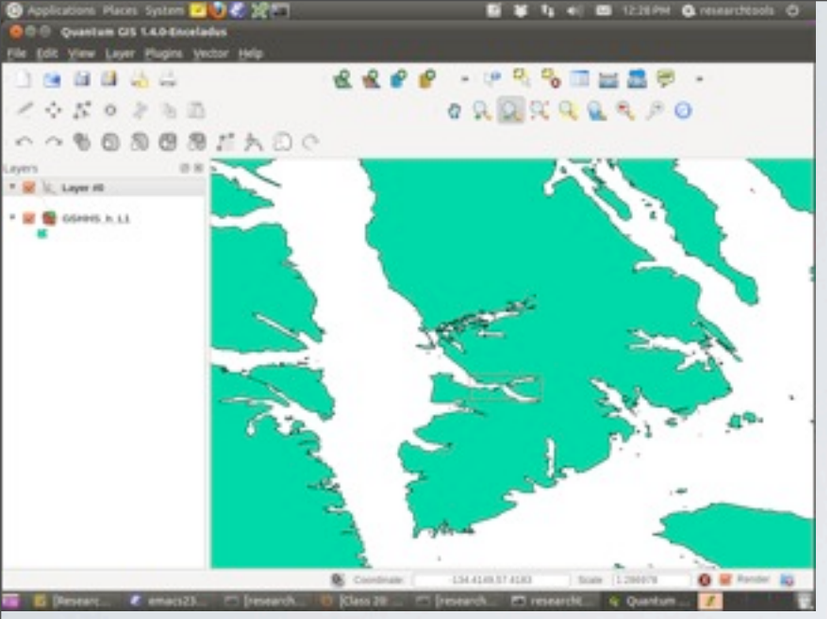
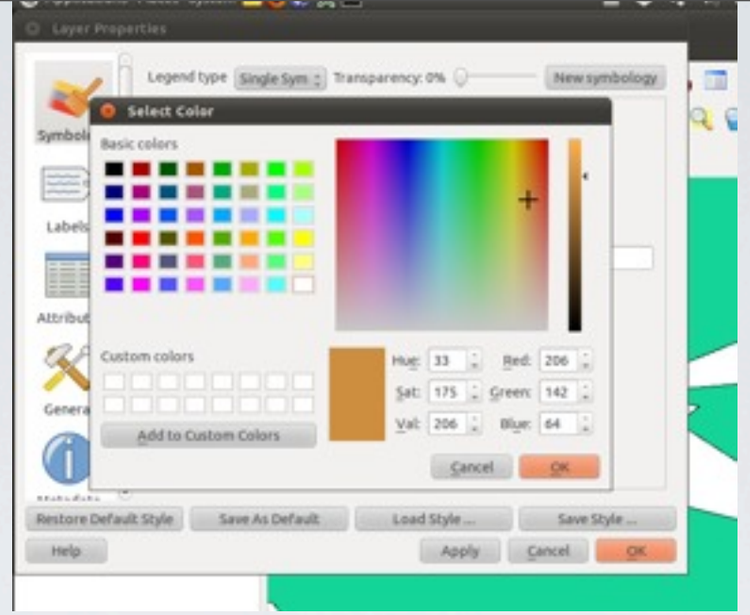
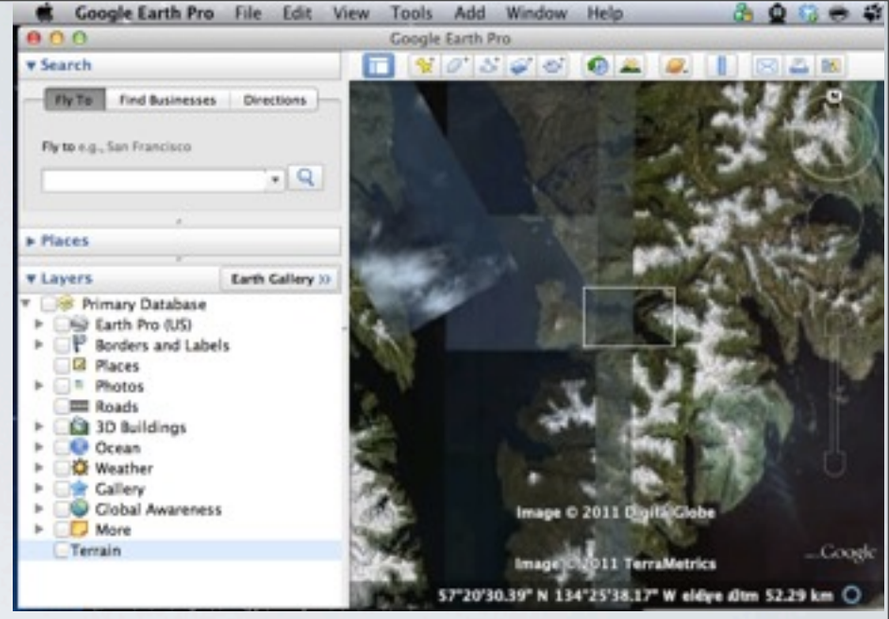
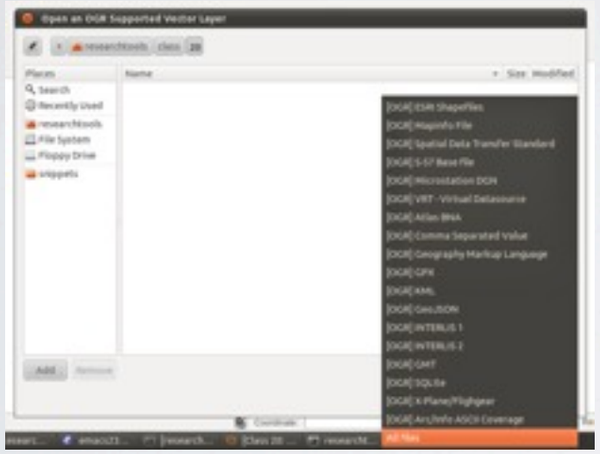
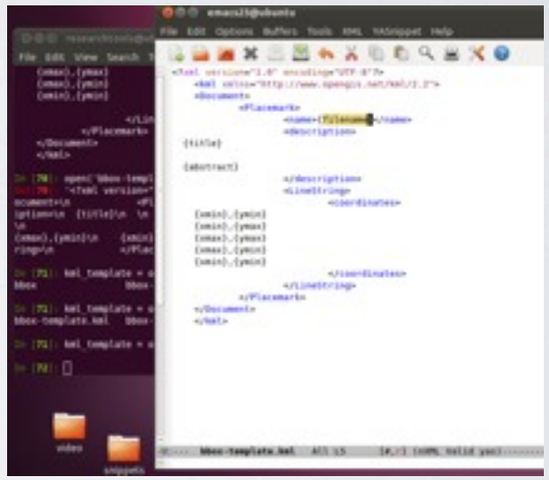






RESEARCH TOOLS 2011
LECTURE 20





2011-Nov-08
Kurt Schwehr
http://schwehr.org

UNH CCOM/JHC
BAGs part 3: XML, KML and GSHHS Shoreline

CC BY NC SA

http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researchtools/
http://creativecommons.org/licenses/by-nc-sa/3.0/

IRC
PLEASE
ISO
XML
Kotlin

Applications Places System 11:01 AM researchtools

emacs23@ubuntu

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Research Tools Class 20: BAGs HDF5 with h5py, lxml, python .format, KML

Search Link Text Notebook

Research Tools Class 20: BAGs HDF5 with h5py, lxml, python .format, KML

and qgis with GSHHS shapefile

2011-Nov-08
UNH CCOM/JHC
Kurt Schwehr
http://schwehr.org

```
[Tue Nov  8 2011]
*** You have joined channel #unhresearchtools                    [11:00]
*** Users on #unhresearchtools: kurtvm ygh2 @goatbar
*** #unhresearchtools modes: +
*** kjerram (~chatzill@gebco7.ccom.nh) has joined channel #unhresearchtools
*** sthein (~chatzill@lab9.ccom.nh) has joined channel #unhresearchtools
<sthein> Hi !
<ygh2> hello
ERC>
-U:**-  #unhresearchtools@Unknown    All L22    (ERC)--------------------------------
Logging in as 'kurtvm'... done
```

video snippets

Research Tools Class ... emacs23@ubuntu [researchtools@ubun...

Applications Places System 11:01 AM

Class 20: BAGs 3, XML Metadata, KML, and GSHHS shapefile - Mozilla Firefox

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Class 20: BAGs 3, XML Metada…

vislab-ccom.unh.edu/~schwehr/rt/20-bags-3-xml-kml-gshhs.html

Google

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Introduction

See also

Setup

```
mkdir -p ~/class/20
cd ~/class/20

ipython
```

Now on to python and bathymetry!

```
logstart?
logstart -o -r -t log-class-20.py append
```

Class 20: BAGs 3, XML Metada…

vislab-ccom.unh.edu/~schwehr/rt/20-bags-3-xml-kml-gshhs.html

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Setup

```
mkdir -p ~/class/20
cd ~/class/20

ipython
```

Now on to python and bathymetry!

```
logstart?
logstart -o -r -t log-class-
!less log-class-20.py

# FIX: put in the name of th
!wget http://vislab-ccom.unh
!emacsclient --no-wait 20-ba
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
researchtools@ubuntu:~$ mkdir -p ~/class/20
researchtools@ubuntu:~$ cd ~/class/20
researchtools@ubuntu:~/class/20$ ls
researchtools@ubuntu:~/class/20$ ipython
Python 2.7.1+ (r271:86832, Apr 11 2011, 18:05:24)
Type "copyright", "credits" or "license" for more information.

IPython 0.10.1 -- An enhanced Interactive Python.
?         -> Introduction and overview of IPython's features.
%quickref -> Quick reference.
help      -> Python's own help system.
object?   -> Details about 'object'. ?object also works, ?? prints more.

In [1]: logstart -o -r -t log-class-20.py
```

Class 20: BAGs 3, XML Metada…

vislab-ccom.unh.edu/~schwehr/rt/20-bags-3-xml-kml-gshhs.html

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Setup

```
mkdir -p ~/class/20
cd ~/class/20

ipython
```

Now on to python and bathymetry!

```
-r -t log-class-20.py append

ass-20.py

n the name of the org file
/vislab-ccom.unh.edu/~schwehr
 --no-wait 20-bags-3-xml-kml-
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
researchtools@ubuntu:~/class/20$ ls
researchtools@ubuntu:~/class/20$ ipython
Python 2.7.1+ (r271:86832, Apr 11 2011, 18:05:24)
Type "copyright", "credits" or "license" for more information.

IPython 0.10.1 -- An enhanced Interactive Python.
?         -> Introduction and overview of IPython's features.
%quickref -> Quick reference.
help      -> Python's own help system.
object?   -> Details about 'object'. ?object also works, ?? prints more.

In [1]: logstart -o -r -t log-class-20.py append
Activating auto-logging. Current session state plus future input saved.
Filename       : log-class-20.py
Mode           : append
Output logging : True
Raw input log  : True
Timestamping   : True
State          : active

In [2]: !wget http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researcht
ools/src/20-bags-3-xml-kml-gshhs.org
```

Class 20: BAGs 3, XML Metadata, KML, and GSHHS shapefile - Mozilla Firefox

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Class 20: BAGs 3, XML Metada…

vislab-ccom.unh.edu/~schwehr/rt/20-bags-3-xml-kml-gshhs.html

Google

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Setup

```
mkdir -p ~/class/20
cd ~/class/20

ipython
```

Now on to python and bathymetry!

```
logstart?
logstart -o -r -t log-class-
!less log-class-20.py

# FIX: put in the name of th
!wget http://vislab-ccom.unh
!emacsclient --no-wait 20-ba
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
Output logging : True
Raw input log  : True
Timestamping   : True
State          : active

In [2]: !wget http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researcht
ools/src/20-bags-3-xml-kml-gshhs.org
--2011-11-08 11:02:56--  http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci89
5-researchtools/src/20-bags-3-xml-kml-gshhs.org
Resolving vislab-ccom.unh.edu... 192.168.3.3
Connecting to vislab-ccom.unh.edu|192.168.3.3|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 6416 (6.3K) [text/plain]
Saving to: `20-bags-3-xml-kml-gshhs.org'

100%[======================================>] 6,416       --.-K/s   in 0s

2011-11-08 11:02:56 (483 MB/s) - `20-bags-3-xml-kml-gshhs.org' saved [6416/6416]


In [3]: !emacsclient --no-wait 20-bags-3-xml-kml-gshhs.org
```

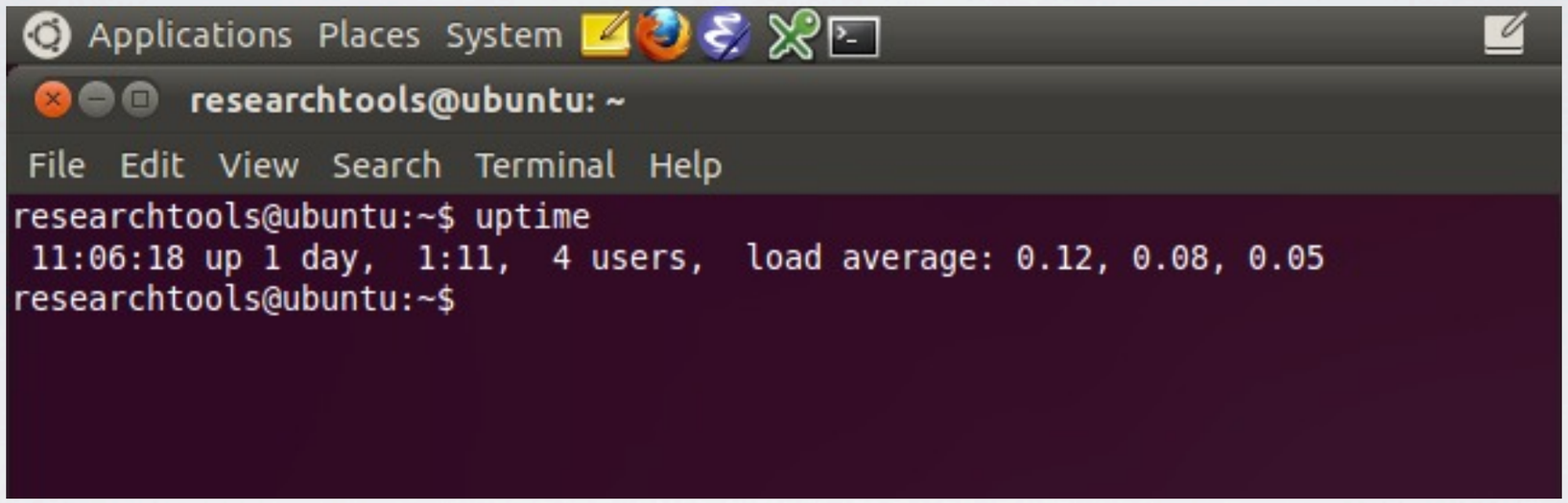
video

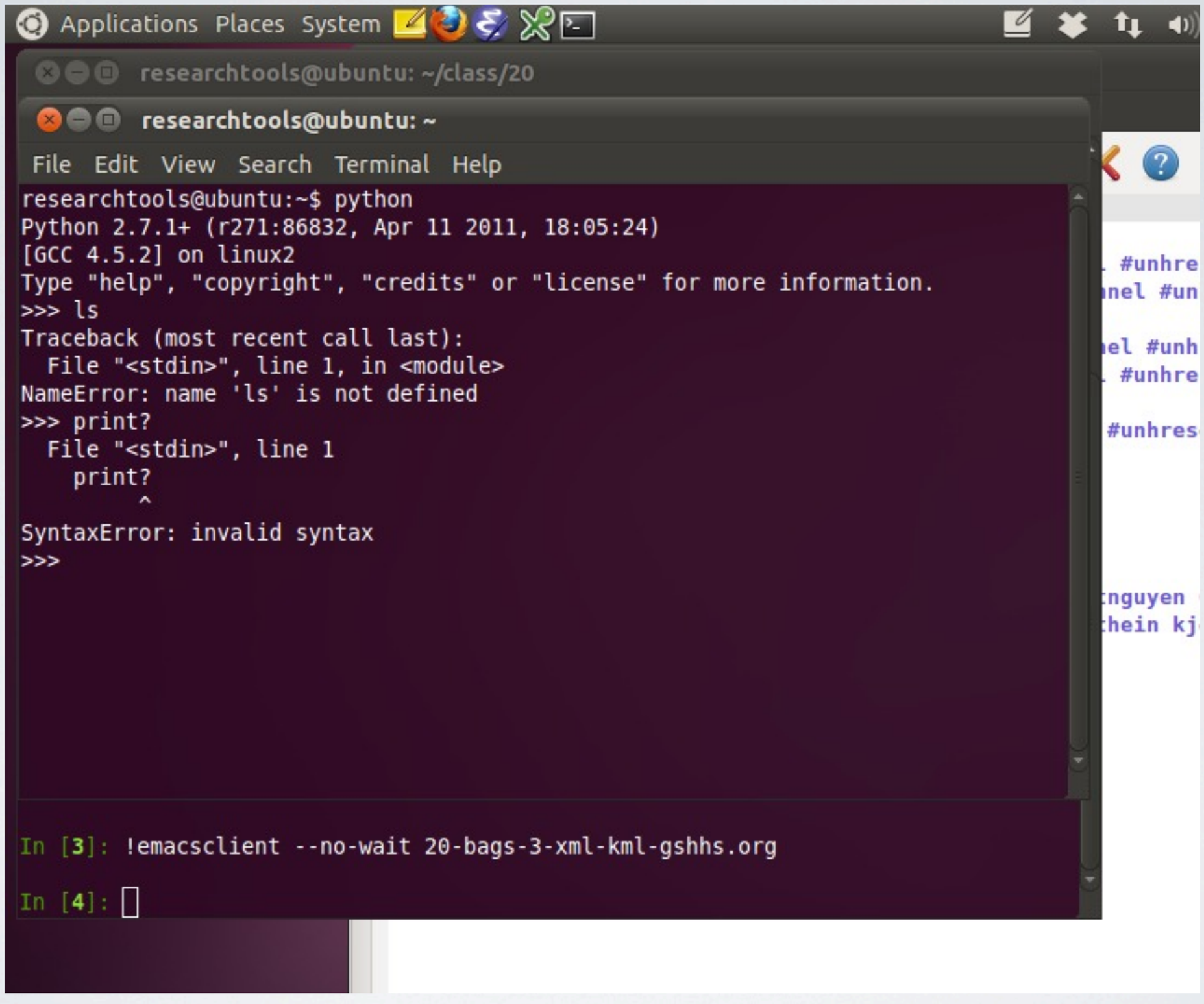
snippets

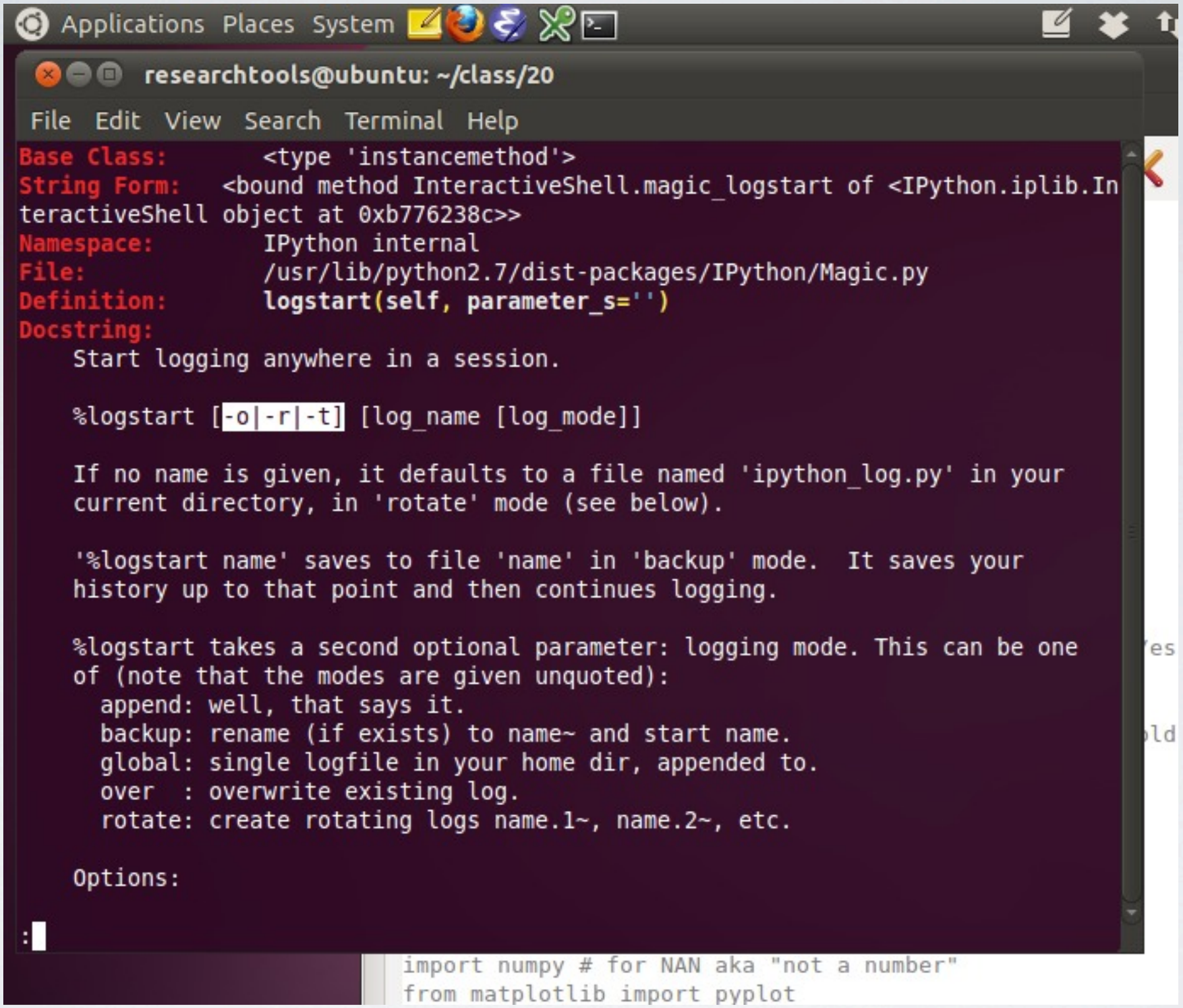
ERC>

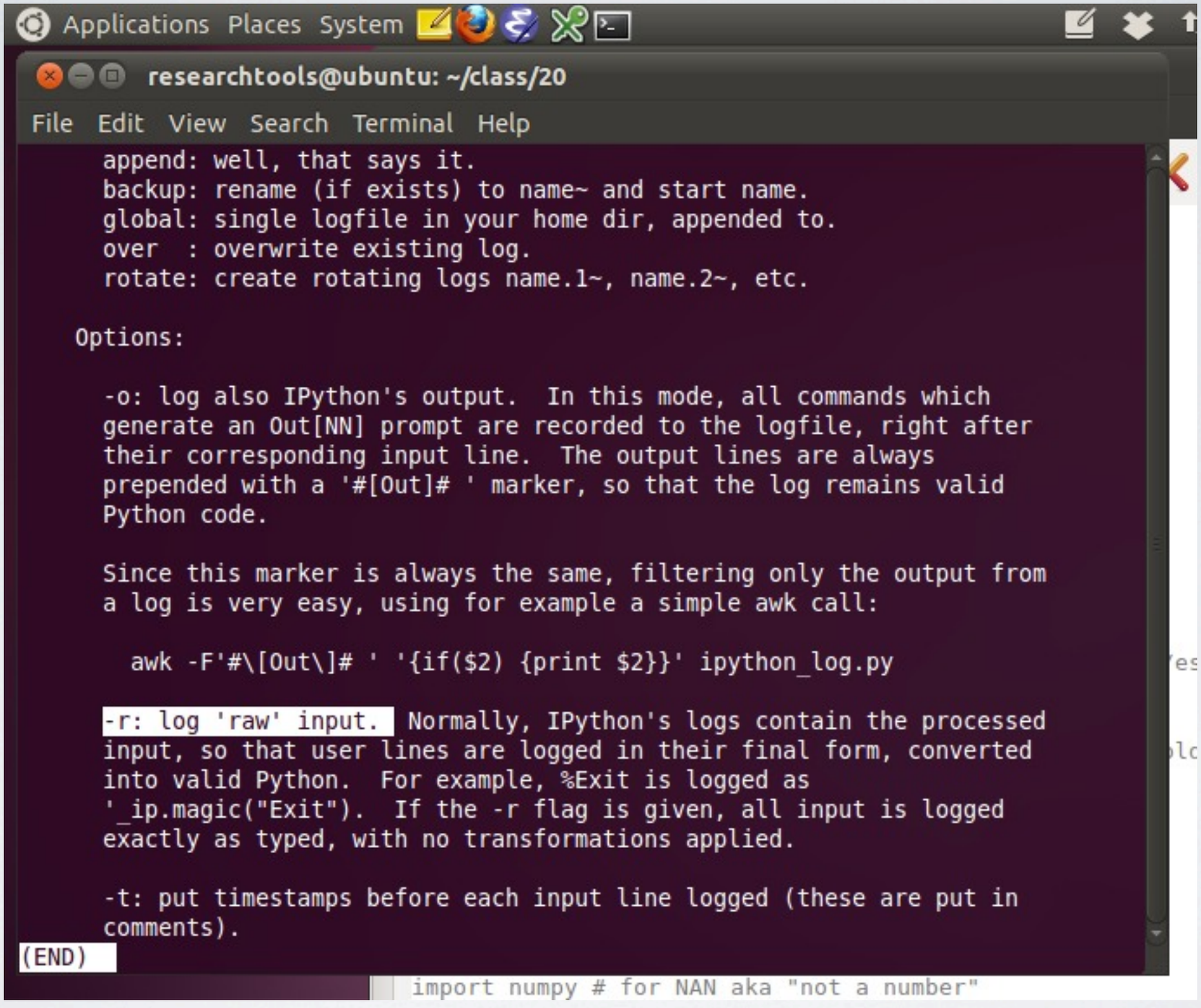
-U:**- #unhresearchtools@Unknown All L29 (ERC)----------

Logging in as 'kurtvm'... done


Applications Places System
researchtools@ubuntu: ~
File Edit View Search Terminal Help
researchtools@ubuntu:~$ uptime
 11:06:18 up 1 day, 1:11, 4 users, load average: 0.12, 0.08, 0.05
researchtools@ubuntu:~$


Applications Places System
researchtools@ubuntu: ~/class/20
researchtools@ubuntu: ~
File Edit View Search Terminal Help
researchtools@ubuntu:~$ python
Python 2.7.1+ (r271:86832, Apr 11 2011, 18:05:24)
[GCC 4.5.2] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>> ls
Traceback (most recent call last):
File "<stdin>", line 1, in <module>
NameError: name 'ls' is not defined
>>> print?
File "<stdin>", line 1
print?
^
SyntaxError: invalid syntax
>>>
In [3]: !emacsclient --no-wait 20-bags-3-xml-kml-gshhs.org
In [4]:

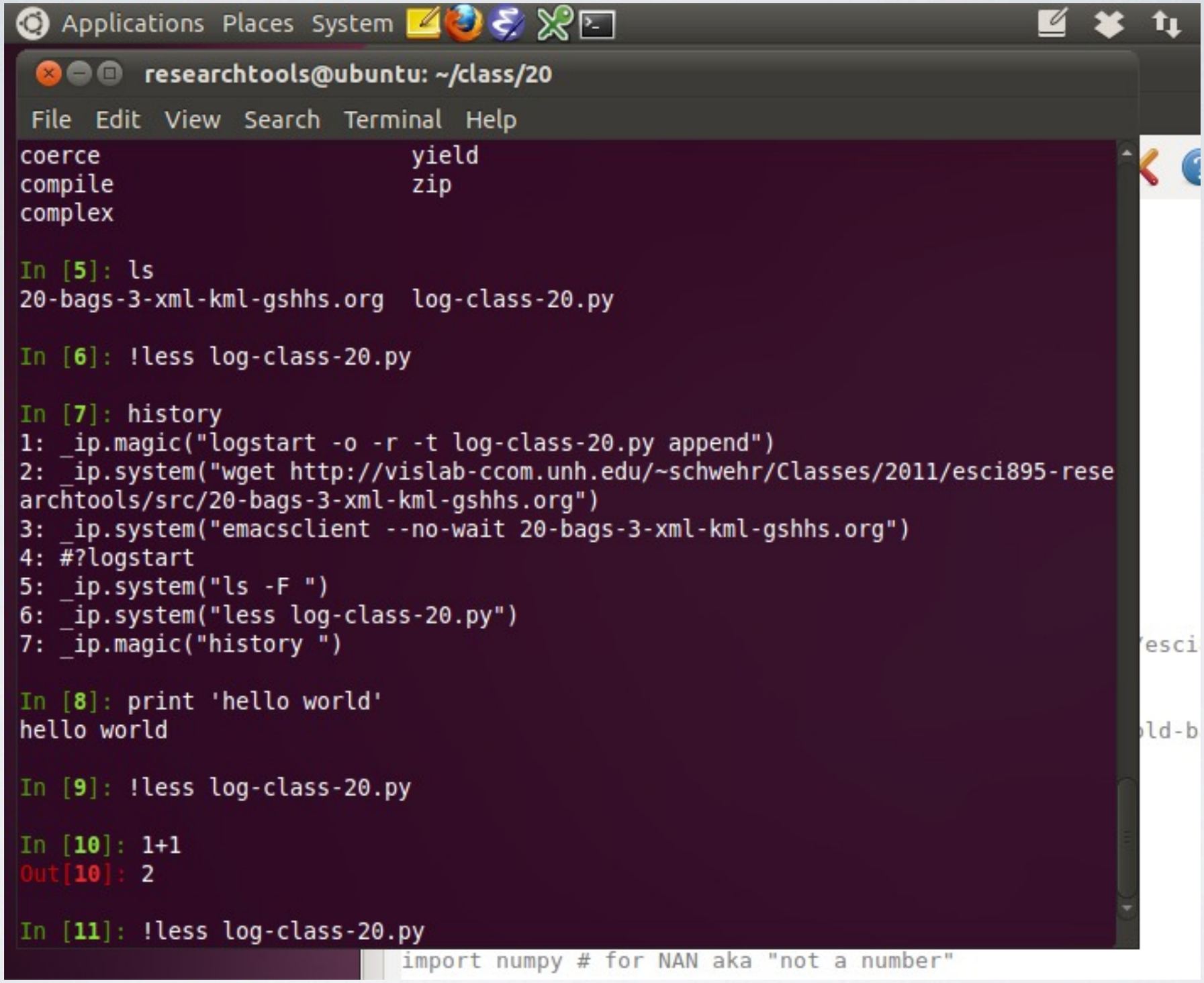

Applications Places System
researchtools@ubuntu: ~/class/20
File Edit View Search Terminal Help
Base Class: <type 'instancemethod'>
String Form: <bound method InteractiveShell.magic_logstart of <IPython.iplib.InteractiveShell object at 0xb776238c>>
Namespace: IPython internal
File: /usr/lib/python2.7/dist-packages/IPython/Magic.py
Definition: logstart(self, parameter_s='')
Docstring:
Start logging anywhere in a session.
%logstart [-o|-r|-t] [log_name [log_mode]]
If no name is given, it defaults to a file named 'ipython_log.py' in your current directory, in 'rotate' mode (see below).
'%logstart name' saves to file 'name' in 'backup' mode. It saves your history up to that point and then continues logging.
%logstart takes a second optional parameter: logging mode. This can be one of (note that the modes are given unquoted):
append: well, that says it.
backup: rename (if exists) to name~ and start name.
global: single logfile in your home dir, appended to.
over : overwrite existing log.
rotate: create rotating logs name.1~, name.2~, etc.
Options:
:
import numpy # for NAN aka "not a number"
from matplotlib import pyplot


Applications Places System
researchtools@ubuntu: ~/class/20
File Edit View Search Terminal Help
append: well, that says it.
backup: rename (if exists) to name~ and start name.
global: single logfile in your home dir, appended to.
over : overwrite existing log.
rotate: create rotating logs name.1~, name.2~, etc.
Options:
-o: log also IPython's output. In this mode, all commands which
generate an Out[NN] prompt are recorded to the logfile, right after
their corresponding input line. The output lines are always
prepended with a '#[Out]# ' marker, so that the log remains valid
Python code.
Since this marker is always the same, filtering only the output from
a log is very easy, using for example a simple awk call:
awk -F'#\[Out\]# ' '{if($2) {print $2}}' ipython_log.py
-r: log 'raw' input. Normally, IPython's logs contain the processed
input, so that user lines are logged in their final form, converted
into valid Python. For example, %Exit is logged as
'_ip.magic("Exit"). If the -r flag is given, all input is logged
exactly as typed, with no transformations applied.
-t: put timestamps before each input line logged (these are put in
comments).
(END)
import numpy # for NAN aka "not a number"

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
# Tue, 08 Nov 2011 11:02:56
!wget http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researchtools/src/20-bags-3-xml-kml-gshhs.org
# Tue, 08 Nov 2011 11:03:18
!emacsclient --no-wait 20-bags-3-xml-kml-gshhs.org
# Tue, 08 Nov 2011 11:11:23
logstart
# Tue, 08 Nov 2011 11:13:28
ls
# Tue, 08 Nov 2011 11:13:42
!less log-class-20.py
log-class-20.py (END)
```


Applications Places System
researchtools@ubuntu: ~/class/20
File Edit View Search Terminal Help
coerce yield
compile zip
complex
In [5]: ls
20-bags-3-xml-kml-gshhs.org log-class-20.py
In [6]: !less log-class-20.py
In [7]: history
1: _ip.magic("logstart -o -r -t log-class-20.py append")
2: _ip.system("wget http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-rese
archtools/src/20-bags-3-xml-kml-gshhs.org")
3: _ip.system("emacsclient --no-wait 20-bags-3-xml-kml-gshhs.org")
4: #?logstart
5: _ip.system("ls -F ")
6: _ip.system("less log-class-20.py")
7: _ip.magic("history ")
In [8]: print 'hello world'
hello world
In [9]: !less log-class-20.py
In [10]: 1+1
Out[10]: 2
In [11]: !less log-class-20.py
import numpy # for NAN aka "not a number"

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
# Tue, 08 Nov 2011 11:02:56
!wget http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researchtools/src/
20-bags-3-xml-kml-gshhs.org
# Tue, 08 Nov 2011 11:03:18
!emacsclient --no-wait 20-bags-3-xml-kml-gshhs.org
# Tue, 08 Nov 2011 11:11:23
logstart
# Tue, 08 Nov 2011 11:13:28
ls
# Tue, 08 Nov 2011 11:13:42
!less log-class-20.py
# Tue, 08 Nov 2011 11:14:02
history
# Tue, 08 Nov 2011 11:14:12
print 'hello world'
# Tue, 08 Nov 2011 11:14:14
!less log-class-20.py
# Tue, 08 Nov 2011 11:14:23
1+1
#[Out]# 2
# Tue, 08 Nov 2011 11:14:28
!less log-class-20.py
log-class-20.py (END)
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
In [12]: !wget http://vislab-ccom.unh.edu/~schwehr/rt/examples/old-bags/H11703_Office_5m.bag.bz2
--2011-11-08 11:15:59--  http://vislab-ccom.unh.edu/~schwehr/rt/examples/old-bags/H11703_Office_5m.bag.bz2
Resolving vislab-ccom.unh.edu... 192.168.3.3
Connecting to vislab-ccom.unh.edu|192.168.3.3|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1474546 (1.4M) [application/x-bzip2]
Saving to: `H11703_Office_5m.bag.bz2'

100%[======================================>] 1,474,546   --.-K/s   in 0.1s

2011-11-08 11:15:59 (11.8 MB/s) - `H11703_Office_5m.bag.bz2' saved [1474546/1474546]


In [13]: !bunzip2 H11703_Office_5m.bag.bz2

In [14]: ls -l
total 22480
-rw-r--r-- 1 researchtools researchtools     6416 2011-11-08 10:25 20-bags-3-xml-kml-gshhs.org
-rw-r--r-- 1 researchtools researchtools 23003248 2011-10-27 09:44 H11703_Office_5m.bag
-rw-r--r-- 1 researchtools researchtools      772 2011-11-08 11:16 log-class-20.py

In [15]:
```

```
#+BEGIN_SRC python
import h5py  # To read HDF5 files (e.g. our BAG bathy)
import numpy # for NAN aka "not a number"
from matplotlib import pyplot
from lxml import etree

bag = h5py.File('H11703_Office_5m.bag')
metadata_txt = ''.join(bag['/BAG_root/metadata'])

out = file('H11703_Office_5m.xml','w')
out.write(metadata_txt)
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
In [15]: ls -l
total 22480
-rw-r--r-- 1 researchtools researchtools     6416 2011-11-08 10:25 20-bags-3-xml-kml-gshhs.org
-rw-r--r-- 1 researchtools researchtools 23003248 2011-10-27 09:44 H11703_Office_5m.bag
-rw-r--r-- 1 researchtools researchtools      806 2011-11-08 11:16 log-class-20.py

In [16]: pwd
Out[16]: '/home/researchtools/class/20'

In [17]: import h5py

In [18]: import num
```

```
#+BEGIN_SRC python
import h5py  # To read HDF5 files (e.g. our BAG bathy)
import numpy # for NAN aka "not a number"
from matplotlib import pyplot
from lxml import etree

bag = h5py.File('H11703_Office_5m.bag')
metadata_txt = ''.join(bag['/BAG_root/metadata'])

out = file('H11703_Office_5m.xml','w')
out.write(metadata_txt)
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
In [17]: import h5py

In [18]: import numpy

In [19]: from matplotlib import pyplot

In [20]: from lxml import etree

In [21]: bag = h5py.File('H11703_Office_5m.bag')

In [22]: whos
```

```
bag = h5py.File('H11703_Office_5m.bag')
metadata_txt = ''.join(bag['/BAG_root/metadata'])

out = file('H11703_Office_5m.xml','w')
out.write(metadata_txt)
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
In [21]: bag = h5py.File('H11703_Office_5m.bag')

In [22]: whos
Variable   Type      Data/Info
------------------------------
bag        File      <HDF5 file "H11703_Office<...>5m.bag" (mode r+, 21.9M)>
etree      module    <module 'lxml.etree' from<...>-packages/lxml/etree.so'>
h5py       module    <module 'h5py' from '/usr<...>on2.7/h5py/__init__.pyc'>
numpy      module    <module 'numpy' from '/us<...>n2.7/numpy/__init__.pyc'>
pyplot     module    <module 'matplotlib.pyplo<...>7/matplotlib/pyplot.pyc'>

In [23]: bag['/BAG_root/metadata']
```

```
bag = h5py.File('H11703_Office_5m.bag')
metadata_txt = ''.join(bag['/BAG_root/metadata'])

out = file('H11703_Office_5m.xml','w')
out.write(metadata_txt)
```

researchtools@ubuntu: ~/class/20

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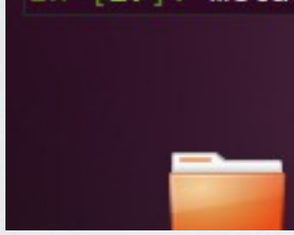
```
numpy      module    <module 'numpy' from '/us<...>n2.7/numpy/__init__.pyc'>
pyplot     module    <module 'matplotlib.pyplo<...>7/matplotlib/pyplot.pyc'>

In [23]: bag['/BAG_root/metadata']
Out[23]: <HDF5 dataset "metadata": shape (5097,), type "|S1">

In [24]: bag['/BAG_root/metadata'].value
Out[24]:
array(['<', '?', 'x', ..., '>', '\n', ''],
      dtype='|S1')

In [25]: metadata_txt = ''.join(bag['/BAG_root/metadata'])
```

```
bag = h5py.File('H11703_Office_5m.bag')
metadata_txt = ''.join(bag['/BAG_root/metadata'])

out = file('H11703_Office_5m.xml','w')
out.write(metadata_txt)
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
In [26]: whos
Variable       Type      Data/Info
---------------------------------
bag            File      <HDF5 file "H11703_Office<...>5m.bag" (mode r+, 21.9M)>
etree          module    <module 'lxml.etree' from<...>-packages/lxml/etree.so'>
h5py           module    <module 'h5py' from '/usr<...>on2.7/h5py/__init__.pyc'>
metadata_txt   str       <?xml version="1.0"?>\n<s<...>on></smXML:MD_Metadata>\n
numpy          module    <module 'numpy' from '/us<...>n2.7/numpy/__init__.pyc'>
pyplot         module    <module 'matplotlib.pyplo<...>7/matplotlib/pyplot.pyc'>

In [27]: metadata_txt[:
```



```
who
whos
whos float
#+END_SRC
```

emacs23@ubuntu

File Edit Options Buffers Tools Operate Mark Regexp Immediate Subdir Help

```
  /home/researchtools/class/20:
  total used in directory 22496 available 11185264
  drwxr-xr-x  2 researchtools researchtools     4096 2011-11-08 11:23 .
  drwxr-xr-x 16 researchtools researchtools     4096 2011-11-08 11:01 ..
  lrwxrwxrwx  1 researchtools researchtools       37 2011-11-08 11:21 .#20-bags-3-xml-kml-gshh
s.org -> researchtools@ubuntu.12694:1320237585
  -rw-r--r--  1 researchtools researchtools     6416 2011-11-08 10:25 20-bags-3-xml-kml-gshhs.
org
  -rw-r--r--  1 researchtools researchtools 23003248 2011-10-27 09:44 H11703_Office_5m.bag
  -rw-r--r--  1 researchtools researchtools     5096 2011-11-08 11:24 H11703_Office_5m.xml
  -rw-r--r--  1 researchtools researchtools     1800 2011-11-08 11:24 log-class-20.py
```

researchtools@ub

File Edit View Search T

```
pyplot          module

In [27]: metadata_txt[:50
Out[27]: '<?xml version="

In [28]: out = open('H117

In [29]: out.write(metada

In [30]: out.close()

In [31]:
```

researchtools@ub

File Edit View Search T

```
pyplot          module

In [27]: metadata_txt[:50
Out[27]: '<?xml version="

In [28]: out = open('H117

In [29]: out.write(metada

In [30]: out.close()

In [31]:
```

video

snippets

emacs23@ubuntu

File Edit Options Buffers Tools Minibuf Help

```
<?xml version="1.0"?>
<smXML:MD_Metadata xmlns:smXML="http://metadata.dgiwg.org/smXML" xmlns:xlink="http://www.w3.or
g/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:gml="http://www.open
gis.net/gml"><identificationInfo><smXML:BAG_DataIdentification><citation><smXML:CI_Citation><t
itle>BAG file created from: N:\OPR0322KR07\Surveys\H11703\Caris\Fieldsheets\H11703_Office\H117
03_Office_5m_Final.hns</title><date><smXML:CI_Date><date>2008-05-09</date><dateType>creation</
dateType></smXML:CI_Date></date><citedResponsibleParty><smXML:CI_ResponsibleParty><individualN
ame>Chief, Pacific Hydrographic Branch</individualName><organisationName>NOAA, NOS, OCS, Hydro
graphic Surveys Division</organisationName><positionName>Chief, Pacific Hydrographic Branch</p
ositionName><role>pointOfContact</role></smXML:CI_ResponsibleParty></citedResponsibleParty></s
mXML:CI_Citation></citation><abstract>Project: OPR-O322-KR-07; Survey: H11703; State: Alaska;
General Locality: Chathman Strait; Sublocality: North and South Arm Hood Bay; Date of Survey:
09/01/2007 - 09/09/2007; Surveyed by: Fugro Pelagos, Inc; Verification by: Pacific Hydrographi
c Branch</abstract><status>historicalArchive</status><spatialRepresentationType>grid</spatialR
epresentationType><language>en</language><topicCategory>elevation</topicCategory><extent><smXM
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stBoundLongitude><eastBoundLongitude>-134.32</eastBoundLongitude><southBoundLatitude>57.34</so
uthBoundLatitude><northBoundLatitude>57.40</northBoundLatitude></smXML:EX_GeographicBoundingBo
x></geographicElement></smXML:EX_Extent></extent><verticalUncertaintyType>Unknown</verticalUnc
ertaintyType></smXML:BAG_DataIdentification></identificationInfo><metadataConstraints><smXML:M
D_LegalConstraints><useConstraints>otherRestrictions</useConstraints><otherConstraints>Not to
be used for Navigation</otherConstraints></smXML:MD_LegalConstraints></metadataConstraints><me
tadataConstraints><smXML:MD_SecurityConstraints><classification>unclassified</classification><
/smXML:MD_SecurityConstraints></metadataConstraints><dataQualityInfo><smXML:DQ_DataQuality><sc
ope><smXML:DQ_Scope><level>dataset</level></smXML:DQ_Scope></scope><lineage><smXML:LI_Lineage>
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11703_Office\H11703_Office_5m.hcs</description></smXML:LI_Source></source><processStep><smXML:
BAG_ProcessStep><description>Software: CARIS HIPS and SIPS; Version: 6.1; Method: Finalize; Pa
rameters: MaxDepth = 120</description><dateTime>2008-05-06T00:00:00Z</dateTime><processor><smX
ML:CI_ResponsibleParty><individualName>fernando.ortiz</individualName><role>processor</role></
smXML:CI_ResponsibleParty></processor><trackingId>-1</trackingId></smXML:BAG_ProcessStep></pro
cessStep></smXML:LI_Lineage></lineage></smXML:DQ_DataQuality></dataQualityInfo><spatialRepres
entationInfo><smXML:MD_Georectified><numberOfDimensions>2</numberOfDimensions><axisDimensionPro
```

-U:--- **H11703_Office_5m.xml** Top L1 [#,r] (nXML Valid yas)----------

Switch to buffer (default 20):

researchtools@ub

File Edit View Search T

```
pyplot          module

In [27]: metadata_txt[:50
Out[27]: '<?xml version="

In [28]: out = open('H117

In [29]: out.write(metada

In [30]: out.close()

In [31]:
```

video

snippets

```
ame>Chief, Pacific Hydrographic Branch</individualName><organisationName>NOAA, NOS, OCS, Hydro
graphic Surveys Division</organisationName><positionName>Chief, Pacific Hydrographic Branch</p
ositionName><role>pointOfContact</role></smXML:CI_ResponsibleParty></citedResponsibleParty></s
mXML:CI_Citation></citation><abstract>Project: OPR-O322-KR-07; Survey: H11703; State: Alaska;
General Locality: Chathman Strait; Sublocality: North and South Arm Hood Bay; Date of Survey:
09/01/2007 - 09/09/2007; Surveyed by: Fugro Pelagos, Inc; Verification by: Pacific Hydrographi
c Branch</abstract><status>historicalArchive</status><spatialRepresentationType>grid</spatialR
epresentationType><language>en</language><topicCategory>elevation</topicCategory><extent><smXM
L:EX_Extent><geographicElement><smXML:EX_GeographicBoundingBox><westBoundLongitude>-134.49</we
stBoundLongitude><eastBoundLongitude>-134.32</eastBoundLongitude><southBoundLatitude>57.34</so
uthBoundLatitude><northBoundLatitude>57.40</northBoundLatitude></smXML:EX_GeographicBoundingBo
x></geographicElement></smXML:EX_Extent></extent><verticalUncertaintyType>Unknown</verticalUnc
ertaintyType></smXML:BAG_DataIdentification></identificationInfo><metadataConstraints><smXML:M
D_LegalConstraints><useConstraints>otherRestrictions</useConstraints><otherConstraints>Not to
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ope><smXML:DQ_Scope><level>dataset</level></smXML:DQ_Scope></scope><lineage><smXML:LI_Lineage>
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11703_Office\H11703_Office_5m.hcs</description></smXML:LI_Source></source><processStep><smXML:
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cessStep></smXML:LI_Lineage></lineage></smXML:DQ_DataQuality></dataQualityInfo><spatialRepres
ntationInfo><smXML:MD_Georectified><numberOfDimensions>2</numberOfDimensions><axisDimensionPro
-U:---  H11703_Office_5m.xml   Top L2      [#,r] (nXML Valid yas)----------------------------------
```

researchtools@ub
File Edit View Search T
pyplot module
In [27]: metadata_txt[:50
Out[27]: '<?xml version="
In [28]: out = open('H117
In [29]: out.write(metada
In [30]: out.close()
In [31]:
video
snippets
graphic Surveys Division</organisationName><positionName>Chief, Pacific Hydrographic Branch</p
ositionName><role>pointOfContact</role></smXML:CI_ResponsibleParty></citedResponsibleParty></s
mXML:CI_Citation></citation><abstract>Project: OPR-O322-KR-07; Survey: H11703; State: Alaska;
General Locality: Chathman Strait; Sublocality: North and South Arm Hood Bay; Date of Survey:
09/01/2007 - 09/09/2007; Surveyed by: Fugro Pelagos, Inc; Verification by: Pacific Hydrographi
c Branch</abstract><status>historicalArchive</status><spatialRepresentationType>grid</spatialR
epresentationType><language>en</language><topicCategory>elevation</topicCategory><extent><smXM
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stBoundLongitude><eastBoundLongitude>-134.32</eastBoundLongitude><southBoundLatitude>57.34</so
uthBoundLatitude><northBoundLatitude>57.40</northBoundLatitude></smXML:EX_GeographicBoundingBo
x></geographicElement></smXML:EX_Extent></extent><verticalUncertaintyType>Unknown</verticalUnc
ertaintyType></smXML:BAG_DataIdentification></identificationInfo><metadataConstraints><smXML:M
D_LegalConstraints><useConstraints>otherRestrictions</useConstraints><otherConstraints>Not to
be used for Navigation</otherConstraints></smXML:MD_LegalConstraints></metadataConstraints><me
tadataConstraints><smXML:MD_SecurityConstraints><classification>unclassified</classification><
/smXML:MD_SecurityConstraints></metadataConstraints><dataQualityInfo><smXML:DQ_DataQuality><sc
ope><smXML:DQ_Scope><level>dataset</level></smXML:DQ_Scope></scope><lineage><smXML:LI_Lineage>
<source><smXML:LI_Source><description>BASE = N:\OPRO322KR07\Surveys\H11703\Caris\Fieldsheets\H
11703_Office\H11703_Office_5m.hcs</description></smXML:LI_Source></source><processStep><smXML:
BAG_ProcessStep><description>Software: CARIS HIPS and SIPS; Version: 6.1; Method: Finalize; Pa
rameters: MaxDepth = 120</description><dateTime>2008-05-06T00:00:00Z</dateTime><processor><smX
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smXML:CI_ResponsibleParty></processor><trackingId>-1</trackingId></smXML:BAG_ProcessStep></pro
cessStep></smXML:LI_Lineage></lineage></smXML:DQ_DataQuality></dataQualityInfo><spatialReprese
ntationInfo><smXML:MD_Georectified><numberOfDimensions>2</numberOfDimensions><axisDimensionPro
-U:--- H11703_Office_5m.xml Top L2 [#,r] (nXML Valid yas Isearch)
I-search: longitude

```
out = file('H11703_Office_5m.xml','w')
out.write(metadata_txt)
out.close()

del out
del bag

root = etree.fromstring(metadata_txt).getroottree()
```

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```
etree          module    <module 'lxml.etree' from<...>-packages/lxml/etree.so'>
h5py           module    <module 'h5py' from '/usr<...>on2.7/h5py/__init__.pyc'>
metadata_txt   str       <?xml version="1.0"?>\n<s<...>on></smXML:MD_Metadata>\n
numpy          module    <module 'numpy' from '/us<...>n2.7/numpy/__init__.pyc'>
out            file      <closed file 'H11703_Offi<...>', mode 'w' at 0x95efcd8>
pyplot         module    <module 'matplotlib.pyplo<...>7/matplotlib/pyplot.pyc'>

In [32]: del out

In [33]: del bag

In [34]: who
```

Unlike in class 19, we now don't have insane amounts of data in our workspace, so

```
root = etree.fromstring(metadata_txt).getroottree()

title = root.xpath('//*/title')[0].text
abstract = root.xpath('//*/abstract')[0].text

xmin = float(root.xpath('//*/westBoundLongitude')[0].text)
xmax = float(root.xpath('//*/eastBoundLongitude')[0].text)

ymin = float(root.xpath('//*/southBoundLatitude')[0].text)
ymax = float(root.xpath('//*/northBoundLatitude')[0].text)
```

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```
In [34]: whos
Variable       Type      Data/Info
---------------------------------
etree          module    <module 'lxml.etree' from<...>-packages/lxml/etree.so'>
h5py           module    <module 'h5py' from '/usr<...>on2.7/h5py/__init__.pyc'>
metadata_txt   str       <?xml version="1.0"?>\n<s<...>on></smXML:MD_Metadata>\n
numpy          module    <module 'numpy' from '/us<...>n2.7/numpy/__init__.pyc'>
pyplot         module    <module 'matplotlib.pyplo<...>7/matplotlib/pyplot.pyc'>

In [35]: root = etree.fromstring(metadata_txt).getroottree()

In [36]: type(root)
```

named function arguments, but here is at least a blog post talking about it:

```
root = etree.fromstring(metadata_txt).getroottree()

title = root.xpath('//*/title')[0].text
abstract = root.xpath('//*/abstract')[0].text

xmin = float(root.xpath('//*/westBoundLongitude')[0].text)
xmax = float(root.xpath('//*/eastBoundLongitude')[0].text)

ymin = float(root.xpath('//*/southBoundLatitude')[0].text)
ymax = float(root.xpath('//*/northBoundLatitude')[0].text)
```

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```
In [35]: root = etree.fromstring(metadata_txt).getroottree()

In [36]: type(root)
Out[36]: <type 'lxml.etree._ElementTree'>

In [37]: title = root.xpath('//*/title')[0].text

In [38]: title
Out[38]: 'BAG file created from: N:\\OPR0322KR07\\Surveys\\H11703\\Caris\\Fieldsheets\\H11703_Office\\H11703_Office_5m_Final.hns'

In [39]: abstract = root.xpath('//*/abstract')[0]
```

named function arguments, but here is at least a blog post talking about it:

```
title = root.xpath('//*/title')[0].text
abstract = root.xpath('//*/abstract')[0].text

xmin = float(root.xpath('//*/westBoundLongitude')[0].text)
xmax = float(root.xpath('//*/eastBoundLongitude')[0].text)

ymin = float(root.xpath('//*/southBoundLatitude')[0].text)
ymax = float(root.xpath('//*/northBoundLatitude')[0].text)
```

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```
In [38]: title
Out[38]: 'BAG file created from: N:\\OPR0322KR07\\Surveys\\H11703\\Caris\\Fieldsheets\\H11703_Office\\H117
03_Office_5m_Final.hns'

In [39]: abstract = root.xpath('//*/abstract')[0].text

In [40]: print abstract
Project: OPR-0322-KR-07; Survey: H11703; State: Alaska; General Locality: Chathman Strait; Sublocality: No
rth and South Arm Hood Bay; Date of Survey: 09/01/2007 - 09/09/2007; Surveyed by: Fugro Pelagos, Inc; Veri
fication by: Pacific Hydrographic Branch

In [41]: xmin = float( root.xpath('//*/westBoundLongitude')[0].text )
```

named function arguments, but here is at least a blog post talking about it:

```
xmin = float(root.xpath('//*/westBoundLongitude')[0].text)
xmax = float(root.xpath('//*/eastBoundLongitude')[0].text)

ymin = float(root.xpath('//*/southBoundLatitude')[0].text)
ymax = float(root.xpath('//*/northBoundLatitude')[0].text)
```

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```
In [41]: xmin = float( root.xpath('//*/westBoundLongitude')[0].text )

In [42]: xmin
Out[42]: -134.49

In [43]: xmax = float( root.xpath('//*/eastBoundLongitude')[0].text )

In [44]: ymin = float( root.xpath('//*/southBoundLatitude')[0].text )

In [45]: ymax = float( root.xpath('//*/northBoundLatitude')[0].text )

In [46]:
```

named function arguments, but here is at least a blog post talking about it:

```
xmin = float(root.xpath('//*/westBoundLongitude')[0].text)
xmax = float(root.xpath('//*/eastBoundLongitude')[0].text)

ymin = float(root.xpath('//*/southBoundLatitude')[0].text)
ymax = float(root.xpath('//*/northBoundLatitude')[0].text)
```

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```
ymax            float           57.4
ymin            float           57.34

In [47]: whos float
Variable   Type     Data/Info
----------------------------
xmax       float    -134.32
xmin       float    -134.49
ymax       float    57.4
ymin       float    57.34

In [48]: whos
```

```
#+BEGIN_SRC python
'{xmin}'.format(xmin=xmin)
'{xmin} and {ymax}'.format(xmin=xmin, ymax=ymax)

'{xmin} and {wahoo}'.format(xmin=xman, wahoo=ymax)

bbox = {'xmin': xmin, 'ymin': ymin, 'xmax': xmax, 'ymax': ymax}
bbox

'{xmin} and {ymax}'.format(bbox)
# ERROR!
```

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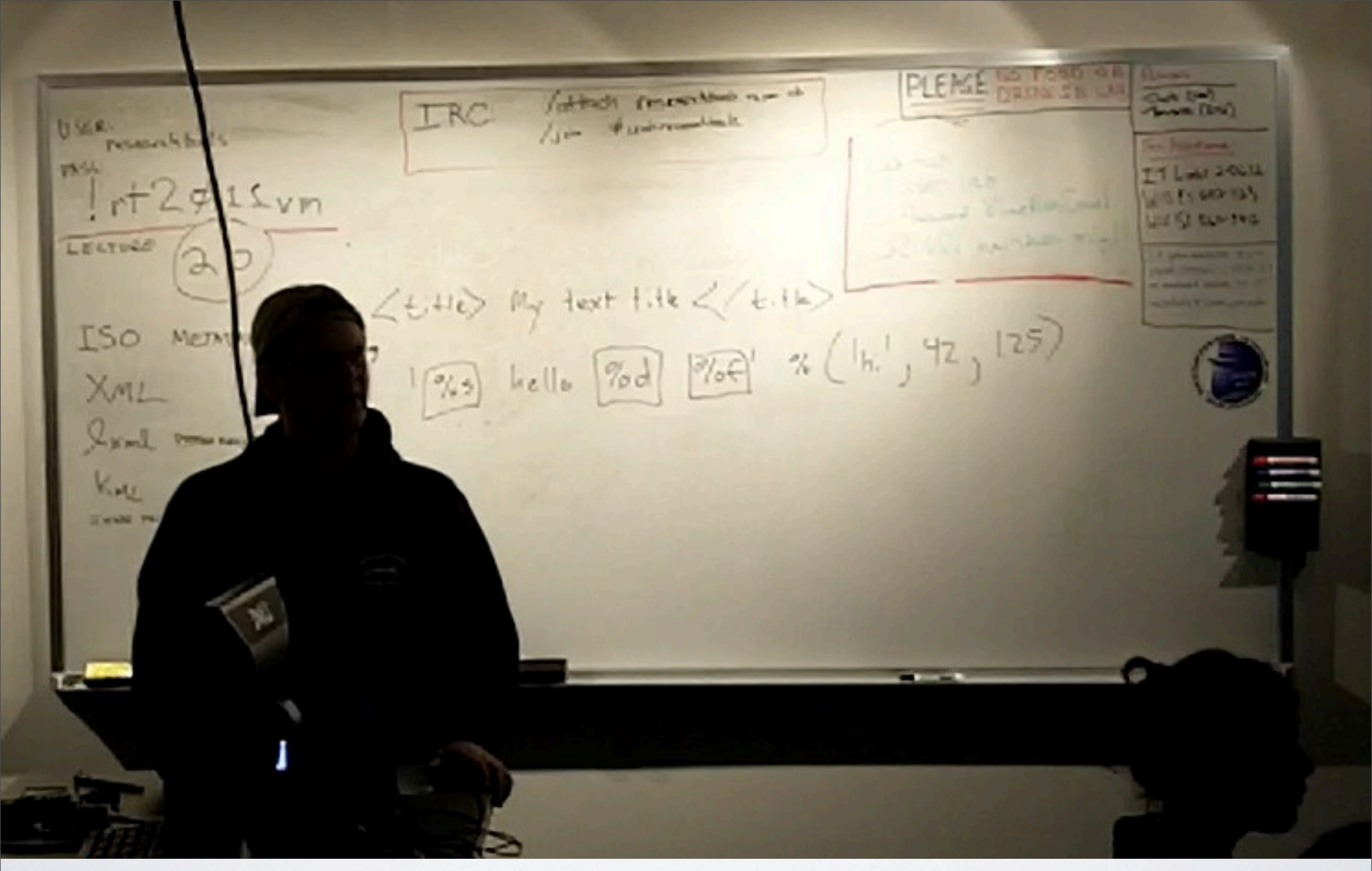
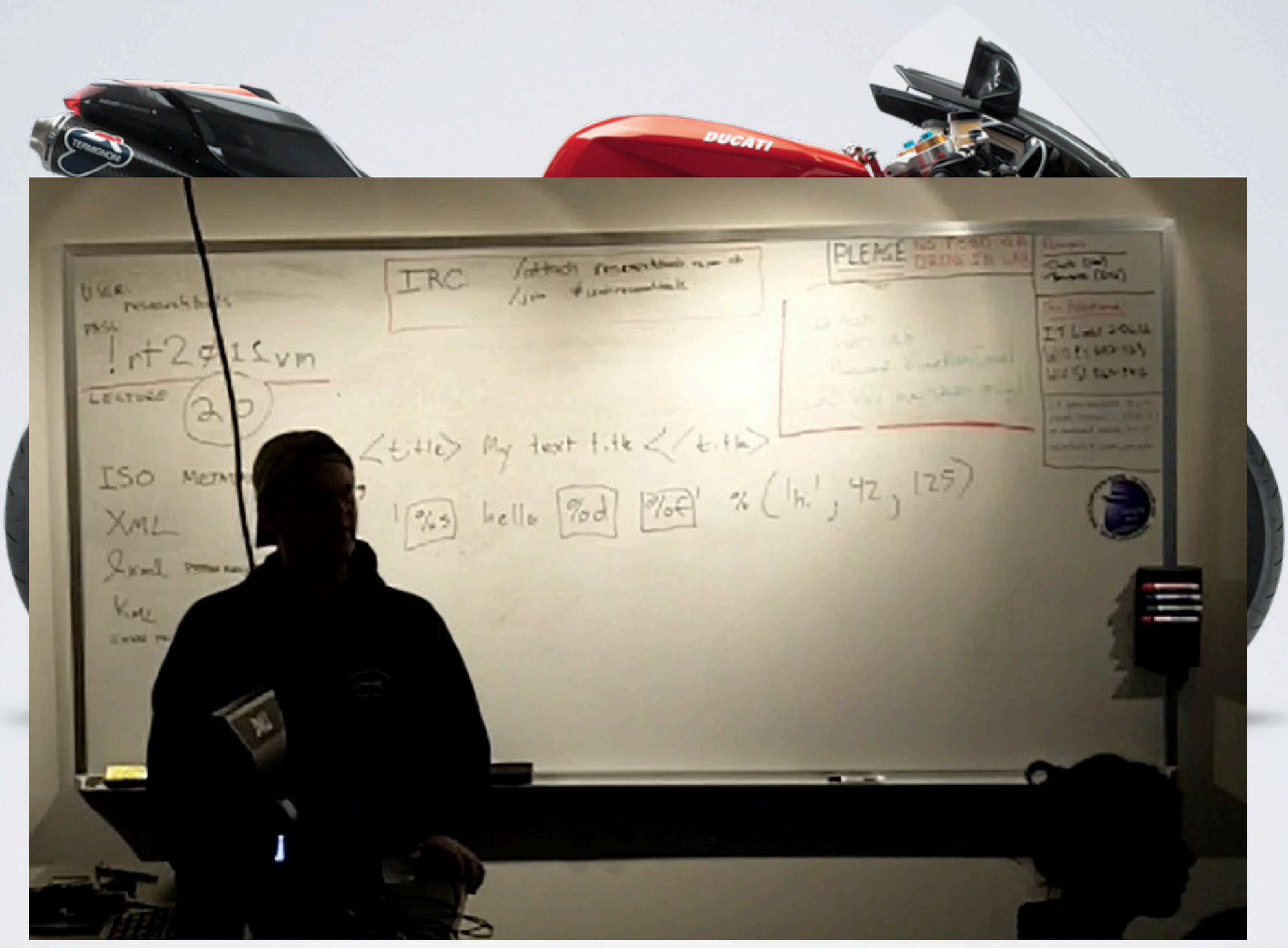
```
xmin       float    -134.49
ymax       float    57.4
ymin       float    57.34

In [48]: whos str
Variable       Type    Data/Info
------------------------------
abstract       str     Project: OPR-0322-KR-07; <...>cific Hydrographic Branch
metadata_txt   str     <?xml version="1.0"?>\n<s<...>on></smXML:MD_Metadata>\n
title          str     BAG file created from: N:<...>11703_Office_5m_Final.hns

In [49]:
```


IRC
PLEASE
LECTURE
ISO
XML
<title> My text title </title>
%s hello %d %of % ('hi', 42, 125)


DUCATI
IRC
PLEASE
LECTURE
ISO
XML
<title> My text title </title>
%s hello %d %of % ('hi', 42, 125)

```
#+BEGIN_SRC python
'{xmin}'.format(xmin=xmin)
'{xmin} and {ymax}'.format(xmin=xmin, ymax=ymax)

'{xmin} and {wahoo}'.format(xmin=xman, wahoo=ymax)

bbox = {'xmin': xmin, 'ymin': ymin, 'xmax': xmax, 'ymax': ymax}
bbox

'{xmin} and {ymax}'.format(bbox)
# ERROR!
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
In [49]: whos float
Variable   Type     Data/Info
----------------------------
xmax       float    -134.32
xmin       float    -134.49
ymax       float    57.4
ymin       float    57.34

In [50]: '{xmin}'.format(xmin=xmin)
Out[50]: '-134.49'

In [51]:
```

Here is our template file. Save this as the file bbox-template.kml

```
#+BEGIN_SRC python
'{xmin}'.format(xmin=xmin)
'{xmin} and {ymax}'.format(xmin=xmin, ymax=ymax)

'{xmin} and {wahoo}'.format(xmin=xman, wahoo=ymax)

bbox = {'xmin': xmin, 'ymin': ymin, 'xmax': xmax, 'ymax': ymax}
bbox

'{xmin} and {ymax}'.format(bbox)
# ERROR!
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
In [50]: '{xmin}'.format(xmin=xmin)
Out[50]: '-134.49'

In [51]: '{xmin} and {ymax}'.format(xmin=xmin)
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)

/home/researchtools/class/20/<ipython console> in <module>()

KeyError: 'ymax'

In [52]: '{xmin} and {ymax}'.format(xmin=xmin, ymax=ymax)
```

Here is our template file. Save this as the file bbox-template.kml

```
#+BEGIN_SRC python
'{xmin}'.format(xmin=xmin)
'{xmin} and {ymax}'.format(xmin=xmin, ymax=ymax)

'{xmin} and {wahoo}'.format(xmin=xman, wahoo=ymax)

bbox = {'xmin': xmin, 'ymin': ymin, 'xmax': xmax, 'ymax': ymax}
bbox

'{xmin} and {ymax}'.format(bbox)
# ERROR!
```

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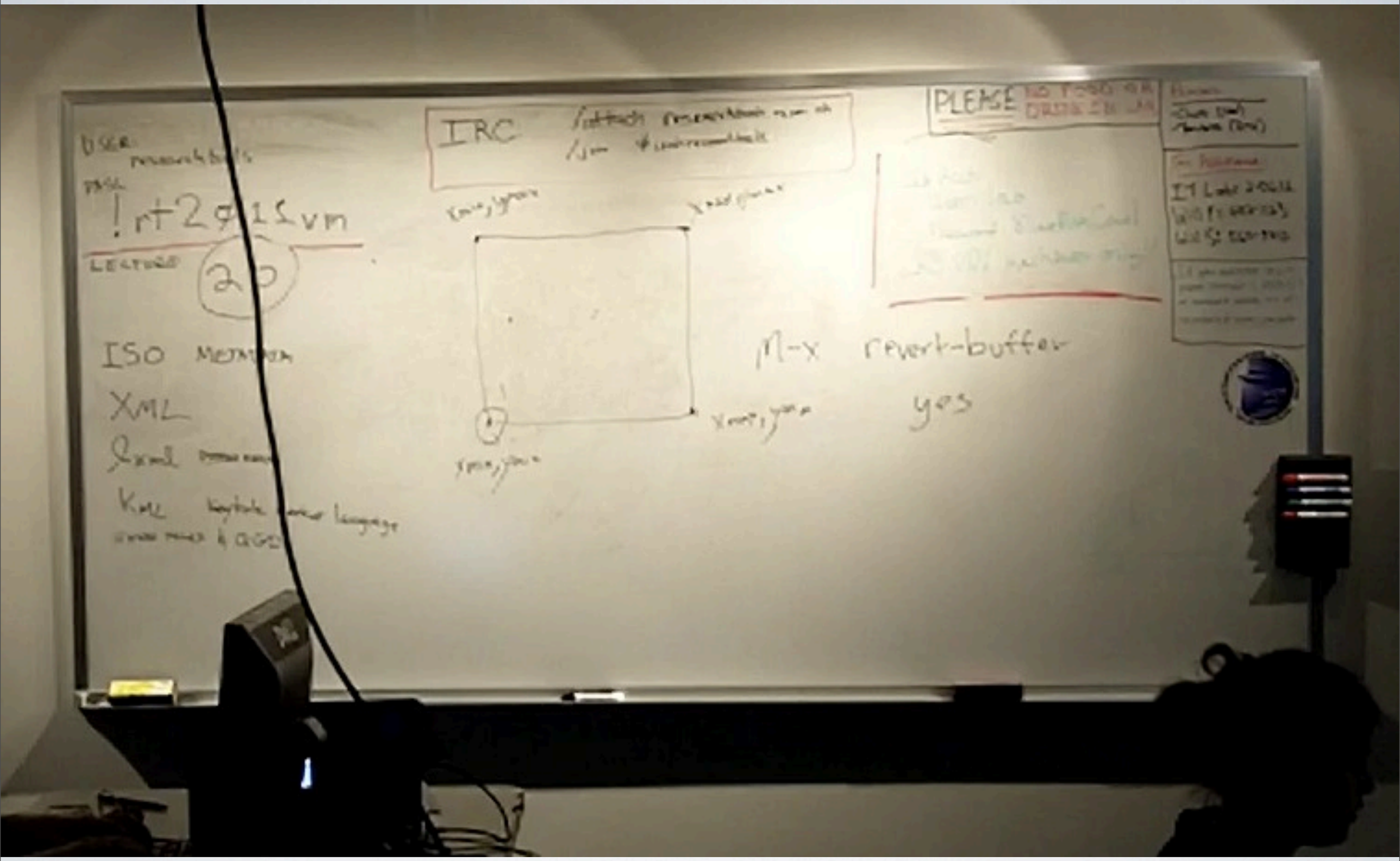
File Edit View Search Terminal Help

```
KeyError: 'ymax'

In [52]: '{xmin} and {ymax}'.format(xmin=xmin, ymax=ymax)
Out[52]: '-134.49 and 57.4'

In [53]: '{xmin} and {ymax}'.format(ymax=ymax, xmin=xmin)
Out[53]: '-134.49 and 57.4'

In [54]: '{wahoo}'.format(wahoo=ymax)
Out[54]: '57.4'

In [55]:
```

Here is our template file. Save this as the file bbox-template.kml


IRC
PLEASE
ISO
XML
M-x revert-buffer
yes

```
#+BEGIN_SRC python
'{xmin}'.format(xmin=xmin)
'{xmin} and {ymax}'.format(xmin=xmin, ymax=ymax)

'{xmin} and {wahoo}'.format(xmin=xman, wahoo=ymax)

bbox = {'xmin': xmin, 'ymin': ymin, 'xmax': xmax, 'ymax': ymax}
bbox

'{xmin} and {ymax}'.format(bbox)
# ERROR!
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
In [55]: whos float
Variable   Type     Data/Info
----------------------------
xmax       float    -134.32
xmin       float    -134.49
ymax       float    57.4
ymin       float    57.34

In [56]: bbox = {'xmin': xmin, 'ymin': ymin, 'xmax': xmax, 'ymax': ymax}

In [57]: bbox
```

Here is our template file. Save this as the file bbox-template.kml

```
#+BEGIN_SRC python
'{xmin}'.format(xmin=xmin)
'{xmin} and {ymax}'.format(xmin=xmin, ymax=ymax)

'{xmin} and {wahoo}'.format(xmin=xman, wahoo=ymax)

bbox = {'xmin': xmin, 'ymin': ymin, 'xmax': xmax, 'ymax': ymax}
bbox

'{xmin} and {ymax}'.format(bbox)
# ERROR!
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
ymax        float    57.4
ymin        float    57.34

In [56]: bbox = {'xmin': xmin, 'ymin': ymin, 'xmax': xmax, 'ymax': ymax}

In [57]: bbox
Out[57]: {'xmax': -134.32, 'xmin': -134.49, 'ymax': 57.4, 'ymin': 57.34}

In [58]: bbox['xmin']
Out[58]: -134.49

In [59]:
```

Here is our template file. Save this as the file bbox-template.kml

```
bbox = {'xmin': xmin, 'ymin': ymin, 'xmax': xmax, 'ymax': ymax}
bbox

'{xmin} and {ymax}'.format(bbox)
# ERROR!

# Use the crazy expansion syntax of ** to use bbox as arguments
# to the format method of a string
'{xmin} and {ymax}'.format( **bbox )

# Better yet, there is a function that returns a dictionary of all
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
ymax        float    57.4
ymin        float    57.34

In [56]: bbox = {'xmin': xmin, 'ymin': ymin, 'xmax': xmax, 'ymax': ymax}

In [57]: bbox
Out[57]: {'xmax': -134.32, 'xmin': -134.49, 'ymax': 57.4, 'ymin': 57.34}

In [58]: bbox['xmin']
Out[58]: -134.49

In [59]: '{xmin} and {ymax}'.format(bbox)
```

```
bbox = {'xmin': xmin, 'ymin': ymin, 'xmax': xmax, 'ymax': ymax}
bbox

'{xmin} and {ymax}'.format(bbox)
# ERROR!

# Use the crazy expansion syntax of ** to use bbox as arguments
# to the format method of a string
'{xmin} and {ymax}'.format( **bbox )

# Better yet, there is a function that returns a dictionary of all
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
In [59]: '{xmin} and {ymax}'.format(bbox)
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)

/home/researchtools/class/20/<ipython console> in <module>()

KeyError: 'xmin'

In [60]: '{xmin} and {ymax}'.format(**bbox)
Out[60]: '-134.49 and 57.4'

In [61]:
```

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```
In [58]: bbox['xmin']
Out[58]: -134.49

In [59]: '{xmin} and {ymax}'.format(bbox)
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)

/home/researchtools/class/20/<ipython console> in <module>()

KeyError: 'xmin'

In [60]: '{xmin} and {ymax}'.format(**bbox)
Out[60]: '-134.49 and 57.4'

In [61]: locals?
Type:           builtin_function_or_method
Base Class:     <type 'builtin_function_or_method'>
String Form:    <built-in function locals>
Namespace:      Python builtin
Docstring:
    locals() -> dictionary

    Update and return a dictionary containing the current scope's local variables.


In [62]:
```

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```
In [62]: who
abstract        bbox    etree   h5py    metadata_txt    numpy   pyplot  root    title
xmax    xmin    ymax    ymin

In [63]: whos
Variable       Type           Data/Info
-----------------------------------------
abstract       str            Project: OPR-0322-KR-07; <...>cific Hydrographic Branch
bbox           dict           {'xmin': -134.49, 'ymin':<...>': 57.4, 'xmax': -134.32}
etree          module         <module 'lxml.etree' from<...>-packages/lxml/etree.so'>
h5py           module         <module 'h5py' from '/usr<...>on2.7/h5py/__init__.pyc'>
metadata_txt   str            <?xml version="1.0"?>\n<s<...>on></smXML:MD_Metadata>\n
numpy          module         <module 'numpy' from '/us<...>n2.7/numpy/__init__.pyc'>
pyplot         module         <module 'matplotlib.pyplo<...>7/matplotlib/pyplot.pyc'>
root           _ElementTree   <lxml.etree._ElementTree object at 0x96098ac>
title          str            BAG file created from: N:<...>11703_Office_5m_Final.hns
xmax           float          -134.32
xmin           float          -134.49
ymax           float          57.4
ymin           float          57.34

In [64]: del me
memoryview    metadata_txt

In [64]: del metadata_txt
```

<Placemark>

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
         54: '57.4',
         57: {'xmax': -134.32, 'xmin': -134.49, 'ymax': 57.4, 'ymin': 57.34},
         58: -134.49,
         60: '-134.49 and 57.4'},
 '_sh': <module 'IPython.shadowns' from '/usr/lib/python2.7/dist-packages/IPython/shadowns.pyc'>,
 'abstract': 'Project: OPR-O322-KR-07; Survey: H11703; State: Alaska; General Locality: Chathman Strait; S
ublocality: North and South Arm Hood Bay; Date of Survey: 09/01/2007 - 09/09/2007; Surveyed by: Fugro Pela
gos, Inc; Verification by: Pacific Hydrographic Branch',
 'bbox': {'xmax': -134.32, 'xmin': -134.49, 'ymax': 57.4, 'ymin': 57.34},
 'etree': <module 'lxml.etree' from '/usr/lib/python2.7/dist-packages/lxml/etree.so'>,
 'h5py': <module 'h5py' from '/usr/lib/pymodules/python2.7/h5py/__init__.pyc'>,
 'help': Type help() for interactive help, or help(object) for help about object.,
 'numpy': <module 'numpy' from '/usr/lib/pymodules/python2.7/numpy/__init__.pyc'>,
 'pyplot': <module 'matplotlib.pyplot' from '/usr/lib/pymodules/python2.7/matplotlib/pyplot.pyc'>,
 'root': <lxml.etree._ElementTree object at 0x96098ac>,
 'title': 'BAG file created from: N:\\OPRO322KR07\\Surveys\\H11703\\Caris\\Fieldsheets\\H11703_Office\\H11
703_Office_5m_Final.hns',
 'xmax': -134.32,
 'xmin': -134.49,
 'ymax': 57.4,
 'ymin': 57.34}

In [67]: '{xmin} and {ymax}'.format( ** locals() )
Out[67]: '-134.49 and 57.4'

In [68]:
```

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File Edit Options Buffers Org Tbl Help

```
#+END_SRC

Here is our template file. Save this as the file bbox-temp

#+BEGIN_SRC xml
    <?xml version="1.0" encoding="UTF-8"?>
    <kml xmlns="http://www.opengis.net/kml/2.2">
    <Document>
            <Placemark>
                    <name>{filename}</name>
                    <description>
  {title}

  {abstract}
                    </description>
                    <LineString>
                            <coordinates>
    {xmin},{ymin}
    {xmin},{ymax}
    {xmax},{ymax}
    {xmax},{ymin}
    {xmin},{ymin}
                            </coordinates>
                    </LineString>
            </Placemark>
    </Document>
    </kml>
#+END_SRC

Now we can load the template and fill it in.

#+BEGIN_SRC python
kml_template = open('bbox-template.kml').read()
```

--:**- **20-bags-3-xml-kml-gshhs.org** 53% L145 [#,r] (Org)

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File Edit Options Buffers Tools Help

```
<?xml version="1.0" encoding="UTF-8"?>
    <kml xmlns="http://www.opengis.net/kml/2.2">
    <Document>
            <Placemark>
                    <name>{filename}</name>
                    <description>
  {title}

  {abstract}
                    </description>
                    <LineString>
                            <coordinates>
    {xmin},{ymin}
    {xmin},{ymax}
    {xmax},{ymax}
    {xmax},{ymin}
    {xmin},{ymin}
                            </coordinates>
                    </LineString>
            </Placemark>
    </Document>
    </kml>
```

-U:--- **bbox-template.kml** All L16 [#,r] (Fundamental)----------

Wrote /home/researchtools/class/20/bbox-template.kml

Applications Places System

researchtools@ub

File Edit View Search T

```
        54: '57.4',
        57: {'xmax': -13
        58: -134.49,
        60: '-134.49 and
 '_sh': <module 'IPython.
 'abstract': 'Project: OP
ublocality: North and Sou
gos, Inc; Verification by
 'bbox': {'xmax': -134.32
 'etree': <module 'lxml.e
 'h5py': <module 'h5py' f
 'help': Type help() for
 'numpy': <module 'numpy'
 'pyplot': <module 'matpl
 'root': <lxml.etree._Ele
 'title': 'BAG file creat
703_Office_5m_Final.hns',
 'xmax': -134.32,
 'xmin': -134.49,
 'ymax': 57.4,
 'ymin': 57.34}

In [67]: '{xmin} and {yma
Out[67]: '-134.49 and 57.

In [68]:
```

emacs23@ubuntu

File Edit Options Buffers Tools Minibuf Help

```
<?xml version="1.0" encoding="UTF-8"?>
    <kml xmlns="http://www.opengis.net/kml/2.2">
    <Document>
            <Placemark>
                    <name>{filename}</name>
                    <description>
  {title}

  {abstract}
                    </description>
                    <LineString>
                            <coordinates>
    {xmin},{ymin}
    {xmin},{ymax}
    {xmax},{ymax}
    {xmax},{ymin}
    {xmin},{ymin}
                            </coordinates>
                    </LineString>
            </Placemark>
</Document>
</kml>
```

researchtools@ub

File Edit View Search T

```
        54: '57.4',
        57: {'xmax': -13
        58: -134.49,
        60: '-134.49 and
 '_sh': <module 'IPython.
 'abstract': 'Project: OP
ublocality: North and Sou
gos, Inc; Verification by
 'bbox': {'xmax': -134.32
 'etree': <module 'lxml.e
 'h5py': <module 'h5py' f
 'help': Type help() for
 'numpy': <module 'numpy'
 'pyplot': <module 'matpl
 'root': <lxml.etree._Ele
 'title': 'BAG file creat
703_Office_5m_Final.hns',
 'xmax': -134.32,
 'xmin': -134.49,
 'ymax': 57.4,
 'ymin': 57.34}

In [67]: '{xmin} and {yma
Out[67]: '-134.49 and 57.

In [68]:
```

video

snippets

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File Edit Options Buffers Tools XML YASnippet Help

```
<?xml version="1.0" encoding="UTF-8"?>
    <kml xmlns="http://www.opengis.net/kml/2.2">
    <Document>
            <Placemark>
                    <name>{filename}</name>
                    <description>
  {title}

  {abstract}
                    </description>
                    <LineString>
                            <coordinates>
    {xmin},{ymin}
    {xmin},{ymax}
    {xmax},{ymax}
    {xmax},{ymin}
    {xmin},{ymin}
                            </coordinates>
                    </LineString>
            </Placemark>
    </Document>
    </kml>
```

-U:--- **bbox-template.kml** All L16 [#,r] (nXML Valid yas)----------

Using vacuous schema

Applications Places System 11:57 AM

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researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
In [69]: print open('bbox-template.kml').read()
<?xml version="1.0" encoding="UTF-8"?>
    <kml xmlns="http://www.opengis.net/kml/2.2">
    <Document>
            <Placemark>
                    <name>{filename}</name>
                    <description>
  {title}

  {abstract}
                    </description>
                    <LineString>
                            <coordinates>
    {xmin},{ymin}
    {xmin},{ymax}
    {xmax},{ymax}
    {xmax},{ymin}
    {xmin},{ymin}
                            </coordinates>
                    </LineString>
            </Placemark>
    </Document>
    </kml>

In [70]:
```

video

snippets

-U:--- **bbox-template.kml** All L2 [#,r] (nXML Valid yas)----------

Wrote /home/researchtools/class/20/bbox-template.kml

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File Edit View Search T

```
    {xmax},{ymax}
    {xmax},{ymin}
    {xmin},{ymin}

                </Lin
            </Placemark>
    </Document>
    </kml>

In [70]: open('bbox-templ
Out[70]: '<?xml version="
ocument>\n            <Pl
iption>\n  {title}\n  \n
\n
{xmax},{ymin}\n    {xmin}
ring>\n            </Plac

In [71]: kml_template = o
bbox                bbox-

In [71]: kml_template = o
bbox-template.kml   bbox-

In [71]: kml_template = o

In [72]:
```

video

snippets

emacs23@ubuntu

File Edit Options Buffers Tools XML YASnippet Help

```
<?xml version="1.0" encoding="UTF-8"?>
    <kml xmlns="http://www.opengis.net/kml/2.2">
    <Document>
            <Placemark>
                    <name>{filename}</name>
                    <description>
  {title}

  {abstract}
                    </description>
                    <LineString>
                            <coordinates>
    {xmin},{ymin}
    {xmin},{ymax}
    {xmax},{ymax}
    {xmax},{ymin}
    {xmin},{ymin}
                            </coordinates>
                    </LineString>
            </Placemark>
    </Document>
    </kml>
```

-U:--- **bbox-template.kml** All L5 [#,r] (nXML Valid yas)-------

Applications Places System 11:59 AM

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researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
            </Placemark>
    </Document>
    </kml>

In [70]: open('bbox-template.kml').read()
Out[70]: '<?xml version="1.0" encoding="UTF-8"?>\n    <kml xmlns="http://www.opengis.net/kml/2.2">\n    <D
ocument>\n            <Placemark>\n                <name>{filename}</name>\n                    <descr
iption>\n  {title}\n  \n  {abstract}\n                </description>\n                <LineString>
\n                    <coordinates>\n    {xmin},{ymin}\n    {xmin},{ymax}\n    {xmax},{ymax}\n
{xmax},{ymin}\n    {xmin},{ymin}\n                </coordinates>\n                </LineSt
ring>\n            </Placemark>\n    </Document>\n    </kml>'

In [71]: kml_template = open('bbo
bbox                bbox-template.kml   bbox-template.kml~

In [71]: kml_template = open('bbox-
bbox-template.kml   bbox-template.kml~

In [71]: kml_template = open('bbox-template.kml').read()

In [72]: filename = 'H1
H11703_Office_5m.bag  H11703_Office_5m.xml

In [72]: filename = 'H11703_Office_5m.bag'

In [73]:
```

video

snippets

-U:--- **bbox-template.kml** All L5 [#,r] (nXML Valid yas)----------

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
In [71]: kml_template = open('bbox-template.kml').read()

In [72]: filename = 'H1
H11703_Office_5m.bag  H11703_Office_5m.xml

In [72]: filename = 'H11703_Office_5m.bag'

In [73]: whos
Variable       Type           Data/Info
-----------------------------------------
abstract       str            Project: OPR-0322-KR-07; <...>cific Hydrographic Branch
bbox           dict           {'xmin': -134.49, 'ymin':<...>': 57.4, 'xmax': -134.32}
etree          module         <module 'lxml.etree' from<...>-packages/lxml/etree.so'>
filename       str            H11703_Office_5m.bag
h5py           module         <module 'h5py' from '/usr<...>on2.7/h5py/__init__.pyc'>
kml_template   str            <?xml version="1.0" encod<...>  </Document>\n    </kml>
numpy          module         <module 'numpy' from '/us<...>n2.7/numpy/__init__.pyc'>
pyplot         module         <module 'matplotlib.pyplo<...>7/matplotlib/pyplot.pyc'>
root           _ElementTree   <lxml.etree._ElementTree object at 0x96098ac>
title          str            BAG file created from: N:<...>11703_Office_5m_Final.hns
xmax           float          -134.32
xmin           float          -134.49
ymax           float          57.4
ymin           float          57.34

In [74]: print kml_template.format( **local() )
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
title           str             BAG file created from: N:<...>11703_Office_5m_Final.hns
xmax            float           -134.32
xmin            float           -134.49
ymax            float           57.4
ymin            float           57.34

In [74]: print kml_template.format( **locals() )
<?xml version="1.0" encoding="UTF-8"?>
    <kml xmlns="http://www.opengis.net/kml/2.2">
    <Document>
            <Placemark>
                    <name>H11703_Office_5m.bag</name>
                    <description>
  BAG file created from: N:\OPR0322KR07\Surveys\H11703\Caris\Fieldsheets\H11703_Office\H11703_Office_5m_Fi
nal.hns

  Project: OPR-0322-KR-07; Survey: H11703; State: Alaska; General Locality: Chathman Strait; Sublocality:
North and South Arm Hood Bay; Date of Survey: 09/01/2007 - 09/09/2007; Surveyed by: Fugro Pelagos, Inc; Ve
rification by: Pacific Hydrographic Branch
                    </description>
                    <LineString>
                            <coordinates>
    -134.49,57.34
    -134.49,57.4
    -134.32,57.4
    -134.32,57.34
    -134.49,57.34
                            </coordinates>
                    </LineString>
            </Placemark>
    </Document>
    </kml>

In [75]:
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
title           str             BAG file created from: N:<...>11703_Office_5m_Final.hns
xmax            float           -134.32
xmin            float           -134.49
ymax            float           57.4
ymin            float           57.34

In [74]: print kml_template.format( **locals() )
<?xml version="1.0" encoding="UTF-8"?>
    <kml xmlns="http://www.opengis.net/kml/2.2">
    <Document>
            <Placemark>
                    <name>H11703_Office_5m.bag</name>
                    <description>
  BAG file created from: N:\OPR0322KR07\Surveys\H11703\Caris\Fieldsheets\H11703_Office\H11703_Office_5m_Fi
nal.hns

  Project: OPR-0322-KR-07; Survey: H11703; State: Alaska; General Locality: Chathman Strait; Sublocality:
North and South Arm Hood Bay; Date of Survey: 09/01/2007 - 09/09/2007; Surveyed by: Fugro Pelagos, Inc; Ve
rification by: Pacific Hydrographic Branch
                    </description>
                    <LineString>
                            <coordinates>
    -134.49,57.34
    -134.49,57.4
    -134.32,57.4
    -134.32,57.34
    -134.49,57.34
                            </coordinates>
                    </LineString>
            </Placemark>
    </Document>
    </kml>

In [75]:
```

researchtools@ubuntu: ~/class/20

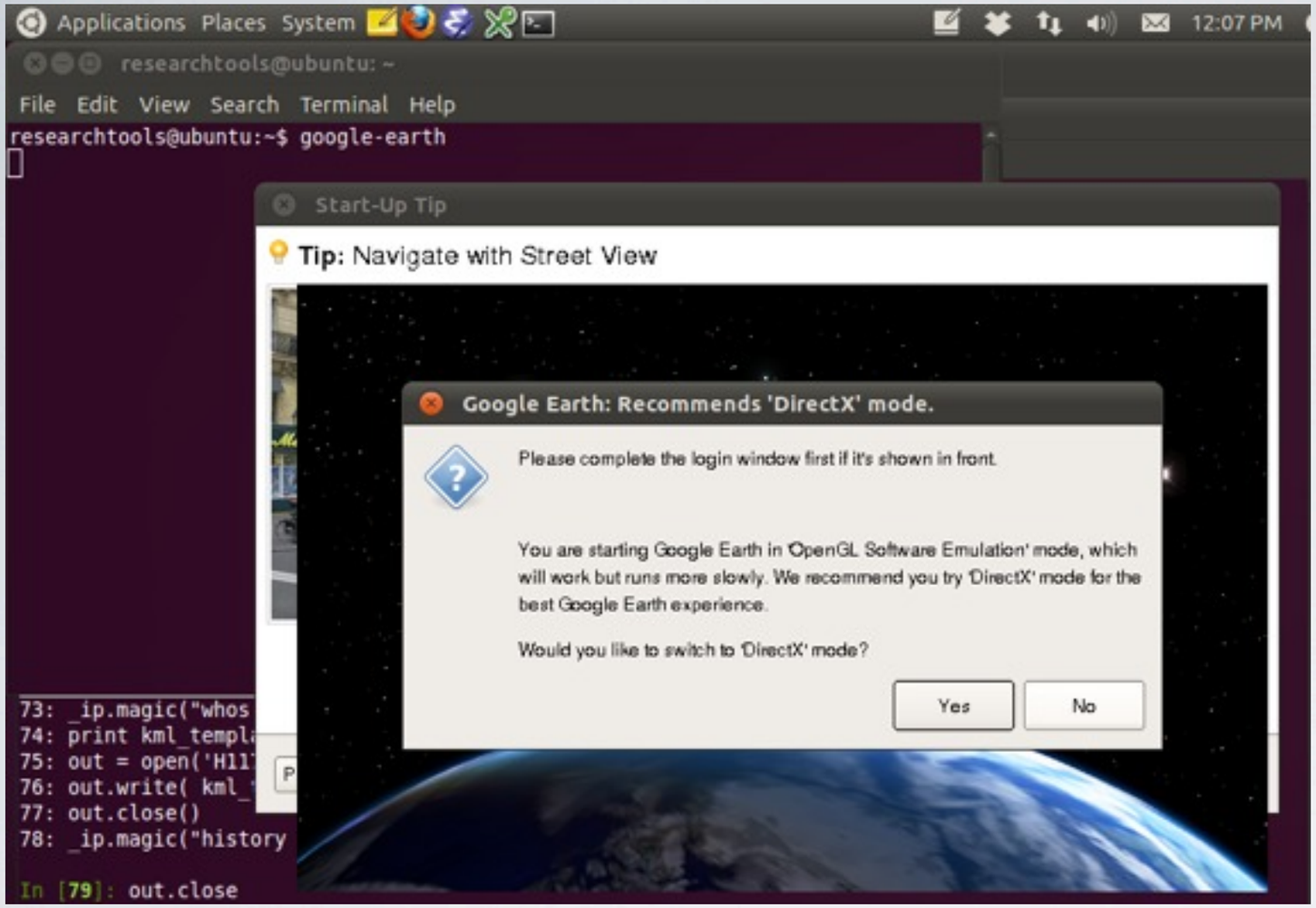
File Edit View Search Terminal Help

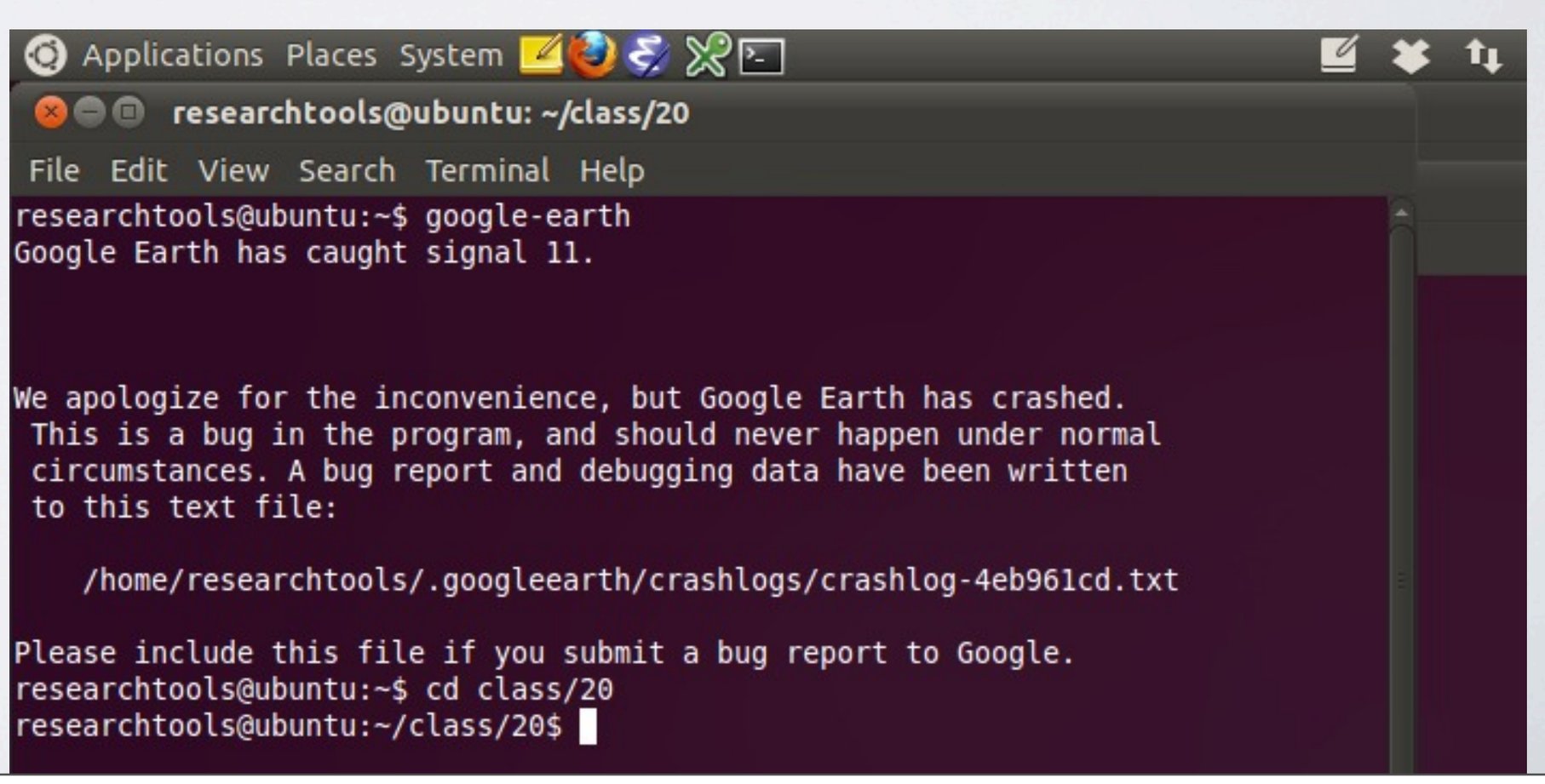
```
    <Document>
            <Placemark>
                    <name>H11703_Office_5m.bag</name>
                    <description>
  BAG file created from: N:\OPR0322KR07\Surveys\H11703\Caris\Fieldsheets\H11703_Office\H11703_Office_5m_Fi
nal.hns

  Project: OPR-0322-KR-07; Survey: H11703; State: Alaska; General Locality: Chathman Strait; Sublocality:
North and South Arm Hood Bay; Date of Survey: 09/01/2007 - 09/09/2007; Surveyed by: Fugro Pelagos, Inc; Ve
rification by: Pacific Hydrographic Branch
                    </description>
                    <LineString>
                            <coordinates>
    -134.49,57.34
    -134.49,57.4
    -134.32,57.4
    -134.32,57.34
    -134.49,57.34
                            </coordinates>
                    </LineString>
            </Placemark>
    </Document>
    </kml>

In [75]: out = ('H1
H11703_Office_5m.bag  H11703_Office_5m.xml

In [75]: out = open('H11703_Office_5m-bbox.kml','w')

In [76]: out.write( kml_template.format( **locals() ) )

In [77]: out.close()
```

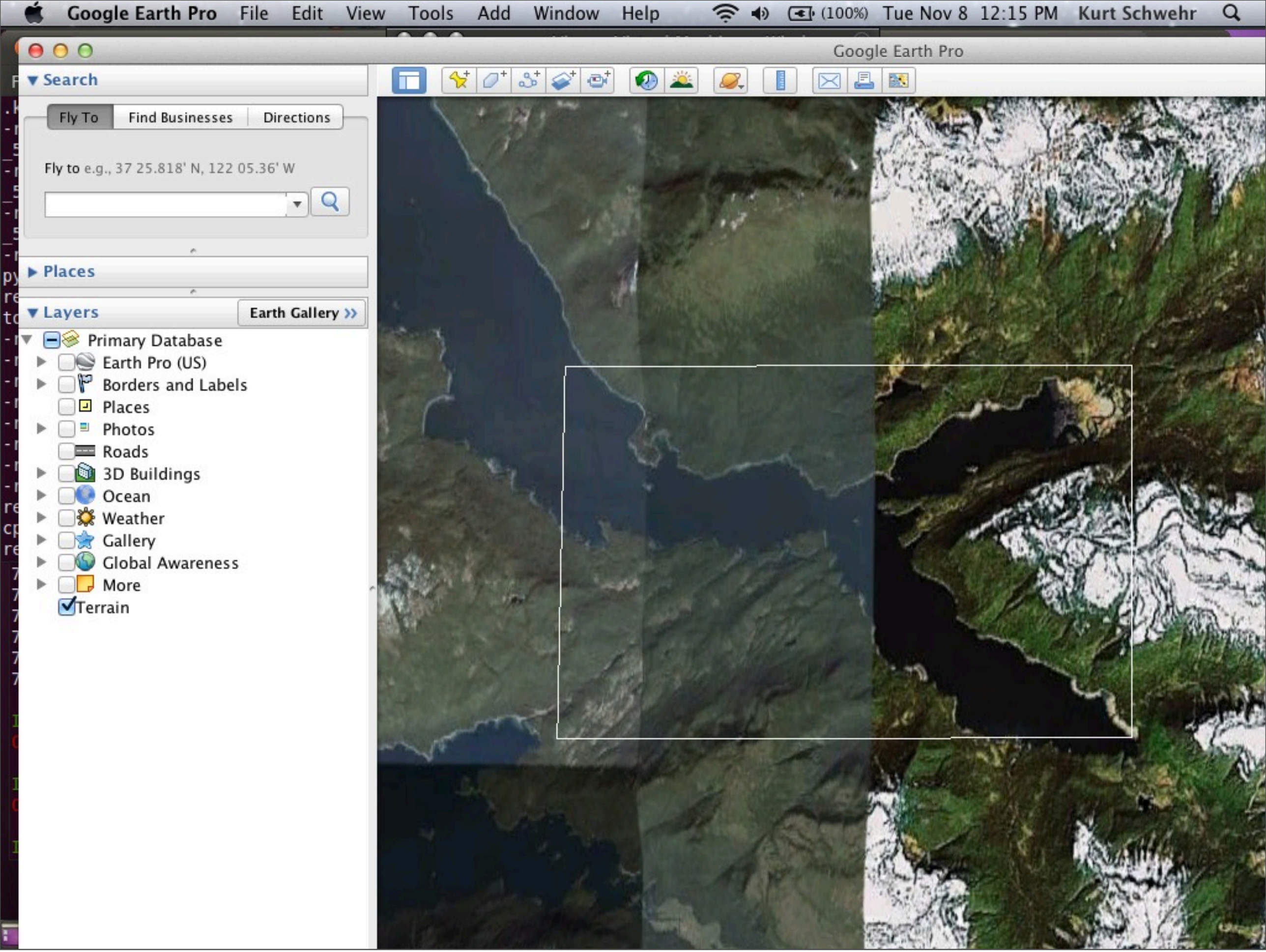
researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
53: '{xmin} and {ymax}'.format(ymax=ymax, xmin=xmin)
54: '{wahoo}'.format(wahoo=ymax)
55: _ip.magic("whos float")
56: bbox = {'xmin': xmin, 'ymin': ymin, 'xmax': xmax, 'ymax': ymax}
57: bbox
58: bbox['xmin']
59: '{xmin} and {ymax}'.format(bbox)
60: '{xmin} and {ymax}'.format(**bbox)
61: #?locals
62: _ip.magic("who ")
63: _ip.magic("whos ")
64: del metadata_txt
65: _ip.magic("whos ")
66: locals()
67: '{xmin} and {ymax}'.format( ** locals() )
68: print open('bbox-template.kml').read()
69: print open('bbox-template.kml').read()
70: open('bbox-template.kml').read()
71: kml_template = open('bbox-template.kml').read()
72: filename = 'H11703_Office_5m.bag'
73: _ip.magic("whos ")
74: print kml_template.format( **locals() )
75: out = open('H11703_Office_5m-bbox.kml','w')
76: out.write( kml_template.format( **locals() ) )
77: out.close()
78: _ip.magic("history ")

In [79]: out.close
Out[79]: <built-in method close of file object at 0x96c95a0>

In [80]: xmin
Out[80]: -134.49

In [81]:
```


Applications Places System
12:07 PM
researchtools@ubuntu: ~
File Edit View Search Terminal Help
researchtools@ubuntu:~$ google-earth
Start-Up Tip
Tip: Navigate with Street View
Google Earth: Recommends 'DirectX' mode.
Please complete the login window first if it's shown in front.
You are starting Google Earth in 'OpenGL Software Emulation' mode, which will work but runs more slowly. We recommend you try 'DirectX' mode for the best Google Earth experience.
Would you like to switch to 'DirectX' mode?
Yes
No
73: _ip.magic("whos
74: print kml_templ
75: out = open('H11
76: out.write(kml_
77: out.close()
78: _ip.magic("history
In [79]: out.close


Applications Places System
researchtools@ubuntu: ~/class/20
File Edit View Search Terminal Help
researchtools@ubuntu:~$ google-earth
Google Earth has caught signal 11.
We apologize for the inconvenience, but Google Earth has crashed.
This is a bug in the program, and should never happen under normal
circumstances. A bug report and debugging data have been written
to this text file:
/home/researchtools/.googleearth/crashlogs/crashlog-4eb961cd.txt
Please include this file if you submit a bug report to Google.
researchtools@ubuntu:~$ cd class/20
researchtools@ubuntu:~/class/20$



Google Earth (actually Pro, but for our purposes, Pro does not matter)
Screen shot from Mac OSX 10.7 showing the bounding box.

```
researchtools@ubuntu: ~/class/20
File  Edit  View  Search  Terminal  Help
.kml~
-rw-r--r-- 1 researchtools researchtools 23003248 2011-10-27 09:44 H11703_Office
_5m.bag
-rw-r--r-- 1 researchtools researchtools      913 2011-11-08 12:03 H11703_Office
_5m-bbox.kml
-rw-r--r-- 1 researchtools researchtools     5096 2011-11-08 11:24 H11703_Office
_5m.xml
-rw-r--r-- 1 researchtools researchtools    16996 2011-11-08 12:05 log-class-20.
py
researchtools@ubuntu:~/class/20$ ls -l
total 22524
-rw-r--r-- 1 researchtools researchtools     6416 2011-11-08 11:50 #20-bags-3-xml-kml-gshhs.org#
-rw-r--r-- 1 researchtools researchtools     6416 2011-11-08 10:25 20-bags-3-xml-kml-gshhs.org
-rw-r--r-- 1 researchtools researchtools      559 2011-11-08 11:56 bbox-template.kml
-rw-r--r-- 1 researchtools researchtools      559 2011-11-08 11:51 bbox-template.kml~
-rw-r--r-- 1 researchtools researchtools 23003248 2011-10-27 09:44 H11703_Office_5m.bag
-rw-r--r-- 1 researchtools researchtools      913 2011-11-08 12:03 H11703_Office_5m-bbox.kml
-rw-r--r-- 1 researchtools researchtools     5096 2011-11-08 11:24 H11703_Office_5m.xml
-rw-r--r-- 1 researchtools researchtools    16996 2011-11-08 12:05 log-class-20.py
researchtools@ubuntu:~/class/20$ cp H11703_Office_5m-bbox.kml ~/Dropbox/
cp: overwrite `/home/researchtools/Dropbox/H11703_Office_5m-bbox.kml'? y
researchtools@ubuntu:~/class/20$
```

```
73: _ip.magic("whos ")
74: print kml_template.format( **locals() )
75: out = open('H11703_Office_5m-bbox.kml','w')
76: out.write( kml_template.format( **locals() ) )
77: out.close()
78: _ip.magic("history ")

In [79]: out.close
Out[79]: <built-in method close of file object at 0x96c95a0>

In [80]: xmin
Out[80]: -134.49

In [81]:
```

Applications Places System

Accessories
Games
Graphics
Internet
Office
Other
Programming
Science
Sound & Video
System Tools
Ubuntu Software Center

Quantum GIS
Geographical Information System

emacs23@ubuntu

ile Edit Options Buffers Tools Org Tbl

#+END_SRC

Or, if you are in the class Linux Virtu
and from your normal desktop, go to you
through the web interface: https://www.

file on your desktop.

We can also view the file in QGIS.

- Layer -> Add Vector Layer
  - Browse and find the file
  - ok
  - ok

-rw-r--r-- 1 researchtools
-rw-r--r-- 1 researchtools

eladus

Vector Help

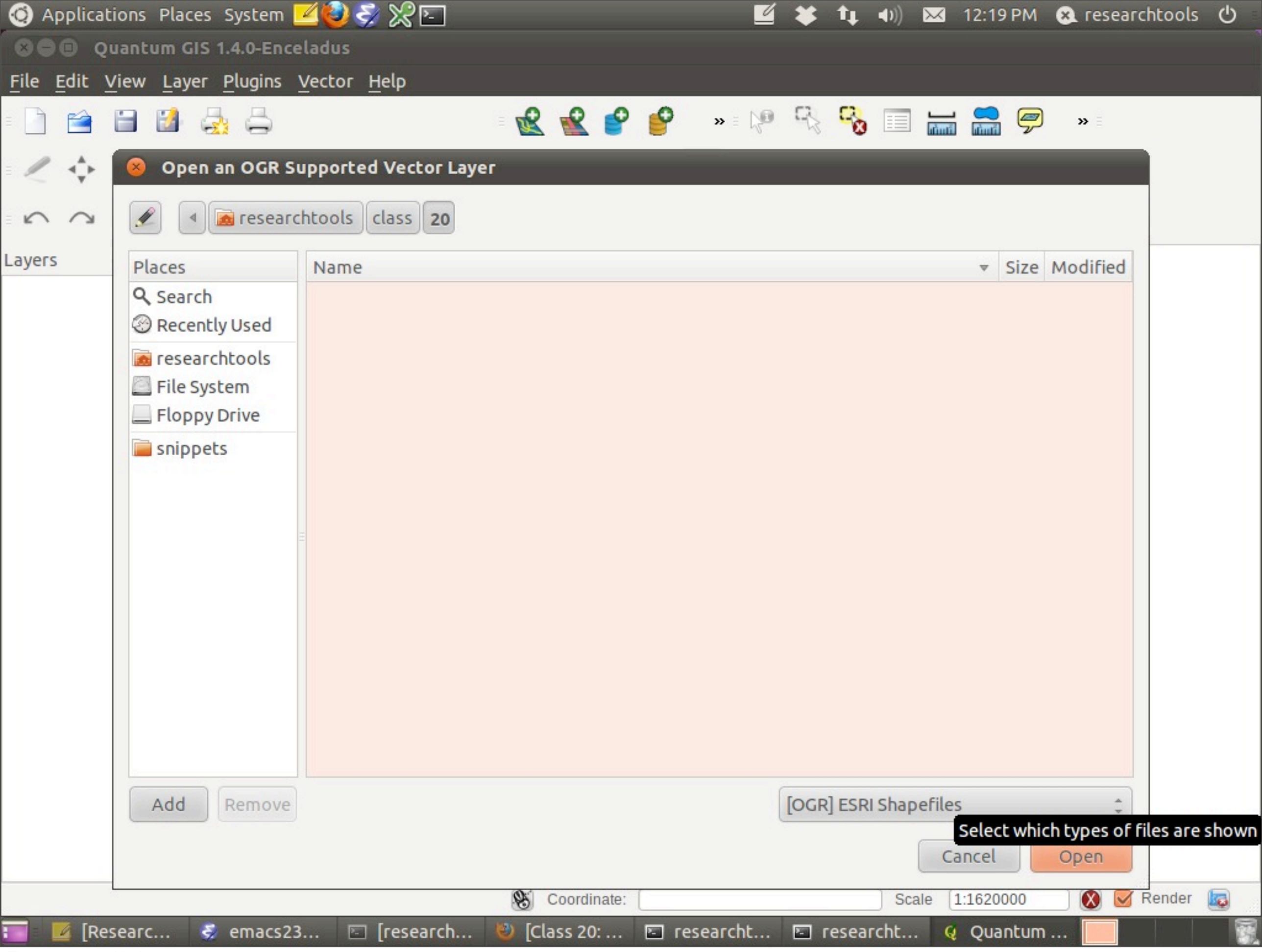
ayer... Ctrl+Shift+N
ayer... Ctrl+Shift+V
ayer... Ctrl+Shift+R
Layer... Ctrl+Shift+D
Add SpatiaLite Layer... Ctrl+Shift+L
Add WMS Layer... Ctrl+Shift+W

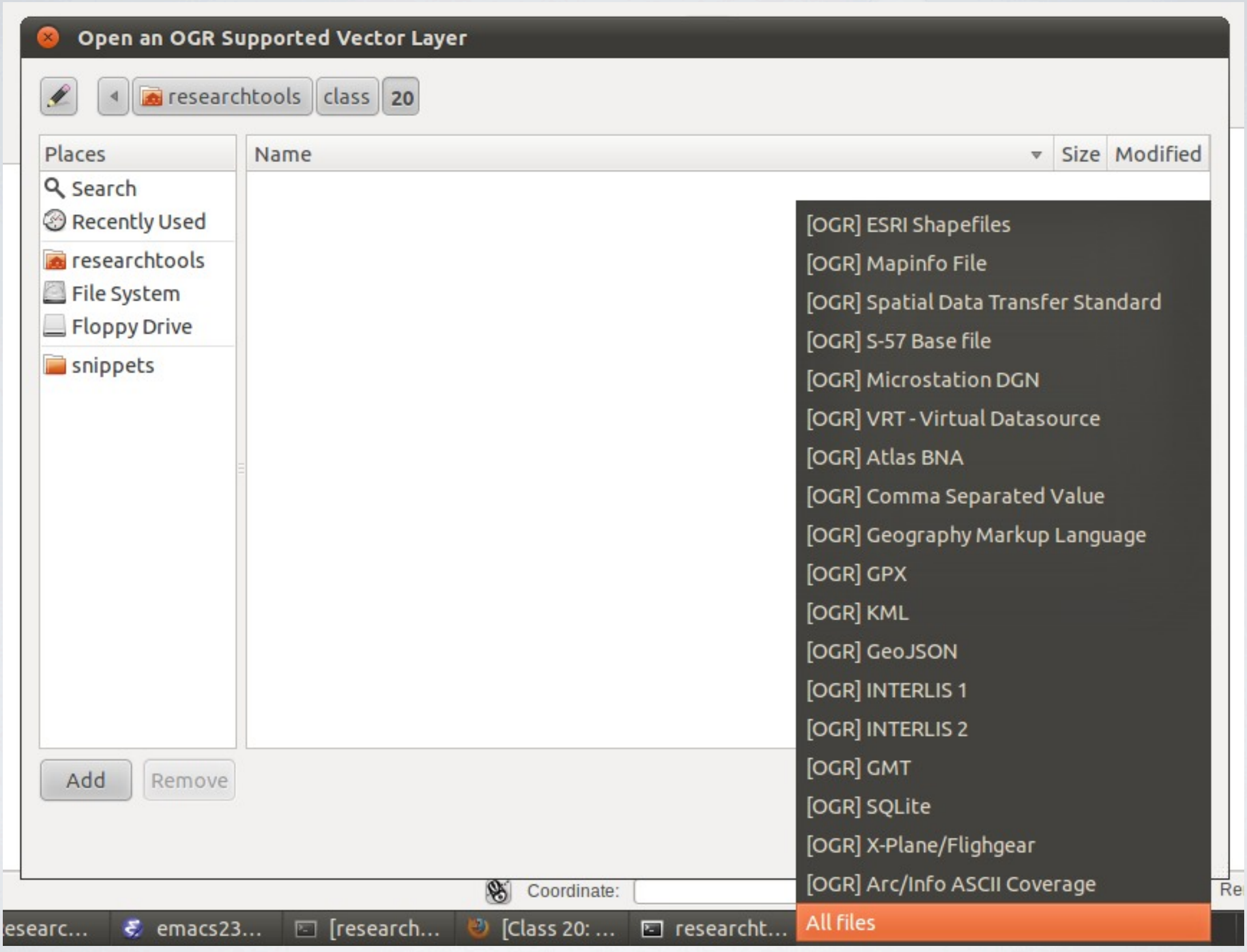
Open Attribute Table
Toggle editing
Save as Shapefile...
Save Selection as Shapefile...
Remove Layer Ctrl+D
Properties...

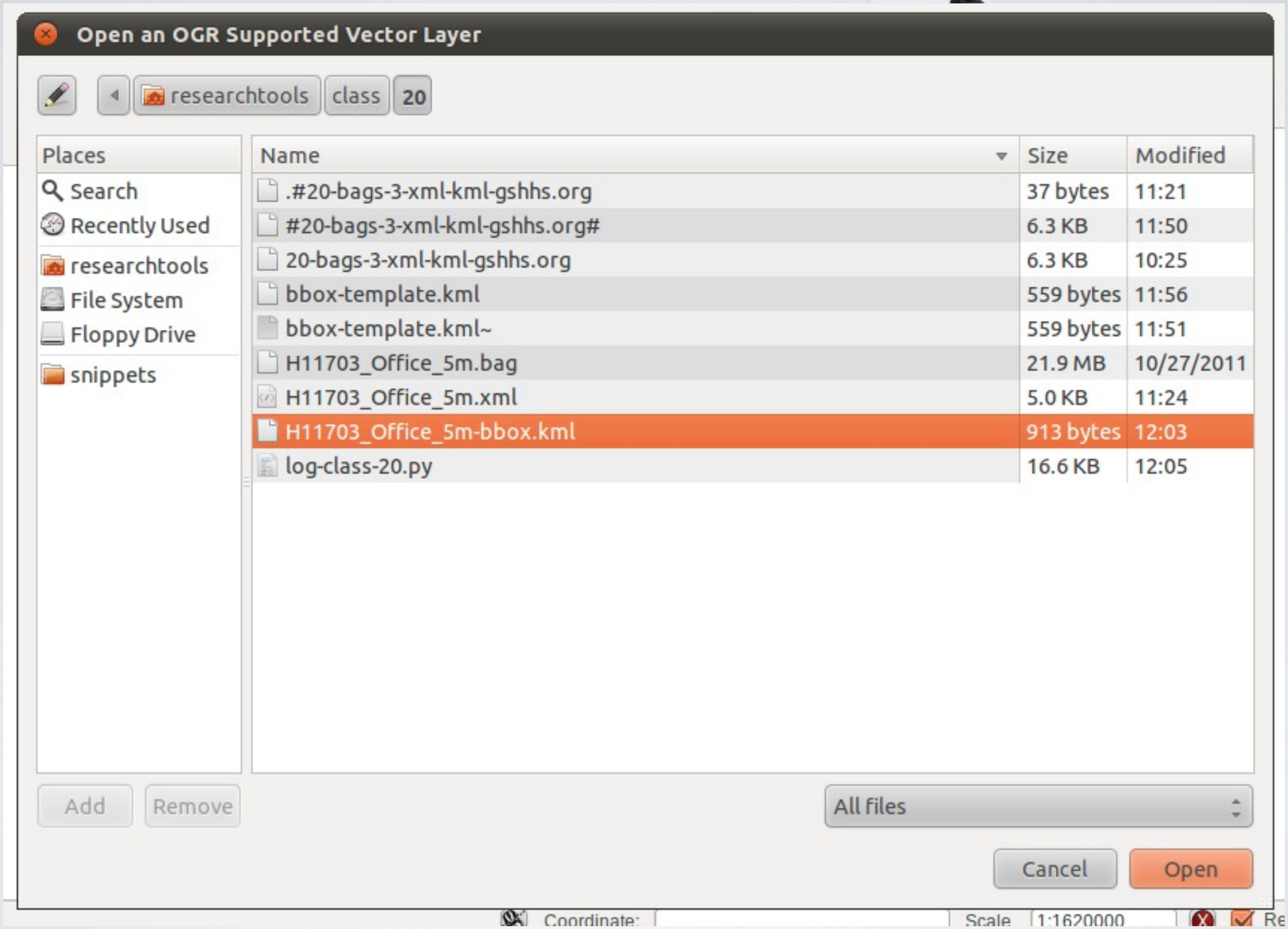
Add to Overview Ctrl+Shift+O
Add All to Overview
Remove All From Overview

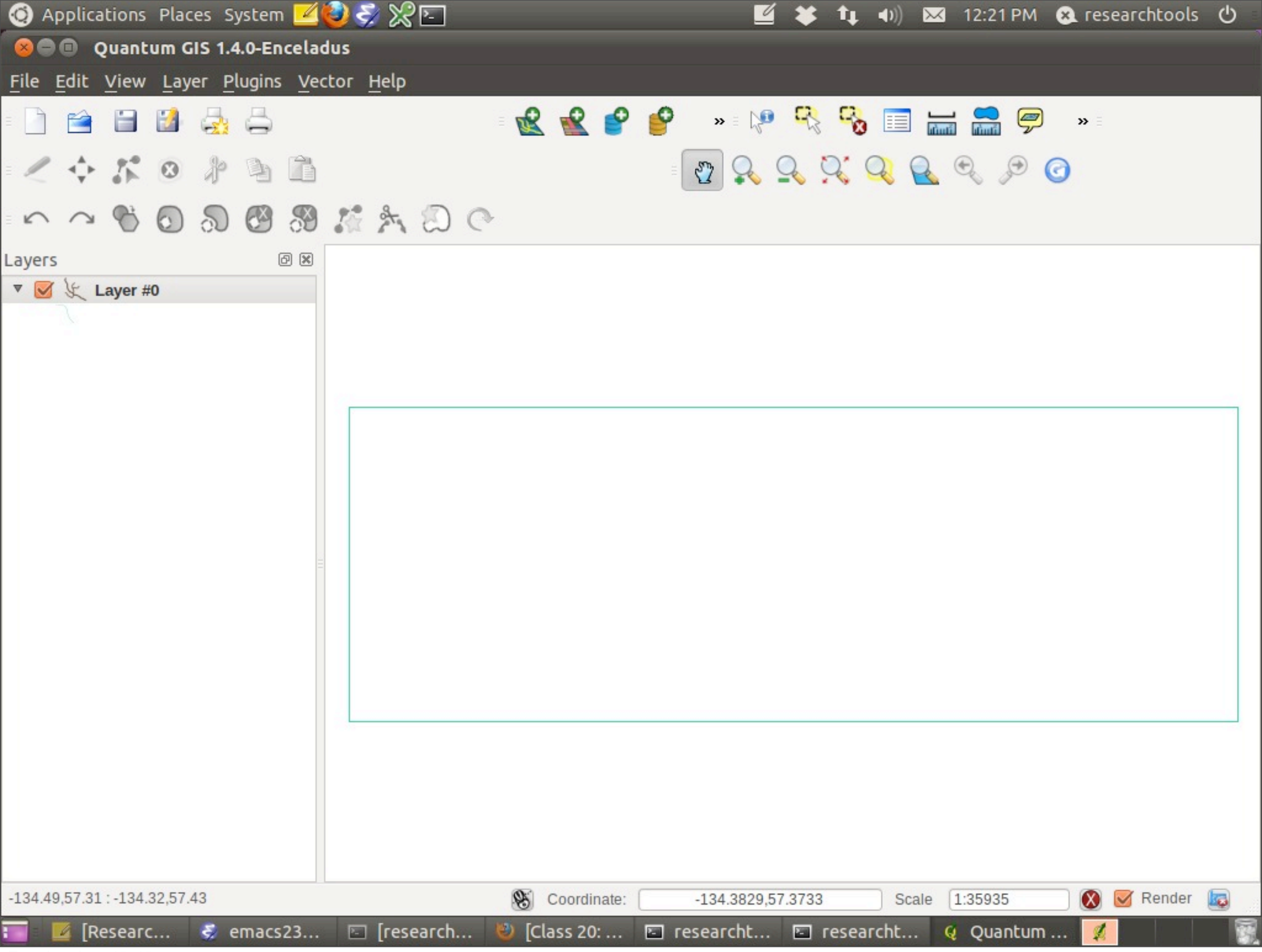
Hide All Layers Ctrl+Shift+H
Show All Layers Ctrl+Shift+U

Layers


Applications Places System
12:19 PM researchtools
Quantum GIS 1.4.0-Enceladus
File Edit View Layer Plugins Vector Help
Layers
Open an OGR Supported Vector Layer
researchtools class 20
Places
Search
Recently Used
researchtools
File System
Floppy Drive
snippets
Name
Size
Modified
Add
Remove
[OGR] ESRI Shapefiles
Select which types of files are shown
Cancel
Open
Coordinate:
Scale
1:1620000
Render
[Researc...
emacs23...
[research...
[Class 20: ...
researcht...
researcht...
Quantum ...


Open an OGR Supported Vector Layer
researchtools
class
20
Places
Search
Recently Used
researchtools
File System
Floppy Drive
snippets
Name
Size
Modified
Add
Remove
[OGR] ESRI Shapefiles
[OGR] Mapinfo File
[OGR] Spatial Data Transfer Standard
[OGR] S-57 Base file
[OGR] Microstation DGN
[OGR] VRT - Virtual Datasource
[OGR] Atlas BNA
[OGR] Comma Separated Value
[OGR] Geography Markup Language
[OGR] GPX
[OGR] KML
[OGR] GeoJSON
[OGR] INTERLIS 1
[OGR] INTERLIS 2
[OGR] GMT
[OGR] SQLite
[OGR] X-Plane/Flighgear
[OGR] Arc/Info ASCII Coverage
All files
Coordinate:
esearc...
emacs23...
[research...
[Class 20: ...
researcht...

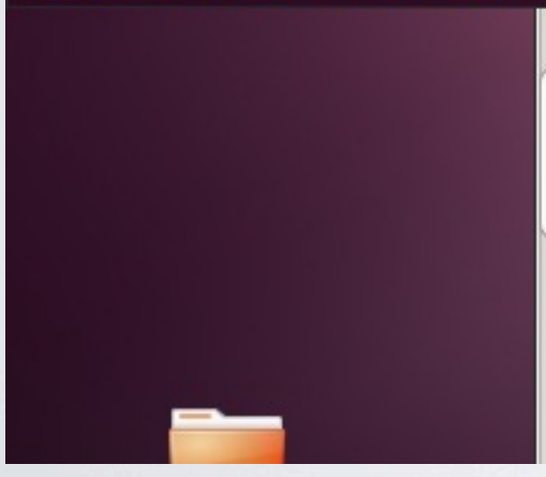

Open an OGR Supported Vector Layer
researchtools
class
20
Places
Search
Recently Used
researchtools
File System
Floppy Drive
snippets
Name
Size
Modified
.#20-bags-3-xml-kml-gshhs.org
37 bytes
11:21
#20-bags-3-xml-kml-gshhs.org#
6.3 KB
11:50
20-bags-3-xml-kml-gshhs.org
6.3 KB
10:25
bbox-template.kml
559 bytes
11:56
bbox-template.kml~
559 bytes
11:51
H11703_Office_5m.bag
21.9 MB
10/27/2011
H11703_Office_5m.xml
5.0 KB
11:24
H11703_Office_5m-bbox.kml
913 bytes
12:03
log-class-20.py
16.6 KB
12:05
Add
Remove
All files
Cancel
Open
Coordinate:
Scale
1:1620000


Applications Places System
12:21 PM researchtools
Quantum GIS 1.4.0-Enceladus
File Edit View Layer Plugins Vector Help
Layers
Layer #0
-134.49,57.31 : -134.32,57.43
Coordinate:
-134.3829,57.3733
Scale
1:35935
Render
[Researc...
emacs23...
[research...
[Class 20: ...
researcht...
researcht...
Quantum ...

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
-rw-r--r-- 1 researchtools researchtools      559 2011-11-08 11:51 bbox-template.kml~
-rw-r--r-- 1 researchtools researchtools 23003248 2011-10-27 09:44 H11703_Office_5m.bag
-rw-r--r-- 1 researchtools researchtools      913 2011-11-08 12:03 H11703_Office_5m-bbox.kml
-rw-r--r-- 1 researchtools researchtools     5096 2011-11-08 11:24 H11703_Office_5m.xml
-rw-r--r-- 1 researchtools researchtools    16996 2011-11-08 12:05 log-class-20.py
researchtools@ubuntu:~/class/20$ cp H11703_Office_5m-bbox.kml ~/Dropbox/
cp: overwrite `/home/researchtools/Dropbox/H11703_Office_5m-bbox.kml'? y
researchtools@ubuntu:~/class/20$ wget http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researchtools/examp
les/gshhs-shp-h-2.2.0.tar.bz2
--2011-11-08 12:22:44--  http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researchtools/examples/gshhs-shp
-h-2.2.0.tar.bz2
Resolving vislab-ccom.unh.edu... 192.168.3.3
Connecting to vislab-ccom.unh.edu|192.168.3.3|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 17540170 (17M) [application/x-bzip2]
Saving to: `gshhs-shp-h-2.2.0.tar.bz2'

100%[======================================>] 17,540,170  10.9M/s   in 1.5s

2011-11-08 12:22:46 (10.9 MB/s) - `gshhs-shp-h-2.2.0.tar.bz2' saved [17540170/17540170]

researchtools@ubuntu:~/class/20$ tar tf gshhs-shp-h-2.2.0.tar.bz2
```



```
- http://www.soest.hawaii.edu/pwessel/papers/1996/JGR_96/jgr_96.html
- http://www.ngdc.noaa.gov/mgg/shorelines/gshhs.html

#+BEGIN_SRC sh
# wget ftp://ftp.soest.hawaii.edu/pwessel/gshhs/GSHHS_shp_2.2.0.zip
# or faster:

wget http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researchtools/examples/gshhs-
tar tf gshhs-shp-h-2.2.0.tar.bz2
tar xf gshhs-shp-h-2.2.0.tar.bz2
```

researchtools@ubuntu: ~/class/20

File Edit View Search Terminal Help

```
2011-11-08 12:22:46 (10.9 MB/s) - `gshhs-shp-h-2.2.0.tar.bz2' saved [17540170/17540170]

researchtools@ubuntu:~/class/20$ tar tf gshhs-shp-h-2.2.0.tar.bz2
gshhs-shp-h-2.2.0/
gshhs-shp-h-2.2.0/GSHHS_h_L1.shx
gshhs-shp-h-2.2.0/GSHHS_h_L2.shx
gshhs-shp-h-2.2.0/GSHHS_h_L3.shx
gshhs-shp-h-2.2.0/GSHHS_h_L1.dbf
gshhs-shp-h-2.2.0/GSHHS_h_L2.dbf
gshhs-shp-h-2.2.0/GSHHS_h_L4.shx
gshhs-shp-h-2.2.0/GSHHS_h_L1.shp
gshhs-shp-h-2.2.0/GSHHS_h_L4.dbf
gshhs-shp-h-2.2.0/GSHHS_h_L3.shp
gshhs-shp-h-2.2.0/GSHHS_h_L3.dbf
gshhs-shp-h-2.2.0/GSHHS_h_L4.prj
gshhs-shp-h-2.2.0/GSHHS_h_L3.prj
gshhs-shp-h-2.2.0/GSHHS_h_L4.shp
gshhs-shp-h-2.2.0/GSHHS_h_L2.shp
gshhs-shp-h-2.2.0/GSHHS_h_L1.prj
gshhs-shp-h-2.2.0/GSHHS_h_L2.prj
researchtools@ubuntu:~/class/20$ tar xf gshhs-shp-h-2.2.0.tar.bz2
researchtools@ubuntu:~/class/20$
```

video

snippets

```
- http://www.soest.hawaii.edu/pwessel/papers/1996/JGR_96/jgr_96.html
- http://www.ngdc.noaa.gov/mgg/shorelines/gshhs.html

#+BEGIN_SRC sh
# wget ftp://ftp.soest.hawaii.edu/pwessel/gshhs/GSHHS_shp_2.2.0.zip
# or faster:

wget http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researchtools/examples/gsl
tar tf gshhs-shp-h-2.2.0.tar.bz2
tar xf gshhs-shp-h-2.2.0.tar.bz2

cd gshhs-shp-h-2.2.0
--:**-  20-bags-3-xml-kml-gshhs.org   78% L212    [#,r] (Org)----------------------------
menu-bar edit copy
```

researchtools@ubuntu: ~/class/20/gshhs-shp-h-2.2.0

File Edit View Search Terminal Help

```
gshhs-shp-h-2.2.0/GSHHS_h_L2.prj
researchtools@ubuntu:~/class/20$ tar xf gshhs-shp-h-2.2.0.tar.bz2
researchtools@ubuntu:~/class/20$ cd gshhs-shp-h-2.2.0/
researchtools@ubuntu:~/class/20/gshhs-shp-h-2.2.0$ ls -l
total 71668
-rw-r--r-- 1 researchtools researchtools 31278855 2011-07-07 19:52 GSHHS_h_L1.dbf
-rw-r--r-- 1 researchtools researchtools      143 2011-07-07 19:52 GSHHS_h_L1.prj
-rw-r--r-- 1 researchtools researchtools 34445220 2011-07-07 19:52 GSHHS_h_L1.shp
-rw-r--r-- 1 researchtools researchtools  1163956 2011-07-07 19:52 GSHHS_h_L1.shx
-rw-r--r-- 1 researchtools researchtools  1419655 2011-07-07 19:52 GSHHS_h_L2.dbf
-rw-r--r-- 1 researchtools researchtools      143 2011-07-07 19:52 GSHHS_h_L2.prj
-rw-r--r-- 1 researchtools researchtools  4258740 2011-07-07 19:52 GSHHS_h_L2.shp
-rw-r--r-- 1 researchtools researchtools    52916 2011-07-07 19:52 GSHHS_h_L2.shx
-rw-r--r-- 1 researchtools researchtools   305740 2011-07-07 19:52 GSHHS_h_L3.dbf
-rw-r--r-- 1 researchtools researchtools      143 2011-07-07 19:52 GSHHS_h_L3.prj
-rw-r--r-- 1 researchtools researchtools   405020 2011-07-07 19:52 GSHHS_h_L3.shp
-rw-r--r-- 1 researchtools researchtools    11468 2011-07-07 19:52 GSHHS_h_L3.shx
-rw-r--r-- 1 researchtools researchtools     2590 2011-07-07 19:52 GSHHS_h_L4.dbf
-rw-r--r-- 1 researchtools researchtools      143 2011-07-07 19:52 GSHHS_h_L4.prj
-rw-r--r-- 1 researchtools researchtools     4172 2011-07-07 19:52 GSHHS_h_L4.shp
-rw-r--r-- 1 researchtools researchtools      188 2011-07-07 19:52 GSHHS_h_L4.shx
researchtools@ubuntu:~/class/20/gshhs-shp-h-2.2.0$
```

video

snippets

```
- http://www.soest.hawaii.edu/pwessel/papers/1996/JGR_96/jgr_96.html
- http://www.ngdc.noaa.gov/mgg/shorelines/gshhs.html

#+BEGIN_SRC sh
# wget ftp://ftp.soest.hawaii.edu/pwessel/gshhs/GSHHS_shp_2.2.0.zip
# or faster:

wget http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researchtools/examples/gshhs-shp
tar tf gshhs-shp-h-2.2.0.tar.bz2
tar xf gshhs-shp-h-2.2.0.tar.bz2

cd gshhs-shp-h-2.2.0
--:**-  20-bags-3-xml-kml-gshhs.org   78% L212    [#,r] (Org)----------
menu-bar edit copy
```

researchtools@ubuntu: ~/class/20/gshhs-shp-h-2.2.0

File Edit View Search Terminal Help

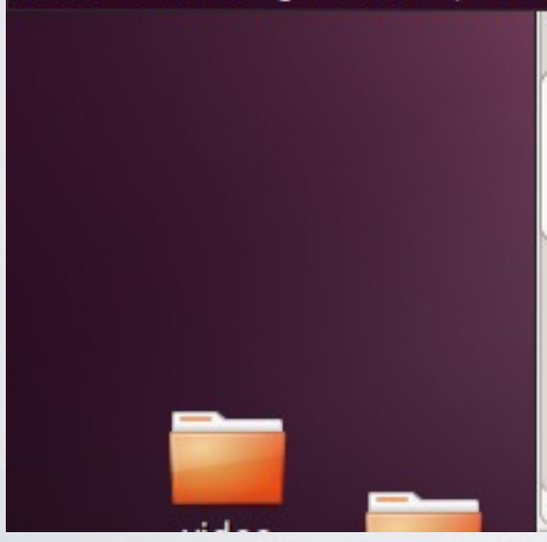
```
-rw-r--r-- 1 researchtools researchtools     2590 2011-07-07 19:52 GSHHS_h_L4.dbf
-rw-r--r-- 1 researchtools researchtools      143 2011-07-07 19:52 GSHHS_h_L4.prj
-rw-r--r-- 1 researchtools researchtools     4172 2011-07-07 19:52 GSHHS_h_L4.shp
-rw-r--r-- 1 researchtools researchtools      188 2011-07-07 19:52 GSHHS_h_L4.shx
researchtools@ubuntu:~/class/20/gshhs-shp-h-2.2.0$ file *
GSHHS_h_L1.dbf: DBase 3 data file (145482 records)
GSHHS_h_L1.prj: ASCII text, with no line terminators
GSHHS_h_L1.shp: ESRI Shapefile version 1000 length 17222610 type Polygon
GSHHS_h_L1.shx: ESRI Shapefile version 1000 length 581978 type Polygon
GSHHS_h_L2.dbf: DBase 3 data file (6602 records)
GSHHS_h_L2.prj: ASCII text, with no line terminators
GSHHS_h_L2.shp: ESRI Shapefile version 1000 length 2129370 type Polygon
GSHHS_h_L2.shx: ESRI Shapefile version 1000 length 26458 type Polygon
GSHHS_h_L3.dbf: DBase 3 data file (1421 records)
GSHHS_h_L3.prj: ASCII text, with no line terminators
GSHHS_h_L3.shp: ESRI Shapefile version 1000 length 202510 type Polygon
GSHHS_h_L3.shx: ESRI Shapefile version 1000 length 5734 type Polygon
GSHHS_h_L4.dbf: DBase 3 data file (11 records)
GSHHS_h_L4.prj: ASCII text, with no line terminators
GSHHS_h_L4.shp: ESRI Shapefile version 1000 length 2086 type Polygon
GSHHS_h_L4.shx: ESRI Shapefile version 1000 length 94 type Polygon
researchtools@ubuntu:~/class/20/gshhs-shp-h-2.2.0$
```

- http://www.soest.hawaii.edu/pwessel/papers/1996/JGR_96/jgr_96.html

researchtools@ubuntu: ~/class/20/gshhs-shp-h-2.2.0

File Edit View Search Terminal Help

```
researchtools@ubuntu:~/class/20/gshhs-shp-h-2.2.0$ file *
GSHHS_h_L1.dbf: DBase 3 data file (145482 records)
GSHHS_h_L1.prj: ASCII text, with no line terminators
GSHHS_h_L1.shp: ESRI Shapefile version 1000 length 17222610 type Polygon
GSHHS_h_L1.shx: ESRI Shapefile version 1000 length 581978 type Polygon
GSHHS_h_L2.dbf: DBase 3 data file (6602 records)
GSHHS_h_L2.prj: ASCII text, with no line terminators
GSHHS_h_L2.shp: ESRI Shapefile version 1000 length 2129370 type Polygon
GSHHS_h_L2.shx: ESRI Shapefile version 1000 length 26458 type Polygon
GSHHS_h_L3.dbf: DBase 3 data file (1421 records)
GSHHS_h_L3.prj: ASCII text, with no line terminators
GSHHS_h_L3.shp: ESRI Shapefile version 1000 length 202510 type Polygon
GSHHS_h_L3.shx: ESRI Shapefile version 1000 length 5734 type Polygon
GSHHS_h_L4.dbf: DBase 3 data file (11 records)
GSHHS_h_L4.prj: ASCII text, with no line terminators
GSHHS_h_L4.shp: ESRI Shapefile version 1000 length 2086 type Polygon
GSHHS_h_L4.shx: ESRI Shapefile version 1000 length 94 type Polygon
researchtools@ubuntu:~/class/20/gshhs-shp-h-2.2.0$ ogrinfo GSHHS_h_L1.shp
INFO: Open of `GSHHS_h_L1.shp'
      using driver `ESRI Shapefile' successful.
1: GSHHS_h_L1 (Polygon)
researchtools@ubuntu:~/class/20/gshhs-shp-h-2.2.0$
```



```
- http://www.soest.hawaii.edu/pwessel/papers/1996/JGR_96/jgr_96.html
- http://www.ngdc.noaa.gov/mgg/shorelines/gshhs.html

#+BEGIN_SRC sh
# wget ftp://ftp.soest.hawaii.edu/pwessel/gshhs/GSHHS_shp_2.2.0.zip
# or faster:

wget http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researchtools/examples/gshh
tar tf gshhs-shp-h-2.2.0.tar.bz2
tar xf gshhs-shp-h-2.2.0.tar.bz2

cd gshhs-shp-h-2.2.0
```

Quantum GIS 1.4.0-Enceladus

File Edit View Layer Plugins Vector Help

Layers

Open an OGR Supported Vector Layer

researchtools class 20 gshhs-shp-h-2.2.0

Places

- Search
- Recently Used
- researchtools
- File System
- Floppy Drive
- snippets

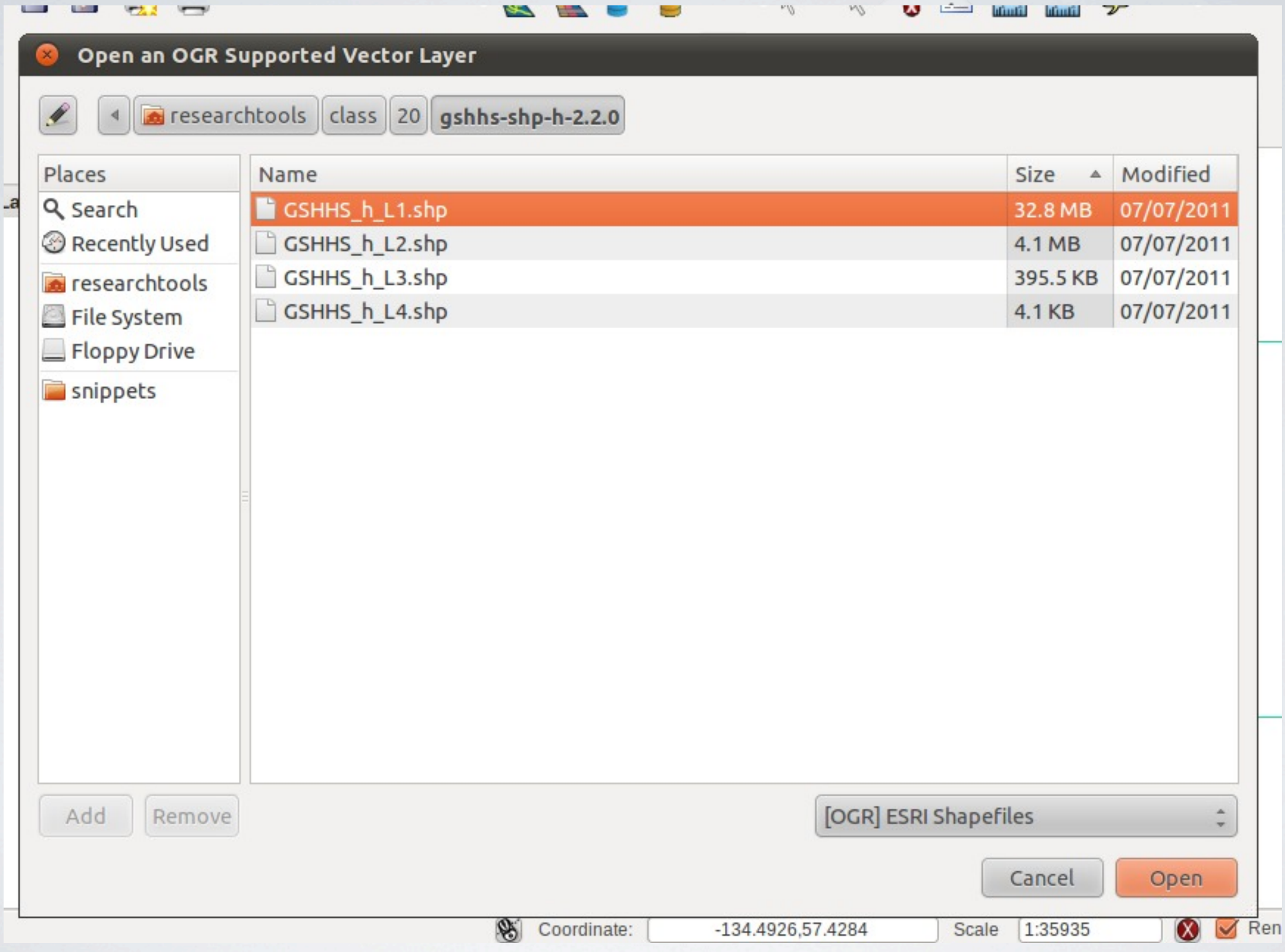
Name	Size	Modified
GSHHS_h_L1.dbf	29.8 MB	07/07/2011
GSHHS_h_L1.prj	143 bytes	07/07/2011
GSHHS_h_L1.shp	32.8 MB	07/07/2011
GSHHS_h_L1.shx	1.1 MB	07/07/2011
GSHHS_h_L2.dbf	1.4 MB	07/07/2011
GSHHS_h_L2.prj	143 bytes	07/07/2011
GSHHS_h_L2.shp	4.1 MB	07/07/2011
GSHHS_h_L2.shx	51.7 KB	07/07/2011
GSHHS_h_L3.dbf	298.6 KB	07/07/2011
GSHHS_h_L3.prj	143 bytes	07/07/2011
GSHHS_h_L3.shp	395.5 KB	07/07/2011
GSHHS_h_L3.shx	11.2 KB	07/07/2011
GSHHS_h_L4.dbf	2.5 KB	07/07/2011
GSHHS_h_L4.prj	143 bytes	07/07/2011
GSHHS_h_L4.shp	4.1 KB	07/07/2011
GSHHS_h_L4.shx	188 bytes	07/07/2011

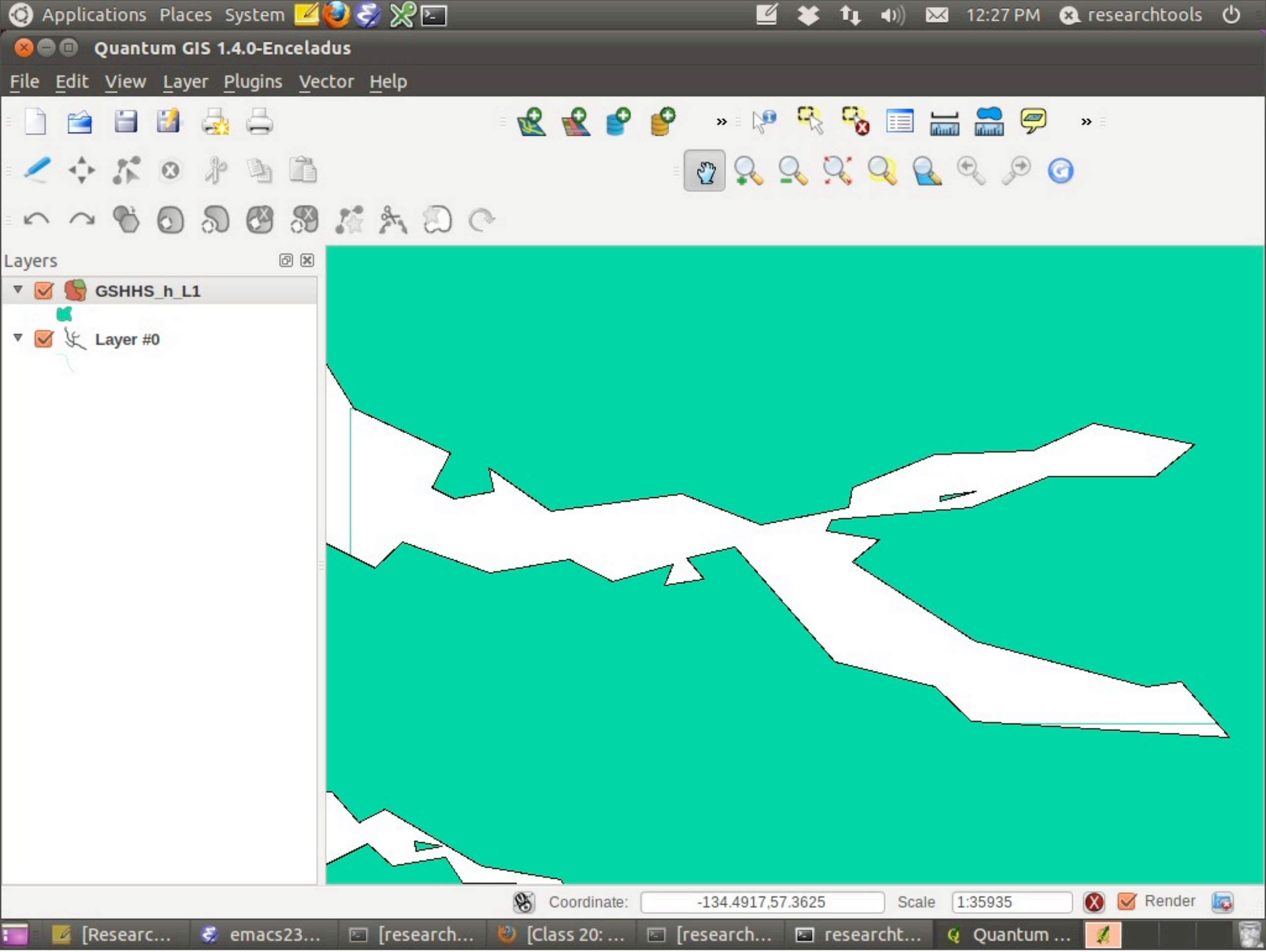
Add Remove

All files

Cancel Open

Coordinate: -134.4926,57.4284 Scale 1:35935


Open an OGR Supported Vector Layer
researchtools
class
20
gshhs-shp-h-2.2.0
Places
Search
Recently Used
researchtools
File System
Floppy Drive
snippets
Name
Size
Modified
GSHHS_h_L1.shp
32.8 MB
07/07/2011
GSHHS_h_L2.shp
4.1 MB
07/07/2011
GSHHS_h_L3.shp
395.5 KB
07/07/2011
GSHHS_h_L4.shp
4.1 KB
07/07/2011
Add
Remove
[OGR] ESRI Shapefiles
Cancel
Open
Coordinate:
-134.4926,57.4284
Scale
1:35935
Ren


Applications Places System
12:27 PM researchtools
Quantum GIS 1.4.0-Enceladus
File Edit View Layer Plugins Vector Help
Layers
GSHHS_h_L1
Layer #0
Coordinate: -134.4917,57.3625
Scale 1:35935
Render
[Researc...
emacs23...
[research...
[Class 20: ...
[research...
researcht...
Quantum ...

Applications Places System 12:27 PM researchtools

Quantum GIS 1.4.0-Enceladus

File Edit View Layer Plugins Vector Help

Layers

GSHHS_h_L1

Layer #0

/home/researchtools/class/20/H11703_Office_5m-bbox.kml

Coordinate: -134.4917,57.3625 Scale 1:35935 Render

[Researc... emacs23... [research... [Class 20: ... [research... researcht... Quantum ...

Applications Places System 12:27 PM researchtools

Quantum GIS 1.4.0-Enceladus

File Edit View Layer Plugins Vector Help

Layers

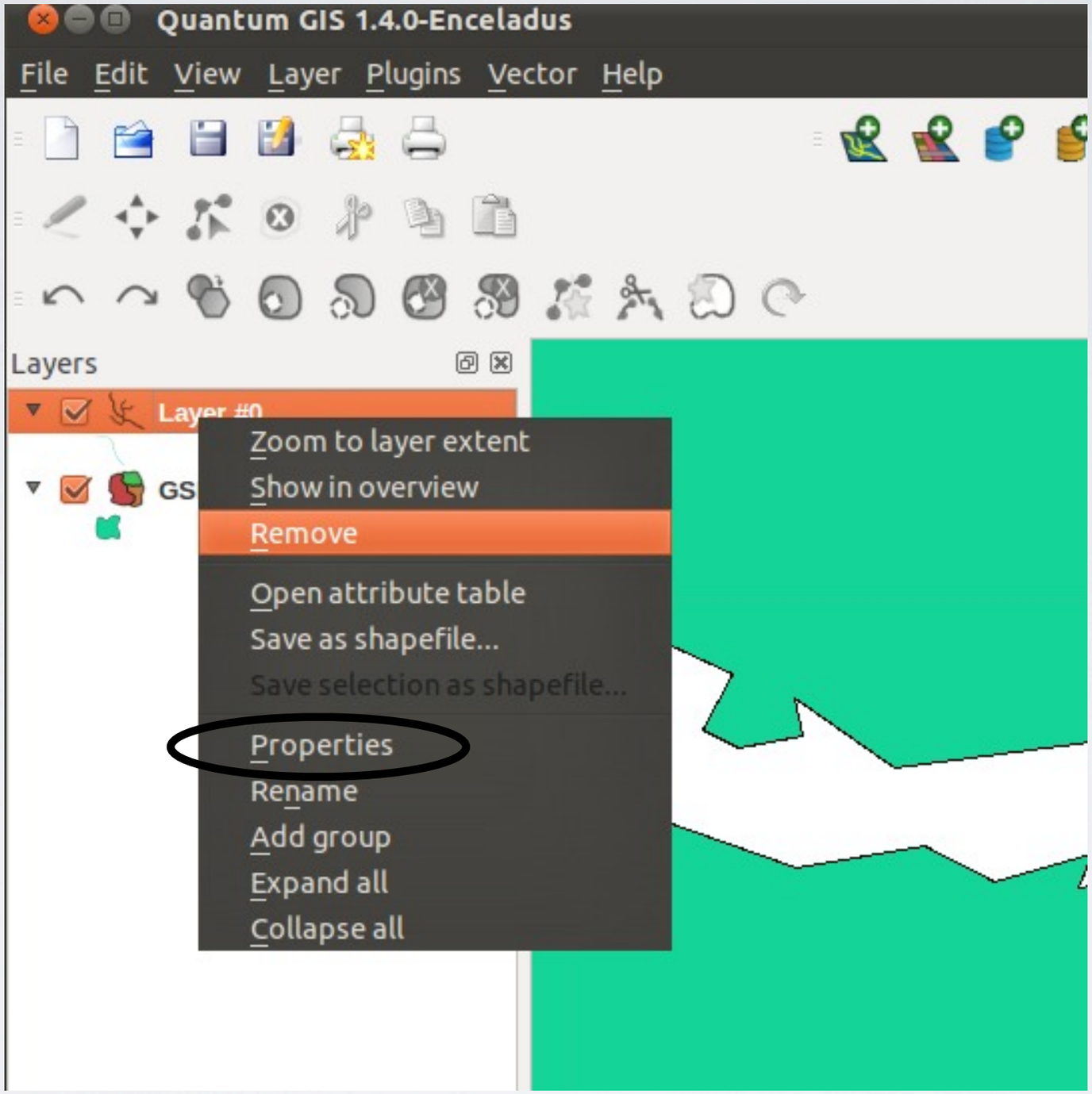
Layer #0

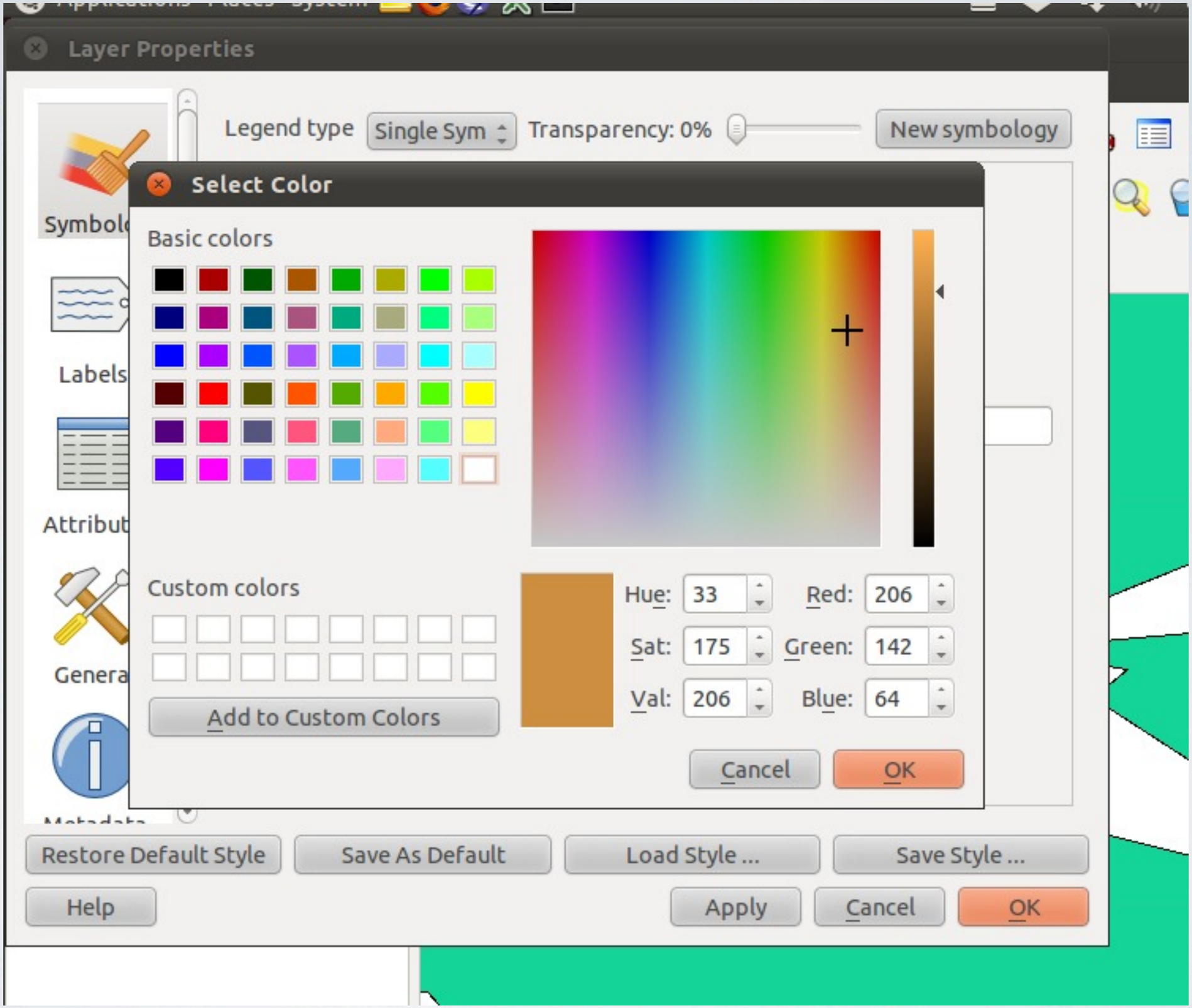
GSHHS_h_L1

Coordinate: -134.4895,57.3968 Scale 1:35935 Render

[Researc... emacs23... [research... [Class 20: ... [research... researcht... Quantum ...

Tuesday, June 12, 12


Quantum GIS 1.4.0-Enceladus
File Edit View Layer Plugins Vector Help
Layers
Layer #0
GS
Zoom to layer extent
Show in overview
Remove
Open attribute table
Save as shapefile...
Save selection as shapefile...
Properties
Rename
Add group
Expand all
Collapse all


Layer Properties
Legend type
Single Sym
Transparency: 0%
New symbology
Symbol
Labels
Attribut
Genera
Select Color
Basic colors
Custom colors
Add to Custom Colors
Hue: 33
Sat: 175
Val: 206
Red: 206
Green: 142
Blue: 64
Cancel
OK
Restore Default Style
Save As Default
Load Style ...
Save Style ...
Help
Apply
Cancel
OK

Applications Places System 12:28 PM researchtools

Quantum GIS 1.4.0-Enceladus

File Edit View Layer Plugins Vector Help

Layers

Layer #0

GSHHS_h_L1

Coordinate: -134.4149,57.4183 Scale 1:286978 Render

[Researc... emacs23... [research... [Class 20: ... [research... researcht... Quantum ...

Tuesday, June 12, 12