

Department of Natural Resources
Geological Survey

**Exploring the Geoscience Atlas** 

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Regional Stream Sediment Sites

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### **Projection Information**

Transverse Mercator vs. Geographic

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### **Geoscience OnLine**



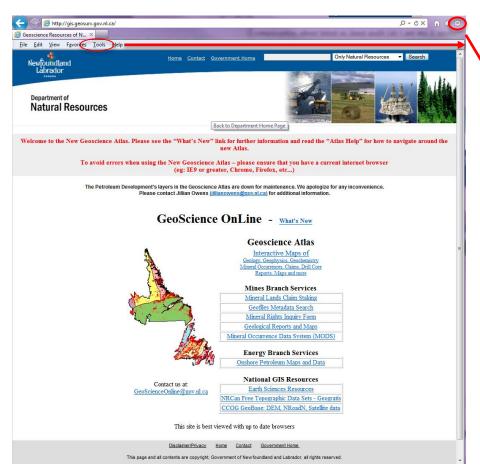
### **Browser Setup**:

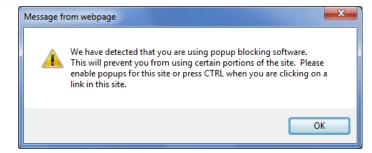
- -use recent versions of Internet Explorer, Google Chrome or Mozilla Firefox (other browsers, such as Apple Safari, work with most tools)
- -allow pop-ups and cookies for this site (geoatlas.gov.nl.ca)
- -ad blockers will cause problems so disable for this site
- -may need to clear history, cache and possibly cookies if Atlas becomes 'glitchy' (be careful not to lose any saved login passwords or filled forms)

## Browser Setup > allow Pop-ups

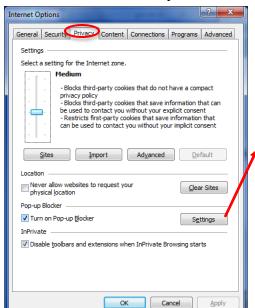


Example: Internet Explorer 11





Go to Tools > Internet Options > Privacy tab

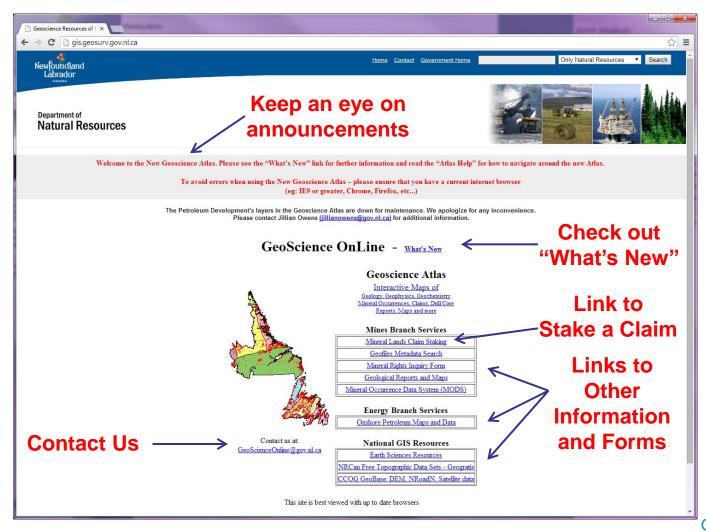


Allow pop-ups for Atlas. Enter Addresses: gis.geosurv.gov.nl.ca geoatlas.gov.nl.ca



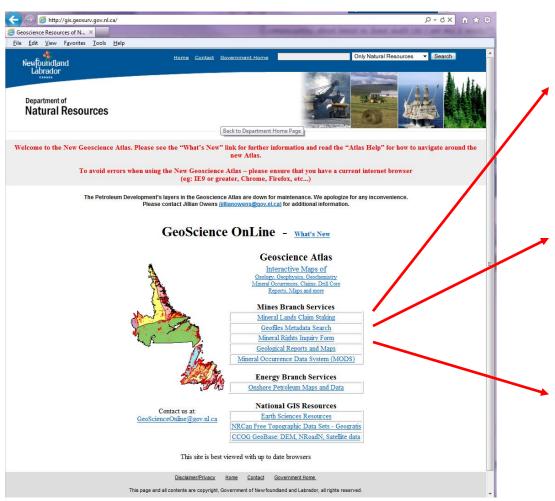
### **GeoScience Online**

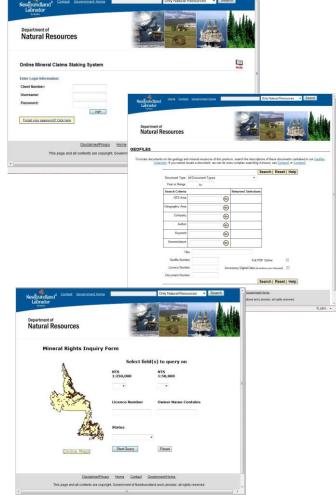




### **GeoScience OnLine**

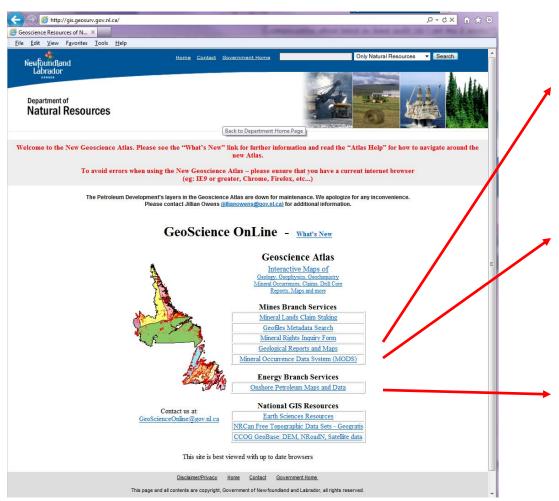


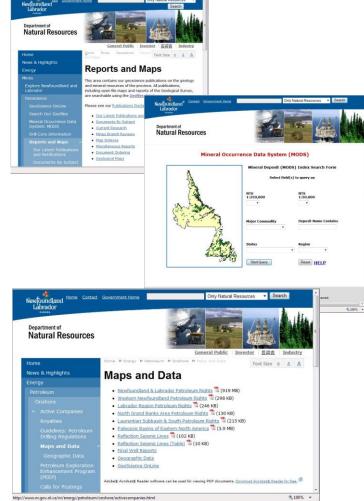




### **GeoScience OnLine**

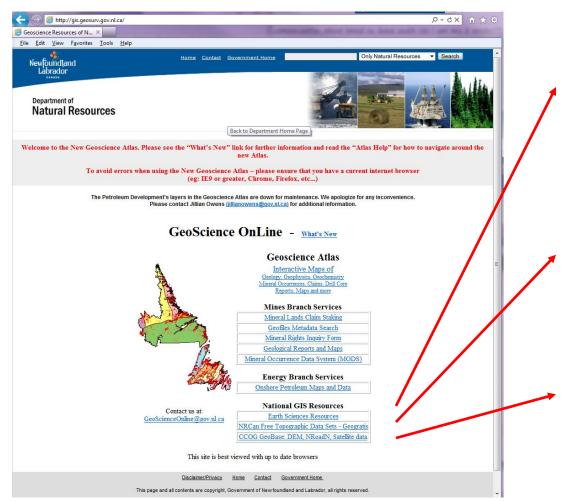


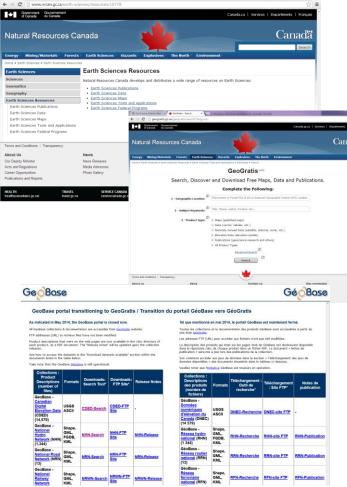




### **GeoScience OnLine**

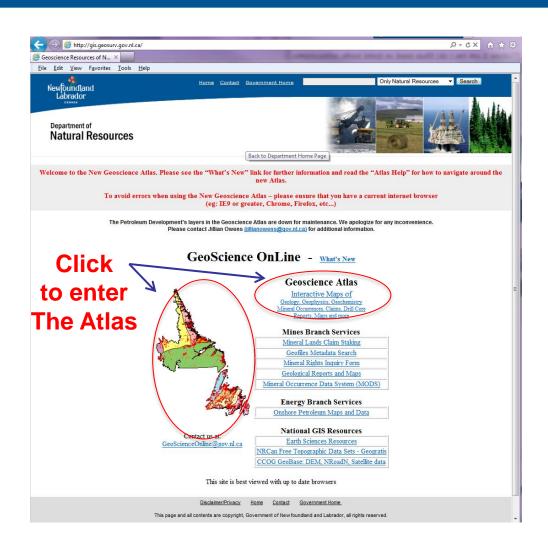






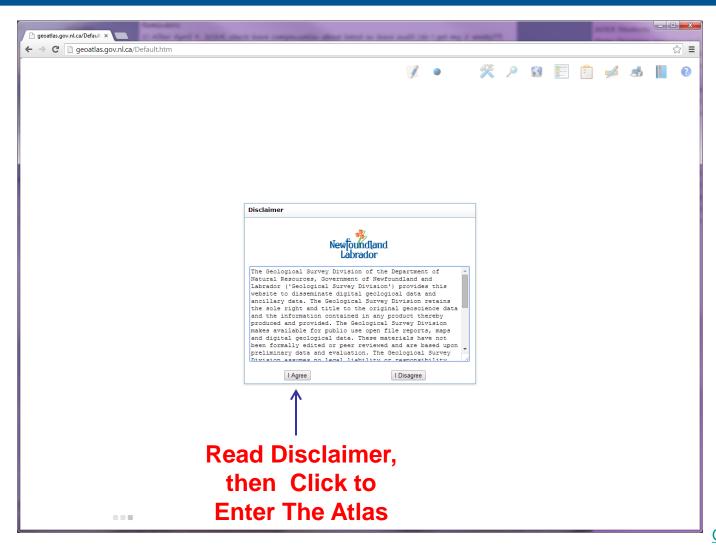
# GeoScience OnLine > How to Start the Geoscience Atlas





## **Geoscience Atlas Disclaimer**



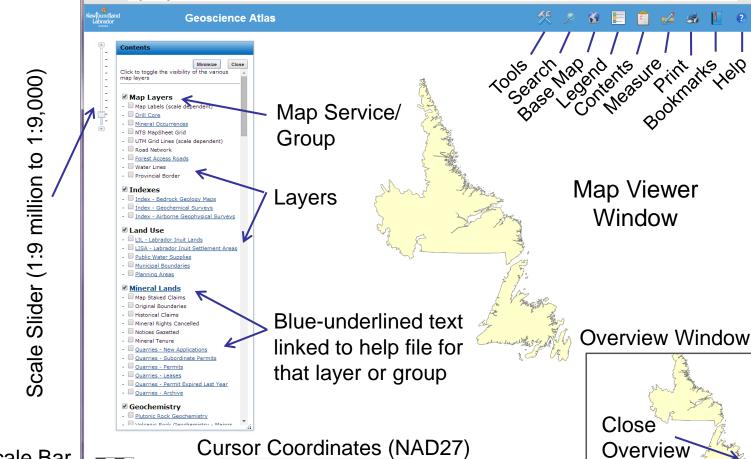


## **Geoscience Atlas Overview**

← → C qeoatlas.gov.nl.ca/Default.htm



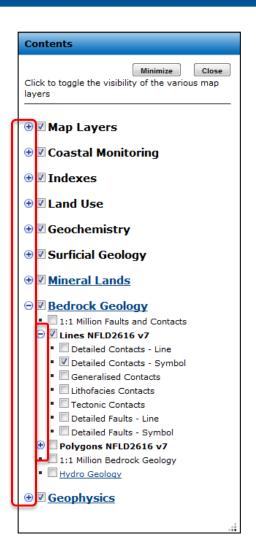
☆ =



Scale Bar

## **Geoscience Atlas Overview**





The Contents panel now contains expandable/collapsible groups and subgroups.

Ad blockers, on your internet browser, need to be disabled for this to work.

The Atlas will remember the settings (i.e., which groups are open and which layers are active) the next time the Atlas is opened.

## Geoscience Atlas Navigating (Zoom and Pan)

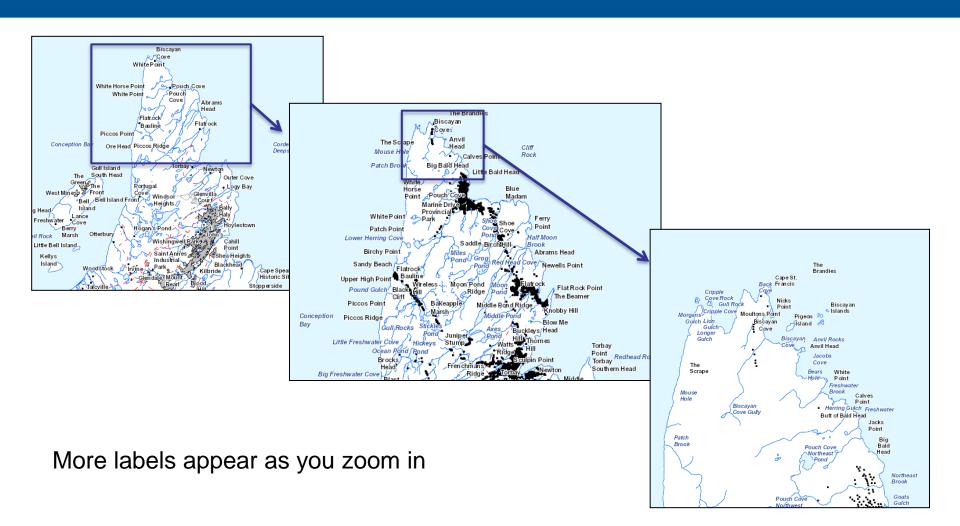


### **Navigating** around the Map Viewer Window:

- 1. Hold down the shift key and drag a box on the map to **zoom in**
- 2. Hold down Ctrl+Shift to **zoom out**
- 3. Double click to **zoom in**
- 4. Use the mouse roller to **zoom in/out**
- 5. Drag the scale slider to **zoom in/out**
- 6. Click and drag the mouse to **pan** the map
- 7. Click the shaded box in the overview window and drag it to a new location to quickly **pan** the map.

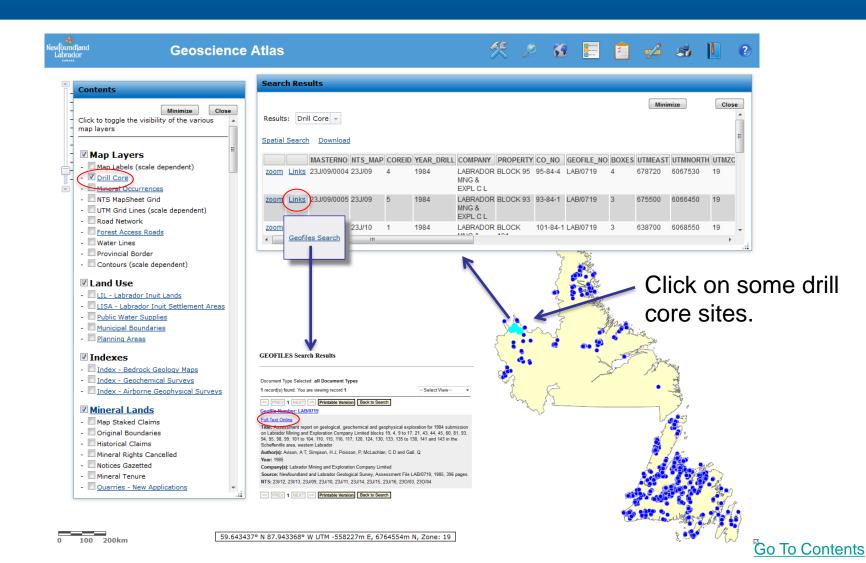
## Geoscience Atlas Map Layers > Map Labels





### **Geoscience Atlas Map Layers > Drill Core**

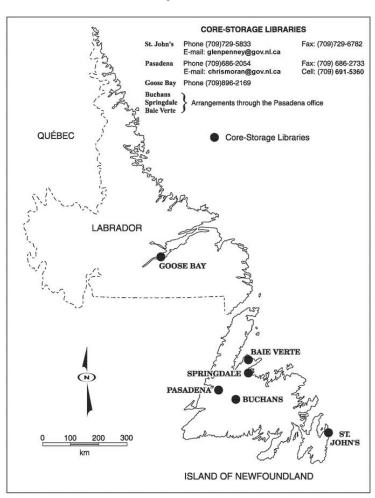




### **Geoscience Atlas Map Layers > Drill Core Help**



In the Contents panel, click on the 'Drill Core' text to access the Help file.



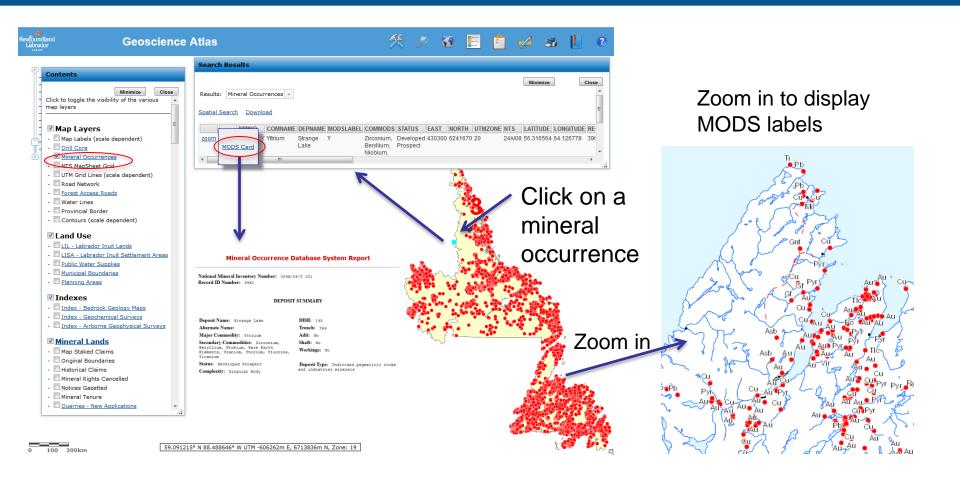
The Help file provides contact information and maps of Core Storage Libraries



St. John's core-storage library is on the Torbay Road side of St. John's Airport, just off RCAF Road

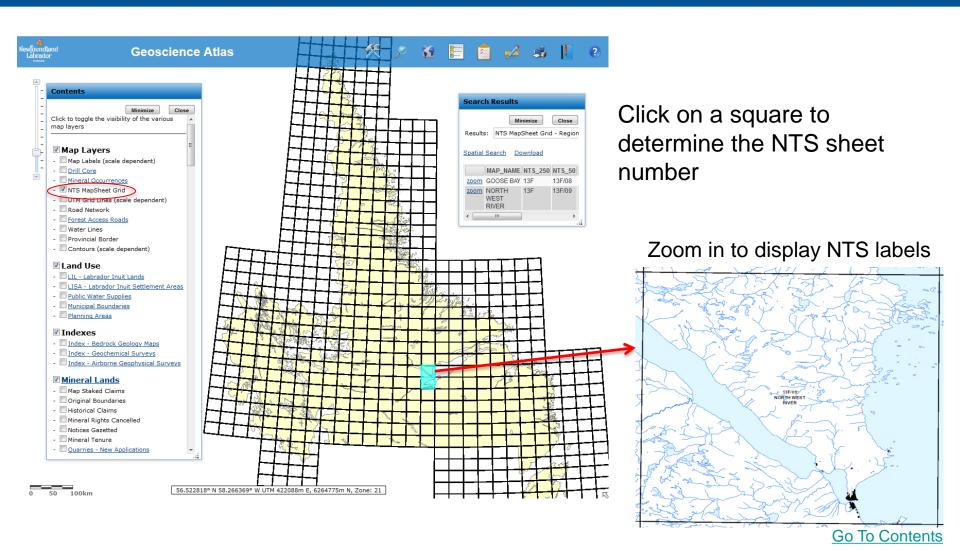
### **Geoscience Atlas Map Layers > Mineral Occurrences**





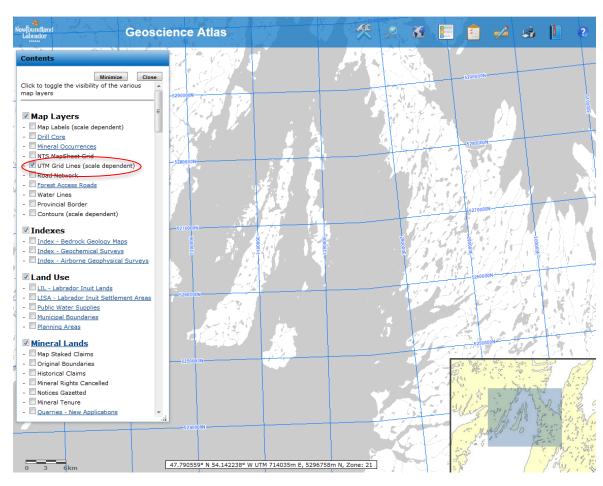
### **Geoscience Atlas Map Layers > NTS MapSheet Grid**





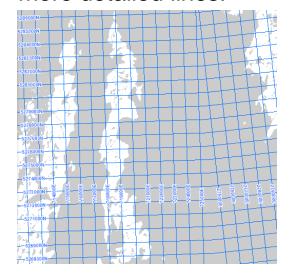
### **Geoscience Atlas Map Layers > UTM Grid Lines**





UTM Grid Lines are only available as a layer when you zoom in. Note the change in grid lines between UTM Zone 21 and UTM Zone 22.

Zoom in further to display more detailed lines.

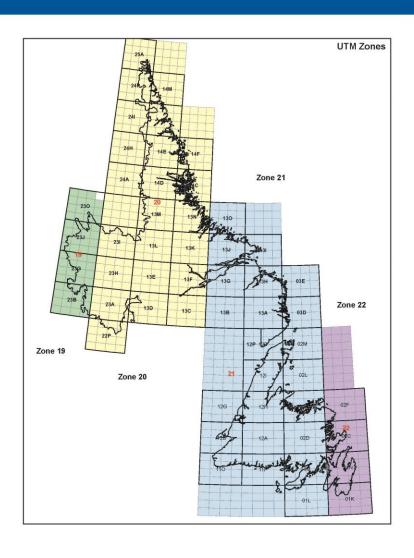


UTM Zone 21

UTM Zone 22

### **Geoscience Atlas Map Layers > UTM Grid Lines**





There are 4 UTM Zones covering Newfoundland and Labrador:

Zone 19: western Labrador

Zone 20: central Labrador

Zone 21: eastern Labrador and

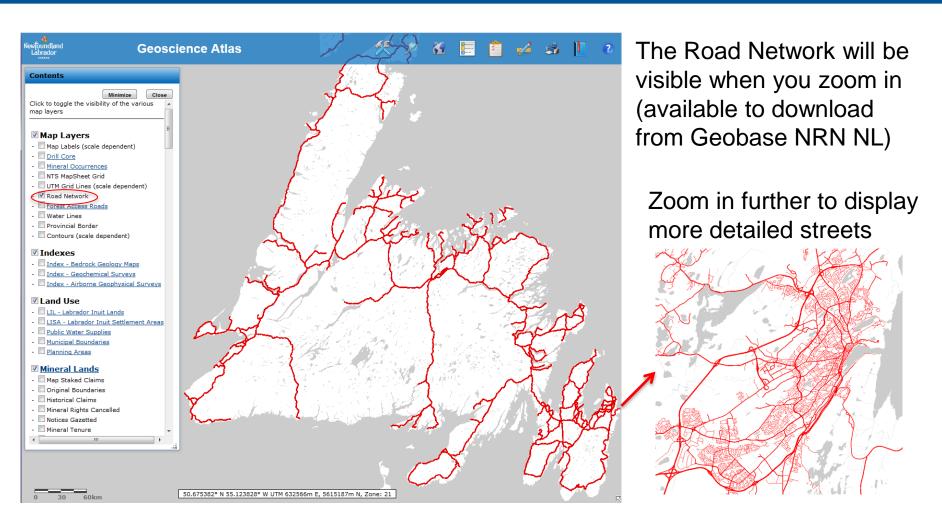
most of Newfoundland

Zone 22: eastern Newfoundland

Note the UTM Easting value, in the Cursor Coordinates bar, changes from 700,000's to 200,000's as you move east across the UTM **Zone** boundary.

### **Geoscience Atlas Map Layers > Road Network**





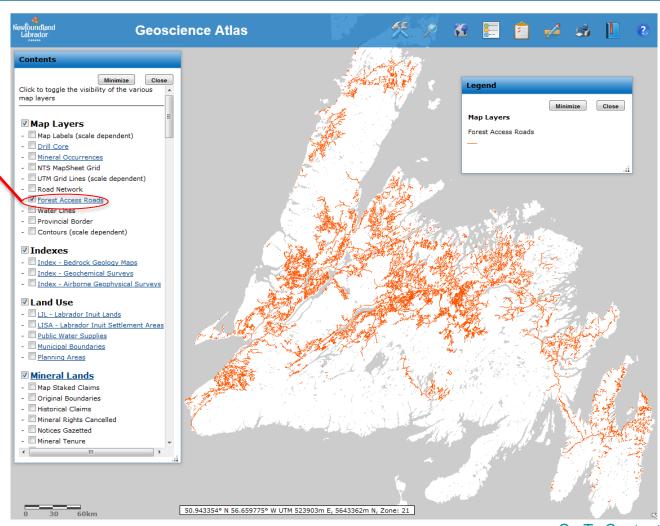
### **Geoscience Atlas**Map Layers > Forest Access Roads



The Help file provides a link to the "Resource Access Roads" website.

"Some roads which are deemed no longer necessary are deactivated"

"The Department can also close roads during times of poor operating conditions"

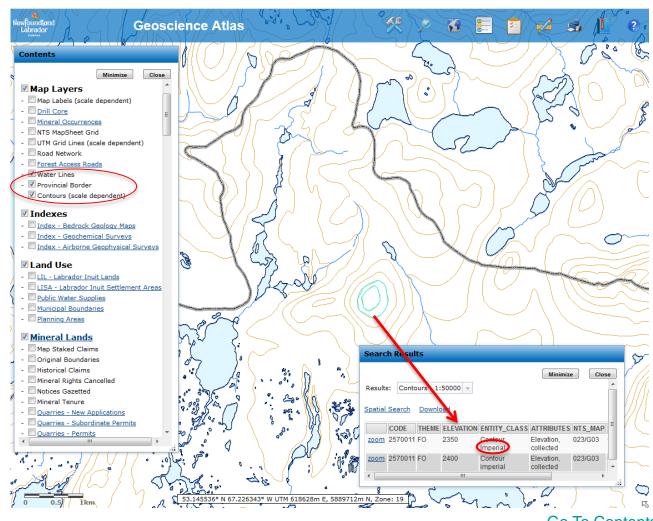


# **Geoscience Atlas**Map Layers > Water Lines, Provincial Border, and Contours



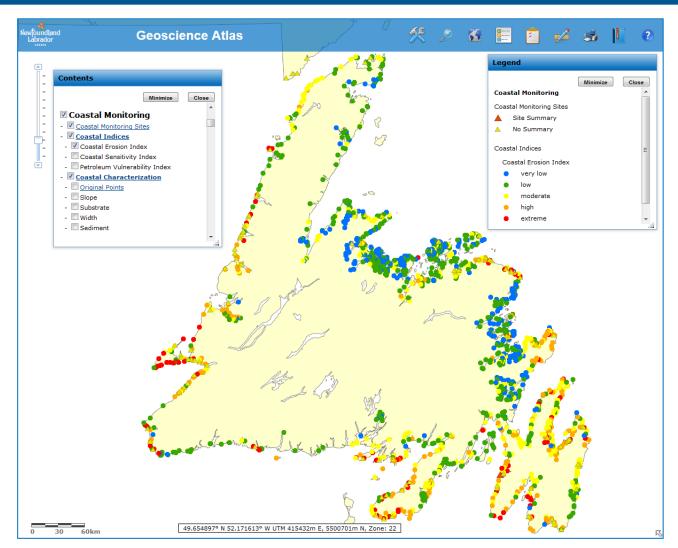
Water Lines and the Labrador/Quebec Provincial Border are provided for spatial reference on raster images. These cannot be downloaded.

The contours are displayed at larger scales only. Click on a contour to determine the elevation in feet or metres ('imperial' indicates contours in feet).



# **Geoscience Atlas**Coastal Information > Monitoring, Indices and Characterization

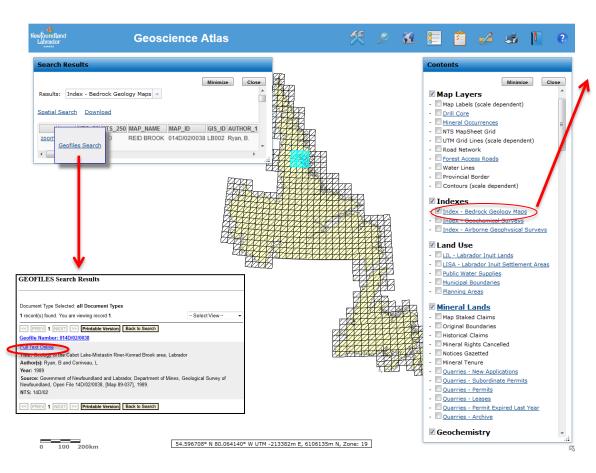




The Coastal Monitoring layers provide information on erosion rates and coastal sensitivity.

### Geoscience Atlas Indexes > Bedrock Geology Maps





### Introduction:

This Index is of recently published Bedrock Geology maps, grouped according to NTS area. With this index turned on (check box), the user may click on the map to view a bibliographic listing of published maps pertaining to that NTS area - the tabulated data will appear in the Search Results window. To help navigate to the area of interest, turn on the "Map Layers - NTS MapSheet Grid" and "Map Layers - Road Network" layers.

To view a PDF version of many of these published maps, in the Search Results window click on the blue underlined 'Links' (left side of table) and then on 'Geofiles'. This will link you to the Geofiles bibliographic search page and further links to any pdf maps or text related to that record. An alternate site to link to the maps is available through the Department of Natural Resources web site, Map Indexes section at <a href="http://www.nr.gov.nl.ca/nr/mines/geoscience/publications/indexes.html">http://www.nr.gov.nl.ca/nr/mines/geoscience/publications/indexes.html</a>, and then click on either the Geological Maps for Newfoundland or Newfoundland

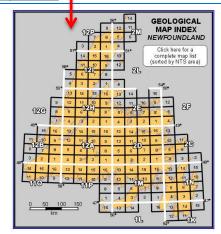
### **Alternative**

### Map Indexes

Digital versions of many of our published bedrock, surficial and geochemical maps are available via GeoScience OnLine and via the Geofiles search engine.

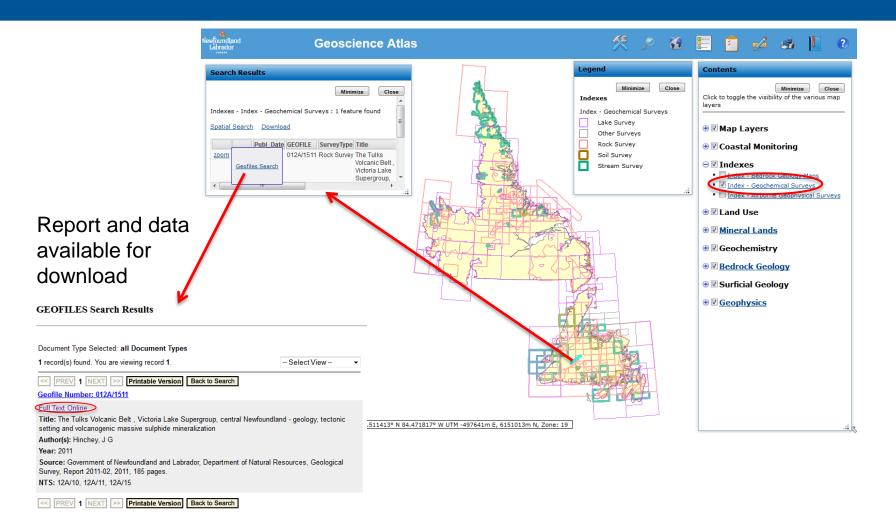
The following index maps provide an additional means to search for information about these specific geoscience products.

- Geological Maps for Newfoundland
- Geological Maps for Labrador



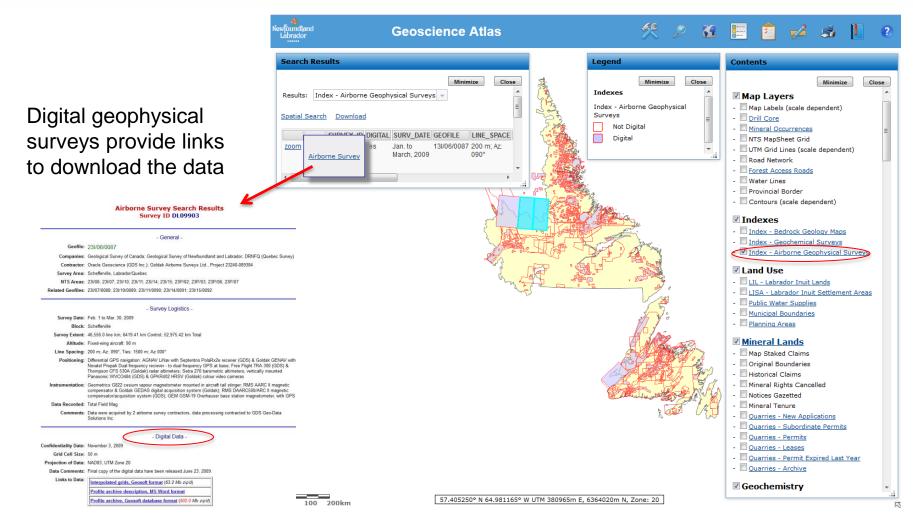
### **Geoscience Atlas**Indexes > Geochemical Surveys





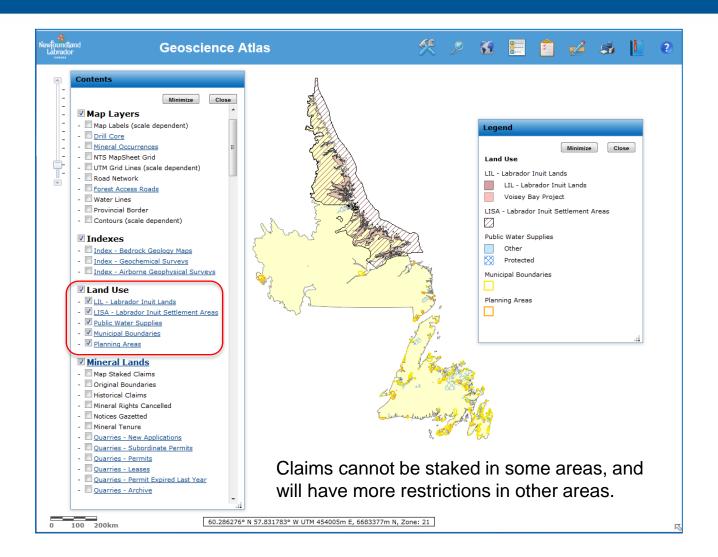
# Geoscience Atlas Indexes > Airborne Geophysical Surveys





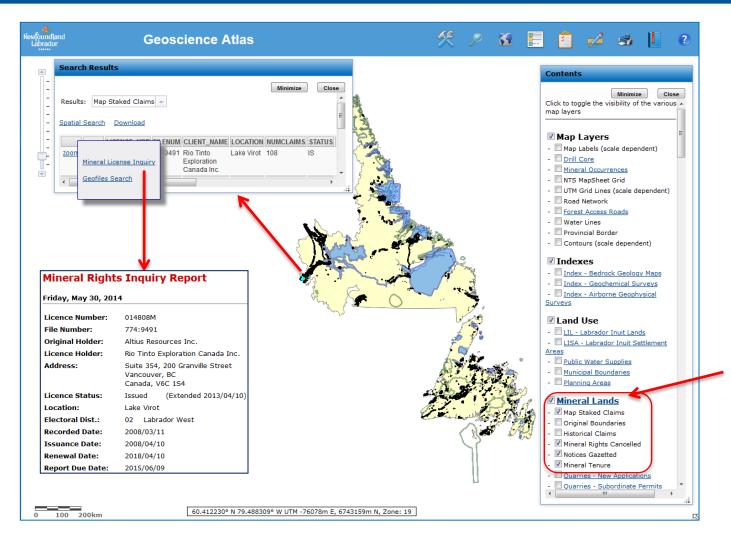
## **Geoscience Atlas**Land Use Group





# **Geoscience Atlas**Mineral Lands > Map Staked Claims, Notices Gazetted, Mineral Tenure etc.







Click on Mineral
Lands text to see
the help file for a
description of each
layer

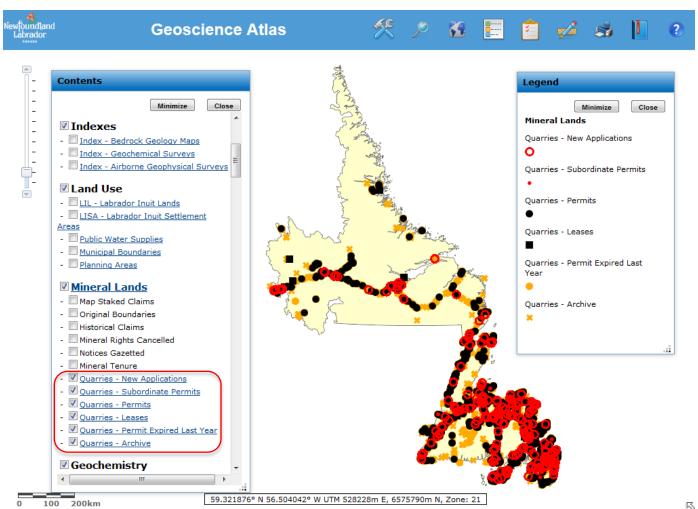
### **Geoscience Atlas Mineral Lands > Historical Claims**



**Geoscience Atlas** Click on a claim – then click on 'I inks' Search Results Contents > 'Geofiles Search' Results: Historical Claims -Click to toggle the visibility of the various . map layers Spatial Search Download and 'Full Text Map Layers LICENSE NRB OLDLIC FILENUM CLIENT NAME LOCATION NUMCLAIMS - Map Labels (scale dependent) 7749505 Rio Tinto zoom Online' to view the - Drill Core Exploration Mineral License Inquiry - Mineral Occurrences Canada Inc. - NTS MapSheet Grid Geofiles Search digital pdf - UTM Grid Lines (scale dependent) - Forest Access Roads assessment report - Water Lines - Provincial Border - Contours (scale dependent) Indexes GEOFILES Search Results - Index - Bedrock Geology Maps - Index - Geochemical Surveys - Index - Airborne Geophysical Surveys Document Type Selected: all Document Types Land Use 2 record(s) found. You are viewing records 1 to 2. -- Select View --- LIL - Labrador Inuit Lands - ILISA - Labrador Inuit Settlement - Public Water Supplies Geofile Number: LAB/1622 - Municipal Boundaries - Planning Areas Title: First and second year assessment report on geological and geochemical exploration for licences 14804M, 14807M-14812M, 14816M, 14819M, 14822M-14823M, 14970M, 14984M-14985M, 14988M Mineral Lands and 15041M-15042M on claims in the Lac Virot to Pegrum Lake area, western Labrador - Map Staked Claims Original Boundaries Author(s): Downing, K Historical Claims Year: 2010 Mineral Rights Cancelled Company(s): Rio Tinto Exploration Incorporated Notices Gazetted Source: Newfoundland and Labrador Geological Survey, Assessment File LAB/1622, 2010, 50 pages. - Mineral Tenure NTS: 23B/14 23B/15 23G/02 23G/03 23G/07 23G/08 - Quarries - New Applications Quarries - Subordinate Permit 60.051572° N 85.810424° W UTM -429348m E, 6776362m N, Zone: 19

### **Geoscience Atlas Mineral Lands > Quarries**

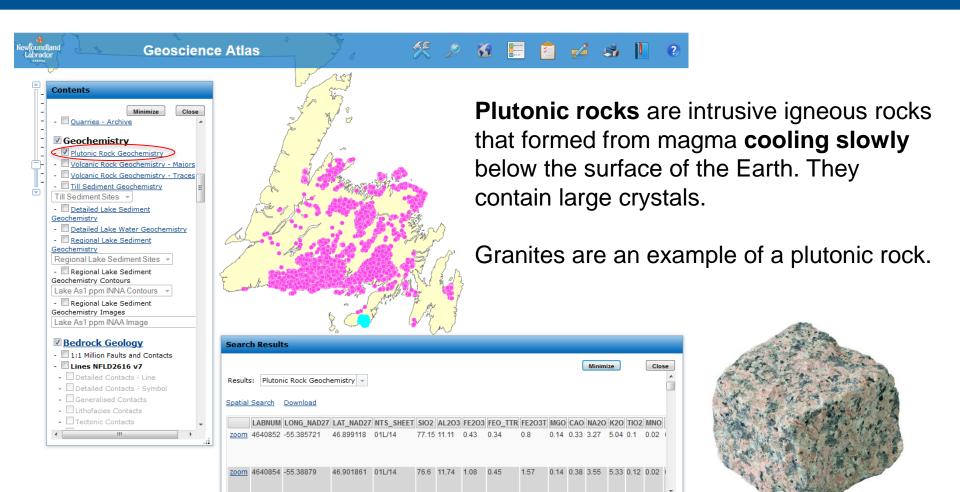




### **Geoscience Atlas Geochemistry > Plutonic Rocks**

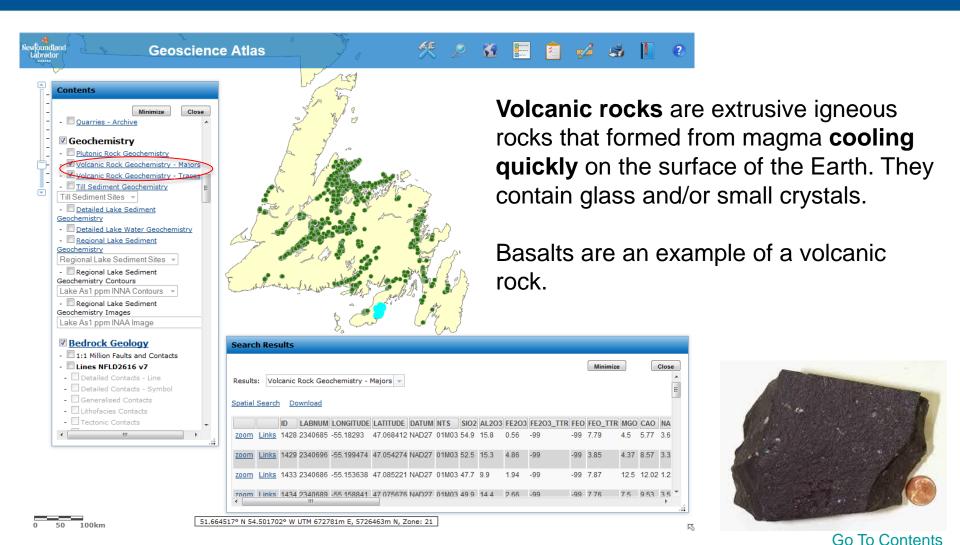
49.277417° N 51.798008° W UTM 441954m E, 5458383m N, Zone: 22





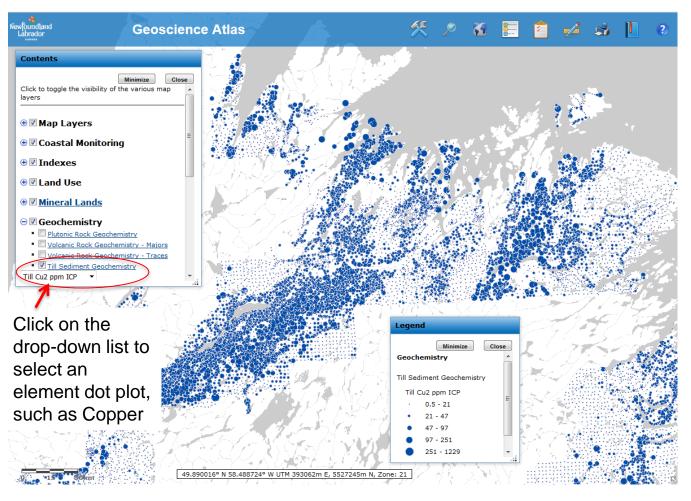
### **Geoscience Atlas Geochemistry > Volcanic Rocks**

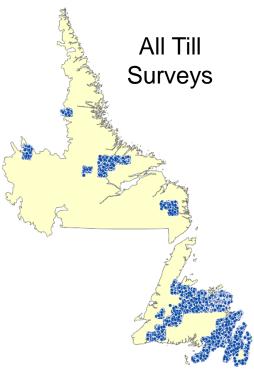




## Geoscience Atlas Geochemistry > Till Sediment Surveys





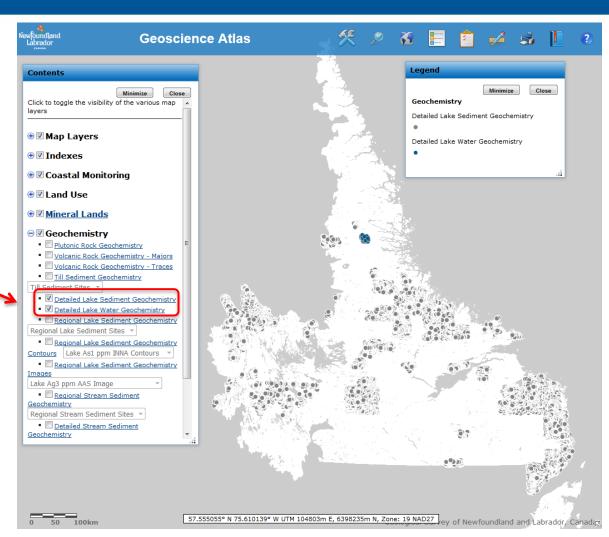


# Geoscience Atlas Geochemistry > Detailed Lake Sediment / Lake Water



Detailed Lake Sediment and Water geochemistry surveys are in separate layers

Searh Results 'Links' provide a link to Geofiles; more recent reports are linked to pdf files and csv data files



# Geoscience Atlas Geochemistry > Regional Lake Sediment

Contents

Geoscience Atlas



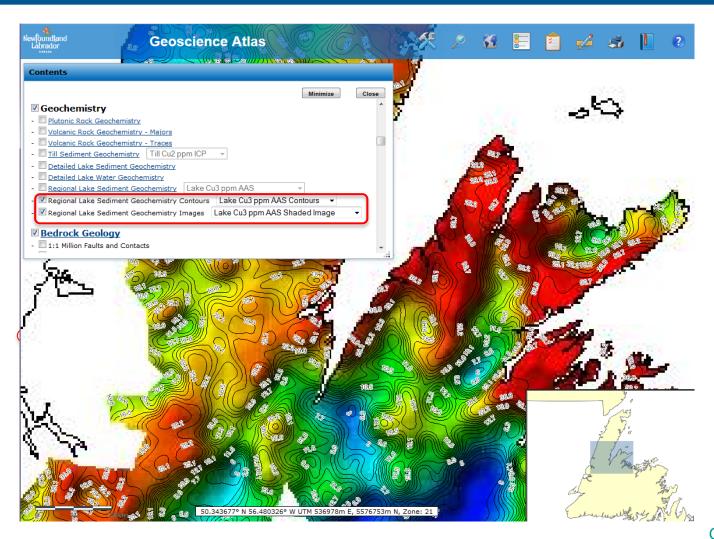
Go To Contents

Legend - Historical Claims Geochemistry - Mineral Rights Cancelled - Notices Gazetted Regional Lake Sediment Geochemistry - Mineral Tenure Lake Cu3 ppm AAS - Quarries - New Applications 1 - 23- Quarries - Subordinate Permits - Ouarries - Permits - Quarries - Leases 60 - 170 - Quarries - Permit Expired Last Year 170 - 916 - Quarries - Archive 916 - 12380 **☑** Geochemistry - Plutonic Rock Geochemistry - Volcanic Rock Geochemistry - Majors - Volcanic Rock Geochemistry - Traces - Till Sediment Geochemistry - Detailed Lake Sediment - Detailed Lake Water Geochemistry - Regional Lake Sediment Lake Cu3 ppm AAS Geochemistry Contours Lake As1 ppm INNA Contours - Regional Lake Sediment Geochemistry Images Lake As1 ppm INAA Image Bedrock Geology - 1:1 Million Faults and Contacts - Lines NFLD2616 v7 - Detailed Contacts - Line

Click on the drop-down list to select an element dot plot, such as Copper

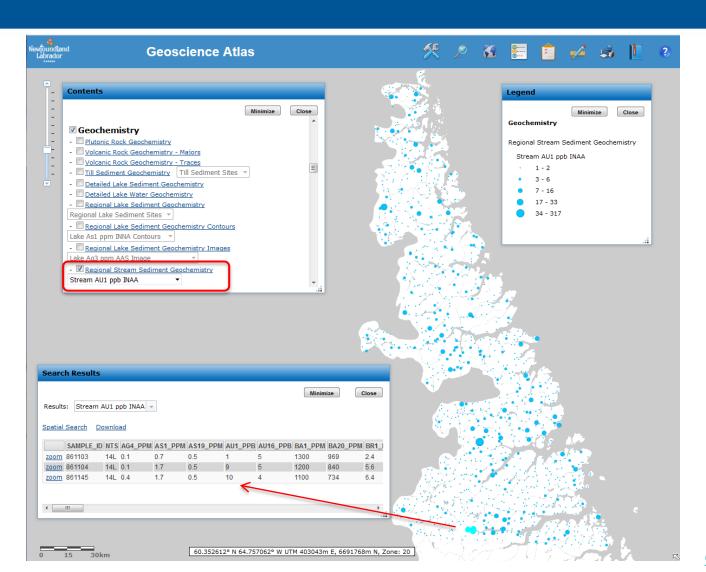
# **Geoscience Atlas**Geochemistry > Regional Lake Sediment – Contours and Images





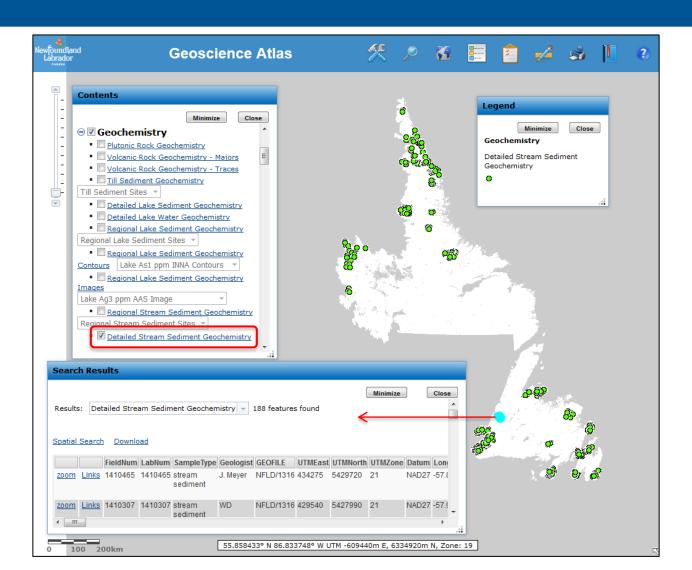
# Geoscience Atlas Geochemistry > Regional Stream Sediment





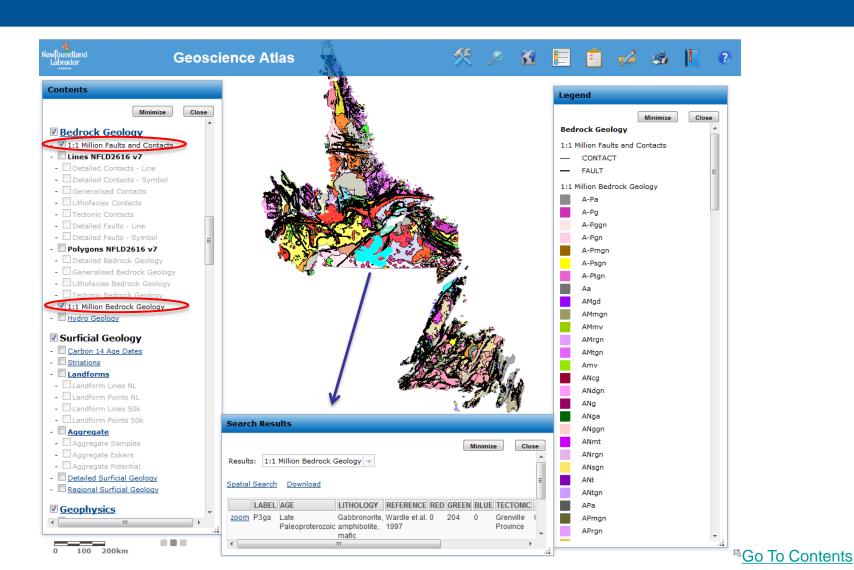
# Geoscience Atlas Geochemistry > Detailed Stream Sediment





### **Geoscience Atlas**Bedrock Geology > 1:1 Million

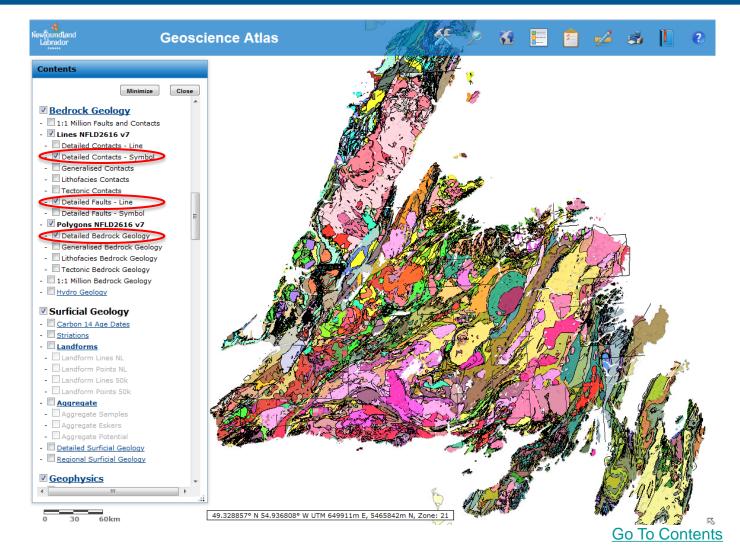




# Geoscience Atlas Bedrock Geology > Detailed Lines and Polygons (NFLD2616 v7)



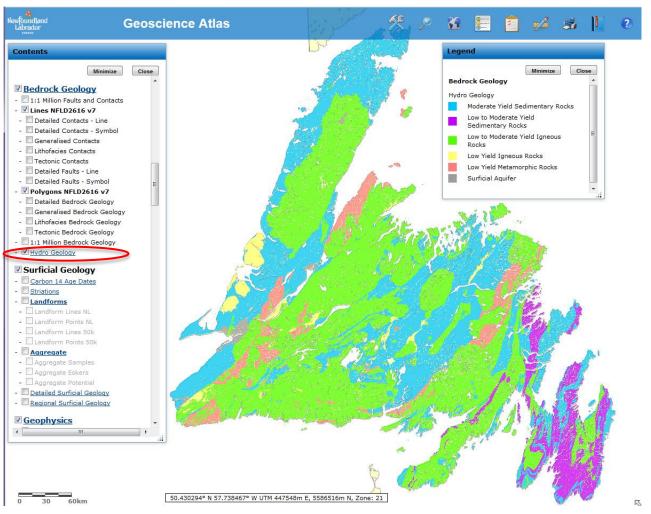
Contacts and Faults are available as symbolized and non-symbolized lines.



### Geoscience Atlas Bedrock Geology > Hydro Geology

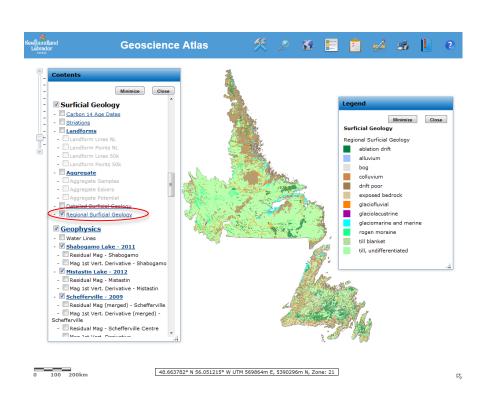


The Hydro Geology layer indicates the relative amount of groundwater available in the rocks.



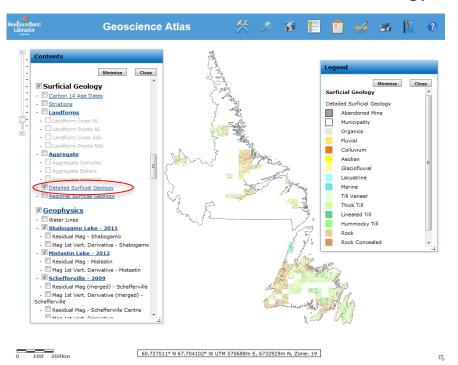
# Geoscience Atlas Surficial Geology > Regional and Detailed





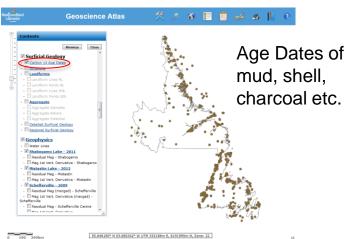
#### Regional Surficial Geology

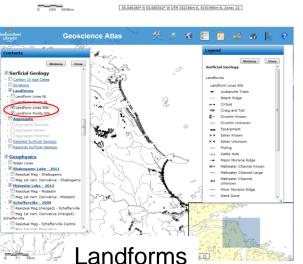
#### **Detailed Surficial Geology**

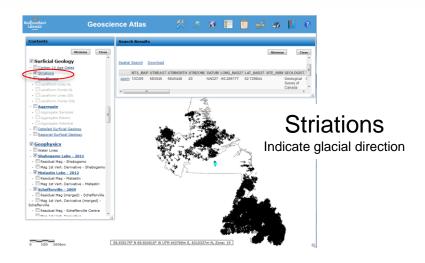


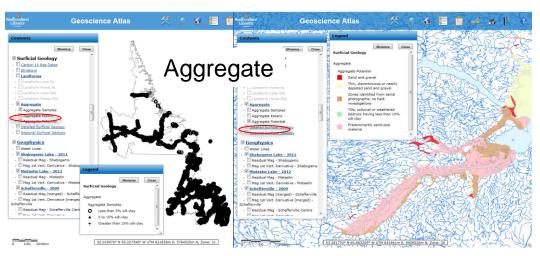
### Geoscience Atlas Surficial Geology > other layers





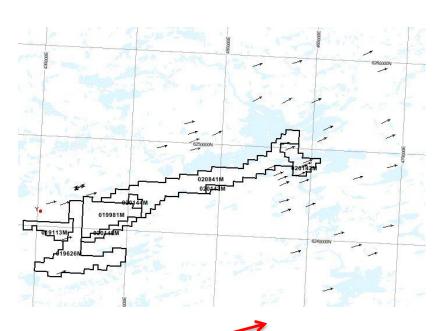






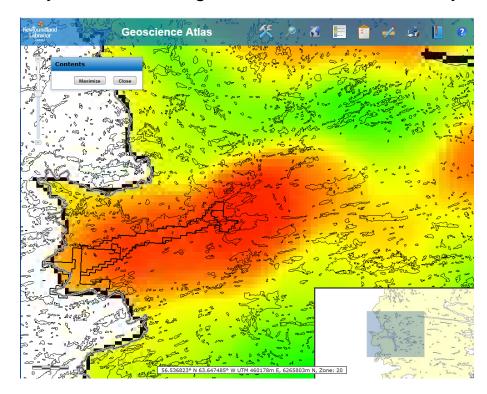
### **Geoscience Atlas**Surficial Geology > Striations





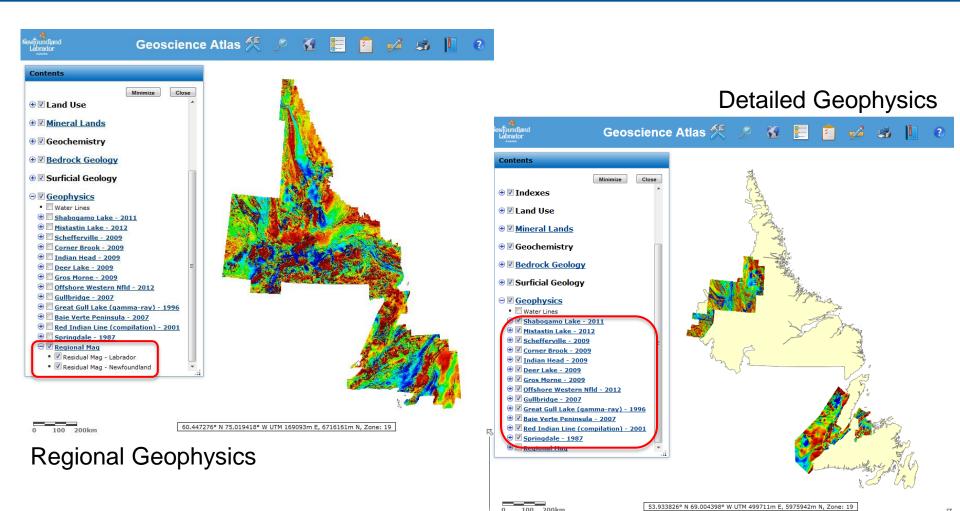
Striations:
Indicate glacial direction is from the southwest to the northeast

The lake sediment geochemistry image for lead (Pb) displays a large anomaly. Exploring in the up-ice direction, southwest of the anomaly, may result in finding the source of this anomaly.



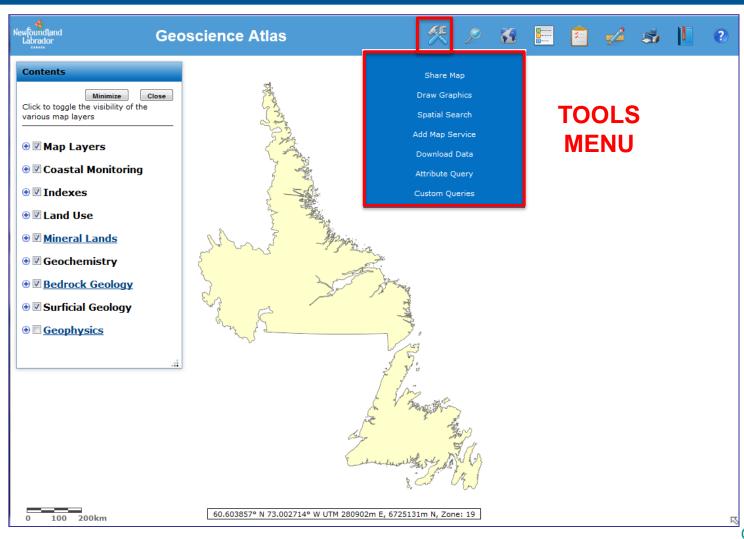
### **Geoscience Atlas Geophysics Group**





## **Geoscience Atlas Tools Menu**

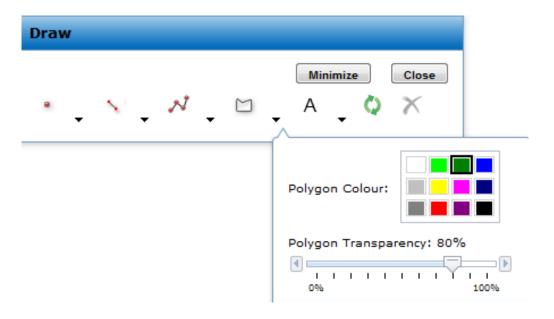




# **Geoscience Atlas Material Tools** > Draw Graphics



- -add points, lines, polylines, polygons and text to your map
- -when printing, these graphics are only included using the Quick Map > 'Print Image' option
- -'Save Image' and 'Save Image as PDF' include the graphics but not the text
- -drawn graphics cannot be saved and are not retained if you refresh the screen



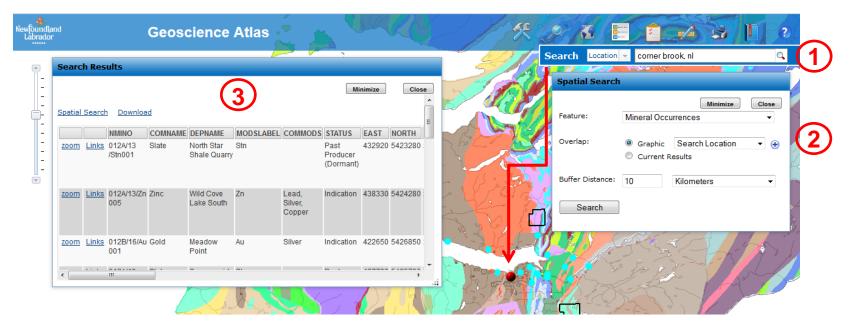
# **Geoscience Atlas K Tools > Spatial Search**



Spatial Search is based on the overlap of

- i) a drawn graphic (e.g., intersecting a line or within a polygon), or
- ii) current results (i.e., current selection in a Search Results window)

Buffer Distance can be used around either Graphic or Current Results. Example: What mineral occurrences are within 10km of Corner Brook?



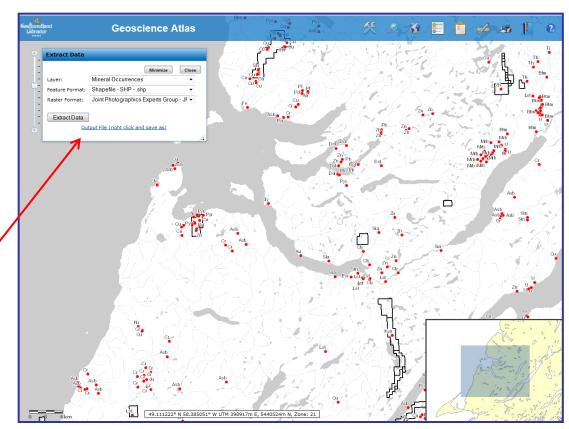
## **Geoscience Atlas \*\* Tools > Download Data**



Choose the layer from the drop-down list (vector features or raster images). The layer does not have to be turned on. Base maps cannot be downloaded.

'Features' (i.e., point, line or polygon vector features) within the current window extents are downloaded in the chosen format (.shp or .gdb).

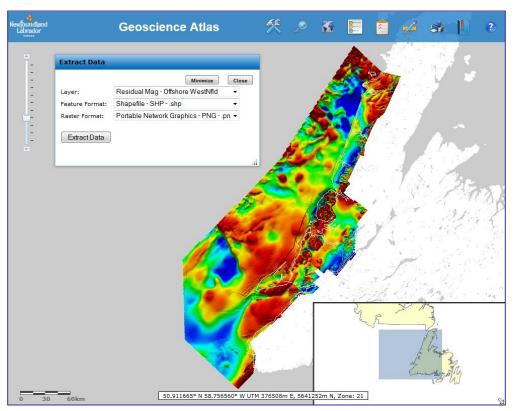
Save the .zip file to your / computer. The data are in latitude-longitude, datum NAD27 coordinate system.



### **Geoscience Atlas K Tools > Download Data**



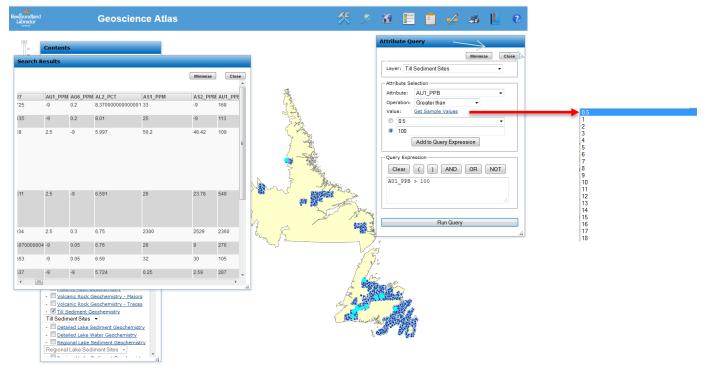
For 'Raster' images (*e.g.*, geophysics raster images, lake seds element images), the **whole image** is downloaded in the chosen format (.jpg, .tif, or .png). The layer does not have to be turned on. The downloaded raster images are in UTM, datum NAD27 coordinate system.







Select the layer and field (attribute) of interest; choose an operator and click on 'Get Sample Values' for **examples** of values; select a value from the drop down list or enter a value in the box below; click on the 'Add to Query Expression' and Run the Query; the records in the Search Results table will be highlighted on the map

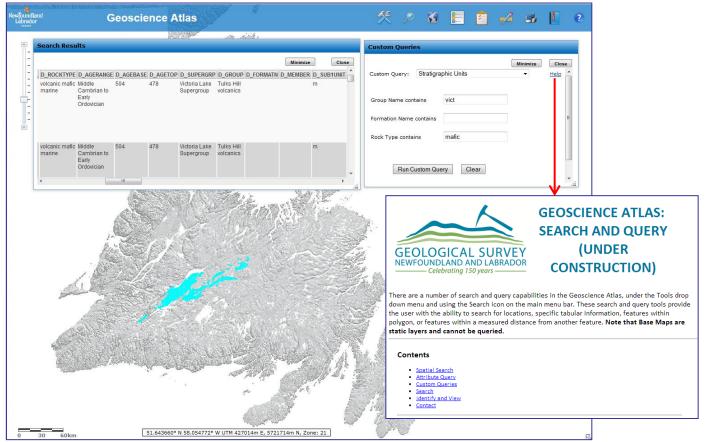






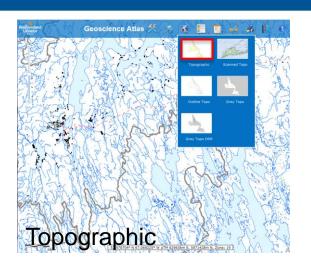
Select one of 17 Custom Query forms.

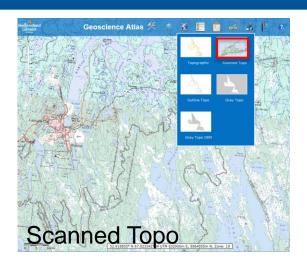
Example: search for 'mafic' Stratigraphic Units of the Victoria Lake Supergroup

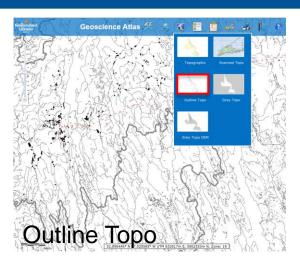


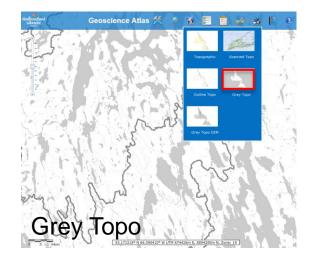
**8** Base Maps – Detail increases as scale is increased

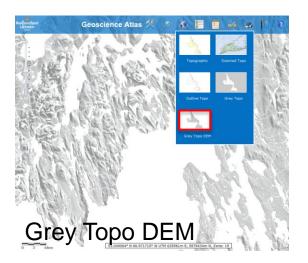






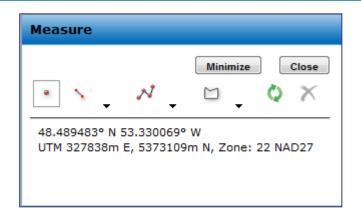






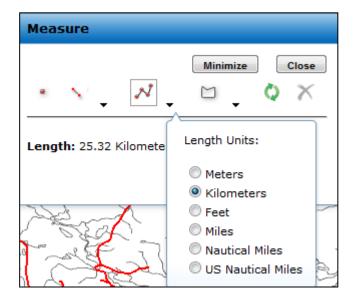






#### **Point**

Provides X/Y coordinates in Longitude/Latitude, based on the **NAD27** datum. Values can be selected, copied and pasted. (UTM values will be added in the future).



#### **Polyline**

Click the arrow next to the polyline icon to choose a unit of measurement. On the map click to start drawing, click to add vertices and double click to finish. The length of the polyline displays in the unit of measurement chosen. The default unit is Kilometers.

See Atlas Help file for Line and Polygon options, Clear and Close.

Go To Contents



#### Print Custom Map



Click the Print icon and choose from several printing options:

**Custom Map**: Fill in the Map Title and choose a Map Layout from the drop down list. If you manually enter a different scale, the map will zoom in or out based on the centre of the preview image. Click the 'Create PDF' button and open the PDF to view, save and print the map. Drawn graphics are not included.





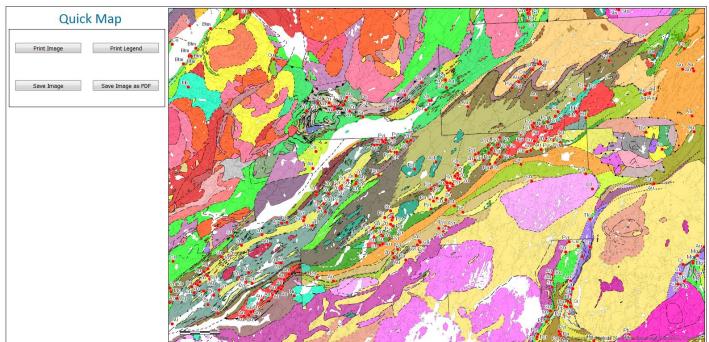
#### Print Quick Map



Click the Print icon and choose the Quick Map printing option:

**Quick Map**: Most drawn graphics **are** included

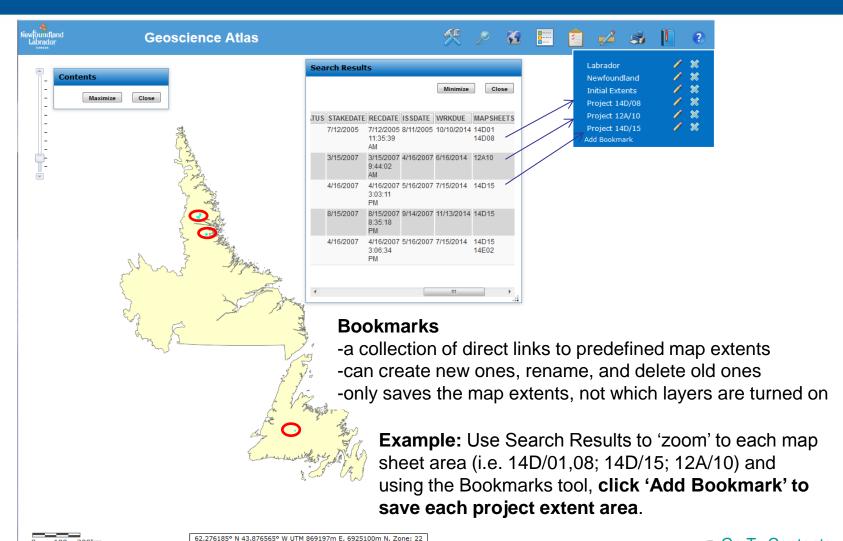
- 1. Print Image prints the map 'as is' with a scale bar
- 2. Save Image saves as a png or bmp depending on your browser
- 3. Save Image as PDF
- 4. Print Legend lists feature symbols from the whole province for open layers; legend does not display base map info, road networks or image values.





#### **Bookmarks**









Atlas Help – provides brief descriptions of all the tools, as well as Links to the Layers help file (description of all the layers), the Frequently Asked Questions (FAQ) and this Tutorial

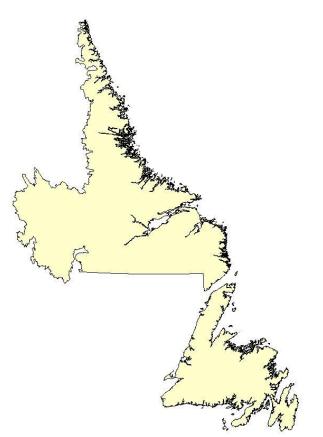
	GEOSCIENCE ATLAS:
GEOLOGICAL SURVEY NEWFOUNDLAND AND LABRADOR Celebrating 150 years	ATLAS HELP
Select from the help topics below for guidance on how to use the various features of the Atlas:	
Atlas Tutorial (brief overview of the Atlas)	
Navigating the map (Zoom in and out, Pan)	
Tools (Share Map, Draw Graphics, Spatial Search, Add Map Service, Download, Queries)	
Search (Location, Layers)	
Base Maps (Topographic, Outline, Grey Topo, DEM)	
Legend Contents	
Contents	
<u>Measure</u> (Point coordinates, Line, Polygon)	
Print (To Scale, Image, PDF, Legend)  Bookmarks	
Help (Help, Contact, Natural Resources Website, Atlas Version)	
Overview Map (Map location, Pan)	
Link to other help files:	
Frequently Asked Questions	
List of Layers	
Search and Query	

Contact Information: 709-729-2301; GeoscienceOnline@gov.nl.ca Home: link to the Department of Natural Resources web site About Atlas: provides Atlas version number and link to Tamarack website

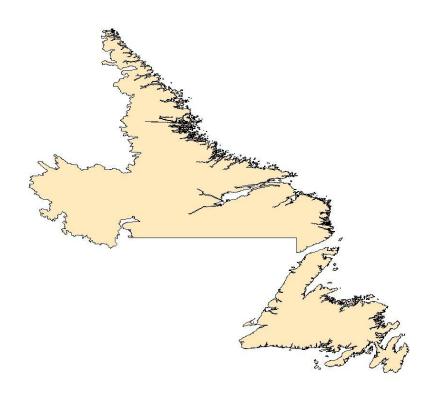
## **Geoscience Atlas Projection Information**



Transverse Mercator projection of the Geoscience Atlas map window



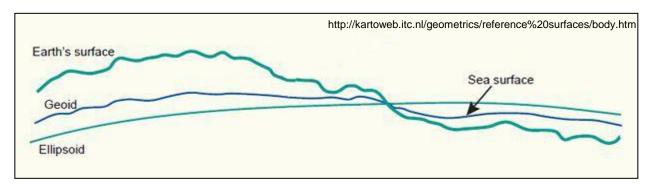
Geographic projection (latitude-longitude, NAD27) of downloaded vector data



## **Geoscience Atlas Projection Information**

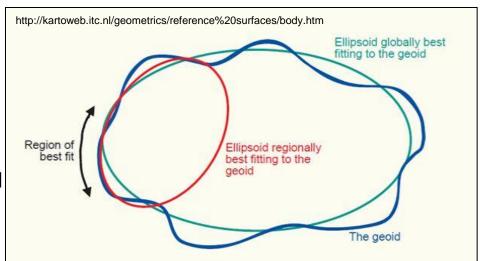


Projections are necessary in order to convert locations on a 3-dimensional Earth to a 2-dimensional piece of paper. How is this done?



The earth's surface is represented by a GEOID, which is the surface representation if the earth was covered by water. The ELLIPSOID is a mathematical representation of the geoid.

Local ellipsoids provide a better fit to the geoid. Prior to 1980 the Clarke\_1866 ellipsoid was used to define the North American Datum of 1927 (NAD27). It was based on manually surveying the continent, starting at the approximate centre in Kansas. New local datums, such as NAD83, are based on satellite data and are more accurate. The WGS84 datum, used as the default by many GPS, is a global datum, similar to NAD83.



## **Geoscience Atlas Projection Definitions**



#### Datum:

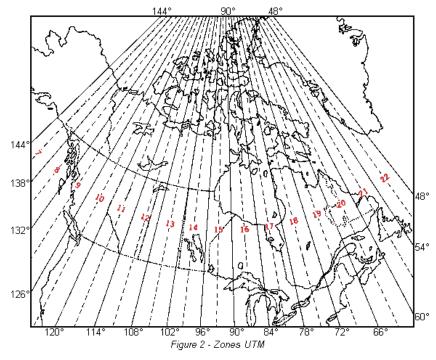
A reference based on a model of the Earth's ellipsoid. The coordinates in the Geoscience Atlas are based on the North American Datum of 1927 (NAD27). Many GPS default to the World Geodetic System of 1984 (WGS84) datum, which is within a metre of another commonly used local datum - NAD83. NAD27 and NAD83 UTM values differ by about 60m in the east direction and 225m in the north direction in Newfoundland and Labrador.

#### Universal Transverse Mercator Projection:

The earth is divided into 60 zones, each is 6° wide – this allows each area to be represented more accurately as a flat surface. Each zone is assigned a Zone number. Zones 19, 20, 21 and 22 cover Newfoundland and Labrador. The central x-value, or Easting, of each zone is defined as 500,000m E and the y-value, or Northing, is measured in metres from the equator. UTM coordinates are based on a datum – the Geoscience Atlas provides UTM coordinates based on the NAD27 datum.

#### Latitude/Longitude Coordinate System:

Provides a spherical numbering system, in degrees, to define a location on the earth's surface. Newfoundland and Labrador ranges from 52.62° to 67.82° west of the 0° Prime Meridian in England, and 46.60° to 60.50° north of the equator. Latitude and longitude coordinates are also based on a datum – the Geoscience Atlas provides latitude/longitude coordinates based on the NAD27 datum.



### **Geoscience Atlas Contact Information**



Contact Information:

Check out Atlas Help:

GeoscienceOnline@gov.nl.ca

709-729-2301

Where is ....?

How do I print a map to scale?

PDF of slides available from Pat O'Neill, (709) 729-2120 matty@gov.nl.ca

What projection is used in the Atlas?

Who do / contact?