



# **Land Remote Sensing Data Access Workshop**

## **Web-Enabled Landsat Data (WELD)**

### **Use Cases**

**March 13-14, 2012**

**USGS National Training Center, Building 53, Denver Federal Center, Denver, CO**

**U.S. Department of the Interior**

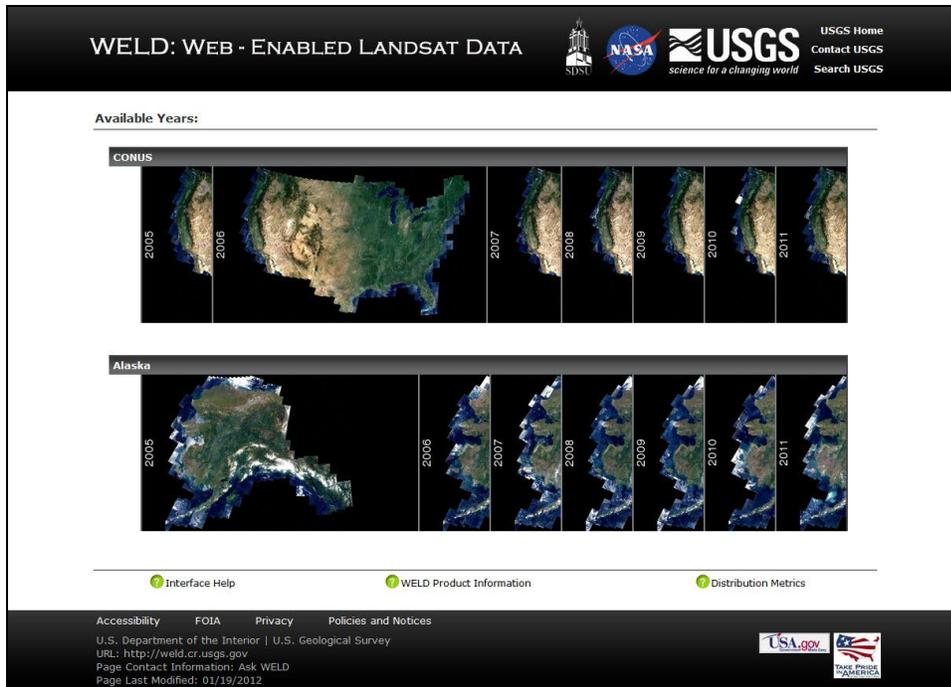
**U.S. Geological Survey**

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## WELD Use Case 1: Order Data for a One-Year Time Series with Selected Bands

1.1. Open a browser and navigate to the WELD site: [weld.cr.usgs.gov](http://weld.cr.usgs.gov)



1.2. Choose a general region

- CONUS or Alaska. For this example, select **CONUS**

1.3. Choose a year

- 2005 – 2010. For this example, select **2006**



#### 1.4. Choose a time period of interest

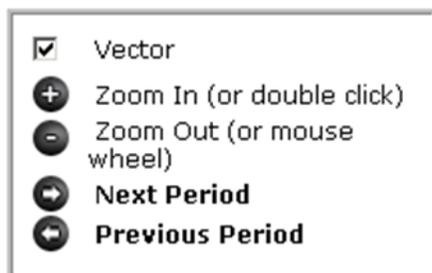
- Annual & Seasonal
  - Annual
  - Winter
  - Spring
  - Summer Autumn
- Monthly
  - December '05 – December '06 (*Dec. '05 is available in support of the global winter season months Dec – Jan – Feb*)
- Weekly
  - Week 1- 53 (*52 weeks + 1 day*)
- For this example, select **Annual**

#### 1.5. Select an area of interest

- Use the map navigation buttons located in the upper right portion of the screen, or the mouse shortcuts



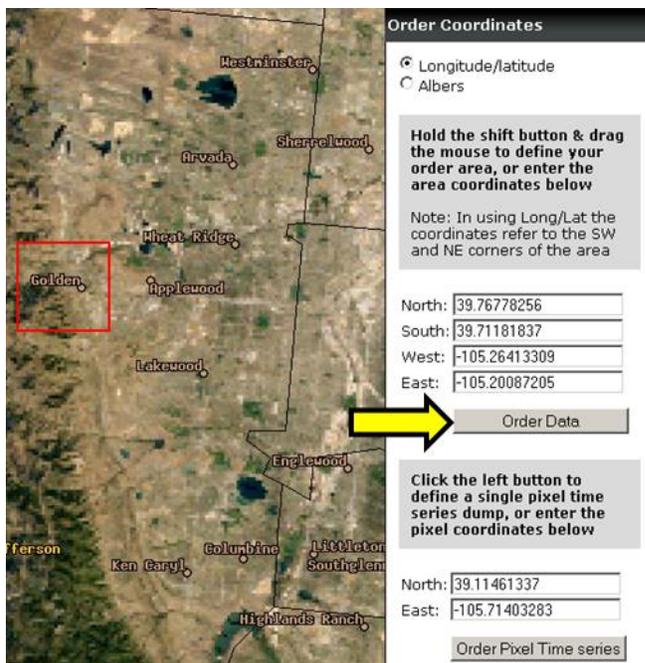
Note: The Vector check box enables a boundary and city name overlay.



- Once an area of the map has been zoomed-in, navigation is possible via dragging and dropping it until you reach your desired destination. To revert back to the full extent, click on the  button in the navigation pane.
- A single mouse click selects a point (pixel) of interest.
- Hold-down the Shift-key to select an area using a box.

### 1.6. Ordering the data requested

- Once a scene/pixel of interest is identified click the **Order Data** button
- Order Data – orders the data within the defined selection box
- Order Pixel Time series – orders a single pixel time series dump



### 1.7. Enter your email address



If you have not previously created an account with the email address entered, please complete the requested information on the Create Account page. Then click

Submit. (Note: Users who have previously placed orders will only need to enter their email address and password.)

**WELD: WEB - ENABLED LANDSAT DATA**    [USGS Home](#)  
[Contact USGS](#)  
[Search USGS](#)

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Create Account << Back

Country:

Affiliation:

Primary Use:

Secondary Use (Please select all that apply):

<input type="checkbox"/> Agriculture	<input checked="" type="checkbox"/> Forestry	<input type="checkbox"/> Natural Resources
<input type="checkbox"/> Climate Change	<input checked="" type="checkbox"/> Geology	<input type="checkbox"/> Planning
<input type="checkbox"/> Cryosphere	<input type="checkbox"/> Human Ecology	<input type="checkbox"/> Socioeconomics
<input type="checkbox"/> Ecosystem Studies	<input type="checkbox"/> Human Health	<input checked="" type="checkbox"/> Telecommunications
<input checked="" type="checkbox"/> Education	<input type="checkbox"/> Insurance	<input checked="" type="checkbox"/> Terrestrial Monitoring
<input checked="" type="checkbox"/> Emergency Response	<input type="checkbox"/> International Land Issues	<input checked="" type="checkbox"/> Visualization
<input checked="" type="checkbox"/> Energy	<input checked="" type="checkbox"/> Land Change	<input checked="" type="checkbox"/> Water
<input checked="" type="checkbox"/> Fire	<input checked="" type="checkbox"/> National Security	<input type="checkbox"/> Other

Password:

Re-type Password:

Note: password should be at least 9 characters - including at least one letter and one number

Type the code shown:



### 1.8. Select the desired time period and bands to be received

- Default product selection is Annual (December 20xx – November 20xx)
  - For this example, select **Monthly [January 2006 – December 2006]**
- Next, select the bands to be received
  - For this example, select **bands 1, 2, and 3** along with the **ACCA\_State**  
(Automated Cloud Cover Assessment State)
- Click **Place Order>>**

You have selected a CONUS region of 225 x 183 30m pixels

**You can order this region for the following WELD products:**

Annual [ December 2005 - November 2006 ]

Seasonal [ December 2005 - November 2006 ]

Monthly [ December 2005 - November 2006 ]

Monthly [ January 2006 - December 2006 ]

Weekly [ January 2006 - December 2006 ]

**and for the following WELD product bands:**

All  Band1\_TOA\_REF

Band2\_TOA\_REF

Band3\_TOA\_REF

Band4\_TOA\_REF

Band5\_TOA\_REF

Band7\_TOA\_REF

All  Band61\_TOA\_BT

Band62\_TOA\_BT

All  NDVI\_TOA

All  Day\_Of\_Year

Num\_Of\_Obs

Saturation\_Flag

All  DT\_Cloud\_State

ACCA\_State



The following message will briefly display when your order has been successfully submitted.

*“Your order for an area of CONUS Annual has been successfully placed. You will be redirected to the home page in a few seconds”*



**Order-Related Email notifications**

- WELD Product request confirmation
  - Provides a summary of what has been ordered

- Order Notification [Order Id: xxxxxxxx]
  - Provides a summary of the file ordered
  - Provides the FTP link (web url) to access the data (Data is available for 14 days to retrieve via FTP PULL)



### Sample Order Confirmation

**Subject :** WELD Product request confirmation [Order Id : 0TleAOYq]

Dear Landsat WELD user,

Your order for the following file(s) has been placed.

conus.annual.2006.lon-105.264133to-105.200872.lat39.711818to39.767783.v1.5

You will be sent another email when the data are ready.

Please note that the latitudinal and longitudinal range reflected in the above filename(s) may be slightly different as the coordinates of your ordered area will be rounded to the nearest pixel.

Thank you.



### Sample Order Notification

**Subject :** Order Notification [Order Id: 0TleAOYq]

Dear Landsat WELD user,

Your order for the following file(s) has been processed:

conus.annual.2006.lon-105.264333to-105.20155.lat39.712656to39.768131.doy002.doy358.v1.5

Your order is available at the following HTTP address:

<http://weld.cr.usgs.gov/orders/0TleAOYq/>

For more information on the WELD products please see <http://globalmonitoring.sdstate.edu/projects/weld/>

For help, please contact us at [sdsu.weld@sdstate.edu](mailto:sdsu.weld@sdstate.edu)

You have 14 days to retrieve this order before it is removed from our server.

Thank you,

WELD Team



Example of FTP Access page

- The annual link below is the default product ordered.
- The **monthly** link contains the January – December data as selected in Exercise 1.

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
<a href="#">annual/</a>	02-Dec-2011 13:05	-	
 <a href="#">monthly/</a>	02-Dec-2011 13:04	-	

This concludes WELD Use Case 1.

## WELD Use Case 2: Directly Download Data in HDF Format

- 2.1. Go to the WELD ftp directory at <ftp://weldftp.cr.usgs.gov> for direct access.
- 2.2. For this example, select the following folders to access data over Alaska for the Week of July 1-7, 2008:
  - ALASKA
  - 2008
  - weekly
  - week 27 (for July 1-7; doy 183-189)

### Index of <ftp://weldftp.cr.usgs.gov/ALASKA/2008/weekly/week27/>

 [Up to higher level directory](#)

Name	Size	Last Modified
 <a href="#">Alaska.week27.2008.h00v05.doy184to184.v1.5.hdf</a>	8070 KB	9/8/2010 12:00:00 AM
 <a href="#">Alaska.week27.2008.h00v07.doy186to186.v1.5.hdf</a>	12542 KB	9/8/2010 12:00:00 AM
 <a href="#">Alaska.week27.2008.h00v08.doy186to186.v1.5.hdf</a>	88014 KB	9/8/2010 12:00:00 AM
 <a href="#">Alaska.week27.2008.h00v09.doy186to186.v1.5.hdf</a>	11118 KB	9/8/2010 12:00:00 AM
 <a href="#">Alaska.week27.2008.h01v01.doy189to189.v1.5.hdf</a>	6962 KB	9/8/2010 12:00:00 AM
 <a href="#">Alaska.week27.2008.h01v02.doy189to189.v1.5.hdf</a>	53626 KB	9/8/2010 12:00:00 AM



The tiles listed in the Week 27 directory are identified with this naming convention: **<Region>.<Period>.<Year>.h<xx>v<yy>.doy<min DOY>to<max DOY>.v<Version Number>.hdf**

- If you are unsure what tile(s) cover your area of interest, WELD provides a tile calculator under their  [WELD Product Information](#) link located at the bottom of the graphical interface or with this link:

<http://globalmonitoring.sdstate.edu/projects/weld/>

- Then look under **Software Tools** for access to the following handy tools:
  - WELD HDF tile coordinate calculator (online version available)
    - <http://globalmonitoring.sdstate.edu/projects/weld/tilecalc.php>
    - converts lat/long to tile or Albers coordinates
    - Converts tile or Albers to lat/long
  - WELD Tile to GeoTIFF converter (download only – Linux/Unix)
    - This tool only supports the Linux or Unix operating systems.



For this example we selected an area near Anchorage, Alaska with the lat/long coordinates of (61, -148)

- Tile number is identified as h7, v8

**Title Calculator** << Back

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This tool allows you to find the WELD tile and pixel coordinates, or the Albers map coordinates of a specified geographic coordinate (*Forward Mapping*) or to find the geographic coordinates of a specified WELD pixel location (*Inverse Mapping*).

**Region:**  CONUS  Alaska

**Enter point for:**

Forward Mapping (Specify geographic coordinates in decimal degrees)

Longitude

Latitude

To tile coordinates (Note: Pixel coordinate 0.5, 0.5 refers to the center of the upper-left tile pixel.)

To Albers coordinates

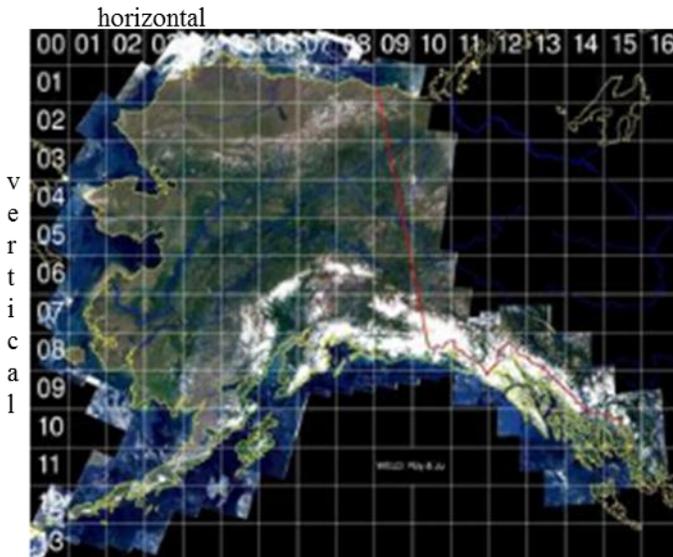
Inverse Mapping (Specify tile or Albers map coordinates)

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**Results:**

longitude -148.00000000 latitude 61.00000000 -> Alaska tile\_h 7 tile\_v 8 column 4156.36423 row 1187.14490

Or look under HDF Format Products for a visual tile map and descriptions for the fields in the naming convention.



2.3. As identified in the previous slides, we will access the file for h7, v8

- <ftp://weldftp.cr.usgs.gov/ALASKA/2008/weekly/week27/Alaska.week27.2008.h07v08.doy187to187.v1.5.hdf>

This concludes WELD Use Case 2.



The Web-enabled Landsat data (WELD) Project page,

<http://landsat.usgs.gov/WELD.php>,

provides access to the following areas:

- WELD documentation site
- WELD order interface (GeoTIFF access)
- WELD FTP site access (Direct download of tiles in HDF4 format)