalcBp/lib/palsar_table.dat
CalcBp/Calc_Bp

$ cd CalcBp/

$ ls
Calc_Bp
inventory/
lib/
work/
```

5. TO UNINSTALL

Remove the CalcBp directory.

Example for Linux:

```
$ ¥rm - rf CalcBp
```

6. GETTING ORBIT DATA

You can get the ALOS orbit data from AUIG (ALOS User Interface Gateway).

Download CSV files to the inventory directory under CalcBp.

See the APPENDIX for information on how to use the AUIG.

7. HOW TO USE THIS SOFTWARE

After downloading CSV files to the “inventory” directory, execute the “Calc_Bp” command.

Example for Linux:

```
$ Calc_Bp
```

The “Calc_Bp” command calculates every orbit pair for same orbit scenes (orbits with the same Observation Path Number, same Center Frame Number and same Orbit Direction) from the CSV files in the inventory directory.

8. RESULTS OF CALCULATIONS

The results of orbital calculations are output to the result.txt file.

No.	RSP.	Frame.	A/D.	Master_Observation_Time.	Slave_Observation_Time.	Bpara.	Bperp.	Master_SceneID, ...
1.	2.	1550.	A.	25/06/2006_22:52:01.21.	10/05/2006_22:51:12.21.	654.15,	-884.57,	ALPSRP022301550, ...
2.	2.	1560.	A.	25/06/2006_22:52:09.21.	10/05/2006_22:51:20.21.	680.46,	-881.79,	ALPSRP022301560, ...
3.	2.	1570.	A.	25/06/2006_22:52:17.21.	10/05/2006_22:51:29.21.	706.82,	-878.82,	ALPSRP022301570, ...
4.	2.	1580.	A.	25/06/2006_22:52:25.21.	10/05/2006_22:51:37.21.	732.95,	-876.01,	ALPSRP022301580, ...
5.	2.	1590.	A.	25/06/2006_22:52:33.21.	10/05/2006_22:51:45.21.	759.16,	-872.94,	ALPSRP022301590, ...
6.	2.	1600.	A.	25/06/2006_22:52:42.21.	10/05/2006_22:51:53.21.	785.24,	-869.89,	ALPSRP022301600, ...
7.	2.	1610.	A.	25/06/2006_22:52:50.21.	10/05/2006_22:52:01.21.	811.31,	-866.73,	ALPSRP022301610, ...
8.	2.	1620.	A.	25/06/2006_22:52:58.21.	10/05/2006_22:52:10.21.	837.21,	-863.64,	ALPSRP022301620, ...
9.	2.	1630.	A.	25/06/2006_22:53:06.21.	10/05/2006_22:52:18.21.	863.09,	-860.44,	ALPSRP022301630, ...
10.	2.	1640.	A.	25/06/2006_22:53:14.21.	10/05/2006_22:52:26.21.	888.88,	-857.18,	ALPSRP022301640, ...

The format of the result.txt file is as follows:

TITLE	ITEM	FORMAT
No	Number	NNNNNNNN (1 to 9999999)
RSP	Observation Path Number	NNN (1 to 671)
Frame	Center Frame Number	NNNN (0 to 7199)
A/D	Orbit Direction	A: Ascending D: Decending
Master_Observation_Time	Master Scene Center Time	DD/MM/YYYY_hh:mm:ss.sss
Slave_Observation_Time	Slave Scene Center Time	DD/MM/YYYY_hh:mm:ss.sss
Bpara	B_para[m]	SNNNNNN.NN(-999999.99 to 999999.99)
Bperp	B_perp[m]	SNNNNNN.NN(-999999.99 to 999999.99)
Master_SceneID	Master Scene ID	XYYYM000OPPPP
Lat	Master Scene Center Latitude	SNN.NNN (-90.000 to 90.000)
Lon	Master Scene Center Longitude	SNNN.NNN (-179.999 to 180.000)
Orb	Master Orbit Data	G: High precision data D: RARR Standard precision data P: RARR Prediction data
TBL	Master Table Number	NNN (0 to 191)
Mode	Master Observation Mode	FBS FBD WB1 WB2
Pol	Master Polarization	' HH',' VV','HH+HV','VV+VH', 'In case of Full POL mode '*****'
Nadir	Master Off-nadir angle	N.N (0.0 to 99.9)
Scan	Master Number of Scan	N (0 to 9) Except Scan SAR mode '*'
Burst	Master Burst	120Mbps 240Mbps Except Scan SAR mode '*****'
Yaw	Master Yaw Steering	On Off
Slave_SceneID	Slave Scene ID	XYYYM000OPPPP
Lat	Slave Scene Center Latitude	SNN.NNN (-90.000 to 90.000)
Lon	Slave Scene Center Longitude	SNNN.NNN (-179.999 to 180.000)
Orb	Slave Orbit Data	G: High precision data D: RARR Standard precision data P: RARR Prediction data
TBL	Slave Table Number	NNN (0 to 191)
Mode	Slave Observation Mode	FBS FBD WB1 WB2
Pol	Slave Polarization	' HH',' VV','HH+HV','VV+VH', 'In case of Full POL mode '*****'
Nadir	Slave Off-nadir angle	N.N (0.0 to 99.9)
Scan	Slave Number of Scan	N (0 to 9) Except Scan SAR mode '*'
Burst	Slave Burst	120Mbps 240Mbps Except Scan SAR mode '*****'
Yaw	Slave Yaw Steering	On Off

9. COPYRIGHT

JAXA has copyrighted this software. You may not copy this archive or collection.

10. RELEASE FROM LIABILITY

JAXA is not liable for any loss or damage which may result from use of this software.

11. REDISTRIBUTION

You may not copy or redistribute this software.

1 2. APPENDIX

1 2. 1 HOW TO USE AUIG

(1) Access to AUIG.

URL= <https://auig.eoc.jaxa.jp/>

(2) Change to English page

If you see a Japanese page, click on [English] button.

The screenshot shows the AUIG 3.0 website interface. At the top, there is a navigation bar with the text 'AUIG 3.0 ALOS User Interface Gateway' and 'Japan Aerospace Exploration Agency'. A red arrow points to the 'English' button, which is circled in red. Other buttons include 'ヘルプ' and 'FAQ'. The main content area is divided into several sections:

- 登録ユーザ向けサービス**: Includes fields for 'ユーザID' and 'パスワード', a 'ログイン' button, and a 'ユーザ登録' button.
- AUIGに関するお知らせ**: A list of notices with dates and descriptions of system updates and maintenance.
- ALOS緊急観測のお知らせ**: A table of emergency observations.
- ALOSデータご利用にあたって**: Information about using ALOS data.

観測日	観測時間	観測場所	災害種別	センサ
2008/10/31	UT06:29頃	パキスタン パロチスタン地区	地震	AVNIR-2 (OBS)
2008/10/20	UT10:28頃	アルジェリア	洪水	PALSAR (FBS)
2008/10/17	UT02:50頃	サン・バルテルミー島 (フランス領)	ハリケーン	PALSAR (FBS)
2008/10/10	UT10:15頃	アルジェリア テベッサ地区	洪水	AVNIR-2 (OBS)
2008/09/23	UT05:17頃	ネパール ダンガジ地区	洪水	PALSAR (FBS)

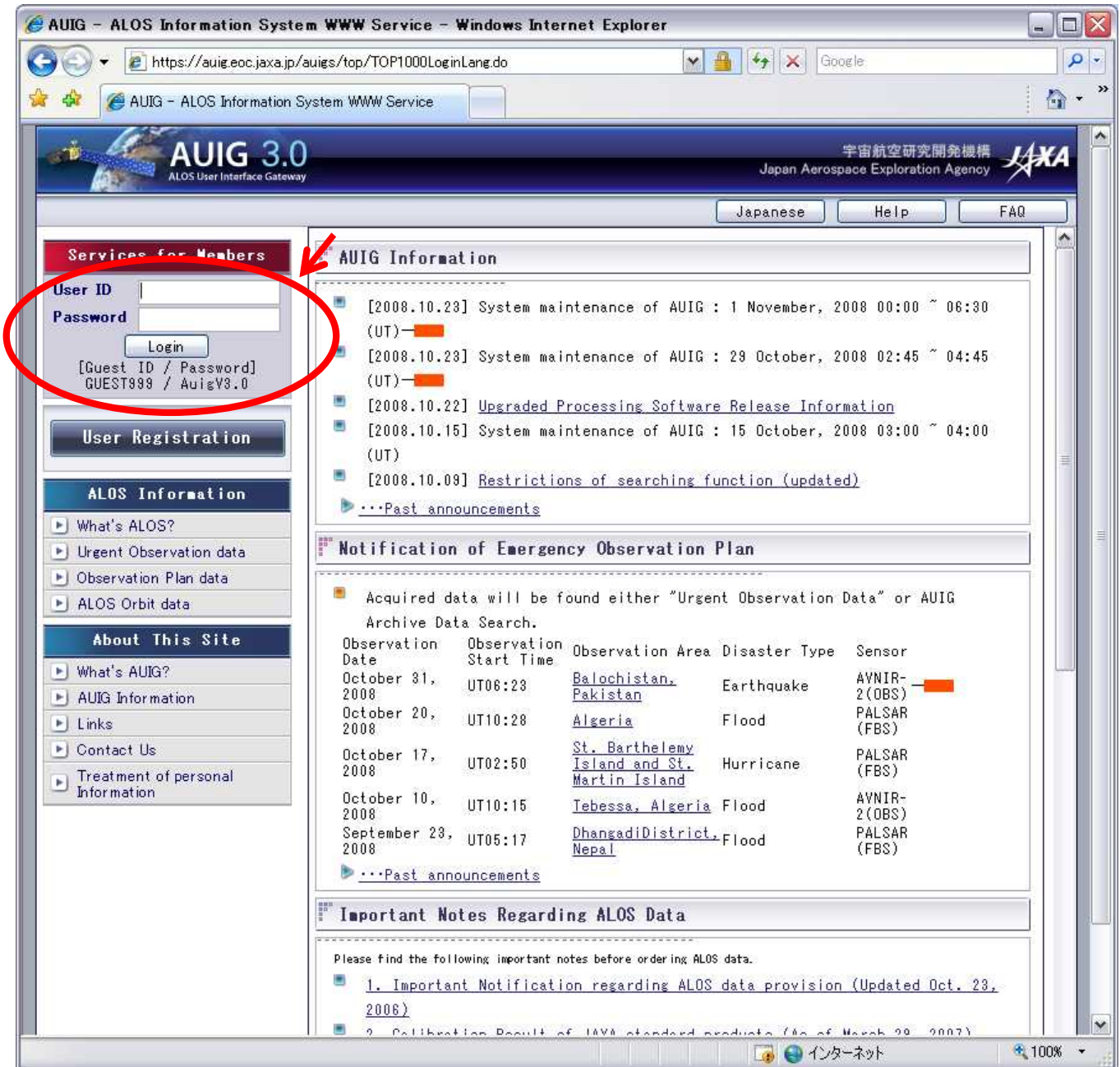
(3) Login to AUIG

Even if you do not have ID, you can login as a guest.

User ID is a "GUEST999".

Password is a "AuigV3.0".

Click on [Login] button.



- (4) Go to Search window.
Click on [Order and Obs. Requests] link.

The screenshot shows the AUIG 3.0 website interface. The browser title is "AUIG - ALOS Information System WWW Service - Windows Internet Explorer". The address bar shows "https://auig.eoc.jaxa.jp/auigs/top/TOP1000Login.do". The page header includes "AUIG 3.0 ALOS User Interface Gateway" and "Japan Aerospace Exploration Agency JAXA". There are buttons for "Japanese", "Help", and "FAQ".

The left sidebar contains several sections:

- Login Status:** Shows "2008/11/04 14:51 User:GuestUser" and a "Logout" button.
- Services for Members:** Contains a red circle and arrow pointing to the "Order and Obs. Requests" link, along with "Tool Download" and "Information for Login User".
- ALOS Information:** Includes "What's ALOS?", "Urgent Observation data", "Observation Plan data", and "ALOS Orbit data".
- About This Site:** Includes "What's AUIG?", "AUIG Information", "Links", "Contact Us", and "Treatment of personal Information".

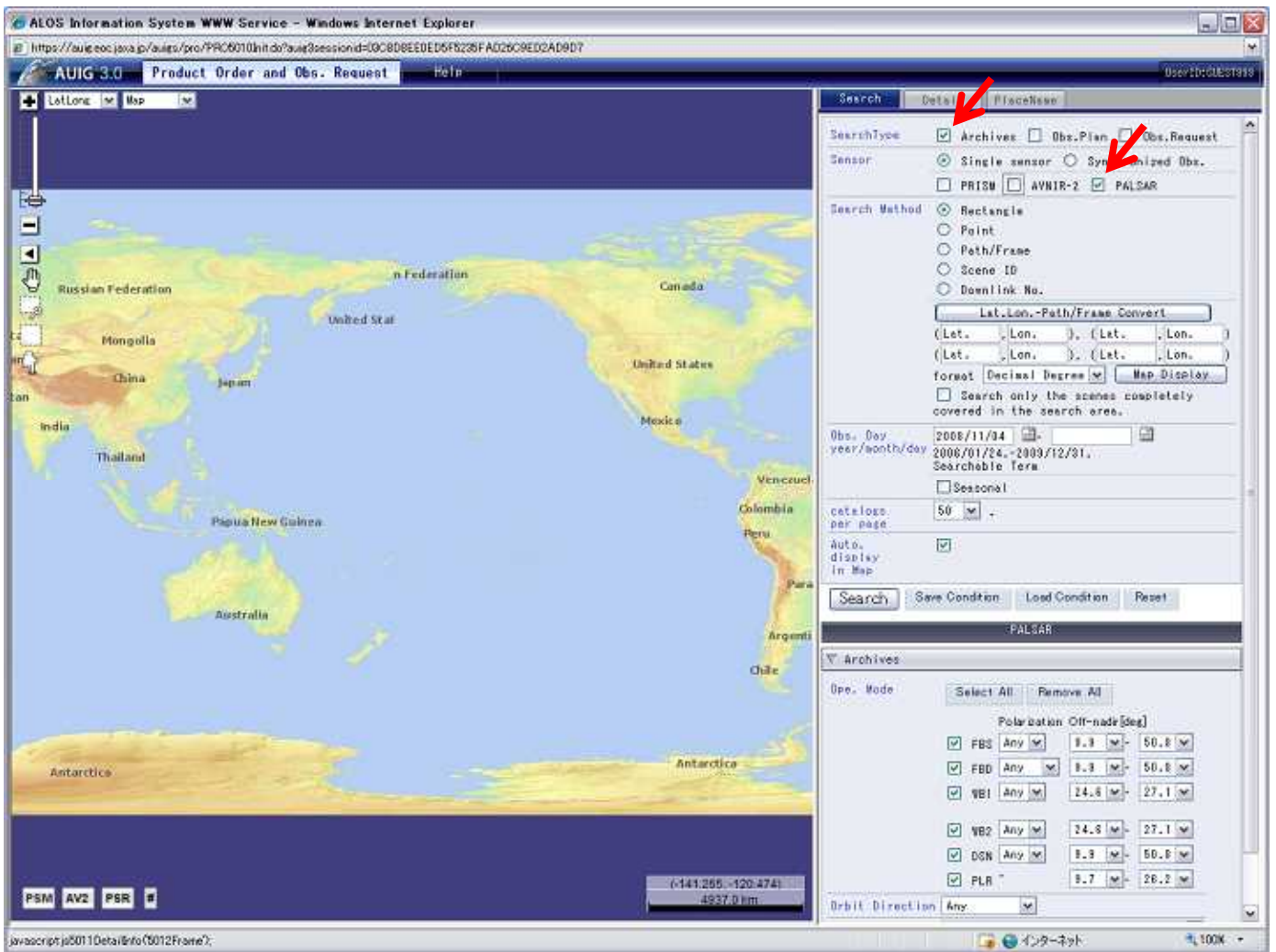
The main content area has several sections:

- AUIG Information:** Lists system maintenance and software release information with "NEW" tags.
- Notification of Emergency Observation Plan:** Contains a table of emergency observations.
- Important Notes Regarding ALOS Data:** Lists important notifications.

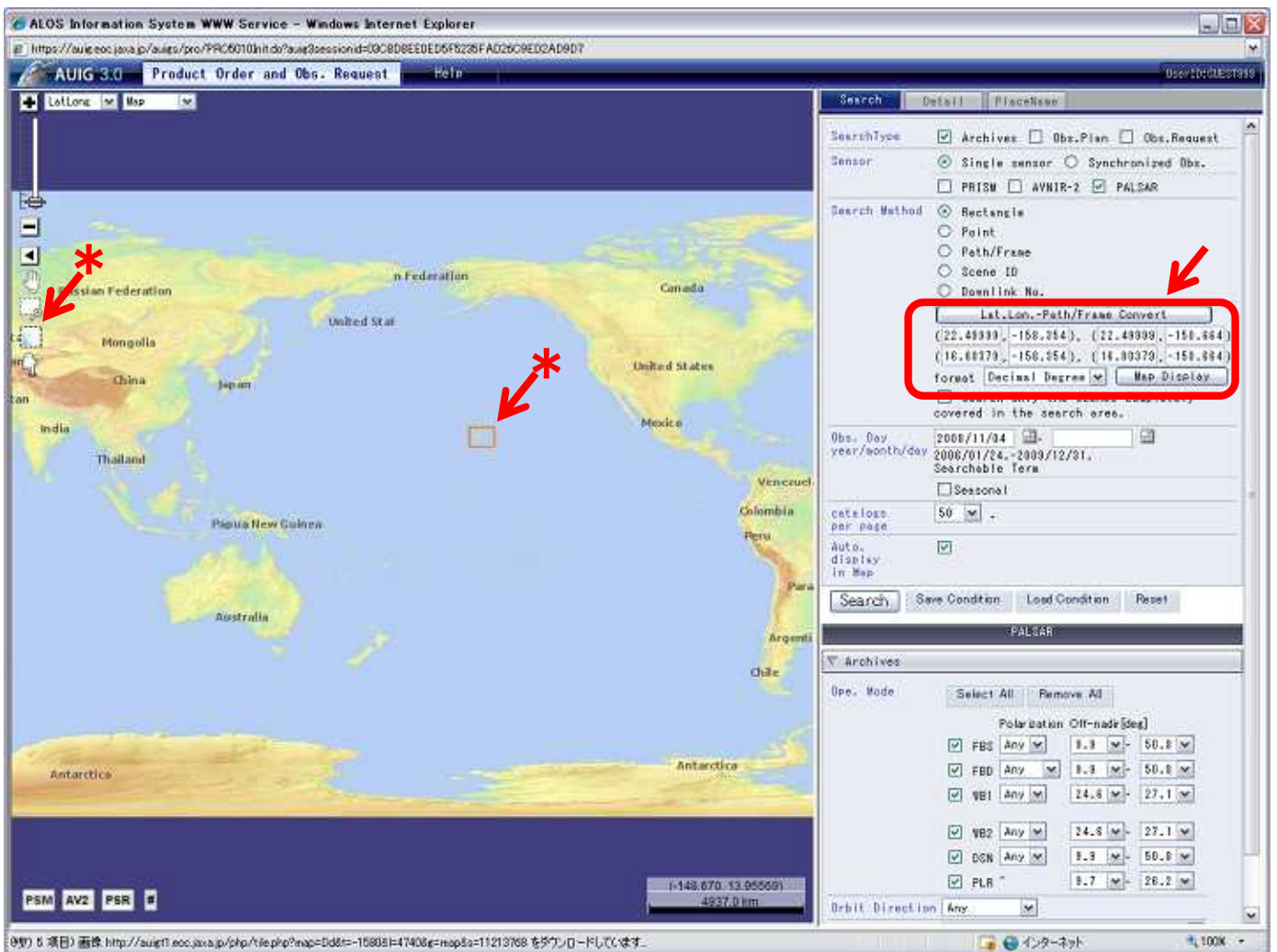
Observation Date	Observation Start Time	Observation Area	Disaster Type	Sensor
October 31, 2008	UT06:23	Balochistan, Pakistan	Earthquake	AVNIR-2(OBS) NEW
October 20, 2008	UT10:28	Algeria	Flood	PALSAR (FBS)
October 17, 2008	UT02:50	St. Barthelemy Island and St. Martin Island	Hurricane	PALSAR (FBS)
October 10, 2008	UT10:15	Tebessa, Algeria	Flood	AVNIR-2(OBS)
September 23, 2008	UT05:17	Dhangadi District, Nepal	Flood	PALSAR (FBS)

(5) Input conditions for search

- ① Search Type: Check [Archives Data] box.
- ② Sensor: Check [PALSAR] box.



- ③ Search Area: Input Lat. and Lon. for 4 corners. (example shown is for HAWAII)
 *: You can input the Lat. and Lon. by using the map tool to select a bounding box.



④ Observation Date: Input start day and end day for search.

The screenshot displays the ALOS Information System WWW Service interface. The main map shows the Pacific region with a red rectangle indicating the search area. The search panel on the right is configured as follows:

- SearchType: Archives, Obs. Plan, Obs. Request
- Sensor: Single sensor, Synchronized Obs.
- PRISM: PRISM, AVNIR-2, PALSAR
- Search Method: Rectangle, Point, Path/Frame, Scene ID, Downlink No.
- Lat./Lon./Path/Frame Convert: (22.49399, -158.254), (22.49399, -158.864), (16.88379, -158.254), (16.88379, -158.864)
- Format: Decimal Degree, Map Display (indicated by a red arrow)
- Obs. Day: 2006/11/24 - 2008/10/18 (highlighted with a red box)
- Searchable Term: 2006/01/24-2009/12/31
- Seasonal: Seasonal
- Items per page: 50
- Auto. display in Map:

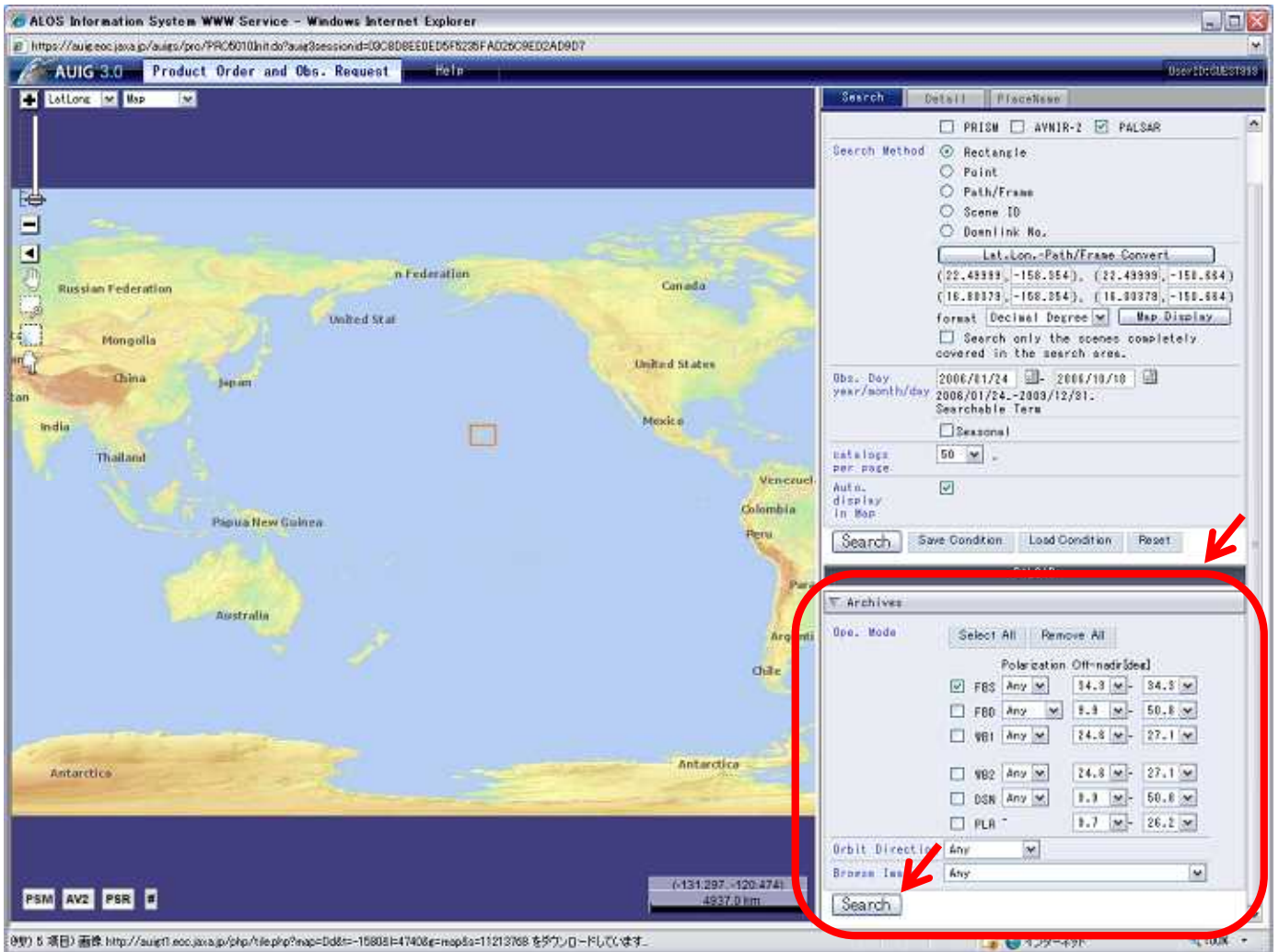
The Archives panel at the bottom right shows the following configuration:

- Open Mode: Select All, Remove All
- Polarization Off-nadir [Deg]:
 - FBS: Any, 9.3, 50.8
 - FBD: Any, 9.3, 50.8
 - WB1: Any, 24.8, 27.1
 - WB2: Any, 24.8, 27.1
 - DGN: Any, 9.3, 50.8
 - PLR: 9.7, 28.2
- Orbit Direction: Any

⑤ Set detail conditions

- Set conditions on “Ope. Mode”, “Polarization” and “Off-nadir” of “Archives Data” .
- Set condition on “Orbit Direction” .

⑥ Click [Search] button to perform search



Searching ...

ALOS Information System WWW Service - Windows Internet Explorer
 https://aui.eoc.jaxa.jp/aui/pro/PRO010.htm.do?auig3sessionid=0C8D8EEDE5F828FA026C9ED2AD9D7

AUIG 3.0 Product Order and Obs. Request Help

050720010E37918

Searching *

Items	Status	Result(scene(s))
Archives	Searching	0
Obs. Plan	Excluded	-
Obs. Request	Excluded	-

Beginning time of Search: 2008/11/04 15:07:42
 Confirming Status time of Searching: 2008/11/04 15:07:45

* The search may take a long time if there are many search results.
 * The maximum number of scenes that can be searched at one time is as follows:
 - Archives[1000]
 - Obs. Plan[1000]
 - Obs. Request[1000]

Cancel

Search Detail Placement

SearchType: Archives Obs. Plan Obs. Request

Sensor: Single sensor Synchronized Obs.

PRISM AVNIR-2 PALSAR

Search Method: Rectangle
 Point
 Path/Frame
 Scene ID
 Downlink No.

Lat./Lon./Path/Frame Convert
 (22.49339, -158.254), (22.49339, -158.864)
 (16.88379, -158.254), (16.88379, -158.864)
 Format: Decimal Degree Map Display

Search only the scenes completely covered in the search area.

Obs. Day: 2006/11/24 - 2008/10/18
 year/month/day: 2006/01/24 - 2009/12/31, Searchable Term
 Seasonal

results per page: 50
 Auto. display in Map:

Search Save Condition Load Condition Reset

PALSAR

Archives

Obs. Mode: Select All Remove All

Polarization Off-nadir [Deg]

<input checked="" type="checkbox"/> FB3	Any	14.3	34.3
<input type="checkbox"/> FB0	Any	9.3	50.8
<input type="checkbox"/> WB1	Any	14.8	27.1
<input type="checkbox"/> WB2	Any	14.8	27.1
<input type="checkbox"/> DGN	Any	9.3	50.8
<input type="checkbox"/> PLR		9.7	28.2

Orbit Direction: Any

ページが表示されました

インターネット 100%

(6) Download the search file (search file format is CSV).

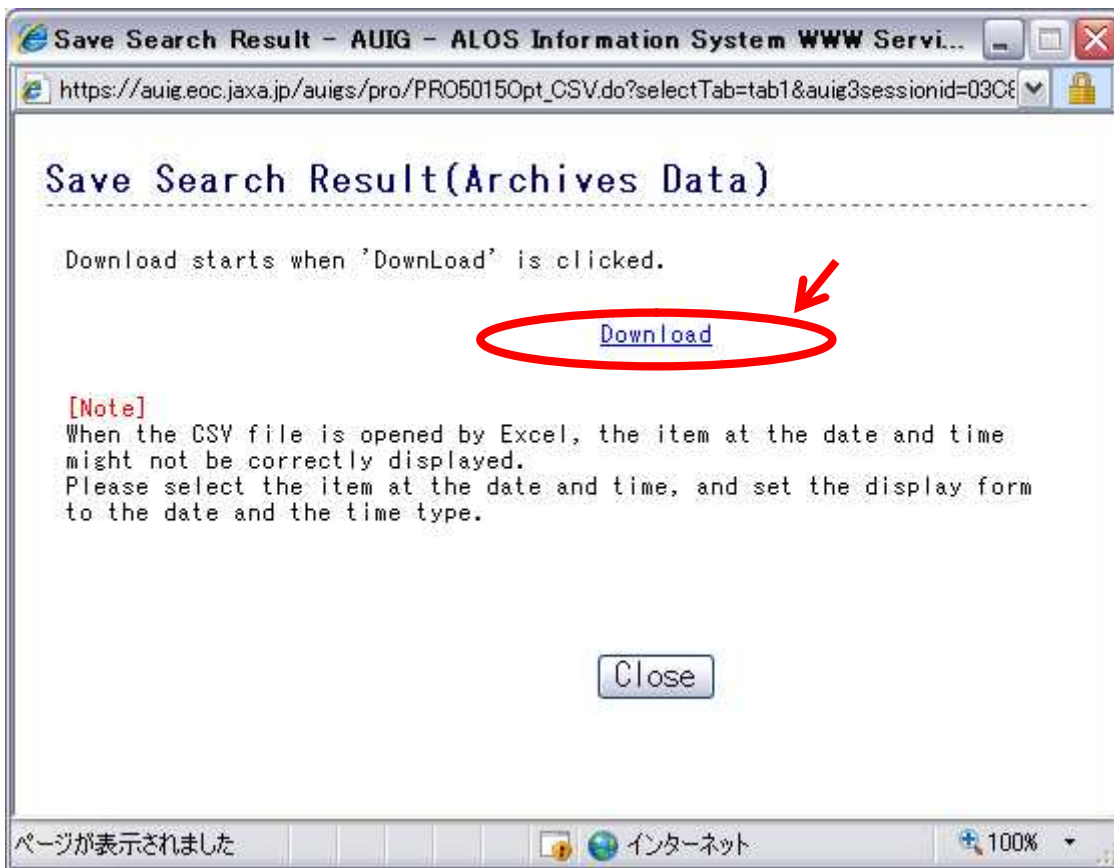
① Click on [Option] -> [CSV].

The screenshot shows the ALOS Information System WWW Service interface. The main map displays a satellite view of the Pacific Ocean region. The search results table is as follows:

Part	Sensor	Scene ID	Obs. Mode	Scene Center Day	Obs. Path No.	Center Frame No.	Cloud Cov.(Scene)	Rad
1	PALSAR	ALPSRP016800340	FBS	2006/05/19	292	340	-	-
2	PALSAR	ALPSRP016800350	FBS	2006/05/19	292	350	-	-
3	PALSAR	ALPSRP016800360	FBS	2006/05/19	292	360	-	-
4	PALSAR	ALPSRP016800370	FBS	2006/05/19	292	370	-	-
5	PALSAR	ALPSRP016800380	FBS	2006/05/19	292	380	-	-
6	PALSAR	ALPSRP016800390	FBS	2006/05/19	292	390	-	-
7	PALSAR	ALPSRP016800400	FBS	2006/05/19	292	400	-	-

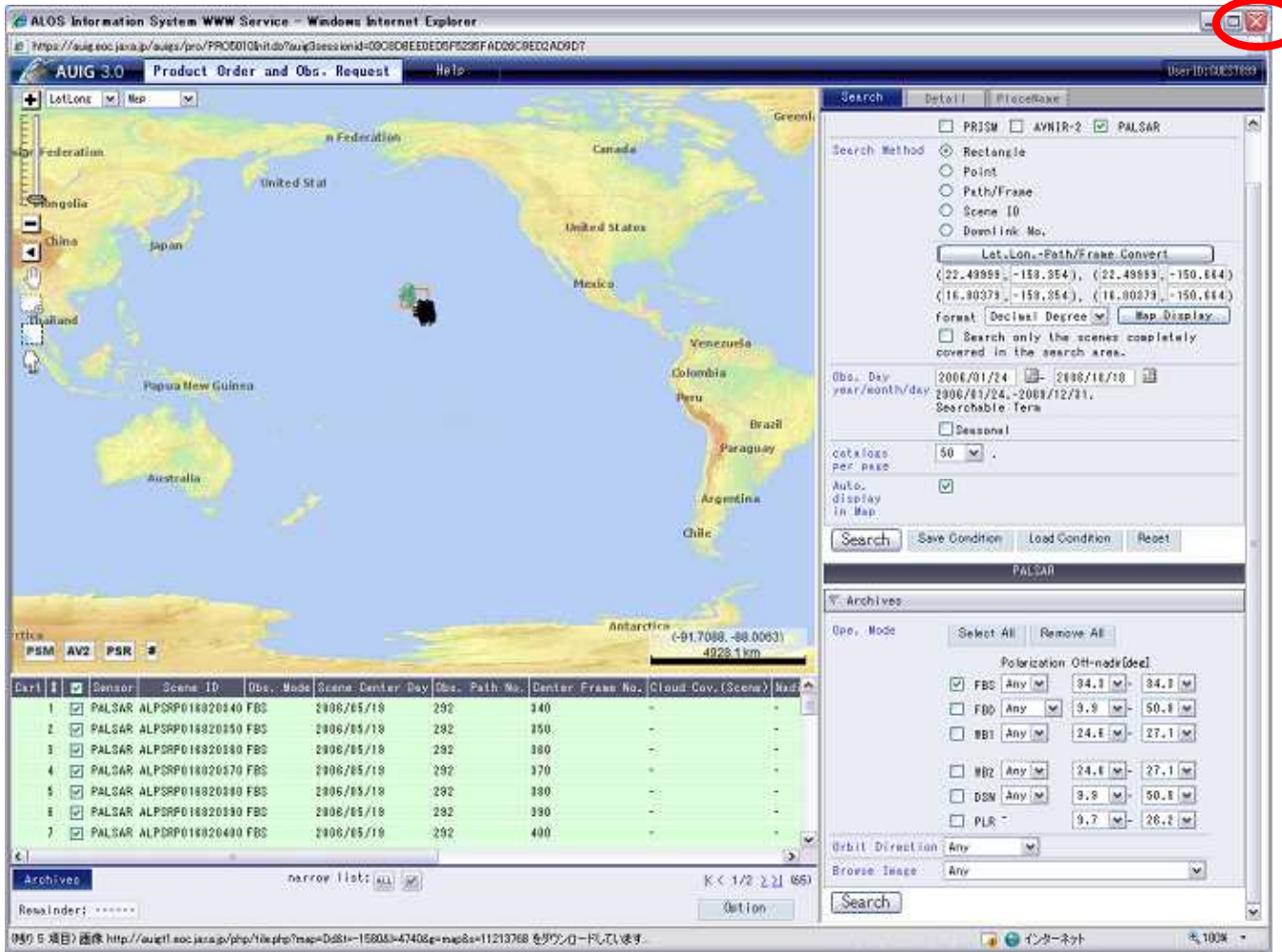
At the bottom of the interface, there are buttons for "Sort", "CSV", and "Option". A red arrow points to the "Option" button, and a red circle highlights the "CSV" and "Option" buttons.

② Click on [Download].



(7) Logout

① Close the AUIG window.



② Click on [Logout]

The screenshot shows the AUIG 3.0 website interface. The browser title is "AUIG - ALOS Information System WWW Service - Windows Internet Explorer". The address bar shows "https://auig.eoc.jaxa.jp/auigs/top/TOP1000Login.do". The page header includes "AUIG 3.0 ALOS User Interface Gateway" and "Japan Aerospace Exploration Agency".

The "Login Status" section on the left shows the user is logged in as "Guest User" on "2008/11/04 14:51". A red circle highlights the "Logout" button, with a red arrow pointing to it.

The "Services for Members" section includes links for "Order and Obs. Requests", "Tool Download", and "Information for Login User".

The "ALOS Information" section includes links for "What's ALOS?", "Urgent Observation data", "Observation Plan data", and "ALOS Orbit data".

The "About This Site" section includes links for "What's AUIG?", "AUIG Information", "Links", "Contact Us", and "Treatment of personal Information".

The "AUIG Information" section contains a list of announcements:

- [2008.10.28] System maintenance of AUIG : 1 November, 2008 00:00 ~ 06:30 (UT)
- [2008.10.28] System maintenance of AUIG : 29 October, 2008 02:45 ~ 04:45 (UT)
- [2008.10.22] [Upgraded Processing Software Release Information](#)
- [2008.10.15] System maintenance of AUIG : 15 October, 2008 03:00 ~ 04:00 (UT)
- [2008.10.09] [Restrictions of searching function \(updated\)](#)
- ...Past announcements

The "Notification of Emergency Observation Plan" section includes a table of data:

Observation Date	Observation Start Time	Observation Area	Disaster Type	Sensor
October 31, 2008	UT06:23	Balochistan, Pakistan	Earthquake	AVNIR-2(OBS)
October 20, 2008	UT10:28	Algeria	Flood	PALSAR (FBS)
October 17, 2008	UT02:50	St. Barthelemy Island and St. Martin Island	Hurricane	PALSAR (FBS)
October 10, 2008	UT10:15	Tebessa, Algeria	Flood	AVNIR-2(OBS)
September 23, 2008	UT05:17	Dhangadi District, Nepal	Flood	PALSAR (FBS)

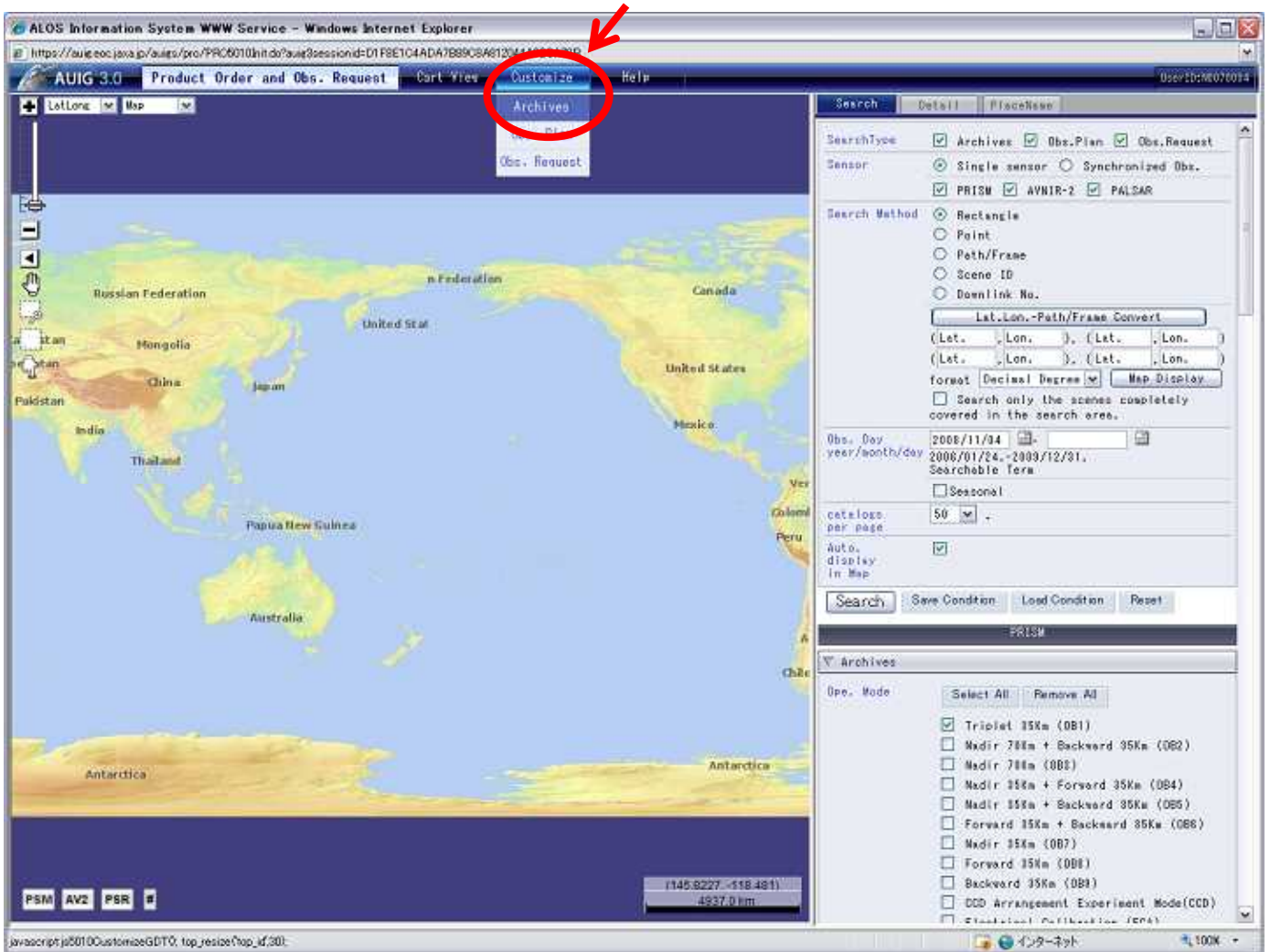
The "Important Notes Regarding ALOS Data" section includes:

- [1. Important Notification regarding ALOS data provision \(Updated Oct. 23, 2008\)](#)
- [2. Calibration Result of JAXA standard products \(As of March 28, 2007\)](#)

(8) Check the results of the search

If you login with your ID, please check the result of the search before searching.

① Click on [Customize] -> [Archives].



② Select items in “Display item”. You need the following items to use this software: Observation Path Number, Center Frame Number, Observation Mode, Table Number, Orbit Direction, Scene Center Day, Scene Center Time, Off-nadir angle, Scene ID, Scene Center Latitude, Scene Center Longitude, Yawsteering Flag, Orbit Data, Position Vector X Component, Position Vector Y Component, Position Vector Z Component, Velocity Vector X Component, Velocity Vector Y Component, Velocity Vector Z Component

You can select the necessary items in “Display item” by using either of the following methods. After selecting once, the selection will stay the same.

a. Method 1: Append 7 items to the Default Setting

(a) Select [Default Setting] under Pattern Selection, and click on [Load] button.

(b) Append the following 7 items to the “Display item” list by highlighting the item in the list on the left and then clicking on the “>>” symbol.

Orbit Data, Position Vector X Component, Position Vector Y Component, Position Vector Z Component, Velocity Vector X Component, Velocity Vector Y Component, Velocity Vector Z Component

b. Method 2: Use “Recommend Pattern 1”

(a) Select [Recommended Pattern 1] under Pattern Selection, and click on the [Load] button.

When “Display item” selection is complete, click on the [OK] button.

