

# GEON LiDAR Workflow (GLW) Users Guide

Joshua Coyan  
Christopher Crosby  
Ramón Arrowsmith  
School of Earth and Space Exploration  
Arizona State University

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<http://lidar.asu.edu>

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## About LiDAR

Light Distance and Ranging (LiDAR) or Airborne Laser Swath Mapping (ALSW) data has become readily available as both technologies have increased and the emergence of Geoinformatics has occurred. LiDAR data is collected by use of an aircraft that is outfitted with a kinematic GPS, an inertial measurement unit, and a pulsed laser ranging system. The combination of these three mechanism work in unison to produce billions of measurement of x, y, and z coordinates of the ground surface and vegetation cover. This data is referred to as the 'Point Cloud' (Crosby, 2006).

Due to the potentially large size of such data sets it can be difficult to both make the data available to others and to model such large data sets in a meaningful way. The GEON LiDAR Workflow (GLW) provides a window to a user-defined selection of raw data that may be modeled into unique, user-defined DEMs or visualizations. The GLW can do this by democratizing the data through multiple super computers. This approach provides a useful avenue to share data and to model cyber infrastructure and information technology. A generalized aerial LiDAR acquisition and processing workflow consists of the following four steps: 1) Data acquisition, 2) processing of laser ranging, GPS and IMU data to generate LiDAR point cloud, 3) point cloud classification and 4) generation, manipulation, and delivery of digital ground and vegetation models (Crosby, 2006)

For more information about LiDAR refer to:

Crosby, Christopher J. A Geoinformatics Approach to LiDAR Data Distribution and Processing with Applications to Geomorphology. Master's Thesis, Arizona State University, August 2006.

<http://activetectonics.la.asu.edu/GEONatASU/index.htm>

<http://lidar.asu.edu>

# Getting Started - Register for a GEON and LiDAR account and log in

This portion of the manual will guide you through setting up an account for GEON, setting up an account for LiDAR, and will briefly discuss some options you may come across. In order to use the GEON LiDAR you will need to register with both GEON and register with LiDAR.

## Registering with GEON

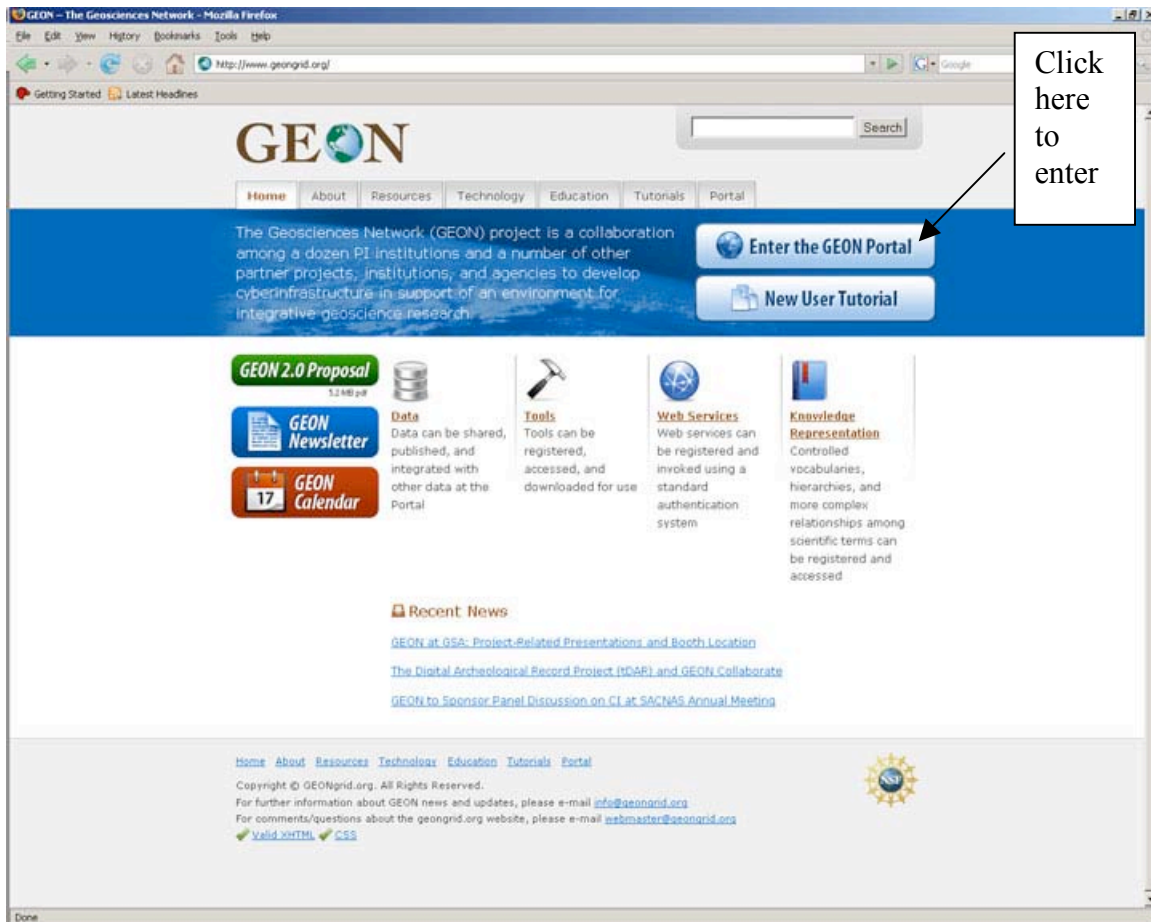
### Step 1

In the address bar of your browser type in- **www.geongrid.org**

This is the intro page for GEON. This is a good location to learn more about GEON and LiDAR by clicking on the About, Research, Resources, Educational, and Tutorials tabs.

### Step 2

Click on the **Portal** Tab shown below. This tab will take you to the login screen.



### Step 3

The portal grants access to the GEON resources and GEON tools. The portal also provides a private workstation where you can queue jobs and return to access them again and again. To learn more about the GEON portal click on the **Portal Info** Tab shown below.

In order to have access to the GEONgrid each user must register by clicking the **Request an Account** link shown below. If you already have an account simply type your username and password into the appropriate box to gain access.

The screenshot shows the GEON Portal home page. At the top left is the GEON Portal logo. Below it are navigation tabs: Portal Status, Portal Info, and Information Web site. The main content area is divided into two columns. The left column contains 'Portal Statistics' with a table of registered users and resources, and a list of 'Most Popular Datasets'. The right column contains a 'Login' form with fields for Username and Password, a 'Remember my login' checkbox, and a 'Login' button. Below the login form are links for 'Forgot your password?' and 'Request an Account', and a 'Guest Login' button. A 'What's New!' section is also present. Two callout boxes with arrows point to the 'Portal Info' tab and the 'Request an Account' link.

Click here for Portal Information

Click here if you have not requested an account and need to register.

Registered Users:			
1154			
Registered Resources:			
5112			
	Public	Private	
Data	4401	39	
Services	637	3	
Tools	1	0	
Ontologies	23	8	
Total	5062	50	5112

**Most Popular Datasets:**

- Arizona Geology Map
- Colorado Geology Map
- 1/3 NED Hawaii Shaded Relief
- Bedrock Geologic Map of the Piedmont of Delaware
- Idaho Geology Map

**Login**

Username(Email)

Password

☐ Remember my login

[Forgot your password?](#) [Request an Account](#)

**What's New!**

- New Contributor Approval system in place**  
The portal now requires users to be pre-approved as "Contributors" before they can register resources into the system.
- Google Maps integrated into GEON Search**  
Advanced Search now uses Google Maps interface for specifying spatial search conditions.
- Creation of group accounts**

### Step 4

This screen requires you to enter information about yourself. Notice, you must enter your first and last name and email address, these fields are required. You must enter a valid email address in order to receive further instructions to login. When you have entered the appropriate information click **Continue**.

The screenshot shows the 'Request an Account' form on the GEON Portal. The form is titled 'Request an Account' and has a sub-header 'Please enter the following information. "\*" fields are required.' The form contains several input fields: \*First name (George), \*Last name (Washington), \*Email address (1stpres@pres.com), Organization (United States Gov), Work phone (555-111-0001), and Fax (555-111-0002). Below these fields is a question 'Do you want to be a contributor for registering data resources into GEON?' with radio buttons for Yes and No. There is a text area for 'Briefly describe your dataset information such as data type, file size, abstract, and so on:'. Below this is another question 'Do you want to add your email to a mailing list in GEON?' with radio buttons for Yes and No. A 'Continue' button is at the bottom of the form. To the right of the form is a 'Login' section with fields for Username and Password, a 'Remember my login' checkbox, and a 'Login' button. Below the login section are links for 'Forgot your password?' and 'Request an Account', and a 'Guest Login' button.

**Request an Account**

Please enter the following information. "\*" fields are required.

\*First name

\*Last name

\*Email address

Organization

Work phone

Fax

Do you want to be a contributor for registering data resources into GEON?

☒ Yes ☐ No

Briefly describe your dataset information such as data type, file size, abstract, and so on:

Do you want to add your email to a mailing list in GEON?

☒ Yes ☐ No

**Login**

Username(Email)

Password

☐ Remember my login

[Forgot your password?](#) [Request an Account](#)

## Step 5

A confirmation screen will appear with the information you entered. Take a moment to review your information and see that it is correct, if it is correct click **Submit** if it is not correct click **Edit Request**, which will return you to the previous screen.

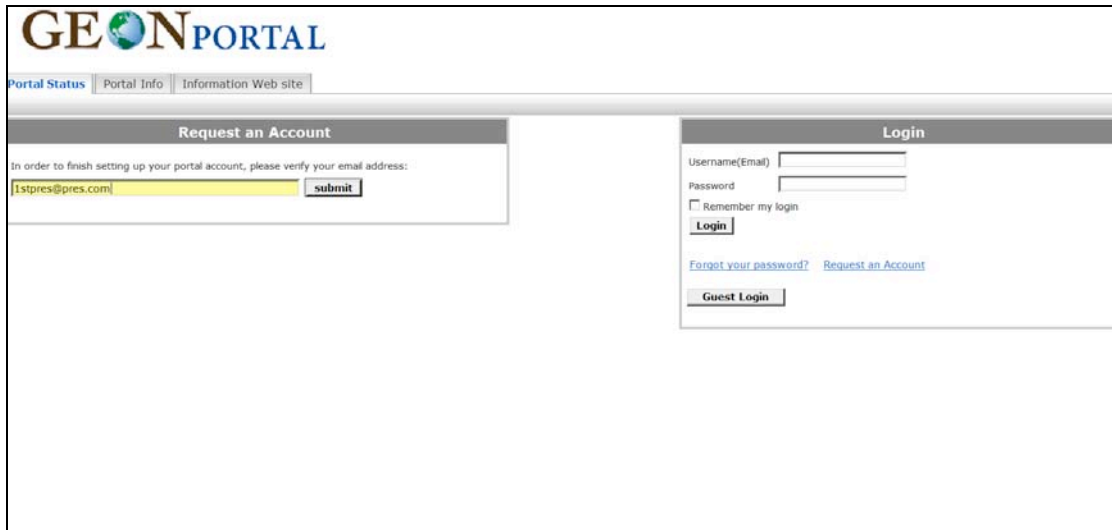
The screenshot shows the GEONPORTAL website with a navigation bar containing 'Portal Status', 'Portal Info', and 'Information Web site'. The main content area is divided into two panels. The left panel, titled 'Request an Account', contains the following information: 'Please confirm the following information:', 'First name: George', 'Last name: Washington', 'Email address: 1stp@pres.com', 'Organization: United States Gov', 'Work phone: 555-111-0001', 'Fax: 555-111-0002', 'Contributor: Yes', 'Briefly describe your dataset information such as data type, file size, abstract, and so on:' (with a text area below), and 'Email subscriber: Yes'. At the bottom of this panel are 'Edit Request' and 'Submit' buttons. The right panel, titled 'Login', contains fields for 'Username(Email)' and 'Password', a 'Remember my login' checkbox, a 'Login' button, and links for 'Forgot your password?' and 'Request an Account'. A 'Guest Login' button is located at the bottom of the right panel.

When you have completed your request, a screen will appear like the one shown below. You will receive an email from **register@geongrid.org** with further instructions. You can close this window in your browser.

The screenshot shows the same GEONPORTAL website. The 'Request an Account' panel now displays the message: 'Account request is submitted to GEON. Please check your email for instructions on completing your account setup.' The 'Login' panel remains unchanged from the previous screenshot.

## Step 6

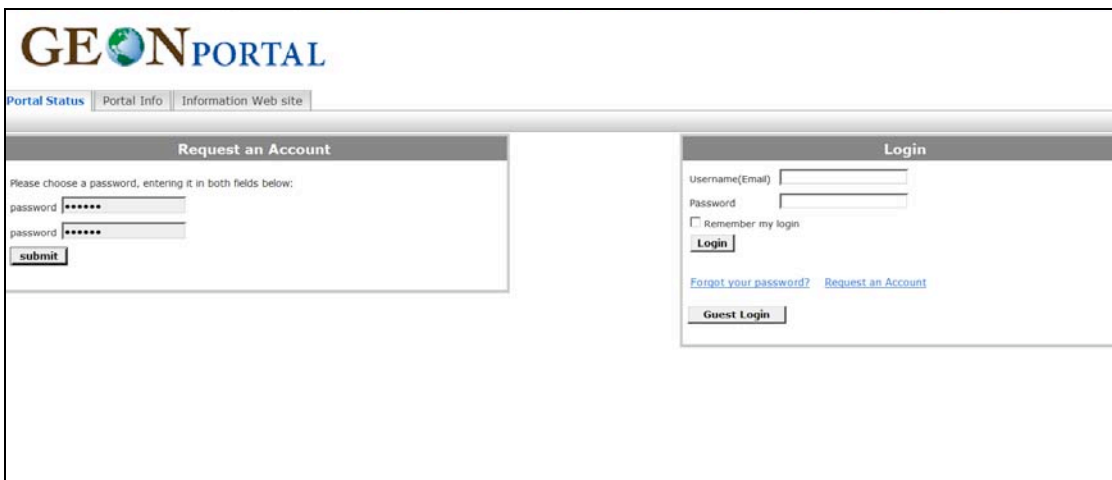
Go to your email account and open the email sent from **register@geongrid.org**. Click on the link in this email or copy and paste the address into the address bar of your browser. This should take you to a page similar to the one shown below. Re-enter your email address.



The screenshot shows the GEONPORTAL website with a navigation bar containing "Portal Status", "Portal Info", and "Information Web site". The main content area is divided into two panels. The left panel, titled "Request an Account", contains the text "In order to finish setting up your portal account, please verify your email address:" followed by a text input field containing "jstpres@pres.com" and a "submit" button. The right panel, titled "Login", contains fields for "Username(Email)" and "Password", a checkbox for "Remember my login", a "Login" button, and a "Guest Login" button. Below the login fields are links for "Forgot your password?" and "Request an Account".

## Step 7

After you have entered your email address a new screen like the one shown below will appear. You will need to choose a password and enter it into the appropriate fields, click **Submit**. You will receive a message indicating that your account is awaiting administrative approval. You can now log in and use the GEONgrid.



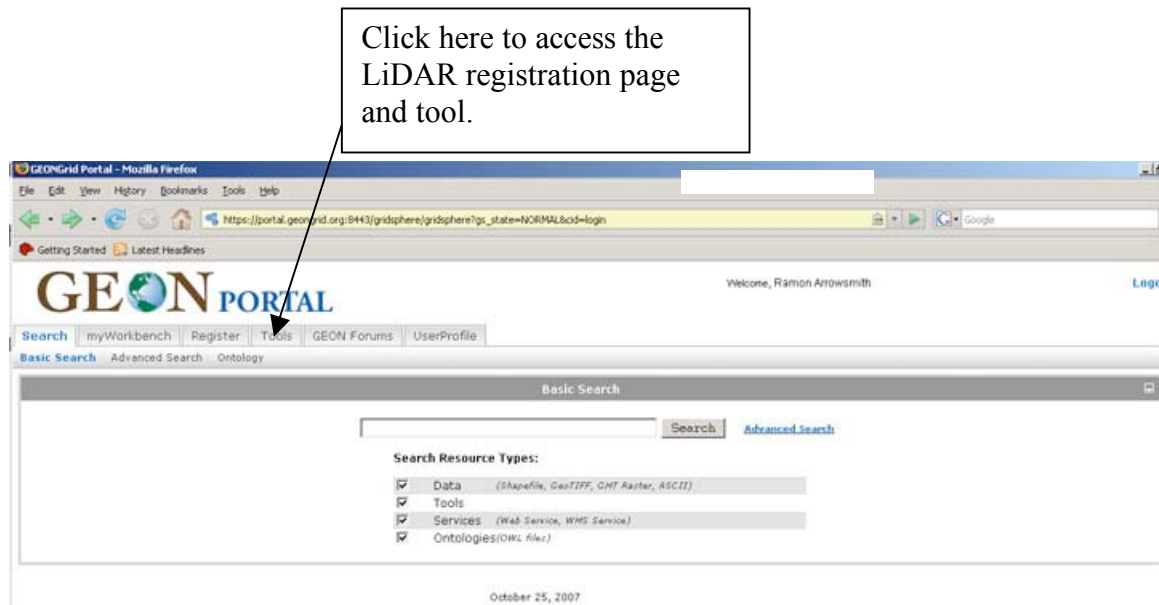
The screenshot shows the same GEONPORTAL website. The "Request an Account" panel now displays the text "Please choose a password, entering it in both fields below:" followed by two "password" input fields, both containing "\*\*\*\*\*", and a "submit" button. The "Login" panel remains unchanged from the previous step.

To login, type your username and password into the appropriate fields on the right hand side of the screen and click **Login**. You may wish to have your username and password remembered, if so check the box.

## Accessing the GEON LiDAR Workflow

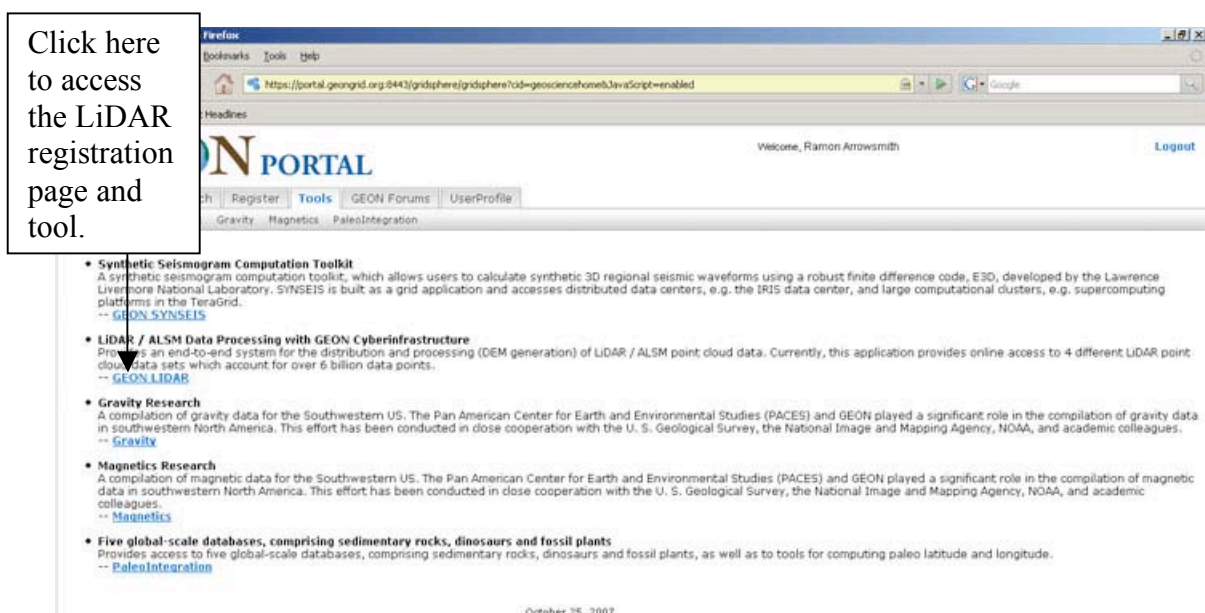
### Step 8

Once you have logged into GEON portal, you should see a screen like the one shown below. To access the LiDAR data set, click on the **Tools** tab shown below.



### Step 9

This will take you to a screen like the one shown below. This screen is a menu of GEON tools available for use; for more information about each tool click on the appropriate link. To access the LiDAR Workflow, click on the **GEON LiDAR** link shown below.





## Step 10

It is now possible to use the LiDAR workflow trial version. To use the trial version, which limits the user to 5 million points per query, see the Data and Tutorials sections of this user's manual. In order to register for an account that will allow 50 million points per query it is necessary to fill out the form shown below (red box), when you are finished click **Submit**. Note that we have this second layer of authentication because we are using US Teragrid compute resources (<http://www.teragrid.org>). We take advantage of the GEON portal role-based authentication capabilities to manage resource use accordingly. Give this a try and if you need more, contact the GLW development team ([glw@geongrid.org](mailto:glw@geongrid.org)) and we can up your point limit.

**GEON**PORTAL

[Logout](#)

GEONsearchmyGEONContributeGEONtoolsUserProfileDocs/Help

HomeSYNSEISLIDARAtype WorkflowGravityMagneticsPaleointegration

**Lidar Application**

**Lidar Datasets**  
NSAF  
Mt. Rainier  
ECSZ  
B4

**LIDAR Utilities**  
My LIDAR Jobs  
My Jobs Submission Info

LIDAR Main Page

**LiDAR / ALSM Data Processing with GEON Cyberinfrastructure**

Welcome to the GEON LiDAR / ALSM processing page. This site is a proof of concept implementation of an end-to-end system for the distribution and processing (DEM generation) of LiDAR / ALSM point cloud data. This tool capitalizes on cyberinfrastructure developed by GEON as part of its effort to develop information technology for the Geosciences. The goal of this project is to provide a web-based toolset that can democratize access to these rich and computationally challenging data sets. Please note that these pages are actively under development and therefore may experience outages and poor performance. If you have problems or suggestions for improvement, we encourage you to contact us.

**Current Interface is not compatible with Internet Explorer 7, We are working on a solution for it.**

**Please select a data set:**  
[Northern San Andreas Fault \(NSAF\), CA](#)  
[West Rainier Seismic Zone, WA](#)  
[Fault systems in the Eastern California Shear Zone \(ECSZ\)](#)  
[B4: Southern San Andreas Fault](#)

Metadata documents on these data sets can be found [here](#).

\*Web browser compatibility for Macintosh users: Some aspects of the GEON LiDAR processing pages may not be compatible with Apple's Safari web browser. We recommend Firefox for browsing these pages.

**You currently have limited access to the GEON LiDAR Workflow.**

**Request full access to run LiDAR jobs:**

First Name:

Last Name:

Institution:

Email:

Interest in the LiDAR GEON Workflow (up to 1000 characters):  

Please write comments here

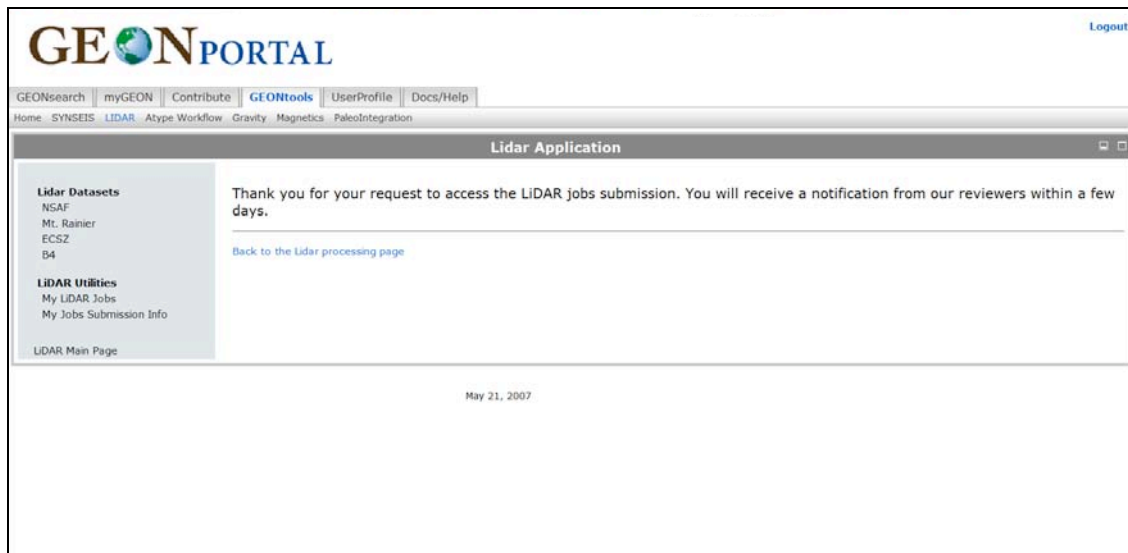
Information about us and the projects we are involved with

[Geoinformatics at ASU](#)  
[ASU Active Tectonics Research Group](#)  
[Active Tectonics Group LiDAR / ALSM research pages](#)  
[The GEON Project](#)

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Once you have completed the form you should see a screen that looks like the one shown below. Expect to receive an email from the GLW reviewers within 24 hours. While you are waiting, feel free to run some jobs and get used to the GLW.



The next time you return to the LiDAR page the registration form will not be a part of the screen and you can now directly access the data sets. For information on how to access the data sets see the Data and Tutorial sections of this User's Manual.

## (Optional) Customize your portal

### Step 11

From the GEON portal shown below, click the **UserProfile** tab. In this tab you can edit your account information, change your password, and customize your workstation. To add a LiDAR Workflow tab to your workstation click the box next to LiDAR as shown below. Then click **Save**.

Click here to add a LiDAR tab to your workstation.

**GEONPORTAL**

GEONsearch | myGEON | Contribute | GEONtools | **UserProfile** | Docs/Help

User Settings

**User Profile Manager Portlet**

**Edit Settings for**

Last Login Time: Monday, May 21, 2007 4:28:37 PM PDT

User Name:

Full Name:

Email Address:

Organization:

**Save**

**Update password**

Enter original password:

Password:

Confirm password:

**Save**

**Customize registered portlets below in your layout**

Groups:	Group Description:	Role in Group
<input type="checkbox"/> gridportlets	Grid Portlets	User
<input checked="" type="checkbox"/> gama	admin group for grid accounts	User
<input type="checkbox"/> Paleointegration	Paleointegration Project	User
<input type="checkbox"/> LiDAR	LiDAR Group	User
<input type="checkbox"/> SYNSEIS	SYNSEIS portlet	User
<input type="checkbox"/> Classroom Group Account	Classroom Group Account	User
<input checked="" type="checkbox"/> gridsphere	Core GridSphere Group	User

**Save**

You should notice that a tab entitles LiDAR is now be located on the top of the screen as shown below.

New LiDAR workstation Tab

**GEONPORTAL**

GEONsearch | myGEON | Contribute | GEONtools | **UserProfile** | Docs/Help | **LiDAR**

User Settings

**User Profile Manager Portlet**

**Edit Settings for**

Last Login Time: Monday, May 21, 2007 4:28:37 PM PDT

User Name:

Full Name:

Email Address:

Organization:

**Save**

**Update password**

Enter original password:

Password:

Confirm password:

**Save**

**Customize registered portlets below in your layout**

Groups:	Group Description:	Role in Group
<input type="checkbox"/> gridportlets	Grid Portlets	User
<input checked="" type="checkbox"/> gama	admin group for grid accounts	User
<input type="checkbox"/> Paleointegration	Paleointegration Project	User
<input checked="" type="checkbox"/> LiDAR	LiDAR Group	User
<input type="checkbox"/> SYNSEIS	SYNSEIS portlet	User
<input type="checkbox"/> Classroom Group Account	Classroom Group Account	User
<input checked="" type="checkbox"/> gridsphere	Core GridSphere Group	User

**Save**

From the GEON portal, you can now click on the LiDAR tab to come directly to the LiDAR portal.

## **Information about the datasets currently available in the GEON LiDAR Workflow**

### ***Northern San Andreas Fault (NSAF), CA Data Set***

The Northern San Andreas Fault data set features data along the Northern San Andreas fault and associated marine terraces in coastal Sonoma and Mendocino counties, California. This data set covers approximately 418 square kilometers and includes approximately 1.2 billion data points. Point density is 1.2 points per square meter.

This airborne laser swath mapping data was acquired in support of collaborative research by members of the U.S. Geological Survey (USGS) and the National Aeronautics and Space Administration (NASA), with funding provided by NASA's Earth Surface and Interior Focus Area. The data were acquired and processed by TerraPoint, LLC under contract to NASA's Stennis Space Center. The data are in the public domain with no restrictions on their use.

**Projection:** State Plane

**Zone for San Andreas:** California II

**Horizontal units:** US Survey Feet (= 1200/3937 meters ~ 0.30480061 meters)

**Elevation units:** International Feet (= 0.3048 meters)

**Spheroid:** GRS80

**Horizontal Datum:** NAD83, 1991 Adjustment

**Vertical Datum:** NAVD88

Orthometric elevations are derived from ellipsoid elevations using the National Geodetic Survey geoid model Geoid99

([https://portal.geongrid.org:8443/gridsphere/gridsphere?gs\\_action=lidarNSAF&cid=215](https://portal.geongrid.org:8443/gridsphere/gridsphere?gs_action=lidarNSAF&cid=215))

### ***Western Rainier Seismic Zone, WA Data Set***

The Western Rainier Seismic Zone data set features data from the western Rainier seismic zone, adjacent to Mt. Rainier, in Pierce County, WA. This data set covers approximately 325 square kilometers and includes approximately a billion data points. Point density is approximately 2 points per square meter. For more information on these data please go to: [http://gsa.confex.com/gsa/2003AM/finalprogram/abstract\\_67004.htm](http://gsa.confex.com/gsa/2003AM/finalprogram/abstract_67004.htm).

This airborne laser swath mapping data was acquired in support of collaborative research by members of the U.S. Geological Survey (USGS) and the National Aeronautics and Space Administration (NASA), with funding provided by NASA's Earth Surface and Interior Focus Area. The data were acquired and processed by TerraPoint, LLC under contract to NASA's Stennis Space Center. The data are in the public domain with no restrictions on their use.

**Projection:** State Plane  
**Zone:** Washington North  
**Horizontal units:** US Survey Feet (= 1200/3937 meters ~ 0.30480061 meters)  
**Elevation units:** International Feet (= 0.3048 meters)  
**Spheroid:** GRS80  
**Horizontal Datum:** NAD83, 1991 Adjustment  
**Vertical Datum:** NAVD88

Orthometric elevations are derived from ellipsoid elevations using the National Geodetic Survey geoid model Geoid99

([https://portal.geongrid.org:8443/gridsphere/gridsphere?gs\\_action=lidarRainier&cid=215](https://portal.geongrid.org:8443/gridsphere/gridsphere?gs_action=lidarRainier&cid=215))

## ***Fault Systems in the Eastern California Shear Zone (ECSZ)***



The Fault Systems in the Eastern California Shear Zone (ECSZ) contains data acquired by the [National Center for Airborne Laser Mapping \(NCALM\)](https://portal.geongrid.org:8443/gridsphere/gridsphere?gs_action=lidarECSZ&cid=215) on behalf of Dr. Mike Oskin (UNC) and Dr. Lesley Perg (U of M)) as part of their NSF project on fault systems in the Eastern California Shear Zone. They have kindly agreed to make these data available to the research community through the GEON LiDAR Workflow.

**Grid Coordinate System Name:** Universal Transverse Mercator  
**UTM Zone Number:** 11 N  
**Transverse Mercator Projection**  
**Scale Factor at Central Meridian:** 0.999600  
**Longitude of Central Meridian:** -117.000000  
**Latitude of Projection Origin:** 0.000000  
**False Easting:** 500000.000000  
**False Northing:** 0.000000  
**Planar Coordinate Information:**  
**Planar Distance Units:** meters  
**Geodetic Model**  
**Horizontal Datum Name:** D\_WGS\_1984  
**Ellipsoid Name:** WGS\_1984

([https://portal.geongrid.org:8443/gridsphere/gridsphere?gs\\_action=lidarECSZ&cid=215](https://portal.geongrid.org:8443/gridsphere/gridsphere?gs_action=lidarECSZ&cid=215))

## ***B4: Southern San Andreas Fault***



# B4

The B4: Southern San Andreas Fault Data Set offers access to LiDAR point cloud data of the southern San Andreas Fault acquired by the [National Center for Airborne Laser Mapping \(NCALM\)](#) through funding from the National Science Foundation (NSF) as part of the "B4 Project". The B4 Project has kindly agreed to make these data available to the research community through the GEON LiDAR Workflow. If you utilize the B4 data for talks, posters or publications, we ask that you acknowledge the B4 project.

**Grid Coordinate System Name:** Universal Transverse Mercator

**UTM Zone Number:** 11 N

**Transverse Mercator Projection**

**Scale Factor at Central Meridian:** 0.999600

**Longitude of Central Meridian:** -117.000000

**Latitude of Projection Origin:** 0.000000

**False Easting:** 500000.000000

**False Northing:** 0.000000

**Planar Coordinate Information:**

**Planar Distance Units:** meters

**Geodetic Model**

**Horizontal Datum Name:** D\_WGS\_1984

**Ellipsoid Name:** WGS\_1984

([https://portal.geongrid.org:8443/gridsphere/gridsphere?gs\\_action=lidarB4&cid=215](https://portal.geongrid.org:8443/gridsphere/gridsphere?gs_action=lidarB4&cid=215))

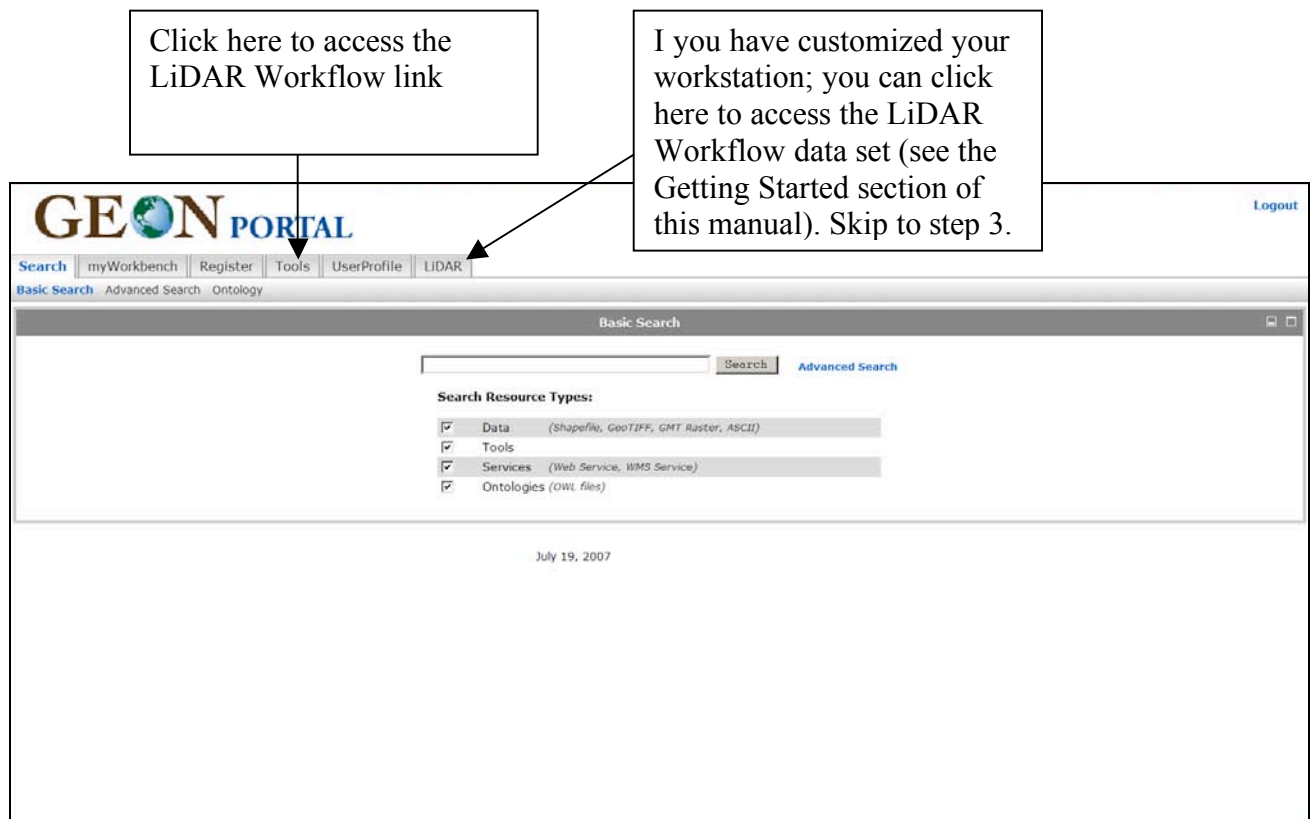
# Dataset tutorials—How to process and download data in the GEON LiDAR Workflow

## *Navigating to the different datasets*

Note: Current Interface with the LiDAR/ALSM Data Processing is not compatible with Internet explorer 7. We are working on a solution. You may need to uninstall Internet Explorer 7, see Microsoft Help for more information.

### Step 1

After you have requested an account and logged into the GEON Portal (if you have not completed these steps see the **Getting Started** section of this manual).



## Step 2

Click on the **GEON LiDAR** link below.


Click here  
to access  
the LiDAR  
data set.

The screenshot shows the GEON PORTAL website. At the top is the 'GEON PORTAL' logo and a 'Logout' link. Below the logo is a navigation bar with links: Search, myWorkbench, Register, Tools, UserProfile, and LiDAR. Underneath is a secondary navigation bar with links: Home, SYNSEIS, LiDAR, Gravity, Magnetism, and Paleointegration. The main content area lists several resources:

- Synthetic Seismogram Computation Toolkit**: A synthetic seismogram computation toolkit, which allows users to calculate synthetic 3D regional seismic waveforms using a robust finite difference code, E3D, developed by the Lawrence Livermore National Laboratory. SYNSEIS is built as a grid application and accesses distributed data centers, e.g. the IRIS data center, and large computational clusters, e.g. supercomputing platforms in the TeraGrid.  
-- [GEON SYNSEIS](#)
- LiDAR / ALSM Data Processing with GEON Cyberinfrastructure**: Provides an end-to-end system for the distribution and processing (DEM generation) of LiDAR / ALSM point cloud data. Currently, this application provides online access to 4 different LiDAR point cloud data sets which account for over 6 billion data points.  
-- [GEON LiDAR](#)
- Gravity Research**: A compilation of gravity data for the Southwestern US. The Pan American Center for Earth and Environmental Studies (PACES) and GEON played a significant role in the compilation of gravity data in southwestern North America. This effort has been conducted in close cooperation with the U. S. Geological Survey, the National Image and Mapping Agency, NOAA, and academic colleagues.  
-- [Gravity](#)
- Magnetism Research**: A compilation of magnetic data for the Southwestern US. The Pan American Center for Earth and Environmental Studies (PACES) and GEON played a significant role in the compilation of magnetic data in southwestern North America. This effort has been conducted in close cooperation with the U. S. Geological Survey, the National Image and Mapping Agency, NOAA, and academic colleagues.  
-- [Magnetism](#)
- Five global-scale databases, comprising sedimentary rocks, dinosaurs and fossil plants**: Provides access to five global-scale databases, comprising sedimentary rocks, dinosaurs and fossil plants, as well as to tools for computing paleo latitude and longitude.  
-- [Paleointegration](#)

## Step 3

This page contains links to the four data sets offered by the LiDAR Workflow.

When you see the symbol  you can click on them to receive more information concerning the topic that the symbol is in front of.

Click here  
to access  
the NSAF  
data set.

Click here  
to access  
the **West  
Rainier**  
data set.

Click here  
to access  
the **ECSZ**  
data set.

Click here  
to access  
the **B4  
Southern  
SAF** data  
set.

The screenshot shows the 'Lidar Application' page. At the top is the 'Lidar Application' header. Below it is the title 'LiDAR / ALSM Data Processing with GEON Cyberinfrastructure'. The main text reads: 'Welcome to the GEON LiDAR / ALSM processing page. This site is a proof of concept implementation of an end-to-end system for the distribution and processing (DEM generation) of LiDAR / ALSM point cloud data. This tool capitalizes on cyberinfrastructure developed by GEON as part of its effort to develop information technology for the Geosciences. The goal of this project is to provide a web-based toolset that can democratize access to these rich and computationally challenging data sets. Please note that these pages are actively under development and therefore may experience outages and poor performance. If you have problems or suggestions for improvement, we encourage you to contact us.'

Below the text is a 'Lidar Status Updates' section. It contains the heading 'System Normal' and the text 'All systems are currently functioning as normal.' followed by 'Status updated on Sat Apr 21 14:00:00 PDT 2007'.

At the bottom, there is a section titled 'Please select a data set:' with four links, each preceded by a question mark icon:

- [? Northern San Andreas Fault \(NSAF\), CA](#)
- [? West Rainier Seismic Zone, WA](#)
- [? Fault systems in the Eastern California Shear Zone \(ECSZ\)](#)
- [? B4: Southern San Andreas Fault](#)



## How to download data from the Northern San Andreas Fault, CA or West Rainier Seismic Zon data set

### Step 4

## LiDAR / ALSM Data Processing with GEON Cyberinfrastructure

Click here to see the area that contains downloadable data.

Click here for  
specifications  
about the  
NASF data set.



**Map Layers**

- ☒ towns
- ☒ faults
- ☒ roads
- ☒ dataset extent
- ☒ water
- ☒ DEM
- ☒ landsat image

## Step 5 Selecting the Data

This page contains the spatial selection tool for the LiDAR NSAF data set. There are two ways to select the data you want. The first is you can use the **Select area to zoom** (the magnifying glass) tool to zoom to the area you are interested in and then use the **Select tool** to select the data points.

**Interactive spatial selection of LiDAR data**

The stippled pattern on the map is the area that contains data.

Click here to add/ remove towns.

Click here to add/ remove faults.

Click here to add/ remove roads.

Click here to add/ remove the data extent.

Click here to add/ remove water.

Click here to add/ remove the DEM.

Click here to add/ remove the underlying landsat image.

Map Layer

- ☐ towns
- ☒ faults
- ☒ roads
- ☒ dataset extent
- ☒ water
- ☒ DEM
- ☒ landsat image

Back to previous view

Jump to next view

Select area to zoom

Zoom out

Go to home view

Click to drag and pan

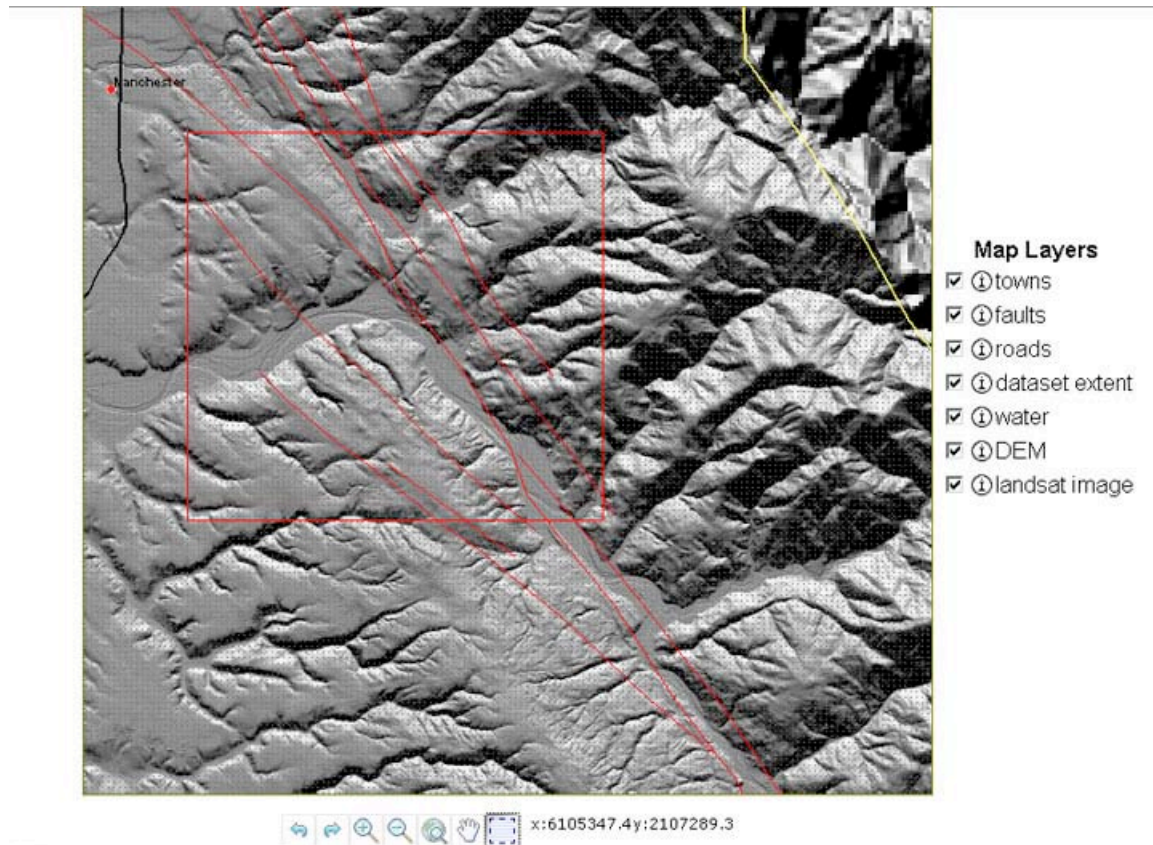
Selection tool

Location of mouse

x: 6141217.9 y: 1935685.2

Detailed description: The interface is titled 'Interactive spatial selection of LiDAR data'. It features a central map window displaying a grayscale LiDAR topographic image of a coastal area. A blue stippled region on the left side of the map indicates the area containing data. A yellow line traces a path along the coastline. To the right of the map is a 'Map Layer' panel with a list of layers: towns, faults, roads, dataset extent, water, DEM, and landsat image. Each layer has a checkbox, with 'faults', 'roads', 'dataset extent', 'water', 'DEM', and 'landsat image' currently checked. Below the map is a toolbar with icons for navigation: back, forward, home, zoom in, zoom out, pan, and a selection tool. A status bar at the bottom right shows the coordinates 'x: 6141217.9 y: 1935685.2'. Several callout boxes with arrows point to specific parts of the interface: one points to the stippled area on the map; another points to the 'Map Layer' panel, with sub-callouts for each layer; a third points to the toolbar, with sub-callouts for each icon; and a fourth points to the status bar.

After you have zoomed to the area of interest and selected the area that you would like to download data from, information will appear below the selection tools informing the user about the specific of the download. If there is an error or the request is too large you will be informed so you can make the necessary adjustments.



The selection area contains approximately 2,510,000 points.

Estimated processing time for the local binning algorithm is 259 seconds.

Warning, the selection area contains more than 1.6 million points. Currently, interpolation of points to an elevation product is limited to 1,600,000 points for the spline algorithm. The local binning algorithm is limited to 100,000,000 points. This limit does not apply to downloads of point cloud data. If you'd like to download the point cloud data for this selection, choose only the "download raw data" option below and submit your request.

\* These estimates are based on average system load.

Note: If there is more than 1.6 million points selected you will receive a warning that states: **Warning, the selection area contains more than 1.6 million points. Currently, interpolation of points to an elevation product is limited to 1,600,000 points for the spline algorithm. The local binning algorithm is limited to 100,000,000 points. This limit does not apply to downloads of point cloud data. If you'd like to download the point cloud data for this selection, choose only the "download raw data" option below and submit your request.**



If you would like the **DEM Generation via Spline Interpolation Algorithm** option for download, you can only have 1.6 million data points selected. For all other options you can choose up to 50 million points. More about these options below.

The second method for selecting data is used if you know the California Data Set Coordinates of the area you would like to select. Enter the coordinates into the **Data selection coordinates** section shown below. It is an option to choose which type of data you would like to download. Failure to select a classification type results in all classifications being returned.

**Data selection coordinates**

MinX	6088232.3	MinY	2107141.8
MaxX	6096158.8	MaxY	2115312.2

**?** **Classification**

B - Blunder

G - Ground

S - Structure

V - Vegetation

Classification selection tool

Note: The numbers in the **Data selection coordinates** boxes will also reflect which area is chosen from the navigation map above.

## Step 6 Downloading the Data: Point Cloud Data Download

After you have selected the data you want, now you need to specify how you want the data sent. The next few pages of this tutorial will go through each option and what it means. You may also want to check the Glossary pages of this tutorial if you need further clarification or more information.

Selection of this option returns the LiDAR point cloud for the area selected as a compressed ASCII file (comma delimited, one point per line). This is the perfect option if you only wish to download the raw data. It is not necessary to select any of the other options below.

### Point Cloud Data Download

☐  Download raw data (Query result in compressed ASCII File)

You can skip the rest of the screen and jump to the bottom.

### Job Description

Enter job title

Job description (up to 500 characters):

### Email Address

Enter your e-mail address for notification upon completion of processing

When you have completed your selection you will want to enter a job title and a description of the job. Confirm your email address. You will receive a completion notification email when the job is complete. Click **Submit** to finish this order. An email will be sent to you, which contains two links, one is a link that provides a summary of the data requested including the title, description, dataset, projection, units, zone, spheroid, and coordinates. The second is a link to download the data .

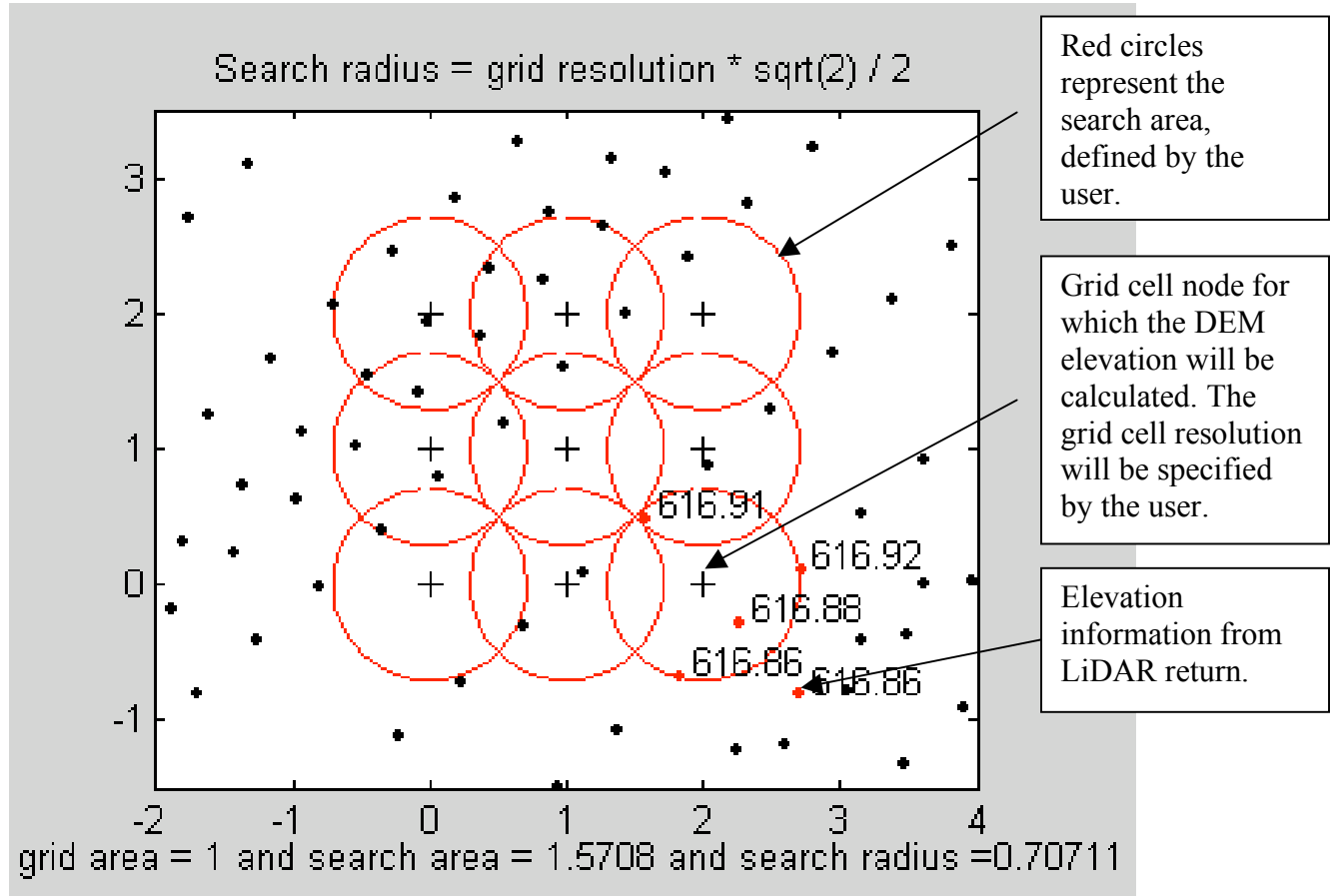
The data that will be downloaded from selecting the **Point Cloud Data/ Download Raw Data** option will look like this. It contains a column for x, y, z, date, time, return number, number of zero returns that occurred, offnidar, returnint, and classification. Below is a sample of the type of data you will receive as shown in the screen capture of the data parsed in an excel spreadsheet.

x	y	z	date	time	returnnumber	noreturns	offnidar	returnint	classification
6099409.16	2102824	79.69	1205	6.12E+04	1	5	17.17	31	V
6099415.43	2102824	79.36	1205	6.12E+04	1	5	17.09	34	V
6099422.73	2102824	78.57	1205	6.12E+04	1	5	17	18	G
6099434.5	2102823	78.75	1205	6.12E+04	1	5	16.86	25	G
6099440.78	2102823	78.53	1205	6.12E+04	1	5	16.78	20	G
6099447.47	2102822	79.22	1205	6.12E+04	1	5	16.7	21	V
6099454.18	2102822	79.21	1205	6.12E+04	1	5	16.61	19	G
6099412.2	2102829	79.06	1205	6.12E+04	1	5	17.14	20	V
6099417.43	2102829	79.18	1205	6.12E+04	1	5	17.07	22	V
6099427.83	2102823	78.96	1205	6.12E+04	1	5	16.94	22	V
6099460.23	2102821	79.66	1205	6.12E+04	1	5	16.54	19	V
6099436.91	2102828	78.65	1205	6.12E+04	1	5	16.83	18	V
6099468.93	2102825	79.52	1205	6.12E+04	1	5	16.44	22	V
6099500.84	2102823	79.71	1205	6.12E+04	1	5	16.05	54	V
6099532.36	2102821	79.57	1205	6.12E+04	1	5	15.66	56	V
6099558.92	2102819	78.93	1205	6.12E+04	1	5	15.33	45	G
6099426.32	2102833	78.85	1205	6.12E+04	1	5	16.97	28	V
6099458.62	2102831	79.1	1205	6.12E+04	1	5	16.57	34	G
6099490.4	2102829	79.34	1205	6.12E+04	1	5	16.18	40	V
6099521.91	2102826	79.8	1205	6.12E+04	1	5	15.79	43	V
6099548.68	2102825	79.09	1205	6.12E+04	1	5	15.47	38	G

## Step 6b Producing and Downloading the Digital Elevation Model: Local Binning

What does the Local Binning Algorithm do?

The local binning algorithm creates a DEM using the elevation information from LiDAR returns contained within a circular search area.



Five values are computed for each node in a grid: 1) the minimum, 2) maximum, 3) mean, and 4) inverse distance weighted mean of the local points, and 5) the number of points in the search area. For more information about each value computed click on the **show details** symbol beside each selection. The local binning algorithm was written by Han Suk Kim (UCSD). For more information on this algorithm please go to [lidar.asu.edu](http://lidar.asu.edu) and follow the **Knowledge Base** link.



When downloading the DEM Generation via Local Binning Algorithms you can choose to download all five of the computed interpolation methods, the minimum, the maximum, the mean, the inverse distance weighted and the point cloud. These are available in both Arc grid format and Ascii grid format.

The screenshot shows a web form titled "DEM Generation via Local Binning Algorithms". It contains several sections with checkboxes and input fields. Callout boxes provide instructions for each section:

- Interpolation Method:** Includes checkboxes for Min, Max, Mean, IDW, and Point Count. Callouts explain that selecting Min or Max downloads the DEM calculated using the minimum or maximum elevation, respectively. Selecting Mean or IDW downloads the DEM calculated using the mean elevation. Selecting Point Count populates the grid cell with the number of points within the user-defined search radius.
- Product Download Format:** Includes checkboxes for Arc Grid and Ascii Grid. A callout states that the Arc Grid box is automatically checked, but it can be unchecked if preferred. The Ascii Grid option will not be automatically checked and can be selected if desired.
- Algorithm Parameters:** Includes a "Grid Resolution (Default=6 ft)" field and an "Enter radius value (Default=MIN{1 ft, ( $\sqrt{2}/2$  \* Resolution))}" field. Callouts explain that the grid resolution is the resolution of the DEM (default 6 feet) and that the radius sets the search areas used for the binning algorithm.

To complete the request, add a title to and descriptions in the space provided and click **Submit**. An email will be sent to you, which contains two links, one is a link that provides a summary of the data requested including the title, description, dataset, projection, units, zone, spheroid, and coordinates. The second is a link that will take you to a webpage that will allow you to download the data you requested.

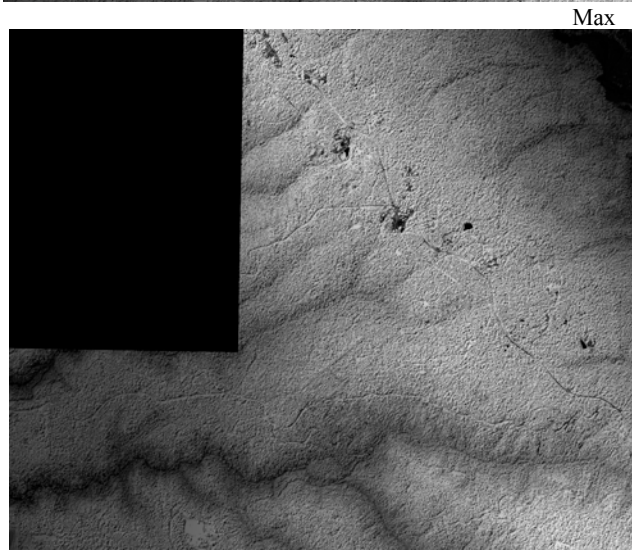
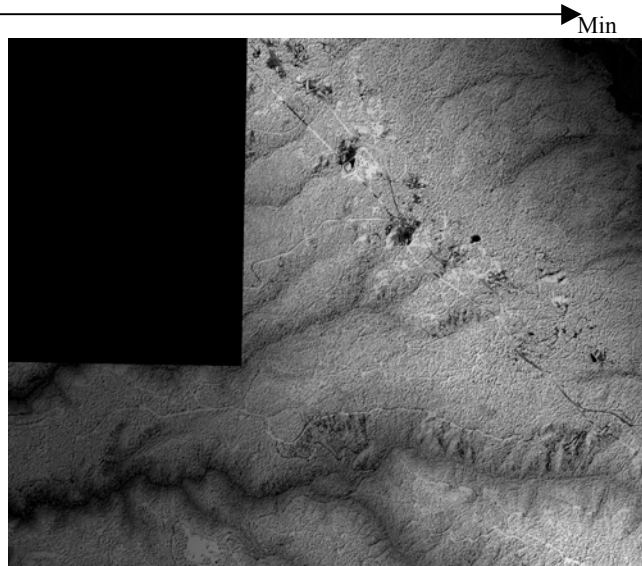
The second link will take you to a page that gives an example of the file types shown and a link to information about your order and a link to download your order.

## LiDAR Processing Workflow Outputs

Processing of 14306499 points in Lidar point cloud.

This page contains samples of the DEM's requested and there type, the type is labeled in the upper right-hand corner.

There may be numerous samples of DEMs or just a few depending on your selections.



To download the data click on the **Results** link.

Below you can download an archive file (tgz format) with the results of your job

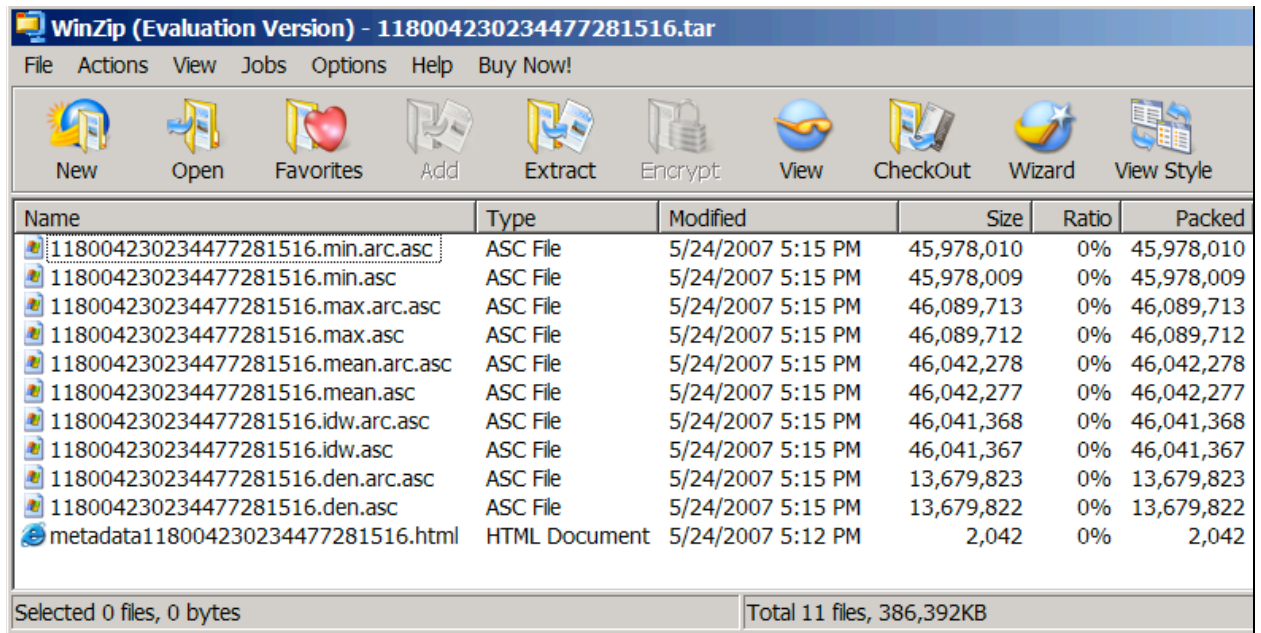
[Results](#)

Click on the **metadata** link for information about the data requested..

The processing selections of your job are available at [metadata](#).

Download [LViz](#) - A free application for visualization of LiDAR point cloud and interpolated surface data developed in the Active Tectonics Research Group at Arizona State University.

Once you have downloaded the data, you can unzip the file using WinZip. (For the purposes of this tutorial all of the items were selected for the Local Binning Algorithms section) The file you receive will look like the following:

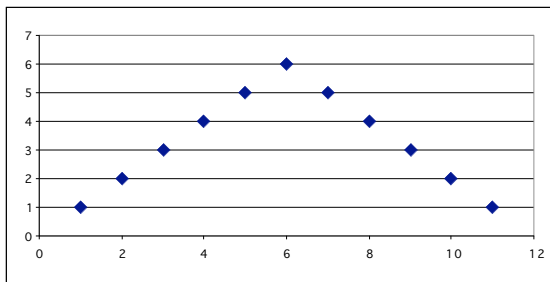


This file contains eleven files, each item selected and a file that contains a summary of the data request. The file name is the unique request id. The file extension denotes the product requested and the file type, Arc grid (.arc.asc) or Ascii grid (.asc).

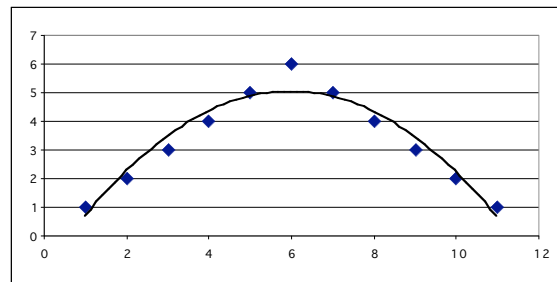
## Step 6c Producing and Downloading the Digital Elevation Model: Spline Interpolation

What does the Spline Interpolation Algorithm do?

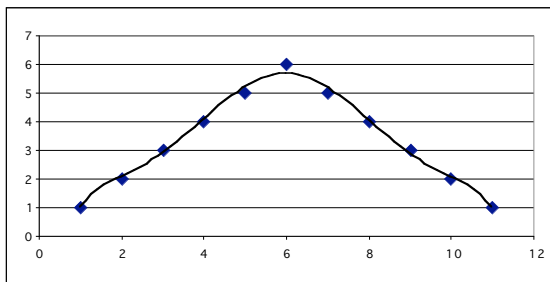
The Spline is a mathematical function that fits polynomials to data points; it is commonly used for smoothing or interpolation. It is essentially a process of fitting data points that contain x, y, and z data to a curve or plane. The Spline requires input settings of smoothing and tension from the user. If we image a two dimensional data set with x and y data points, and we are trying to fit an imaginary string through these points the smoothing setting determines how many order polynomials to use, the higher the ordered polynomial the smoother the curve. But it is also important to have a setting that determines how closely the curve will fit to the data so if we imagine the same string fastened to one end and we pulled the other end, it would become tighter and fit the data better. For instance lets look at the two-dimensional plots below. We would like to fit this data to a curve, if we use a second order polynomial; the line does not fit to closely but is very smooth. If we use a sixth order polynomial the curve matches the data better but is less smooth. The way that we fit the data to a surface is the same thing based on the settings we use.



X and Y data



Second-order polynomial



Sixth-order polynomial

For more information about the program, GRASS, which runs the Spline, please go to [grass.itc.it](http://grass.itc.it).

When downloading the DEM Generation via Spline Interpolation Algorithms you can choose to download four options with different file types, the Elevation, the Slope, the Aspect, and the Pcurv. The slope is information about the landscape and determines what the slope of each grid tile is from 0 to 90 degrees. The aspect is a determination of which direction the slope of a grid tile is facing from 0 to 360 degrees, The PCurv is the profile curvature with a numeric value assigned for concavity. These products are available in either Arc grid, Ascii Grid, or GeoTiff formats. Note you can download all products and all file types simultaneously.

This option specifies that you would like to download the DEM from the Spline calculation.

When you choose the DEM and products option, the Arc grid box will automatically be checked, you can uncheck this box if you prefer.

The Ascii grid option will not automatically be checked, you can check this box if you would like to download the data in this format.

The GeoTiff option will not automatically be checked, you can check this box if you would like to download the data in this format.

Click on this if it is a + to expand to see these options

DEM Generation via Spline Interpolation Algorithm
?

**DEM and Derived Product**

☐ Elevation (Spline)

☐ Slope

☐ Aspect

☐ PCurv

**Algorithm Parameters**

Grid Resolution (Default=6 ft)

Enter dmin value (Default=1)

Enter spline tension (Default=40)

Enter spline smoothing (Default=0.1)

**Product Download Format**

<input checked="" type="checkbox"/> Arc Grid	<input type="checkbox"/> Ascii Grid	<input type="checkbox"/> GeoTIFF
<input checked="" type="checkbox"/> Arc Grid	<input type="checkbox"/> Ascii Grid	<input type="checkbox"/> GeoTIFF
<input checked="" type="checkbox"/> Arc Grid	<input type="checkbox"/> Ascii Grid	<input type="checkbox"/> GeoTIFF
<input checked="" type="checkbox"/> Arc Grid	<input type="checkbox"/> Ascii Grid	<input type="checkbox"/> GeoTIFF

This option specifies that you would like to download the Slope data.

This option specifies that you would like to download the Aspect data.

This option specifies that you would like to download the PCurv data.

The grid resolution is the resolution of the DEM, the default DEM resolution is 6 feet. Grid resolution is set in the same units as the data set.

Sets minimum distance between points used for the interpolation. Dmin is in the same units as the data set.

The tension parameter tunes the character of the surface. For most landscape applications 40 seems to generate good results.

This is most useful when dealing with noisy data. With the smoothing set to 0 the surface passes exactly through the data points.



To complete the request, add a title to and descriptions in the space provided at the bottom of the page and click **Submit**. An email will be sent to you, which contains two links, one is a link that provides a summary of the data requested including the title, description, dataset, projection, units, zone, spheroid, and coordinates. The second is a link that will take you to a webpage that will allow you to download your data.

The second link will take you to a page that gives an example of the file types, a link to information about your order, and a link to download your order.

This page contains samples of the product requested. It is labeled in the center above the image.

To download the data click on the **Results** link.

Click on the **metadata** link for information about the data requested..

### LiDAR Processing Workflow Outputs

Processing of 1001012 points in Lidar point cloud.

Elevation (spline)



Slope



Aspect



Pcurv

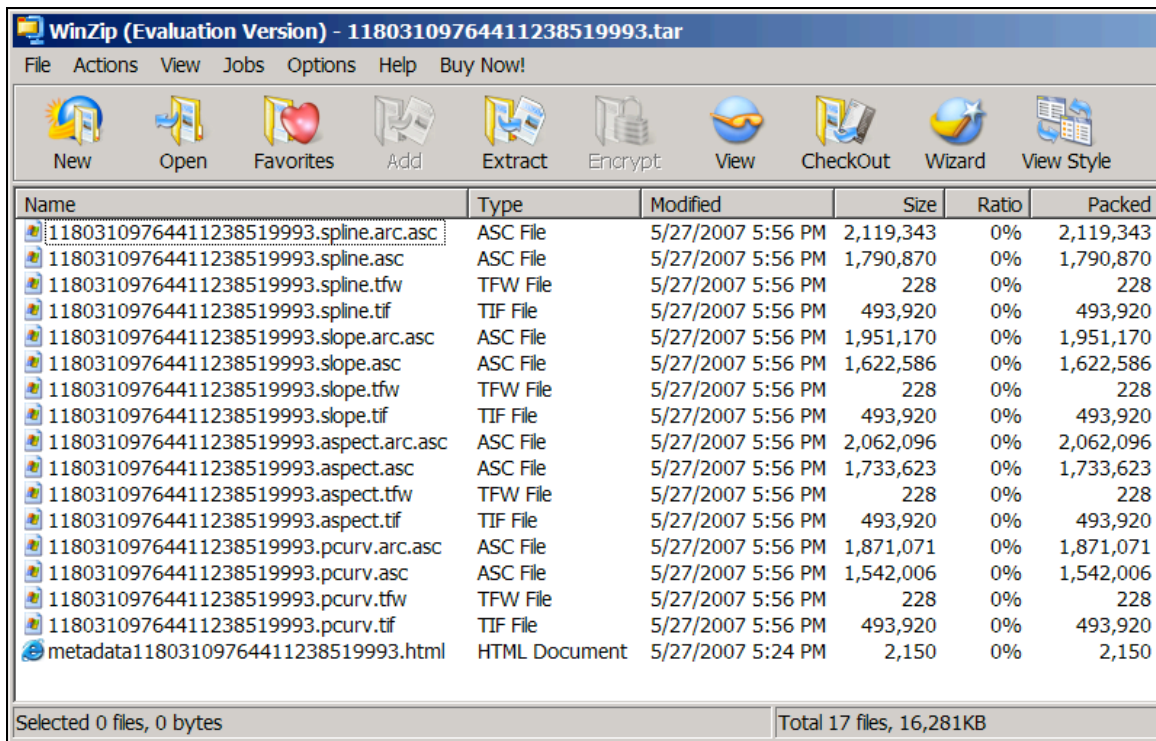


Below you can download an archive file (tgr format) with the results of your job

[Results](#)

The processing selections of your job are available at [metadata](#).

Once you have downloaded the data, you can unzip the file using WinZip. (For the purposes of this tutorial all of the items were selected for the Spline Interpolation Algorithms section) The file you receive will look like the following:



Name	Type	Modified	Size	Ratio	Packed
11803109764411238519993.spline.arc.asc	ASC File	5/27/2007 5:56 PM	2,119,343	0%	2,119,343
11803109764411238519993.spline.asc	ASC File	5/27/2007 5:56 PM	1,790,870	0%	1,790,870
11803109764411238519993.spline.tfw	TFW File	5/27/2007 5:56 PM	228	0%	228
11803109764411238519993.spline.tif	TIF File	5/27/2007 5:56 PM	493,920	0%	493,920
11803109764411238519993.slope.arc.asc	ASC File	5/27/2007 5:56 PM	1,951,170	0%	1,951,170
11803109764411238519993.slope.asc	ASC File	5/27/2007 5:56 PM	1,622,586	0%	1,622,586
11803109764411238519993.slope.tfw	TFW File	5/27/2007 5:56 PM	228	0%	228
11803109764411238519993.slope.tif	TIF File	5/27/2007 5:56 PM	493,920	0%	493,920
11803109764411238519993.aspect.arc.asc	ASC File	5/27/2007 5:56 PM	2,062,096	0%	2,062,096
11803109764411238519993.aspect.asc	ASC File	5/27/2007 5:56 PM	1,733,623	0%	1,733,623
11803109764411238519993.aspect.tfw	TFW File	5/27/2007 5:56 PM	228	0%	228
11803109764411238519993.aspect.tif	TIF File	5/27/2007 5:56 PM	493,920	0%	493,920
11803109764411238519993.pcurv.arc.asc	ASC File	5/27/2007 5:56 PM	1,871,071	0%	1,871,071
11803109764411238519993.pcurv.asc	ASC File	5/27/2007 5:56 PM	1,542,006	0%	1,542,006
11803109764411238519993.pcurv.tfw	TFW File	5/27/2007 5:56 PM	228	0%	228
11803109764411238519993.pcurv.tif	TIF File	5/27/2007 5:56 PM	493,920	0%	493,920
metadata11803109764411238519993.html	HTML Document	5/27/2007 5:24 PM	2,150	0%	2,150

Selected 0 files, 0 bytes      Total 17 files, 16,281KB

This file contains seventeen files, each item that you selected and a file that contains a summary of the data request. The file name is the unique request id. The file extension denotes the product requested and the file type, Arc grid (.arc.asc), Ascii grid (.asc), or GeoTiff (.tfw).



## ***Eastern California Shear Zone data set Tutorial***

### **How to download data from the Eastern California Shear Zone data set**

This portion of the manual will guide you through downloading data from the Eastern California Shear Zone (ECSZ). We assume that you have navigated there following the instructions above.

For the purposes of this tutorial click on the **Fault Systems in the Eastern California Shear Zone (ECSZ)** link shown above to access the data set.

#### **Step 4**

This page contains information about the ECSZ LiDAR data set and provides the spatial selection window.

### **LiDAR / ALSM Data Processing with GEON ( \_ ) istance**

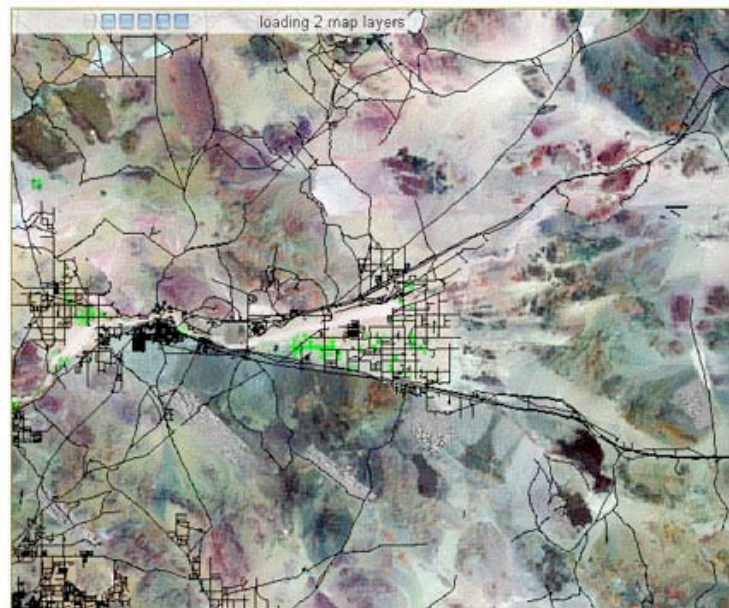
Welcome to the GEON LiDAR / ALSM processing page. This site is a proof of concept implementation of an end-to-end system for the distribution and processing (DEM generation) of LiDAR / ALSM point cloud data. This tool capitalizes on cyberinfrastructure developed by GEON as part of its effort to develop information technology for the Geosciences. The goal of this project is to provide a web-based toolset that can democratize access to these rich and computationally challenging data sets. Please note that these pages are actively under development and therefore may experience outages and poor performance. If you have problems or suggestions for improvement, we encourage you to contact us.

Click here for specifications about the ECSZ data set.

This page offers access to LiDAR data acquired by the [National Center for Airborne Laser Mapping \(NCALM\)](#) on behalf of Dr. Mike Oskin (UNC) and Dr. Lesley Perg (U of M)) as part of their NSF project on fault systems in the Eastern California Shear Zone. They have kindly agreed to make these data available to the research community through the GEON LiDAR Workflow.



#### **Interactive spatial selection of LiDAR data**



- Map Layers**
- ☒ ① towns
  - ☒ ① roads
  - ☒ ① dataset extent
  - ☒ ① DEM
  - ☒ ① landsat image

## Step 5 Selecting the Data

This page contains the spatial selection tool for the LiDAR NSAF data set. There is two ways to select the data you want. The first is you can use the **Select area to zoom** ( the magnifying glass) tool to zoom to the area you are interested in and then use the **Select tool** to select the data points.

The areas highlighted in yellow contain the data for the ECSZ.

Click here to add/ remove towns.

Click here to add/ remove roads.

Click here to add/ remove the data extent.

Click here to add/ remove the DEM.

Click here to add/ remove the underlying landsat image.

Map Layer

- ☒ towns
- ☒ roads
- ☒ dataset extent
- ☒ DEM
- ☒ landsat image

x:528391.42y:3884481.5

x:6141217.9y:1935685.2

Back to previous view

Jump to next view

Select area to zoom

Zoom out

Go to home view

Click to drag and pan

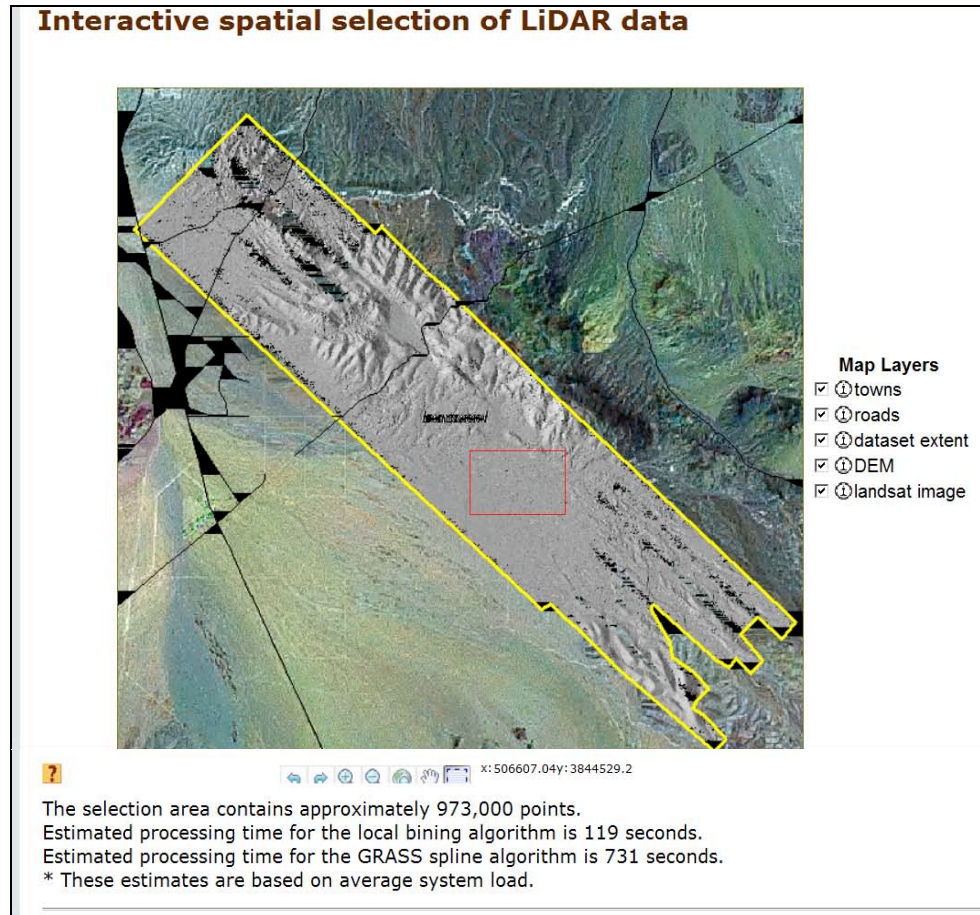
Selection tool

Location of mouse

The screenshot shows a GIS application window. The main map area displays a satellite image with overlaid vector data. Several areas are highlighted with yellow rectangles, indicating selected regions. To the right of the map is a 'Map Layer' panel with a list of layers: 'towns', 'roads', 'dataset extent', 'DEM', and 'landsat image'. Each layer has a checkbox and a small icon. Below the map is a toolbar with various navigation and selection tools. At the bottom of the window, a status bar displays the current coordinates: 'x:528391.42y:3884481.5'. A second set of coordinates, 'x:6141217.9y:1935685.2', is shown above the toolbar. Text boxes with arrows point to specific UI elements: 'The areas highlighted in yellow contain the data for the ECSZ.' points to the yellow rectangles; 'Click here to add/ remove towns.' points to the 'towns' layer checkbox; 'Click here to add/ remove roads.' points to the 'roads' layer checkbox; 'Click here to add/ remove the data extent.' points to the 'dataset extent' layer checkbox; 'Click here to add/ remove the DEM.' points to the 'DEM' layer checkbox; 'Click here to add/ remove the underlying landsat image.' points to the 'landsat image' layer checkbox; 'Back to previous view' points to the first icon in the toolbar; 'Jump to next view' points to the second icon; 'Select area to zoom' points to the third icon; 'Zoom out' points to the fourth icon; 'Go to home view' points to the fifth icon; 'Click to drag and pan' points to the sixth icon; 'Selection tool' points to the seventh icon; and 'Location of mouse' points to the status bar area.



After you have zoomed to the area of interest and selected the area that you would like to download data from, information will appear below the selection tools informing the user about the specifics of the download. If there is an error or the request is too large you will be informed so you can make the necessary adjustments.



Note: If there is more than 1.6 million points selected you will receive a warning that states: **Warning, the selection area contains more than 1.6 million points. Currently, interpolation of points to an elevation product is limited to 1,600,000 points for the spline algorithm. The local binning algorithm is limited to 50,000,000 points. This limit does not apply to downloads of point cloud data. If you'd like to download the point cloud data for this selection, choose only the "download raw data" option below and submit your request.**

If you would like the **DEM Generation via Spline Interpolation Algorithm** option for download, you can only have 1.6 million data points selected. For all other options you can choose up to 50 million points.

For information and steps for Point Cloud Data Download, DEM Generation via Local Binning Algorithms, or DEM Generation via Spline Interpolation Algorithm see Step 6 of the **NSAF and West Rainier Tutorial** section of this User's Manual.

## B4: Southern San Andreas Fault data set Tutorial

This portion of the manual will guide you through downloading data from the B4: Southern San Andreas Fault (B4). We assume you have navigated to the dataset as explained above

### Step 4

This page contains information about the ECSZ LiDAR data set and provides the spatial selection window.

Use this logo if you use the data in a presentation

#### / ALSM Data Processing with GEON Cyberinfrastructure

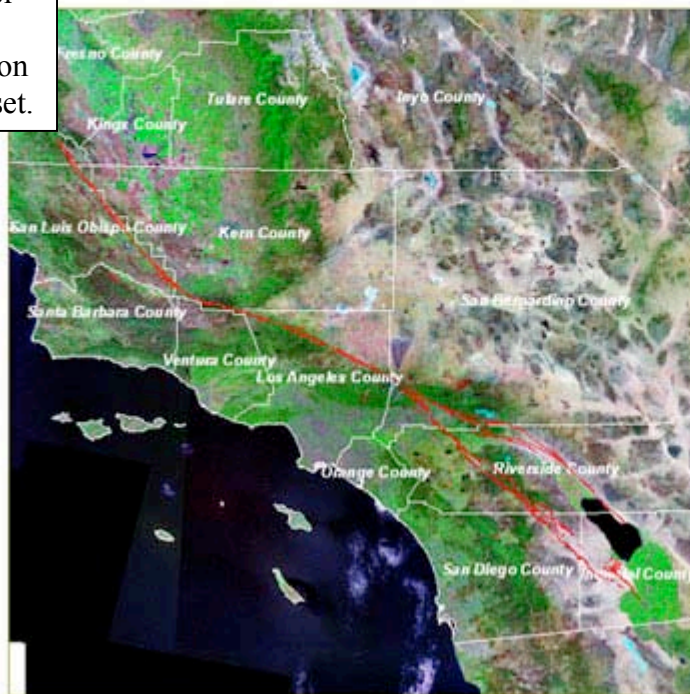
the GEON LiDAR / ALSM processing page. This site is a proof of concept implementation of an end-to-end system for the distribution and processing (DEM of LiDAR / ALSM point cloud data. This tool capitalizes on cyberinfrastructure developed by GEON as part of its effort to develop information technology for the . The goal of this project is to provide a web-based toolset that can democratize access to these rich and computationally challenging data sets. Please note that are actively under development and therefore may experience outages and poor performance. If you have problems or suggestions for improvement, we ou to contact us.

This page offers access to LiDAR point cloud data of the southern San Andreas Fault acquired by the National Center for Airborne Laser Mapping (NCALM) through funding from the National Science Foundation (NSF) as part of the "B4 Project". The B4 Project has kindly agreed to make these data available to the research community through the GEON LiDAR Workflow. If you utilize the B4 data for talks, posters or publications, we ask that you acknowledge the B4 project. The B4 logo can be downloaded [here](#). ?



#### Interactive spatial selection of LiDAR data

Click here for more information on the B4 data set.

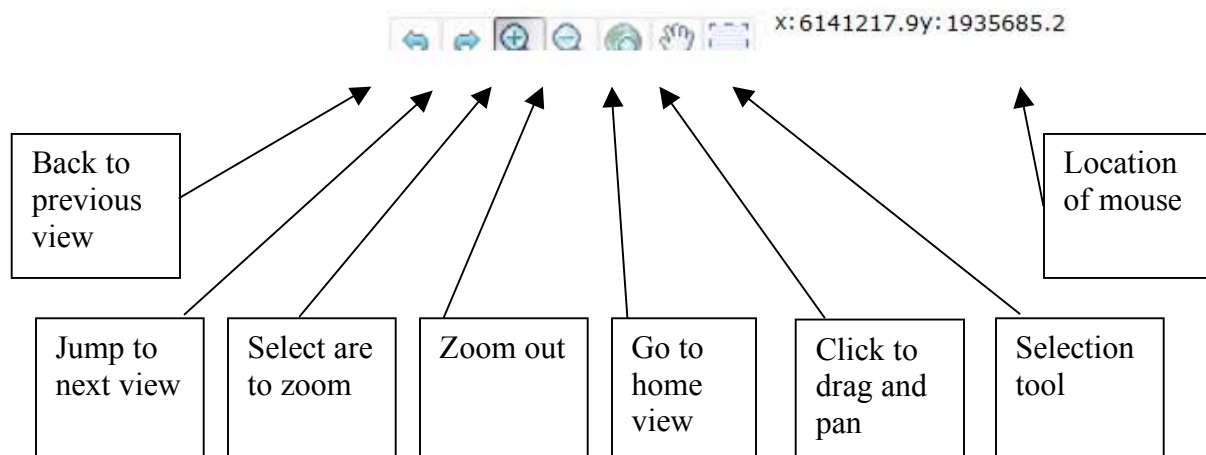
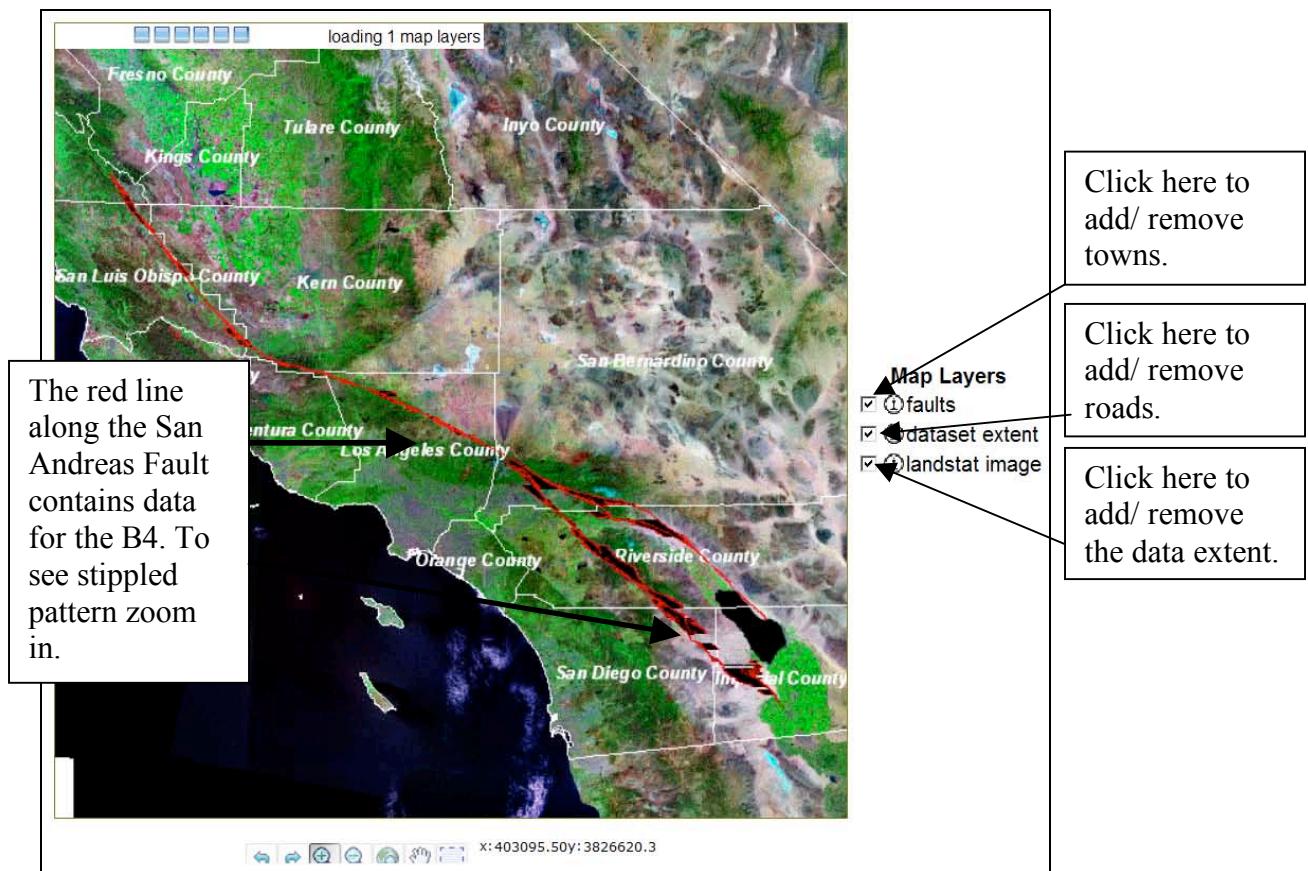


#### Map Layers

- ☒ ① faults
- ☒ ① dataset extent
- ☒ ① landstat image

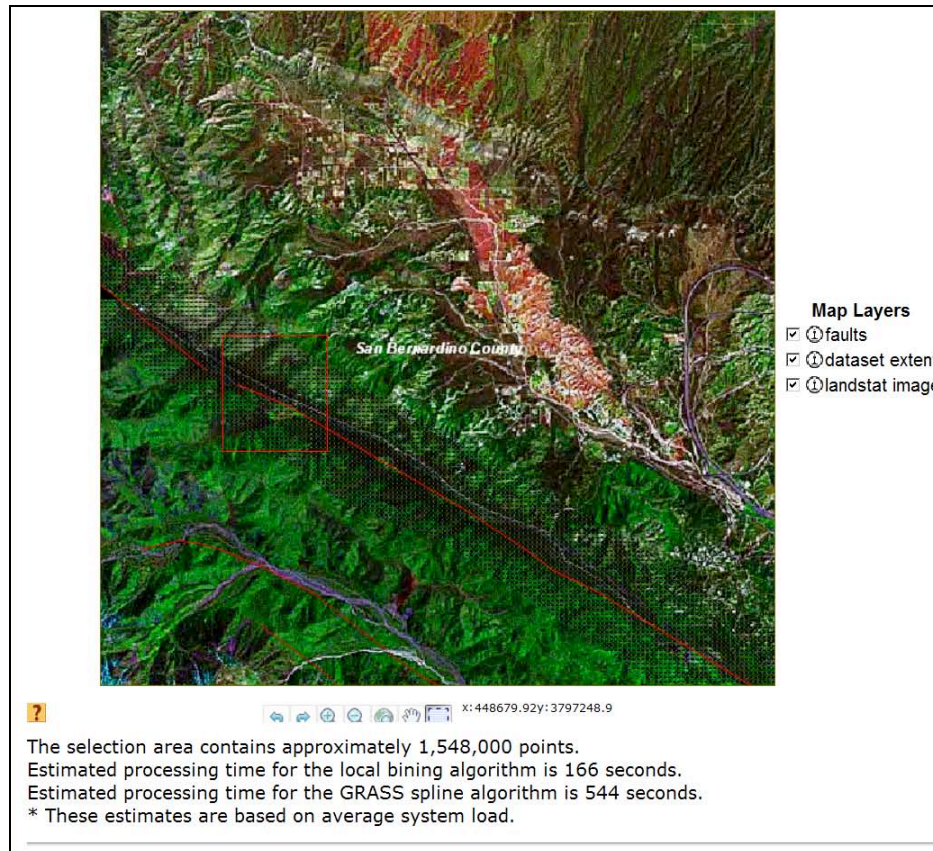
## Step 5 Selecting the Data

This page contains the spatial selection tool for the LiDAR NSAF data set. There is two ways to select the data you want. The first is you can use the **Select area to zoom** ( the magnifying glass) tool to zoom to the area you are interested in and then use the **Select tool** to select the data points.





After you have zoomed to the area of interest and selected the area that you would like to download data from, information will appear below the selection tools informing the user about the specific details of the download. If there is an error or the request is too large you will be informed so you can make the necessary adjustments.



Note: If there is more than 1.6 million points selected you will receive a warning that states: **Warning, the selection area contains more than 1.6 million points. Currently, interpolation of points to an elevation product is limited to 1,600,000 points for the spline algorithm. The local binning algorithm is limited to 50,000,000 points. This limit does not apply to downloads of point cloud data. If you'd like to download the point cloud data for this selection, choose only the "download raw data" option below and submit your request.**

If you would like the **DEM Generation via Spline Interpolation Algorithm** option for download, you can only have 1.6 million data points selected. For all other options you can choose up to 50 million points.

For information and steps for Point Cloud Data Download, DEM Generation via Local Binning Algorithms, or DEM Generation via Spline Interpolation Algorithm see Step 6 of the **NSAF and West Rainier Tutorial** section of this User's Manual.



## Job management

One of the advantages of the cyberinfrastructure approach that we employ is the opportunity to watch your jobs as they progress through the GLW, to archive your jobs, and to find them again and modify them and rerun them if desired.

The screenshot shows the GEON Portal LIDAR Application interface. The header includes the GEON Portal logo and navigation links: GEONsearch, myGEON, Contribute, GEONtools, UserProfile, and Docs/Help. Below the header is a breadcrumb trail: Home > SYNSEIS > LIDAR > Atype Workflow > Gravity > Magnetics > PaleoIntegration. The main content area is titled "Lidar Application" and "LiDAR / ALSM Data Processing with GEON Cyberinfrastructure". It contains a welcome message, a list of data sets (NSAF, Mt. Rainier, ECSZ, B4), and a section for "LIDAR Utilities" with links to "My LIDAR Jobs" and "My Jobs Submission Info". A callout box points to the "My LIDAR Jobs" link, stating: "To view access jobs submitted or status of jobs submitted click here." Another callout box points to the "My Jobs Submission Info" link, stating: "To view a summary of your LiDAR jobs submissions click here." The interface also includes a warning about Internet Explorer 7 compatibility and a footer with contact information and logos for ASU and SDSC.

**GEONPORTAL**

GEONsearch | myGEON | Contribute | **GEONtools** | UserProfile | Docs/Help

Home | SYNSEIS | **LIDAR** | Atype Workflow | Gravity | Magnetics | PaleoIntegration

**Lidar Application**

**LiDAR / ALSM Data Processing with GEON Cyberinfrastructure**

Welcome to the GEON LiDAR / ALSM processing page. This site is a proof of concept implementation of an end-to-end system for the distribution and processing (DEM generation) of LiDAR / ALSM point cloud data. This tool capitalizes on cyberinfrastructure developed by GEON as part of its effort to develop information technology for the Geosciences. The goal of this project is to provide a web-based toolset that can democratize access to these rich and computationally challenging data sets. Please note that these pages are actively under development and therefore may experience outages and poor performance. If you have problems or suggestions for improvement, we encourage you to contact us.

**Current Interface is not compatible with Internet Explorer 7, We are working on a solution for it.**

**Please select a data set:**

- 1 Northern San Andreas Fault (NSAF), CA
- 2 West Rainier Seismic Zone, WA
- 3 Fault systems in the Eastern California Shear Zone (ECSZ)
- 4 B4: Southern San Andreas Fault

Metadata documents on these data sets can be found [here](#).

\*Web browser compatibility for Macintosh users: Some aspects of the GEON LiDAR processing pages may not be compatible with Apple's Safari web browser. We recommend Firefox for browsing these pages.

Information about us and the projects we are involved with

- Geoinformatics at ASU
- ASU Active Tectonics Research Group
- Active Tectonics Group LiDAR / ALSM research pages
- The GEON Project

Please address questions, comments and errors to [Christopher Crosby](#)

**ASU SDSC**  
SAN DIEGO SUPERCOMPUTER CENTER

When you click on **My LiDAR Jobs** you will see a screen like the one shown below. This screen lists your submitted jobs by Id number, Dataset, Title, and Submission Date. The status of your job is also listed. You can click on the status link of each job to get a more detailed description of your job's status.

GEONPORTAL

Home | SYNSEIS | LIDAR | Attype Workflow | Gravity | Magnetics | PaleoIntegration

SAF Data Set

Lidar Datasets  
NSAF  
Mt. Rainier  
ECSZ  
B4

LIDAR Utilities  
My LIDAR Jobs  
My Jobs Submission Info  
LIDAR Main Page

LIDAR Job Manager

List of your submitted jobs

Select	Job Id	Dataset	Title	Submission Date	Job Status
<input type="checkbox"/>	1179798110623544847844	NSAF	SAF Data Set	Mon May 21 18:41:51 PDT 2007	querying
<input type="checkbox"/>	11797980139221907242857	B4 dataset	B4 dataset	Mon May 21 18:40:14 PDT 2007	empty query response
<input type="checkbox"/>	1179797825868804882956	ECSZ	ECSZ Data Set	Mon May 21 18:37:06 PDT 2007	querying
<input type="checkbox"/>	1179797381491203696322	RAINIER	Rainier Data Set	Mon May 21 18:29:41 PDT 2007	last processing
<input type="checkbox"/>	1179797253184332471448	NSAF	SAF Data Set	Mon May 21 18:27:34 PDT 2007	done

Displayed records: 1 - 5 of 5

Delete Jobs Clear All Select All

This is your unique Job Id number based on the time that you submit your request. This Id number ensures that your job will never be mixed up with anyone else.

This is the data set that the selected data is from.

This is the title that you chose for your job.

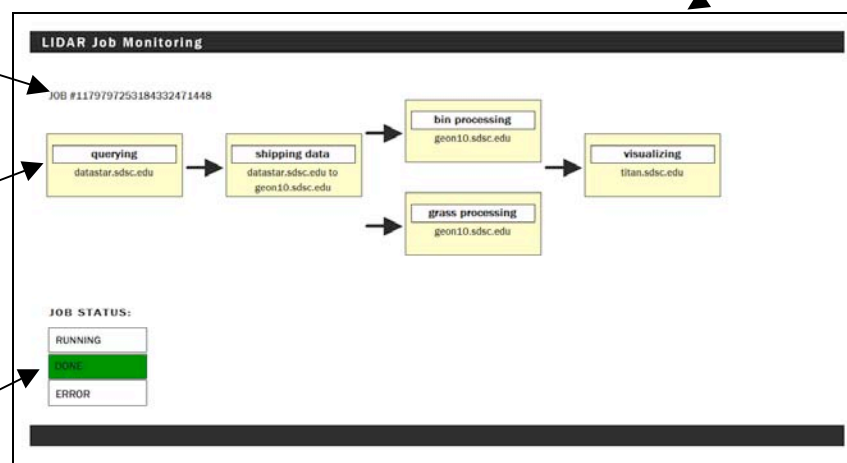
This is the date and time that you submitted your request.

This is the status of your request. By clicking on the link for each job you can view a detailed description of your request. An example is shown below.

This is the job's unique Id number.

This is the position your job is in during processing.

This is the status of your job. If there is an error, click on **Error** to see the error.



If you click on **My Jobs Submission Info** you will be taken to a screen that looks like the one shown below.

This screen gives a summary of your usage history. The top section is your total usage history. The mid-section is a summary of your usage over the past week. Finally, the bottom section is your usage history over the last month.

The screenshot displays the GEON Portal interface. At the top, the logo "GEONPORTAL" is visible, along with a "Logout" link. Below the logo is a navigation bar with links: "GEONsearch", "myGEON", "Contribute", "GEONtools", "UserProfile", and "Docs/Help". A secondary navigation bar includes "Home", "SYNSEIS", "LIDAR", "Atype Workflow", "Gravity", "Magnetics", and "PaleoIntegration". The main content area is titled "Lidar Application" and contains a sidebar on the left and a main panel on the right.

**Lidar Datasets**

- NSAF
- Mt. Rainier
- ECSZ
- B4

**LIDAR Utilities**

- My LIDAR Jobs
- My Jobs Submission Info

LIDAR Main Page


**My LIDAR Job Submission Information**


A total of 6 jobs were submitted processing of 11,810,240 points.  
3 NSAF jobs were submitted processing of 5,152,892 points.  
1 RAINIER jobs were submitted processing of 665,293 points.  
1 ECSZ jobs were submitted processing of 5,992,055 points.  
1 B4 jobs were submitted processing of 0 points.


Info for the past week (May 14, 2007 7:26:21 PM - May 21, 2007 7:26:21 PM)  
6 jobs were submitted  
3 NSAF jobs were submitted  
1 Rainier jobs were submitted  
1 ECSZ jobs were submitted  
1 B4 jobs were submitted

Info for the past month (Apr 21, 2007 7:26:21 PM - May 21, 2007 7:26:21 PM)  
6 jobs were submitted  
3 NSAF jobs were submitted  
1 Rainier jobs were submitted  
1 ECSZ jobs were submitted


## Glossary of Symbols


- Show details, click on this symbol for more information about the topic it is adjacent to


- Hide details, click on this symbol to hide the information about the topic


- Expand menu

- Compact menu


- Interactive data selection menu


- Back to previous extent


- Get the next extent

- Click and drag to zoom in

- Click to zoom out

- Reset the map to full extent

- Click and drag to pan

- Click and drag to set the area of interest