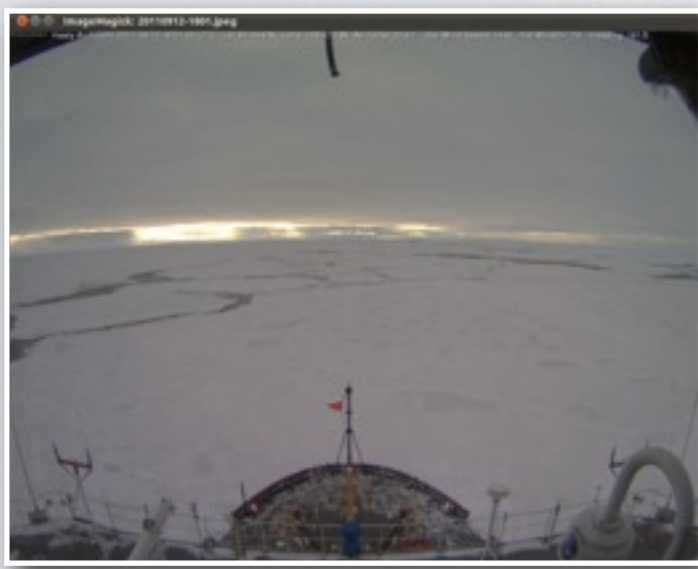


RESEARCH TOOLS 2011

LECTURE 05



2011-Sep-13
Kurt Schwehr
<http://schwehr.org>



UNH CCOM/JHC
File types, Emacs intro, beginning scripts



Ubuntu Start Page - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Ubuntu Start Page

http://start.ubuntu.com/11.04/Google/?sourceid=hp

Google

ubuntu

Google

- Ubuntu help >
- Ubuntu shop >
- Ubuntu community >

Ubuntu Start Page - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Ubuntu Start Page

http://start.ubuntu.com/

Google

ubun

Google

Ubuntu help > Ubuntu shop > Ubuntu community >

- Downloads Ctrl+Shift+Y
- Add-ons Ctrl+Shift+A**
- Set Up Sync...
- Web Developer
- Page Info Ctrl+I
- Start Private Browsing Ctrl+Shift+P
- Clear Recent History... Ctrl+Shift+Del
- Manage Content Plug-ins







Name Last Updated Best match

Search: My Add-ons Available Add-ons

Sort by name

Search







- Get Add-ons
- Languages
- Extensions
- Appearance
- Plugins

	FB Chat History Manager 1.5 Facebook Chat History Manager,save and view your chat history ... More	03/21/2012	Install
	ChatZilla 0.9.88.2 A clean, easy to use and highly extensible Internet Relay Chat (IRC)... More	04/07/2012	Install
	Tidy Facebook Chat 0.1.3 Hides offline contacts from Facebook chat. More	11/04/2011	Install
	Facebook Chat 1.0 Facebook Chat button. Open your Facebook chat from your Mozil... More	02/12/2011	Install
	Get Back Old Facebook Chat 1.9 With this addon you can get back to you OLD Facebook Chat style ... More	09/05/2011	Install
	FB Chat Bully for Firefox 0.9.1 Bully the FB Chat to behave the way you want it to. More	10/20/2011	Install

[See all 92 results](#)

- Search
- Get Add-ons
- Languages
- Extensions
- Appearance
- Plugins

Search: My Add-ons Available Add-ons

	Name	Last Updated	Best match
	FB Chat History Manager 1.5 Facebook Chat History Manager,save and view your chat history ... More	03/21/2012	Install
<i>ChatZilla will be installed after you restart Firefox. Restart now Undo</i>			
	ChatZilla 0.9.88.2 A clean, easy to use and highly extensible Internet Relay Chat (IRC) client. More	06/28/2012	
	Tidy Facebook Chat 0.1.3 Hides offline contacts from Facebook chat. More	11/04/2011	Install
	Facebook Chat 1.0 Facebook Chat button. Open your Facebook chat from your Mozil... More	02/12/2011	Install
	Get Back Old Facebook Chat 1.9 With this addon you can get back to you OLD Facebook Chat style ... More	09/05/2011	Install
	FB Chat Bully for Firefox 0.9.1 Bully the FB Chat to behave the way you want it to. More	10/20/2011	Install

[See all 92 results](#)

- Downloads Ctrl+Shift+Y
- Add-ons Ctrl+Shift+A
- Set Up Sync...
- Web Developer
- Page Info Ctrl+I
- ChatZilla**
- Start Private Browsing Ctrl+Shift+P
- Clear Recent History... Ctrl+Shift+Del
- Manage Content Plug-ins



Search

Get Add-ons

Languages

Extensions

Appearance

Plugins

chat

Name Last Updated Best match

Available Add-ons		
Name	Last Updated	Best match
Facebook Chat History Manager 1.5	03/21/2012	Install
Tidy Facebook Chat 0.1.3	11/04/2011	Install
Facebook Chat 1.0	02/12/2011	Install
Get Back Old Facebook Chat 1.9	09/05/2011	Install
FB Chat Bully for Firefox 0.9.1	10/20/2011	Install

[See all 92 results](#)

Known Networks 12 ChatZilla 0.9.88.2 Connected N

- `|/commands|` lists all the built-in commands in ChatZilla. Use `|/help <command-name>|` to get help on individual commands.

- The IRC Help website [<http://www.irchelp.org/>](http://www.irchelp.org/) provides introductory material for new IRC users.

- The ChatZilla website [<http://chatzilla.hacksrus.com/>](http://chatzilla.hacksrus.com/) provides more information about IRC and ChatZilla, including the ChatZilla FAQ [\(<http://chatzilla.hacksrus.com/faq>](http://chatzilla.hacksrus.com/faq)), which answers many common questions about using ChatZilla.

[INFO] Available networks are [dalnet, efnet, freenode, hispano, ircnet, moznnet, quakenet, serenia, slashnet, solidirc, undernet, webbnnet].

client

researchtools ▾

Change nickname...

- ✓ Back
- Away (I'm not here right now.)
- Away (custom)...



FB Chat Bully for Firefox 0.9.1

Bully the FB Chat to behave the way you want it to. [More](#)

[See all 92 results](#)

chat 🔍

Name Last Updated Best match

Name	Last Updated	Best match
ns		
5	03/21/2012	
ew your chat history ...	More	Install
	11/04/2011	
More		Install
	02/12/2011	
x chat from your Mozil...	More	Install
t 1.9	09/05/2011	
D Facebook Chat style ...	More	Install
	10/20/2011	
		Install

Known Networks 12 ChatZilla 0.9.88.2 Connected N

- `|/commands|` lists all the built-in commands in ChatZilla. Use `|/help <command-name>|` to get help on individual commands.
- The IRC Help website

Prompt

Enter a nickname to use:

Cancel OK

[INFO] Available networks are [[dalnet](#), [efnet](#), [freenode](#), [hispano](#), [ircnet](#), [moznet](#), [quakenet](#), [serenia](#), [slashnet](#), [solidirc](#), [undernet](#), [webbnet](#)].

client

researchtools

Welcome to ChatZilla!

chat

Name Last Updated Best match

Name	Last Updated	Best match
5	03/21/2012	Install
view your chat history ...	More	
11/04/2011		Install
More		
02/12/2011		Install
chat from your Mozil...	More	
1.9	09/05/2011	Install
Facebook Chat style ...	More	
10/20/2011		Install
FB Chat Bully for Firefox 0.9.1		Install
Bully the FB Chat to behave the way you want it to.	More	

[See all 92 results](#)

Known Networks 12 ChatZilla 0.9.88.2 Connected N

- `|/commands|` lists all the built-in commands in ChatZilla. Use `|/help <command-name>|` to get help on individual commands.

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[INFO] Available networks are [dalnet, efnet, freenode, hispano, ircnet, moznnet, quakenet, serenia, slashnet, solidirc, undernet, webbnnet].

client

kurtvm /attach irc.freenode.net

Welcome to ChatZilla!



FB Chat Bully for Firefox 0.9.1

Bully the FB Chat to behave the way you want it to. [More](#)

[See all 92 results](#)

chat

Name Last Updated Best match

Name	Last Updated	Best match
ns		
5	03/21/2012	Install
ew your chat history ...		More
	11/04/2011	Install
		More
x chat from your Mozil...	02/12/2011	Install
		More
t 1.9	09/05/2011	Install
D Facebook Chat style ...		More
	10/20/2011	Install

URL irc://freenode/ Connected Lag 5.27 seconds

```

==== - a not for profit organisation registered in England and
      Wales.
==== -
==== - If you support the work we do and wish to donate to the
      PDPC,
==== - you may do so over at http://freenode.net/pdpc\_donations.
      shtml
==== -
==== - Thank you for using freenode!
==== -
==== - *****
      *****
==== - Please read http://blog.freenode.net/2010/11/be-safe-
      out-there/
==== - *****
      *****
--- End of /MOTD command.
=-= User mode for kurtvm is now +i

```

client freenode

kurtvm /join #unhresearchtools

Welcome to ChatZilla!



FB Chat Bully for Firefox 0.9.1

Bully the FB Chat to behave the way you want it to. [More](#)

[See all 92 results](#)

chat

Name Last Updated Best match

NS		
5	03/21/2012	Install
ew your chat history ...	More	Install
	11/04/2011	Install
More		
	02/12/2011	Install
x chat from your Mozil...	More	Install
t 1.9	09/05/2011	Install
D Facebook Chat style ...	More	Install
	10/20/2011	Install

- goatbar
- kurtvm

URL [irc://freenode /unhresearchtools](irc://freenode/#unhresearchtools) Mode **+ns** Users **2, 1@, 0**
 Topic **<none>**

#unhresearchtools

-->| **YOU (kurtvm) have joined #unhresearchtools**

client freenode #unhresearchtools

kurtvm |

Welcome to ChatZilla!



FB Chat Bully for Firefox 0.9.1

Bully the FB Chat to behave the way you want it to. [More](#)

[See all 92 results](#)

chat

Name Last Updated **Best match**

Name	Last Updated	Best match
ns		
5	03/21/2012	Install
ew your chat history ...	More	Install
	11/04/2011	Install
More		
	02/12/2011	Install
x chat from your Mozil...	More	Install
t 1.9	09/05/2011	Install
D Facebook Chat style ...	More	Install
	10/20/2011	Install

- goatbar
- kurtvm

URL <irc://freenode/unhresearchtools> Mode **+ns** Users **2, 1@, 0**
 Topic **<none>**

#unhresearchtools

-->| **YOU (kurtvm) have joined #unhresearchtools**
 <kurtvm> hi!

client freenode #unhresearchtools

kurtvm

irc://freenode/unhresearchtools

chat

Name Last Updated Best match

ns		
5	03/21/2012	Install
view your chat history ...	More	
	11/04/2011	Install
More		
	02/12/2011	Install
chat from your Mozil...	More	
1.9	09/05/2011	Install
Facebook Chat style ...	More	
	10/20/2011	Install
FB Chat Bully for Firefox 0.9.1		
Bully the FB Chat to behave the way you want it to. More		Install

[See all 92 results](#)



- DOWNLOAD
- PLUGINS
- HELP
- ABOUT
- NEWS
- DEVELOPMENT

pidgin 2.10.4



Get Pidgin
2.10.4 for Linux

[ChangeLog](#)

Pidgin 2.10.4 contains two security updates. Please upgrade!

IM all your friends in one place

Pidgin is an easy to use and free chat client used by millions. Connect to AIM, MSN, Yahoo, and more chat networks all at once.

Supported chat networks:

- AIM
- Google Talk
- IRC
- MySpaceIM
- Sametime
- Zephyr
- Bonjour
- Groupwise
- MSN
- SILC
- XMPP
- Gadu-Gadu
- ICQ
- MXit
- SIMPLE
- Yahoo!

[Learn More](#)

2011 Research Tools

Class material:

- Videos: [Playlist of extra class videos on YouTube](#)
- [Audio podcasts of class](#)
- Mercurial (hg) repository: <https://bitbucket.org/schwehr/researchtools>

Instructors:

All but 1 of the classes were taught by [Kurt Schwehr](#). I am an Affiliate Research Professor in the [Center for Coastal and Ocean Mapping / Joint Hydrographic Center](#) at the [University of New Hampshire](#) and a GIS Data Engineer at Google for Oceans.

[Rob Braswell](#) taught class 25 on R for statistics. Rob is an Affiliate Faculty in EOS at UNH and works at [Applied Geosolutions](#).

Introduction

The goal of this UNH course is to give students skills that will help them conquer data throughout their career. I am hoping to get this wrapped together as a book that people can take with them when they leave CCOM. I am releasing all course material under a creative commons non-commercial license, so that you can pass copies to your co-workers. 2011 is the first year that the course is being taught in this style. Please email me if you find any typos.

NOTE: The order was flipped on 2012-June-26 to have the beginning at the top.

No.	Date	Video	Present	Blog	Audio	Title/Notes
01	2011-08-30	YouTube mp4	pdf key	comment	mp3	Introduction
02	2011-09-01	YouTube mp4	pdf key	comment	mp3	IRC, Wiki, Basic Shell
03	2011-09-06	YouTube mp4	pdf key	comment	mp3	Wiki editing, Weather Demo, Command Line
04	2011-09-08	YouTube mp4	pdf key	comment	mp3	VMWare Ubuntu Image
05	2011-09-13	Coming soon		comment	mp3	File types, Emacs intro, beginning scripts

Class 5: File types and Emacs (DRAFT)

Table of Contents

- [Introduction](#)
- [New IRC server](#)
 - [Text based - irssi](#)
 - [Browser based - Chatzilla](#)
 - [Graphical Client - Pidgin](#)
- [The Cloud - Tools on the internet - Bookmarking](#)
- [Loading the sample data](#)
 - [The default way to open a file](#)
 - [The NOAA Field Procedures Manual](#)
 - [Using file](#)
 - [using grep to search for strings](#)
 - [imagemagick to examine images](#)
 - [Using gdal to ask more about the images](#)
- [Creating a script](#)
 - [Emacs - a powerful text editor](#)

Introduction

Rough plan - you will have to wait for a newer version of this lecture notes to have an introduction.

New IRC server `irc`

I am switching the class to use an IRC server at CCOM using <http://ngircd.barton.de/> This will give us total control of the channels that we want to have. There are many different ways to connect to the IRC server.

Text based - irssi

Index of /~schwehr/Classes/2011/esci895-researchtools/virtual-machines/vm-20110908

Name	Last modified	Size	Description
 Parent Directory		-	
 ubuntu-rt-20110908.vmdk	08-Sep-2011 10:19	4.0G	
 ubuntu-rt-20110908.vmx	08-Sep-2011 10:21	2.8K	

Apache/2.2.20 (Ubuntu) Server at vislab-ccom.unh.edu Port 80

Welcome to Delicious!

Delicious helps you find cool stuff and collect it for easy sharing. Dig into stacks created by the community, and then build your own!




Featured Users

 iflynn

Beautiful urban histories from Cyprus to Gold Rush S.F.

 tompayne888

Dogs smarter than cats? Check out these stacks!

 kmbycd

Web wonder-woman Kmbycd has you covered for all your design and tech needs!

Staff Stack Picks



Statistics You Should Know

<http://harp-social.com/2011/04/social-medias-shocking-statistics/> · FedStats · 20 Tech Stats You Should Know

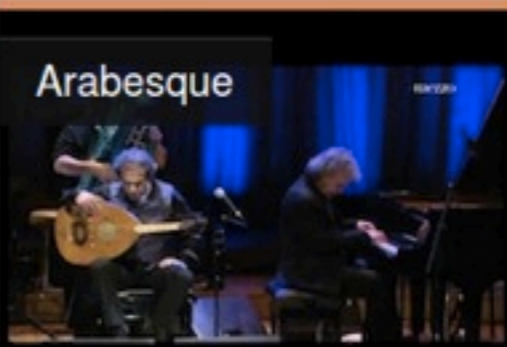
320 views 22 links



Spaces + Culture

8 Insane Schools, Playgrounds, And Libraries Of The Future | Co.Exist: World changing ideas and innovation · Why Ditching The Office Could Help You Be More Creative | Co.Exist...

169 views 13 links



Arabesque

Rai, arabic and oriental fusion beats.

227 views 24 links

goatbar

Feed

Stacks

Links

Add a Tag Filter

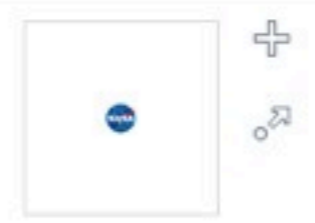
Normal View

Create Stack Add to Stack

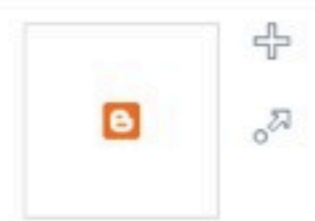
2231 links

June 27, 2012

NASA - NASA to Invite 25 Social Media Fans to Mars Rover Landing Event
3 saves http://www.nasa.gov/connect/social/social_curiosity_aug2012.html
msl monica nasa



Google Geo Developers Blog: Powerful data visualization with Symbols and Heatmap...
2 saves http://googlegeodevelopers.blogspot.com/2012/06/powerful-data-visualization...
googlemaps



oceans 0.1.0 : Python Package Index
1 save http://pypi.python.org/pypi/oceans/
potential?
ocean opensource python



Follow



goatbar

Joined 30 Sep 2008
http://schwehr.org
RSS: Public
Following: 2 Users

2231 Links

TAGS By Count

- deepwaterhorizon 192
- python 135



Google Search

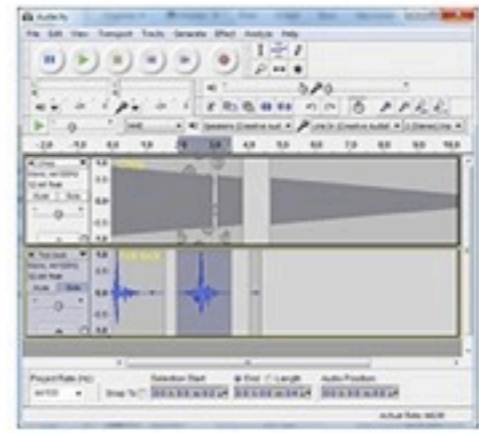
this site Wiki/Forum/Team site Web

- Home
- About
- Download
- Help
- Contact Us
- Get Involved
- Donate

Audacity® is free, open source, cross-platform software for recording and editing sounds.

Audacity is available for Windows®, Mac®, GNU/Linux®, and other operating systems. [Learn more about Audacity...](#) Also check our [Wiki](#) and [Forum](#) for more information.

The current release of Audacity is **2.0.0**. It replaces all previous versions. It is derived from version 1.3.14, but is no longer a Beta version, and has major improvements over 1.2.6. See [New Features](#) for more information.



Download Audacity 2.0.0
for Windows, Mac, or GNU/Linux

[Other Audacity Downloads for Windows, Mac, or GNU/Linux](#)

[All Audacity Downloads](#)

March 13, 2012: Audacity 2.0 Released!

The Audacity Team is elated to announce the release of [Audacity 2.0](#) for Windows, Mac, GNU/Linux, and other operating systems. Audacity 2.0 replaces all previous versions. It is derived from version 1.3.14, but is no longer a Beta version, and has major improvements over 1.2.6. See [New Features](#) and [Release Notes](#) for detailed information.



Search [input] Titles Text

- Wiki
- Documentation
- Mailing Lists
- Download**
- Installing SciPy
- Topical Software
- Cookbook
- Developer Zone
- Blogs
- Conference
- SciPy

SciPy



Scientific Tools for Python

SciPy (pronounced "Sigh Pie") is open-source software for mathematics, science, and engineering. It is also the name of a very popular [conference](#) on scientific programming with Python. The SciPy library depends on [NumPy](#), which provides convenient and fast N-dimensional array manipulation. The SciPy library is built to work with NumPy arrays, and provides many user-friendly and efficient numerical routines such as routines for numerical integration and optimization. Together, they run on all popular operating systems, are quick to install, and are free of charge. NumPy and SciPy are easy to use, but powerful enough to be depended upon by some of the world's leading scientists and engineers. If you need to manipulate numbers on a computer and display or publish the results, give SciPy a try!

SciPy is a community effort. We seek volunteers at all levels of ability to work on the project, from coding and packaging to documentation, tutorials, recipes, and the web site. Visit the [Developer Zone](#) if you are interested in helping out (or if you have bug reports).

News

- SciPy 0.11.0b1 released.** (2012-06-13) See the [Download](#) page.
- NumPy 1.6.2 released.** (2012-05-20) See the [Download](#) page.
- SciPy 2012.** The eleventh annual conference on python in science, [SciPy 2012](#), takes place July 16 - 21 in Austin, Texas.
- EuroSciPy 2012.** [EuroSciPy](#) is the European gathering for scientists using Python. The 2012 edition takes place in Brussels, Aug. 23-27.

Older news

- SciPy 0.10.1 released.** (2012-02-28) See the [Download](#) page.
- PyCon 2012.** [PyCon](#) is the largest annual gathering for the community using and developing the open-source Python programming language. This year the conference took place March 7 - 15 in Santa Clara, California.





← → delicious

Name Last Updated Best match

Search

Search: My Add-ons Available Add-ons

- Get Add-ons
- Languages
- Extensions
- Appearance
- Plugins

	Delicious Post 1.5 Post the current page or link to Delicious. More	12/21/2011 Install
	Delicious Bookmarks 2.3.1 Delicious Bookmarks is the official Firefox add-on for Delicious, t... More	07/08/2011 Install
	Delicious Extension 2.3.1 Delicious Firefox 5.0 Extension (Beta) integrates your bookmarks ... More	06/17/2011 Install
	post 2 del.icio.us 1.2.0 Bookmark the current page at del.icio.us More	04/25/2012 Install

[See all 36 results](#)

Add-ons Manager - Mozilla Firefox

File Edit View History Bookmarks Tools Help

SciPy - Add-ons Manager



delicious



Search

Get Add-ons

Languages

Extensions

Appearance

Plugins

Delicious Extension 2.3.1By **AVOS**

Delicious Firefox 5.0 Extension (Beta) integrates your bookmarks and tags with Firefox and syncs them for convenient access. For more information, go to: www.avos.com/terms and www.avos.com/faq

This extension integrates your browser with Delicious (<http://delicious.com>), the leading social bookmarking service on the Web. Supporting Firefox versions 3.0 to 4.0, it provides all the key features of the previous release which includes:

- Search and browse your Delicious bookmarks
- Keep up to date on your Network and Links For You
- Access your bookmarks from any computer at any time
- Keep your bookmarks organized using tags
- Share your bookmarks with friends or anyone on the Web

Please note that this is a beta version, which still is

Add-ons Manager - Mozilla Firefox

File Edit View History Bookmarks Tools Help

SciPy - Add-ons Manager

← → delicious 🔍

Name Last Updated Best match

🔍 Search

Search: My Add-ons Available Add-ons

- Get Add-ons
- Languages
- Extensions
- Appearance
- Plugins

	Delicious Post 1.5 Post the current page or link to Delicious. More	12/21/2011	<input type="button" value="Install"/>
	Delicious Bookmarks 2.3.1 Delicious Bookmarks is the official Firefox add-on for Delicious, t... More	07/08/2011	<input type="button" value="Install"/>
<i>Delicious Extension will be installed after you restart Firefox. Restart now Undo</i>			
	Delicious Extension 2.3.1 Delicious Extension. More	06/28/2012	
	post 2 del.icio.us 1.2.0 Bookmark the current page at del.icio.us More	04/25/2012	<input type="button" value="Install"/>

[See all 36 results](#)

Save a Bookmark

delicious Save a Bookmark Signed in as goatbar

URL <http://www.scipy.org/> Mark as Private

TITLE SciPy -

NOTES 1000 chars

TAGS python sc ?

SEND Clear

Tags

- science (17)
- scaling (3)
- scipy (3)
- scifi (2)
- screencasts (2)
- sc121 (1)
- scanner (1)
- scenagraph (1)
- schwehr (1)
- sciencedata (1)
- screen (1)
- screensharing (1)
- screenshot (1)

SciPy is a community effort. We seek volunteers at all levels of ability to work on the project, from coding and packaging to documentation, tutorials, recipes, and the web site. Visit the Developer Zone if you are interested in helping out (or if you have bug reports).

Python and Scientific Computing

NumPy and SciPy are two of many

annual gathering for the community using and developing the open-source Python programming language. This year the conference took place March 7 - 15 in Santa Clara, California.

SciPy 0.10.0 released. (2011-11-13)
See the [Download](#) page.

NumPy 1.6.1 released. (2011-07-20)

December 29, 2011

- [Data Analysis Tools](#)
1 save <http://www.macinchem.org/data-analysis.php>
researchtools macos
- [Interview: Computational astrophysics with the yt project](#)
1 save <http://www.floss4science.com/Interview-yt/>
researchtools python scipy matplotlib

November 20, 2011

- [Why Emacs? - \(think\)](#)
90 saves <http://batsov.com/articles/2011/11/19/why-emacs/>
researchtools emacs

November 15, 2011

- [Science channels explode onto YouTube | James Grime | Science | guardian.co.uk](#)
1 save <http://www.guardian.co.uk/science/blog/2011/nov/11/science-channels-youtube...>
youtube education researchtools

November 7, 2011

- [Frank's Geo-Geeking: FOSS4G Videos](#)
1 save <http://fuemmer.com/blog/2011/11/1/foos4g-videos-blew/>

Tags: teaching 3, surveying 2, education 2, visualization 2, gps 2, qgis 2, metadata 2, software 2, world 1, google 1, reference 1, mowing 1, timezones 1, sync 1, noaa 1, references 1, learning 1, ebooks 1, statistics 1

TAGS By Count

deepwaterhorizon 192

stories
recent
popular
ask slashdot
book reviews
games
idle
yro
technology
cloud
hardware
linux
management
mobile
science
security
storage

Google I/O Day Two

Posted by [samzenpus](#) on Thursday June 28, @01:33PM from the twice-as-nice dept.

Yesterday Timothy was at Google I/O watching the plenty of announcements on day two. Today's first reports: "[Brian Rakowski](#) VP for (and inventor of) transferability among devices of tabs, bookmarks story, looking at his opened tabs from home and v running Chrome. Not only can open tabs from the 'we've made sure the back button works as well.' a different computer, and have the browsing histo Chrome syncing affects settings, bookmarks, etc tab pages, pre-loading! So when you click on a ta should be read, BAM." As before we'll be updating fold) with his updates as they stream in.

Update: by [Sam](#) : And now the big One More This version is here. "Later today, Chrome will be rolling as it does on other devices -- nicely draggable, et on your iPhone really fun." After showing iPhone, And Yep, on the iPad, too. More space to work wi

Shows that syncing works here, too: his other devices' tabs and bookmarks are all listed. And (nice); credentials, too, are synced and auto-filled across devices. So a NYT login can work if you were logged in to it on an another device, even if you've never logged in there on the one you're using now.

Incognito ("a feature near and dear to my heart") works, too: Scattered laughter at "I hope you find that using incognito on a touch device is a great

Save a Bookmark

delicious Save a Bookmark Signed

URL <http://tech.slashdot.org/story/12/06/28/1740214/google-io-day-two> Mark as Private

TITLE

NOTES

TAGS

SEND

Tags Send

Save



Kurt Schwehr / GIS Data Engineer for Oceans at Google & Affiliate faculty in [CCOM/JHC](#), Comp Sci, and Earth Sci at UNH

- [blog](#) - Web log mostly about my work (geology, computer science, space craft, ships, the ocean, etc)
- [my web page at the UNH CCOM Vis Lab](#)
- [kurtschwehr.vcf](#) - vcard address book entry
- [publications](#)

My Delicious Tags

3d accounts **ais** ais-risk api auv backup Bathymetry bibtex blog blogging book books C++ ccom classb cms cooking cotf crowdsourcing data database databases deb
 debugging **deepwaterhorizon** design development django education emsp **emacs** emergency energy **erma** fish food games gardening
 geolocation geology geophysics georss geotagging **gis** git google **googleearth** googlemaps googleoceans government **gps** hardware healy howto hydrography
ipad **iphone** javascript jpi kml larrymayer latex library **linux** lng mac macos mapping maps marine marinespatialplanning maritime mars math matlab metadata
mise mobile monitoring msp multibeam nagios nas **nasa** navigation networking **noaa** objective-c oilspill openlayers **opensource** org-mode osm osx packaging
 podcasts postgis postgresql press **programming** publishing **python** qgis rap reference research **researchtools** rightwhale robotics rr ruby s-ais **saiss**

The Cloud - Tools on the internet - Bookmarking bookmarking

The idea of cloud bookmarking is that you save a link in your web browser and you can do more than just use it locally on that computer in the particular web browser that you made the bookmark from. First, if you switch browsers or computers, your bookmarks should follow you. Second, you should be able to share bookmarks with others and also be able to keep a bookmark private if you do not want others to see it (there are many reasons to keep bookmarks private).

There are many services on the internet for storing your bookmarks to web pages in the cloud. The old standby is <http://delicious.com>. This service was owned by Yahoo for a while, but is now under new management. It is fairly simple and has an easy to use interface for Firefox, Chrome, and IE.

<http://www.delicious.com/help/tools>

I have been using delicious for a while now. My main page on delicious is:

<http://www.delicious.com/goatbar>

I have been trying to be good about consistently bookmarks to bring order to the chaos that is the internet. For example, I have a tag for this Research Tools course: `researchtools`. Anything that I think might be relevant for the class gets that tag. Delicious tries to offer you suggested tags when you mark a page. You can adopt those and/or create your own strategy. I don't know who invented tag clouds, but they can be helpful to understand focus. Take a look at my tag cloud:

<http://www.delicious.com/tags/goatbar>

WARNING: If you create an account for yourself at any of these bookmarking services, make sure that you create a unique password for the site. Also remember that, even if the service says that a link you say is private, it might not always be secure. Some links should never be put into a linking service.

Both Chrome and Firefox have built in sync services. I do not have much experience with these, but they are likely very good.

There are many many other bookmark services. Some are free, some for pay.

http://en.wikipedia.org/wiki/List_of_social_bookmarking_websites

For whichever bookmark server you choose to use, make sure that the service allows you to back up your bookmarks (a.k.a. export) and back them up! For example, here is the export / backup feature for delicious:

<https://secure.delicious.com/settings/bookmarks/export>

Delicious.com - Discover Yourself! - Mozilla Firefox

File Edit View History Delicious Bookmarks Tools Help

Class 5: File types and Emac... Delicious.com - Discover Yo... +

http://export.delicious.com/settings/bookmarks/export

Recently Bookmarked Google I/O Day Two - ... SciPy - NASA - NASA to Invit... Google Geo Develope...

Delicious Search Profile Add Link Create Stack

export your delicious links

This tool creates a list of all your links in a format understandable by most browsers. You can save the generated page (as HTML) and import it into your browser -- or anything else that accepts bookmarks in a standard format.

Save a copy of your Delicious links to your computer as a HTML file.

- include my tags
- include my notes

Cancel Export

[Jobs](#) | [About](#) | [Blog](#) | [Help](#) | [Tools](#) | [Developers](#)

[Terms](#) | [Privacy](#) | [Copyright](#)

re.delicious.com/settings/bookmarks/export

D: [Comparison of browser synchronizers](#) (Wikipedia)

Getting the sample data

We are going to start exploring data types in Linux. I have put together a collection of various files that we will use to look at files. We will learn more about many of these file types over the semester. For now, we will only graze the surface of these files.

I have a terminal window open in your Linux virtual machine. I have created a TinyURL to make it easier to type the whole URL to the terminal:

vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researchtools/examples/examples-20110913.tar.bz2

Use the command "wget" to pull the file down in the terminal. This is similar to doing a right-click and "Save Link As" in your web browser.

```
wget http://tinyurl.com/examples-20110913
```

```
100% [=====] 100,421,141 8.72M/s
```

Take a look at what we have downloaded. First use the list files command, "ls", with a "-l" for a long listing.

```
ls -l
```

```
-rw-r--r-- 1 schwehr schwehr 100421141 2011-09-13 08:52 examples-20110913
```

If you look at the whole original URL, you will see that we wanted the file to be called "examples-20110913.tar.bz2". We can rename the file using the **mv** command to move the file to the correct name. Remember that in the shell, you can use the **TAB** key to complete filenames. If you type "ex" and press the TAB key, it will complete as far as it can. In this case to "example". Press TAB again until it shows you all the options (there is also an examples.desktop directory). Complete the example by adding "-" and pressing tab again to get "examples-20110913".

```
mv examples-20110913 examples-20110913.tar.bz2
```

Research Tools VM

username: researchtools
password: !rt2011vm

Applications Places System

- Accessories
 - Calculator
 - Character Map
 - Disk Usage Analyzer
 - GNU Emacs 23
 - Help
 - KeePassX
 - Search for Files...
 - Take Screenshot
 - Terminal**
 - Text Editor
 - Time & Date
 - Tomboy Notes
 - VMware Toolbox
- Games
- Graphics
- Internet
- Office
- Other
- Programming
- Science
- Sound & Video
- Ubuntu Software Center

Use the command line

Class 5: File types and Emacs (DRAFT) - Mozilla Firefox

File Edit View History Delicious Bookmarks Tools Help

Class 5: File types and Emacs (...)

<http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-research>

Recently Bookmarked Google I/O Day Two - ... SciPy - NASA - NASA to Invit... Google

<https://secure.delicious.com/settings/bookmarks/export>

SEE ALSO: [Comparison of browser synchronizers](#) (Wikipedia)

Leading the sample data

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100% [=====>] 100,421,141 8.72M

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If you look at the whole original URL, you will see that we wanted the file to be called "examples-20110913.tar.bz2". We will use the **mv** command to move the file to the correct name. Remember that in the shell, you can use the **TAB** key to complete file names. If you press the TAB key, it will complete as far as it can. In this case to "example". Press TAB again until it shows you all the files in the examples.desktop directory). Complete the example by adding "-" and pressing tab again to get "examples-20110913".

```
mv examples-20110913 examples-20110913.tar.bz2
```

The ".tar.bz2" at the end of the name is a hint at the type of file. First, start from the right with the "bz2". This implied that the file is compressed with the **bzip2** program. For now, we don't have to worry about this as the next hint will cover us for

researchtools@ubuntu: ~

File Edit View Search Terminal Help

- researchtools ✓ Show Menubar
- Full Screen F11
- Zoom In Ctrl++
- Zoom Out Ctrl+-
- Normal Size Ctrl+0

zilla Firefox

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edu/~schwehr/Classes/2011/esci895-research

Two - ... SciPy - NASA - NASA to Invit... Goog

pedia)

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[esci895-researchtools/examples/examples-20110913.tar.bz2](http://tinyurl.com/esci895-researchtools/examples/examples-20110913.tar.bz2)

This is similar to doing a right-click and "Save Link As..."

3

----->] 100,421,141 8.72M

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```
mv examples-20110913 examples-20110913.tar.bz2
```

The ".tar.bz2" at the end of the name is a hint at the type of file. First, start from the right with the "bz2". This implied (bzip2) that the file is compressed with the [bzip2](#) program. For now, we don't have to worry about this as the next hint will cover us for

Add to Panel...

Properties

Delete This Panel

New Panel

Help

About Panels

fox

wehr/Classes/2

Google

for pay.

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```
100% [=====] 100,421,141 8.72M/s
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Google

for pay.

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ous files that we will use to
r now, we will only graze

e the whole URL to the










10913.tar.bz2

ght-click and "Save Link

00,421,141 8.72M/s

Add to Panel

Find an item to add to the panel:

-  **Custom Application Launcher**
Create a new launcher
-  **Application Launcher...**
Copy a launcher from the applications menu
-  **Brightness Applet**
Adjusts Laptop panel brightness
-  **Character Palette**
Insert characters
-  **Clock**
Get the current time and date
-  **Connect to Server...**
Connect to a remote computer or shared disk
-  **CPU Frequency Scaling Monitor**
Monitor the CPU Frequency Scaling
-  **Disk Mounter**
Mount local disks and devices
-  **Drawer**
A pop out drawer to store other items in

Help Back Forward Close

<http://vis>

We will
As" in a

wget
100% [

Take a look at what we have downloaded. First use the list files command, "ls", with a "-l" for a long listing.

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ls -l
-rw-r--r-- 1 schwehr schwehr 100421141 2011-09-13 08:52 examples-20110913
```

If you look at the whole original URL, you will see that we wanted the file to be called "examples-20110913.tar.bz2". We

researchtools@ubuntu: ~
File Edit View Search Terminal Help
researchtools@ubuntu:~\$

fox
)
wehr/Classes/2
Google
for pay.

Add to Panel

Find an item to add to the panel:

- Accessories**
Desktop accessories
- Calculator**
Perform arithmetic, scientific or financial calculations
- Character Map**
Insert special characters into documents
- Disk Usage Analyzer**
Check folder sizes and available disk space
- GNU Emacs 23**
View and edit files
- Help**
Get help with Ubuntu
- KeePassX**
Cross Platform Password Manager
- Search for Files...**
Locate documents and folders on this computer by name or content
- Take Screenshot**
Save images of your desktop or individual windows

Buttons: Help, Back, Add, Close

<http://vis>

We will
As" in a

wget
100% [

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ous files that we will use to
r now, we will only graze

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[10913.tar.bz2](#)

ght-click and "Save Link

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File Edit View Search Terminal Help
researchtools@ubuntu:~\$

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wehr/Classes/2
for pay.

Add to Panel

Find an item to add to the panel:

- Character Map**
Insert special characters into documents
- Disk Usage Analyzer**
Check folder sizes and available disk space
- GNU Emacs 23**
View and edit files
- Help**
Get help with Ubuntu
- KeePassX**
Cross Platform Password Manager
- Search for Files...**
Locate documents and folders on this computer by name or content
- Take Screenshot**
Save images of your desktop or individual windows
- Terminal**
Use the command line
- Text Editor**
Edit text files

Buttons: Help, Back, Add, Close

<http://vis>

We will
As" in a

wget
100% [

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```
ls -l
-rw-r--r-- 1 schwehr schwehr 100421141 2011-09-13 08:52 examples-20110913
```

If you look at the whole original URL, you will see that we wanted the file to be called "examples-20110913.tar.bz2". We

researchtools@ubuntu: ~/class/05

Class 5: File types and Emacs (...)

http://vislab-ccom.unh.edu/~schwehr/Classes/2

File Edit View Search Terminal Help

Class 5: File types and Emacs (...)

Google

```
researchtools@ubuntu:~$ mkdir -p class
researchtools@ubuntu:~$ cd class/05
researchtools@ubuntu:~/class/05$ wget
```

There are many many other bookmark services. Some are free, some for pay.

http://en.wikipedia.org/wiki/List_of_social_bookmarking_websites

SEE ALSO: [Comparison of browser synchronizers](#) (Wikipedia)

For whichever bookmark server you choose to use, make sure that the service allows you to back up your bookmarks (a.k.a. export) and back them up! For example, here is the export / backup feature for delicious:

<https://secure.delicious.com/settings/bookmarks/export>

SEE ALSO: [Comparison of browser synchronizers](#) (Wikipedia)

Loading the sample data

Today, we are going to start exploring data types in Linux. I have put together a collection of various files that we will use to learn how to look at files. We will learn more about many of these file types over the semester. For now, we will only graze the surface of these files.

Open a terminal in your Linux virtual machine. I have created a TinyURL to make it easier to type the whole URL to the file, which is:

<http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researchtools/examples/examples-20110913.tar.bz2>

We will use the command "wget" to pull the file down in the terminal. This is similar to doing a right-click and "Save Link As" in a web browser.

Take a look at the terminal output below:

list files command, "ls", with a "-l" for a long listing.

```
wget http://tinyurl.com/examples-20110913
100% [-----] 100,421,141 8.72M/s
ls -l
-rw-r--r-- 1 schwehr schwehr 100421141 2011-09-13 08:52 examples-20110913
```

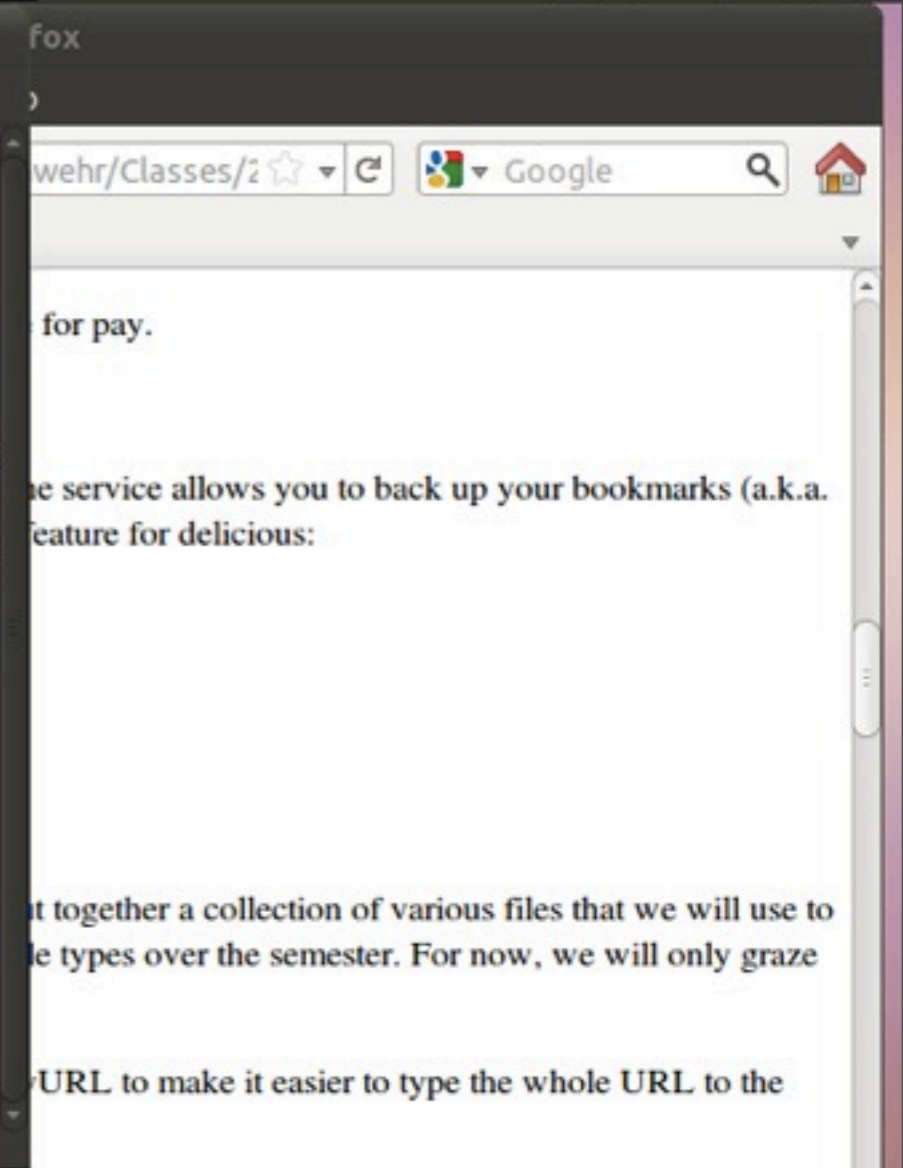
If you look at the whole original URL, you will see that we wanted the file to be called "examples-20110913.tar.bz2". We

```

researchtools@ubuntu: ~/class/05
File Edit View Search Terminal Help
researchtools@ubuntu:~$ mkdir -p class/05
researchtools@ubuntu:~$ cd class/05
researchtools@ubuntu:~/class/05$ wget http://tinyurl.com/examples-20110913
--2012-06-28 23:00:08-- http://tinyurl.com/examples-20110913
Resolving tinyurl.com... 64.62.243.91, 64.62.243.92
Connecting to tinyurl.com[64.62.243.91]:80... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researchtools/examples/examples-20110913.tar.bz2 [following]
--2012-06-28 23:00:08-- http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researchtools/examples/examples-20110913.tar.bz2
Resolving vislab-ccom.unh.edu... 132.177.103.235
Connecting to vislab-ccom.unh.edu[132.177.103.235]:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 83400796 (80M) [application/x-bzip2]
Saving to: `examples-20110913'

15% [=====>] 13,259,713 596K/s eta 52s

```



<http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researchtools/examples/examples-20110913.tar.bz2>

We will use the command "wget" to pull the file down in the terminal. This is similar to doing a right-click and "Save Link As" in a web browser.

```

wget http://tinyurl.com/examples-20110913
100% [=====] 100,421,141 8.72M/s

```

Take a look at what we have downloaded. First use the list files command, "ls", with a "-l" for a long listing.

```

ls -l
-rw-r--r-- 1 schwehr schwehr 100421141 2011-09-13 08:52 examples-20110913

```

If you look at the whole original URL, you will see that we wanted the file to be called "examples-20110913.tar.bz2". We

```

researchtools@ubuntu: ~/class/05
File Edit View Search Terminal Help
Location: http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci895-researchtools
/examples/examples-20110913.tar.bz2 [following]
--2012-06-28 23:00:08-- http://vislab-ccom.unh.edu/~schwehr/Classes/2011/esci89
5-researchtools/examples/examples-20110913.tar.bz2
Resolving vislab-ccom.unh.edu... 132.177.103.235
Connecting to vislab-ccom.unh.edu|132.177.103.235|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 83400796 (80M) [application/x-bzip2]
Saving to: `examples-20110913'

100%[=====>] 83,400,796 1.75M/s in 63s

2012-06-28 23:01:12 (1.26 MB/s) - `examples-20110913' saved [83400796/83400796]

researchtools@ubuntu:~/class/05$ ^C
researchtools@ubuntu:~/class/05$ ls -l
total 81448
-rw-r--r-- 1 researchtools researchtools 83400796 2011-09-13 07:46 examples-2011
0913
researchtools@ubuntu:~/class/05$ ls -l
total 81448
-rw-r--r-- 1 researchtools researchtools 83400796 2011-09-13 07:46 examples-20110913
researchtools@ubuntu:~/class/05$ mv examples-20110913 examples-20110913.tar.bz2
researchtools@ubuntu:~/class/05$

```

Google search results for 'examples-20110913'. The page shows a search bar with 'Google' and a search icon. Below the search bar, there is a snippet of text: 'similar to doing a right-click and "Save Link'.

----->] 100,421,141 8.72M/s

with a "-l" for a long listing.

examples-20110913

e called "examples-20110913.tar.bz2". We Remember that in the shell, you can use the l complete as far as it can. In this case to examples.desktop directory). Complete the

```
mv examples-20110913 examples-20110913.tar.bz2
```

The ".tar.bz2" at the end of the name is a hint at the type of file. First, start from the right with the "bz2". This implied (but does not guarantee) that the file is compressed with the [bzip2](#) program. For now, we don't have to worry about this as the next hint will cover us for now. The ".tar" implies that this is a "tape archive". This is much like a zip file that you may already be familiar with. The idea is that one file acts as a container in while you can stuff a whole bunch of files. You can then move around that single file, email it, etc much easier than you would a whole tree of files.

If you want to learn more about tar, check out the [web page for GNU tar](#) and the wikipedia entry on the [TAR file format](#). Or you can use the command line:

```
tar --help
man tar # remember that "q" quits out of a man page
```

The tar program knows how to handle uncompressing certain types of compression and that includes the bzip2 format. We

```

researchtools@ubuntu:~/class/05$ ls -l
total 81448
-rw-r--r-- 1 researchtools researchtools 83400796 2011-09-13 07:46 examples-20110913.tar.bz2
researchtools@ubuntu:~/class/05$

```

Google

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>] 100,421,141 8.72M/s

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es-20110913

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man tar # remember that "q" quits out of a man page
```

The tar program knows how to handle uncompressing certain types of compression and that includes the bzip2 format. We


```
researchtools@ubuntu:~/class/05$ mv examples-20110913 examples-20110913.tar.bz2
```

```
researchtools@ubuntu:~/class/05$ tar --help
```

Usage: tar [OPTION...] [FILE]...

GNU `tar' saves many files together into a single tape or disk archive, and can restore individual files from the archive.

Examples:

- tar -cf archive.tar foo bar # Create archive.tar from files foo and bar.
- tar -tvf archive.tar # List all files in archive.tar verbosely.
- tar -xf archive.tar # Extract all files from archive.tar.

Main operation mode:

- A, --catenate, --concatenate append tar files to an archive
- c, --create create a new archive
- d, --diff, --compare find differences between archive and file system
- delete delete from the archive (not on mag tapes!)
- r, --append append files to the end of an archive
- t, --list list the contents of an archive
- test-label test the archive volume label and exit
- u, --update only append files newer than copy in archive
- x, --extract, --get extract files from an archive

Operation modifiers:

similar to doing a right-click and "Save Link

----->] 100,421,141 8.72M/s

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examples-20110913

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mv examples-20110913 examples-20110913.tar.bz2
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man tar # remember that "q" quits out of a man page
```

The tar program knows how to handle uncompressing certain types of compression and that includes the bzip2 format. We

NAME
tar - The GNU version of the tar archiving utility

SYNOPSIS
tar [-] A --catenate --concatenate | c --create | d --diff --compare | --delete
| r --append | t --list | --test-label | u --update | x --extract --get
[options] [pathname ...]

DESCRIPTION
Tar stores and extracts files from a tape or disk archive.

The first argument to tar should be a function; either one of the letters **Acdrtux**, or one of the long function names. A function letter need not be prefixed with ``-'`, and may be combined with other single-letter options. A long function name must be prefixed with `--`. Some options take a parameter; with the single-letter form these must be given as separate arguments. With the long form, they may be given by appending `=value` to the option.

FUNCTION LETTERS
Main operation mode:

Manual page tar(1) line 1

similar to doing a right-click and "Save Link

----->] 100,421,141 8.72M/s

with a "-l" for a long listing.

examples-20110913

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examples.desktop directory). Complete the

```
mv examples-20110913 examples-20110913.tar.bz2
```

The ".tar.bz2" at the end of the name is a hint at the type of file. First, start from the right with the "bz2". This implied (but does not guarantee) that the file is compressed with the [bzip2](#) program. For now, we don't have to worry about this as the next hint will cover us for now. The ".tar" implies that this is a "tape archive". This is much like a zip file that you may already be familiar with. The idea is that one file acts as a container in while you can stuff a whole bunch of files. You can then move around that single file, email it, etc much easier than you would a whole tree of files.

If you want to learn more about tar, check out the [web page for GNU tar](#) and the wikipedia entry on the [TAR file format](#). Or you can use the command line:

```
tar --help  
man tar # remember that "q" quits out of a man page
```

The tar program knows how to handle uncompressing certain types of compression and that includes the bzip2 format. We

```

researchtools@ubuntu:~/class/05$ man tar
researchtools@ubuntu:~/class/05$ tar tfvv examples-20110913.tar.bz2
drwxr-xr-x schwehr/schwehr  0 2011-09-13 06:43 examples-20110913/
-rw-r--r-- schwehr/schwehr  48 2011-09-13 05:07 examples-20110913/Makefile
-rw-r--r-- schwehr/schwehr 754688 2011-09-12 14:47 examples-20110913/bags.sqlite
-rw-r--r-- schwehr/schwehr 1638557 2011-09-12 14:43 examples-20110913/mov02175.mov
drwxr-xr-x schwehr/schwehr  0 2011-09-13 05:18 examples-20110913/a-folder/
-rwxr-xr-x schwehr/schwehr   66 2011-09-12 14:03 examples-20110913/script.csh
-rw-r--r-- schwehr/schwehr  48128 2011-09-12 14:34 examples-20110913/Presentation1.ppt
-rw-r--r-- schwehr/schwehr 125003 2011-09-12 07:50 examples-20110913/NH_ENCProdCat_19115.xml
-rw-r--r-- schwehr/schwehr 125722 2011-09-12 19:05 examples-20110913/sample-presentation.key
-rwxr-xr-x schwehr/schwehr   32 2011-09-12 14:01 examples-20110913/shell-script.sh
-rw-r--r-- schwehr/schwehr 208512 2011-09-13 05:31 examples-20110913/sample-audio.ac3
-rw-r--r-- schwehr/schwehr 3715206 2011-09-13 05:11 examples-20110913/0479_20080620_175447_RVC
S.all.bz2
-rw-r--r-- schwehr/schwehr   2716 2011-09-10 08:47 examples-20110913/hello-world.o
-rw-r--r-- schwehr/schwehr   8868 2010-10-16 09:16 examples-20110913/terrain.grd.gz
-rw-r--r-- schwehr/schwehr 5313280 2011-09-10 11:25 examples-20110913/Field_Procedures_Manual_
May_2011.pdf
-rw-r--r-- schwehr/schwehr    78 2011-09-13 05:33 examples-20110913/foo.csv
-rw-r--r-- schwehr/schwehr  64942 2011-09-13 05:37 examples-20110913/sample.pdf
-rw-r--r-- schwehr/schwehr   198 2011-09-13 05:18 examples-20110913/hello-world.c
-rw-r--r-- schwehr/schwehr 2991553 2006-05-26 16:16 examples-20110913/mov02175.mpg

```

with the "bz2". This implied (but have to worry about this as the like a zip file that you may a whole bunch of files. You can files.

entry on the [TAR file format](#). Or

at includes the bzip2 format. We the tar before unpacking it. If it e that with the "C" that appears in

```

tar tfvv examples-20110913.tar.bz2
drwxr-xr-x schwehr/schwehr  0 2011-09-10 11:47 examples-20110913/
-rw-r--r-- schwehr/schwehr 48128 2011-09-12 17:34 examples-20110913/Presentation1.ppt
-rwxr-xr-x schwehr/schwehr   32 2011-09-12 17:01 examples-20110913/shell-script.sh
-rw-r--r-- schwehr/schwehr 3715206 2011-09-13 08:11 examples-20110913/0479_20080620_17
-rw-r--r-- schwehr/schwehr 143781 2011-09-12 17:42 examples-20110913/mov02175.mp4
-rwxr-xr-x schwehr/schwehr   46 2011-09-12 17:05 examples-20110913/perldemo.pl
^C

```

The tar looks good, so go ahead and extract it.

```
tar xf examples-20110913.tar.bz2
```

It is time to start examining the example files. A first command to see what is in there is `tree`. I will not show the test results of `tree` as they do not reproduce in the text mode of these notes.

```
tree
```

researchtools@ubuntu: ~/class/05

File Edit View Search Terminal Help

```
researchtools@ubuntu:~/class/05$ tar xf examples-20110913.tar.bz2
researchtools@ubuntu:~/class/05$ tree -d
```

```
├── examples-20110913
│   ├── a-folder
│   └── US4MA19M
```

3 directories

```
researchtools@ubuntu:~/class/05$ tree
```

```
├── examples-20110913
│   ├── 0479_20080620_175447_RVCS.all.bz2
│   ├── 13003_1.KAP
│   ├── 13003.BSB
│   ├── 20110912-1801.jpeg
│   ├── a-folder
│   ├── bags.sqlite
│   ├── delicious.htm
│   ├── dos-text.txt
│   ├── empty-file
│   ├── Field_Procedures_Manual_May_2011.pdf
│   ├── foo.csv
│   └── H11296_5m-hillshade.tif
```

Google

at includes the bzip2 format. We
the tar before unpacking it. If it
e that with the "C" that appears in

013/
0913/Presentation1.ppt
0913/shell-script.sh
0110913/0479_20080620_17
0110913/mov02175.mp4
0110913/perldemo.pl

The tar looks good, so go ahead and extract it.

```
tar xf examples-20110913.tar.bz2
```

It is time to start examining the example files. A first command to see what is in there is `tree`. I will not show the test results of `tree` as they do not reproduce in the text mode of these notes.

```
tree
```

That gives you a look at the structure of the directories and gives some hint to file type with the colors. Blue text is directories, red files are compressed, yellow-green are files marked "executable".

Go into the directory and do a long listing, but also add the `-h` for "human readable file sizes"

```
cd examples-20110913
ls -l -h
```

```

researchtools@ubuntu:~/class/05/examples-20110913$
researchtools@ubuntu:~/class/05/examples-20110913$ ls -lh
total 94M
-rw-r--r-- 1 researchtools researchtools 3.6M 2011-09-13 05:11 0479_20080620_175447_RVCS.all.bz2
-rw-r--r-- 1 researchtools researchtools 4.0M 2011-09-06 12:03 13003_1.KAP
-rw-r--r-- 1 researchtools researchtools 7.3K 2011-09-06 12:03 13003.BSB
-rw-r--r-- 1 researchtools researchtools 77K 2011-09-12 11:09 20110912-1801.jpeg
drwxr-xr-x 2 researchtools researchtools 4.0K 2011-09-13 05:18 a-folder
-rw-r--r-- 1 researchtools researchtools 737K 2011-09-12 14:47 bags.sqlite
-rw-r--r-- 1 researchtools researchtools 2.6K 2011-09-12 11:01 delicious.htm
-rw-r--r-- 1 researchtools researchtools 117 2011-09-13 05:34 dos-text.txt
-rw-r--r-- 1 researchtools researchtools 0 2011-09-13 05:18 empty-file
-rw-r--r-- 1 researchtools researchtools 5.1M 2011-09-10 11:25 Field_Procedures_Manual_May_2011.pdf
-rw-r--r-- 1 researchtools researchtools 78 2011-09-13 05:33 foo.csv
-rw-r--r-- 1 researchtools researchtools 4.0M 2011-09-12 19:18 H11296_5m-hillshade.tif
-rw-r--r-- 1 researchtools researchtools 488 2011-09-12 14:10 H11296-bbox.kmz
-rwxr-xr-x 1 researchtools researchtools 3.0M 2011-09-12 15:00 H11760_Office_Combined_35.bag
-rwxr-xr-x 1 researchtools researchtools 8.3K 2011-09-10 08:47 hello-world
-rw-r--r-- 1 researchtools researchtools 198 2011-09-13 05:18 hello-world.c
-rw-r--r-- 1 researchtools researchtools 2.7K 2011-09-10 08:47 hello-world.o
-rw-r--r-- 1 researchtools researchtools 48 2011-09-13 05:07 Makefile

```



```

-rw-r--r-- 1 schwehr schwehr 5.1M 2011-09-10 14:25 Field_Procedures_Manual_May_2011.pdf
...

```

You will also see colors again for the file types.

The default way to open a file `open`

There is a command line program that can attempt to open files based on its best guess for how a file should be opened: `xdg-open` (or just `open` on the Mac) This works well for some image types.

```
xdg-open Field_Procedures_Manual_May_2011.pdf
```

You might be accustomed to using the "double click" in graphical interfaces, but knowing how to open files in the default application is very helpful for working from a scripting environment.

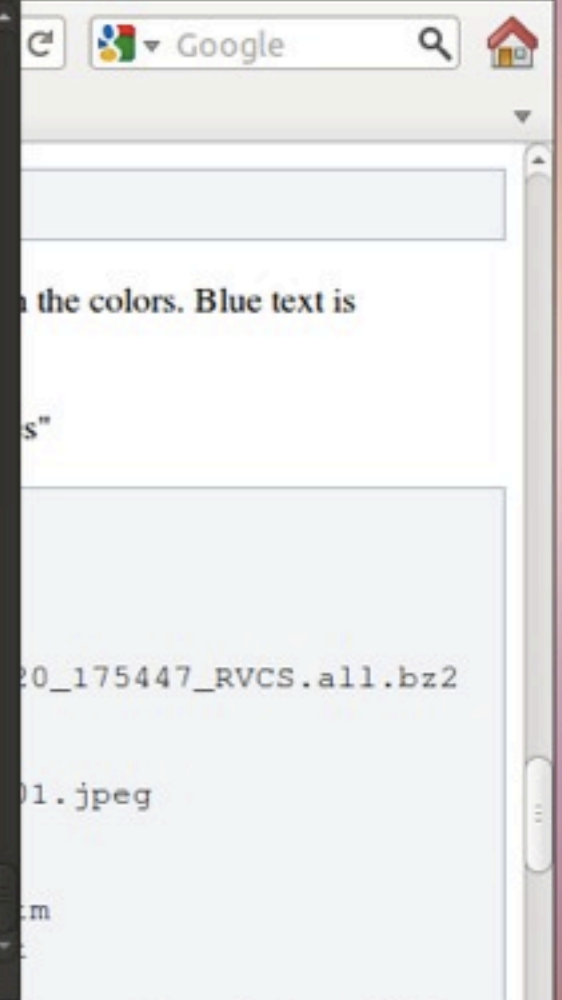
The NOAA Field Procedures Manual

```

└─ y1104-02.segy.bz2
└─ examples-20110913.tar.bz2

3 directories, 46 files
researchtools@ubuntu:~/class/05$ cd examples-20110913/
researchtools@ubuntu:~/class/05/examples-20110913$ ls
0479_20080620_175447_RVCS.all.bz2      hello-world.c          sample-audio.mp3
13003_1.KAP                            hello-world.o         sample-audio.wav
13003.BSB                              Makefile              sample.org
20110912-1801.jpeg                    mov02175.avi         sample.pdf
a-folder                               mov02175.mov         sample-presentation.key
bags.sqlite                           mov02175.mp4         sample.tex
delicious.htm                         mov02175.mpg         sample.xse
dos-text.txt                          NH_ENCProdCat_19115.xml sample-zip-archive.zip
empty-file                             perl demo.pl          script.csh
Field_Procedures_Manual_May_2011.pdf  Presentation1.ppt     shell-script.sh
foo.csv                               Presentation1.pptx    terrain.grd.gz
H11296_5m-hillshade.tif              pythondemo.py        US4MA19M
H11296-bbox.kmz                      reson7111-201005.s7k.bz2 webpage.html
H11760_Office_Combined_35.bag        sample-audio.ac3     y1104-02.segy.bz2
hello-world                           sample-audio.m4a
researchtools@ubuntu:~/class/05/examples-20110913$ xdg-open Field_Procedures_Manual_May_2011.pdf
df

```



```

-rw-r--r-- 1 schwehr schwehr 5.1M 2011-09-10 14:25 Field_Procedures_Manual_May_2011.pdf
...

```

You will also see colors again for the file types.

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```

xdg-open Field_Procedures_Manual_May_2011.pdf

```

You might be accustomed to using the "double click" in graphical interfaces, but knowing how to open files in the default application is very helpful for working from a scripting environment.

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Google

the colors. Blue text is

key

ip

20_175447_RVCS.all.bz2

01.jpeg

```

H11296-...
H11760_Office_Combined_35.bag
hello-world
researchtools@ubuntu:~/class/05/examples-20110913$ xdg-open Field_Procedures_Manual_May_2011.p
df
researchtools@ubuntu:~/class/05/examples-20110913$

```

```

-rw-r--r-- 1 schwehr schwehr 5.1M 2011-09-10 14:25 Field_Procedures_Manual_May_2011.pdf
...

```

You will also see colors again for the file types.

The default way to open a file `open`

There is a command line program that can attempt to open files based on its best guess for how a file should be opened: `xdg-open` (or just `open` on the Mac) This works well for some image types.

```
xdg-open Field_Procedures_Manual_May_2011.pdf
```

You might be accustomed to using the "double click" in graphical interfaces, but knowing how to open files in the default application is very helpful for working from a scripting environment.

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```

-rwxr-xr-x 1 researchtools researchtools 15M 2011-09-13 05:11 y1104-02.segy.bz2
researchtools@ubuntu:~/class/05/examples-20110913$
researchtools@ubuntu:~/class/05/examples-20110913$ xdg-open Field_Procedures_Manual_May_2011.pdf
researchtools@ubuntu:~/class/05/examples-20110913$ file *
0479_20080620_175447_RVCS.all.bz2:      bzip2 compressed data, block size = 900k
13003_1.KAP:                          data
13003.BSB:                             ASCII English text, with CRLF line terminators
20110912-1801.jpeg:                   JPEG image data, JFIF standard 1.01
a-folder:                              directory
bags.sqlite:                           SQLite 3.x database
delicious.htm:                         exported SGML document text
dos-text.txt:                          ASCII text, with CRLF line terminators
empty-file:                            empty
Field_Procedures_Manual_May_2011.pdf:  PDF document, version 1.4
foo.csv:                               ASCII text
H11296_5m-hillshade.tif:              TIFF image data, little-endian
H11296-bbox.kmz:                       Zip archive data, at least v2.0 to extract
H11760_Office_Combined_35.bag:        Hierarchical Data Format (version 5) data
hello-world:                           ELF 32-bit LSB executable, Intel 80386, version 1 (SYSV), dynamically
linked (uses shared libs), for GNU/Linux 2.6.15, not stripped
hello-world.c:                         ASCII C program text

```

Google

Open files in the default

per of very helpful

about how they do

other organization or

llent reference and

of the semester.

Using file file

Now we can try asking the computer more about these files. There is a The **file** command tries to look at a little bit of the beginning of each file to see if it can figure out what type of data is in that file.

WARNING: Always be aware that file names are just a hint to a file type. Renaming a file to some random characters does not change the contents of the file. Some programs count on the "extensions" on the end of the file name (e.g. ".tar"), but you will find that those are not always consistent with the content of the file.

```

file *
0479_20080620_175447_RVCS.all.bz2:      bzip2 compressed data, block size = 900k
13003_1.KAP:                          data
13003.BSB:                             ASCII English text, with CRLF line terminators
20110912-1801.jpeg:                   JPEG image data, JFIF standard 1.01
a-folder:                              directory
bags.sqlite:                           SQLite 3.x database
delicious.htm:                         exported SGML document text
dos-text.txt:                          ASCII text, with CRLF line terminators
empty-file:                            empty
Field_Procedures_Manual_May_2011.pdf:  PDF document, version 1.4
foo.csv:                               ASCII text

```



```

researchtools@ubuntu:~/class/05/examples-20110913$ file * | head
0479_20080620_175447_RVCS.all.bz2:      bzip2 compressed data, block size = 900k
13003_1.KAP:                          data
13003.BSB:                             ASCII English text, with CRLF line terminators
20110912-1801.jpeg:                   JPEG image data, JFIF standard 1.01
a-folder:                              directory
bags.sqlite:                           SQLite 3.x database
delicious.htm:                         exported SGML document text
dos-text.txt:                          ASCII text, with CRLF line terminators
empty-file:                            empty
Field_Procedures_Manual_May_2011.pdf:  PDF document, version 1.4
researchtools@ubuntu:~/class/05/examples-20110913$

```

Google

of the semester.

look at a little bit of the

random characters does
ame (e.g. ".tar"), but

ze = 900k

line terminators
1.01

```

bags.sqlite:                           SQLite 3.x database
delicious.htm:                         exported SGML document text
dos-text.txt:                          ASCII text, with CRLF line terminators
empty-file:                            empty
Field_Procedures_Manual_May_2011.pdf:  PDF document, version 1.4
foo.csv:                               ASCII text
...

```

There are a large number of files in this directory, but just look at the first file that comes up:

```
0479_20080620_175447_RVCS.all.bz2:      bzip2 compressed data, block size = 900k
```

The **file** command does not get past the fact that the file is compressed. We need to uncompress all of the files that have been shrunk with bzip2 or another program called **gzip**. gzip files tend to end in ".gz".

```

ls -l *.bz2 *.gz
-rw-r--r-- 1 schwehr schwehr 3715206 2011-09-13 08:11 0479_20080620_175447_RVCS.all.b
-rw-r--r-- 1 schwehr schwehr 42990137 2011-09-13 08:08 reson7111-201005.s7k.bz2
-rw-r--r-- 1 schwehr schwehr      8868 2010-10-16 12:16 terrain.grd.gz
-rwxr-xr-x 1 schwehr schwehr 15541594 2011-09-13 08:11 y1104-02.segy.bz2

```

```

researchtools@ubuntu:~/class/05/examples-20110913$ file * | head
0479_20080620_175447_RVCS.all.bz2:      bzip2 compressed data, block size = 900k
13003_1.KAP:                            data
13003.BSB:                               ASCII English text, with CRLF line terminators
20110912-1801.jpeg:                     JPEG image data, JFIF standard 1.01
a-folder:                                directory
bags.sqlite:                             SQLite 3.x database
delicious.htm:                           exported SGML document text
dos-text.txt:                             ASCII text, with CRLF line terminators
empty-file:                               empty
Field_Procedures_Manual_May_2011.pdf:    PDF document, version 1.4
researchtools@ubuntu:~/class/05/examples-20110913$ ls -l *.bz2 *.gz
-rw-r--r-- 1 researchtools researchtools 3715206 2011-09-13 05:11 0479_20080620_175447_RVCS.all.bz2
-rw-r--r-- 1 researchtools researchtools 42990137 2011-09-13 05:08 reson7111-201005.s7k.bz2
-rw-r--r-- 1 researchtools researchtools 8868 2010-10-16 09:16 terrain.grd.gz
-rwxr-xr-x 1 researchtools researchtools 15541594 2011-09-13 05:11 y1104-02.segy.bz2
researchtools@ubuntu:~/class/05/examples-20110913$

```

Google

of the semester.

look at a little bit of the

random characters does
ame (e.g. ".tar"), but

ze = 900k

line terminators
1.01

```

bags.sqlite:                             SQLite 3.x database
delicious.htm:                           exported SGML document text
dos-text.txt:                             ASCII text, with CRLF line terminators
empty-file:                               empty
Field_Procedures_Manual_May_2011.pdf:    PDF document, version 1.4
foo.csv:                                  ASCII text
...

```

There are a large number of files in this directory, but just look at the first file that comes up:

```
0479_20080620_175447_RVCS.all.bz2:      bzip2 compressed data, block size = 900k
```

The **file** command does not get past the fact that the file is compressed. We need to uncompress all of the files that have been shrunk with bzip2 or another program called **gzip**. gzip files tend to end in ".gz".

```

ls -l *.bz2 *.gz
-rw-r--r-- 1 schwehr schwehr 3715206 2011-09-13 08:11 0479_20080620_175447_RVCS.all.b
-rw-r--r-- 1 schwehr schwehr 42990137 2011-09-13 08:08 reson7111-201005.s7k.bz2
-rw-r--r-- 1 schwehr schwehr 8868 2010-10-16 12:16 terrain.grd.gz
-rwxr-xr-x 1 schwehr schwehr 15541594 2011-09-13 08:11 y1104-02.segy.bz2

```

```

bags.sqlite: SQLite 3.x database
delicious.htm: exported SGML document text
dos-text.txt: ASCII text, with CRLF line terminators
empty-file: empty
Field_Procedures_Manual_May_2011.pdf: PDF document, version 1.4
researchtools@ubuntu:~/class/05/examples-20110913$ ls -l *.bz2 *.gz
-rw-r--r-- 1 researchtools researchtools 3715206 2011-09-13 05:11 0479_20080620_175447_RVCS.all.bz2
-rw-r--r-- 1 researchtools researchtools 42990137 2011-09-13 05:08 reson7111-201005.s7k.bz2
-rw-r--r-- 1 researchtools researchtools 8868 2010-10-16 09:16 terrain.grd.gz
-rwxr-xr-x 1 researchtools researchtools 15541594 2011-09-13 05:11 y1104-02.segy.bz2
researchtools@ubuntu:~/class/05/examples-20110913$ bunzip2 *.bz2
gunzip *.researchtools@ubuntu:~/class/05/examples-20110913$ gunzip *.gz
researchtools@ubuntu:~/class/05/examples-20110913$ ls -l *.bz2 *.gz
ls: cannot access *.bz2: No such file or directory
ls: cannot access *.gz: No such file or directory
researchtools@ubuntu:~/class/05/examples-20110913$ ls -l 0479_20080620_175447_RVCS.all
-rw-r--r-- 1 researchtools researchtools 10025430 2011-09-13 05:11 0479_20080620_175447_RVCS.all
researchtools@ubuntu:~/class/05/examples-20110913$ file 0479_20080620_175447_RVCS.all
0479_20080620_175447_RVCS.all: data
researchtools@ubuntu:~/class/05/examples-20110913$ less 0479_20080620_175447_RVCS.all
"0479_20080620_175447_RVCS.all" may be a binary file. See it anyway?

```

Google

All of the files that have

175447_RVCS.all.b
05.s7k.bz2

bz2

```
0479_20080620_175447_RVCS.all: data
```

So, it turns out that `file` does not know anything about our ".all" file. It's binary data, but we can try some other means to see if we can identify the file... we can look into the file. If we try the pager command `less`, it will ask us if we are sure we want to look at the binary data. Yes, we would like to take a look.

```
less 0479_20080620_175447_RVCS.all
"0479_20080620_175447_RVCS.all" may be a binary file. See it anyway?
```

Answer yes, and you will see lots of weird stuff with some characters in there. Type a "q" to quit out of less and we will try another helpful command to try to hide the "noise" of the binary data and see if there is any useful text in the file. The command `strings` will go through a file and return only readable characters from a file. We can see how many strings there are first by "piping" the output from strings to a command called word count (`WC`).

```
strings 0479_20080620_175447_RVCS.all | wc
21912  26248  143940
```

The vertical bar is the "pipe" command. `WC` tells us the number of lines followed by the number of words in the middle and the number of characters on the right. 21 thousand matches is too many to look at, so we should just look at the first few

```
<DC>^B^@^@^BI<CC>^K<EC>g2^A(^@<D8>^C<DF>^A<E1>^AB^AWLZ=0.57,SMH=481,S1X=9.05,S1Y=-0.22,S1Z=1.46,S1H=
359.80,S1P=2.31,S1R=39.01,G01=0.00,FX1=1,S2X=9.10,S2Y=0.22,S2Z=1.45,S2H=359.50,S2P=2.09,S2R=-41.90,G
02=0.00,FX2=3,TSV=2.0.9 060126,RSV=2.0.9 060126,BSV=1.3.2 060912,PSV=1.9.8 070423,DSX=0.00,DSY=0.00,
DSZ=0.00,DSD=0,DSH=NI,P1M=0,P1T=1,P1X=0.00,P1Y=0.00,P1Z=0.00,P1D=0.000,P1G=WGS84,P2M=0,P2T=0,P2X=0.0
0,P2Y=0.00,P2Z=0.00,P2D=0.000,P3M=0,P3T=0,P3X=0.00,P3Y=0.00,P3Z=0.00,P3D=0.000,MSX=0.00,MSY=0.00,MSZ
=0.00,MRP=RP,MSD=0,MSR=0.00,MSP=0.00,MSG=0.00,NSX=0.00,NSY=0.00,NSZ=0.00,NRP=RP,NSD=0,NSR=0.00,NSP=0
.00,NSG=0.00,MAS=1.000,GCG=0.00,APS=0,AHS=2,ARO=2,AHE=2,DDS= 3.18 2005/11/24,DSV=3.0.7 040104,SID=Hy
dro2008_Day2,COM=Day1 of Summer Hydro 2008.
Areal
06/14/1501,^C5<AB>4^@^@^@^BR<CC>^K<EC>g2^A^_@<D8>^C<96><84><E1>^A^@^@^@^A^B^A^@<96>^@<D8>ESC<95>
^@^0^@^@^0<A0>^R^@,^A^B8<80>8,^A^@^@^@^C<EC>^@^@^@^BR<CC>^K<EC>g2^A$^@<D8>^C<96><84><E1>^A
^@^@^@^A^B^A^@<96>^@<D8>ESC<95>^@^0^@^@^0<A0>^R^@,^A^B8<80>8,^A^@^@^@^C<F1>^@^@^@^BR
<CC>^K<EC>g2^A)^@<D8>^C<96><84><E1>^A^@^@^@^A^B^A^@<96>^@<D8>ESC<95>^@^0^@^@^0<A0>^R^@,^A
^B8<80>8,^A^@^@^@^C<F6>^@^@^@^BU<CC>^K<EC>g2^A)^@<D8>^C<9A>^@<E1>^A<EC>g2^A<BC><9D>^@^@/^@^A
^@^@^@^@(:^@^@n^@^@^@':^@^@<A0>^@^@^@':^@^@<BE>^@^@^@':^@^@<E6>^@^@^@&:^@^@^@N^A^@^@&:^@^@,^A^@^@':
^@^@h^A^@^@':^@^@<90>^A^@^@':^@^@<B8>^A^@^@&:^@^@<EA>^A^@^@&:^@^@R^B^@^@&:^@^@:^B^@^@&:^@^@b^B^@^@'
:^@^@<94>^B^@^@':^@^@<B2>^B^@^@':^@^@<DA>^B^@^@':^@^@^B^C^@^@':^@^@>^C^@^@':^@^@f^C^@^@(:^@^@<84>^C
^@^@(:^@^@<AC>^C^@^@(:^@^@<CA>^C^@^@(:^@^@<FC>^C^@^@':^@^@s^D^@^@':^@^@B^D^@^@':^@^@j^D^@^@(:^@^@
<92>^D^@^@':^@^@<B0>^D^@^@':^@^@<D8>^D^@^@':^@^@<F6>^D^@^@':^@^@
^E^@^@':^@^@(^E^@^@':^@^@P^E^@^@':^@^@n^E^@^@':^@^@<8C>^E^@^@':^@^@<A0>^E^@^@':^@^@<B4>^E^@^@(:^@^@
0479 20080620 175447 RVCS.all
```

Google

All of the files that have

175447_RVCS.all.b
05.s7k.bz2
bz2

```
0479_20080620_175447_RVCS.all: data
```

So, it turns out that `file` does not know anything about our ".all" file. It's binary data, but we can try some other means to see if we can identify the file... we can look into the file. If we try the pager command `less`, it will ask us if we are sure we want to look at the binary data. Yes, we would like to take a look.

```
less 0479_20080620_175447_RVCS.all
"0479_20080620_175447_RVCS.all" may be a binary file. See it anyway?
```

Answer yes, and you will see lots of weird stuff with some characters in there. Type a "q" to quit out of less and we will try another helpful command to try to hide the "noise" of the binary data and see if there is any useful text in the file. The command `strings` will go through a file and return only readable characters from a file. We can see how many strings there are first by "piping" the output from strings to a command called word count (`WC`).

```
strings 0479_20080620_175447_RVCS.all | wc
21912    26248   143940
```

The vertical bar is the "pipe" command. `WC` tells us the number of lines followed by the number of words in the middle and the number of characters on the right. 21 thousand matches is too many to look at, so we should just look at the first few

```

researchtools@ubuntu:~/class/05/examples-20110913$ strings 0479_20080620_175447_RVCS.all | wc
21912 26248 143940
researchtools@ubuntu:~/class/05/examples-20110913$ strings 0479_20080620_175447_RVCS.all | head
WLZ=0.57,SMH=481,S1X=9.05,S1Y=-0.22,S1Z=1.46,S1H=359.80,S1P=2.31,S1R=39.01,G01=0.00,FX1=1,S2X=9.10,S
2Y=0.22,S2Z=1.45,S2H=359.50,S2P=2.09,S2R=-41.90,G02=0.00,FX2=3,TSV=2.0.9 060126,RSV=2.0.9 060126,BSV
=1.3.2 060912,PSV=1.9.8 070423,DSX=0.00,DSY=0.00,DSZ=0.00,DSD=0,DSH=NI,P1M=0,P1T=1,P1X=0.00,P1Y=0.00
,P1Z=0.00,P1D=0.000,P1G=WGS84,P2M=0,P2T=0,P2X=0.00,P2Y=0.00,P2Z=0.00,P2D=0.000,P3M=0,P3T=0,P3X=0.00,
P3Y=0.00,P3Z=0.00,P3D=0.000,MSX=0.00,MSY=0.00,MSZ=0.00,MRP=RP,MSD=0,MSR=0.00,MSP=0.00,MSG=0.00,NSX=0
.00,NSY=0.00,NSZ=0.00,NRP=RP,NSD=0,NSR=0.00,NSP=0.00,NSG=0.00,MAS=1.000,GCG=0.00,APS=0,AHS=2,ARO=2,A
HE=2,DDS= 3.18 2005/11/24,DSV=3.0.7 040104,SID=Hydro2008_Day2,COM=Day1 of Summer Hydro 2008.
Areal
06/14/1501,
G":s
" xj
K!)k
u!Wk
H"5m
Z!?!
.!h!
researchtools@ubuntu:~/class/05/examples-20110913$

```

Google

try some other means to ask us if we are sure

of less and we will try xt in the file. The ee how many strings

```

strings 0479_20080620_175447_RVCS.all | wc
21912 26248 143940

```

The vertical bar is the "pipe" command. WC tells us the number of lines followed by the number of words in the middle and the number of characters on the right. 21 thousand matches is too many to look at, so we should just look at the first few strings returned using the head command (there is also an equivalent tail command for the other end of the stream).

```

strings 0479_20080620_175447_RVCS.all | wc
21912 26248 143940
schwehr@ubuntu:~/examples-20110913$ strings 0479_20080620_175447_RVCS.all | head
WLZ=0.57,SMH=481, ... DSV=3.0.7 040104,SID=Hydro2008_Day2,COM=Day1 of Summer Hydro 200
Areal
06/14/1501,
G":s
" xj
K!)k
u!Wk
H"5m
Z!?!
.!h!

```

```

researchtools@ubuntu:~/class/05/examples-20110913$ strings 0479_20080620_175447_RVCS.all | grep GGA
| head
GINGGA,175447.471,4423.69910,N,06847.25002,W,4,07,1.2,6.33,M,,0,0000*02
GINGGA,175447.571,4423.69895,N,06847.25005,W,4,07,1.2,6.33,M,,0,0000*08
GINGGA,175447.671,4423.69880,N,06847.25007,W,4,07,1.2,6.32,M,,0,0000*0C
GINGGA,175447.771,4423.69865,N,06847.25009,W,4,07,1.2,6.32,M,,0,0000*08
GINGGA,175447.871,4423.69850,N,06847.25012,W,4,07,1.2,6.32,M,,0,0000*0B
GINGGA,175447.971,4423.69835,N,06847.25014,W,4,07,1.2,6.32,M,,0,0000*0F
GINGGA,175448.071,4423.69820,N,06847.25016,W,4,07,1.2,6.32,M,,0,0000*0F
GINGGA,175448.171,4423.69805,N,06847.25018,W,4,07,1.2,6.32,M,,0,0000*07
GINGGA,175448.271,4423.69790,N,06847.25020,W,4,07,1.2,6.32,M,,0,0000*0C
GINGGA,175448.371,4423.69776,N,06847.25022,W,4,07,1.2,6.32,M,,0,0000*07
researchtools@ubuntu:~/class/05/examples-20110913$
researchtools@ubuntu:~/class/05/examples-20110913$ file *.jpeg
20110912-1801.jpeg: JPEG image data, JFIF standard 1.01
researchtools@ubuntu:~/class/05/examples-20110913$ file * | grep image
20110912-1801.jpeg:          JPEG image data, JFIF standard 1.01
H11296_5m-hillshade.tif:    TIFF image data, little-endian
researchtools@ubuntu:~/class/05/examples-20110913$

```

Google [Search bar]

.all | head
Summer Hydro 200

at this file. From this, I
have anything that tells
Summer Hydro class.

using grep to search for strings `grep`

We can use a program called "grep" to search for text patterns in the results of the `file` command. The pictures in the file return a line that contains the word "image". For example, I found this JPEG image:

```
20110912-1801.jpeg:          JPEG image data, JFIF standard 1.01
```

We can pass the output through a pipe to the `grep` command and ask it to search for the word "image".

```

file * | grep image
20110912-1801.jpeg:          JPEG image data, JFIF standard 1.01
H11296_5m-hillshade.tif:    TIFF image data, little-endian

```

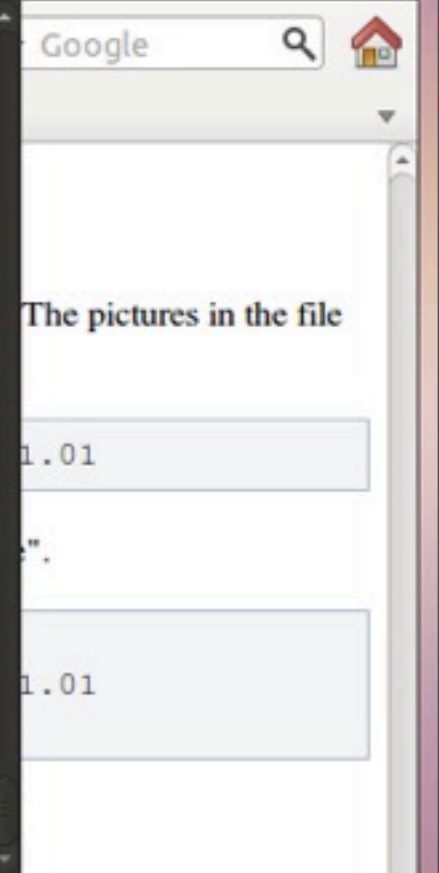
imagemagick to examine images

We have a JPEG image and a tiff image. That doesn't tell us much about those images, but we can find out more with other tools. The first tool that we will use is [ImageMagick](#). It comes with a command called `identify`.

```

researchtools@ubuntu:~/class/05/examples-20110913$ file * | grep image
20110912-1801.jpeg:          JPEG image data, JFIF standard 1.01
H11296_5m-hillshade.tif:    TIFF image data, little-endian
researchtools@ubuntu:~/class/05/examples-20110913$ identify *.jpeg *.tif
20110912-1801.jpeg JPEG 1280x960 1280x960+0+0 8-bit DirectClass 78.4KB 0.000u 0:00.000
H11296_5m-hillshade.tif[1] TIFF 3205x1278 3205x1278+0+0 8-bit Grayscale DirectClass 4.107MB 0.000u 0
:00.000
identify: H11296_5m-hillshade.tif: unknown field with tag 33550 (0x830e) encountered. `TIFFReadDirec
tory' @ warning/tiff.c/TIFFWarnings/704.
identify: H11296_5m-hillshade.tif: unknown field with tag 33922 (0x8482) encountered. `TIFFReadDirec
tory' @ warning/tiff.c/TIFFWarnings/704.
identify: H11296_5m-hillshade.tif: unknown field with tag 34735 (0x87af) encountered. `TIFFReadDirec
tory' @ warning/tiff.c/TIFFWarnings/704.
identify: H11296_5m-hillshade.tif: unknown field with tag 34736 (0x87b0) encountered. `TIFFReadDirec
tory' @ warning/tiff.c/TIFFWarnings/704.
identify: H11296_5m-hillshade.tif: unknown field with tag 34737 (0x87b1) encountered. `TIFFReadDirec
tory' @ warning/tiff.c/TIFFWarnings/704.
identify: H11296_5m-hillshade.tif: unknown field with tag 42113 (0xa481) encountered. `TIFFReadDirec
tory' @ warning/tiff.c/TIFFWarnings/704.
researchtools@ubuntu:~/class/05/examples-20110913$ display *.jpeg *.tif

```



We have a JPEG image and a tiff image. That doesn't tell us much about those images, but we can find out more with other tools. The first tool that we will use is [ImageMagick](#). It comes with a command called identify.

```

identify *.jpeg *.tif
20110912-1801.jpeg JPEG 1280x960 1280x960+0+0 8-bit DirectClass 78.4KB 0.000u 0:00.000
H11296_5m-hillshade.tif[1] TIFF 3205x1278 3205x1278+0+0 8-bit Grayscale DirectClass 4.
identify: H11296_5m-hillshade.tif: unknown field with tag 33550 (0x830e) encountered.
identify: H11296_5m-hillshade.tif: unknown field with tag 33922 (0x8482) encountered.
identify: H11296_5m-hillshade.tif: unknown field with tag 34735 (0x87af) encountered.
...

```

Ignore the warnings with "unknown field" in them. This is a geotiff with information that ImageMagick does not know about. identify has told us the size of the images a little about the type of content. Better yet to take a look at the images.

```
display *.jpeg *.tif
```

The jpeg turns out to be an image from the camera above the bridge of the USCG Ice Breaker Healy. The tiff looks weird, but is actually a gray scale image of some Lidar data from the area near the UNH campus.

File 2011-09-12 18:01:02 UTC Lat: 81.14.4 N Long: 126.47.5 W Air Temp: 22.9 F Rel Wind Speed: 14 kt Rel WindDir: 79 Heading: 1

resea
20110
H1129
resea
20110
H1129
:00.0
ident
tory'
ident
tory'
ident
tory'
ident
tory'
ident
tory'
ident
tory'
resea
□



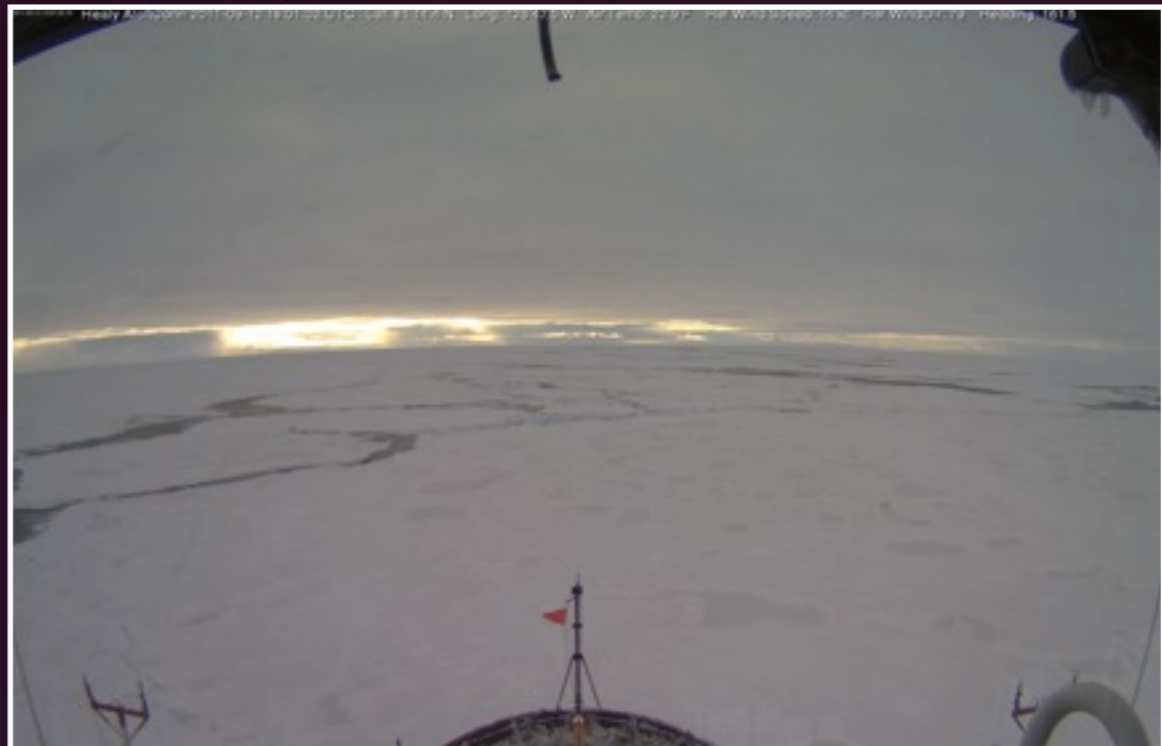


researchtools@ubuntu:~/class/05/examples-20110913\$ gdalinfo 20110912-1801.jpeg

```

Driver: JPEG/JPEG JFIF
Files: 20110912-1801.jpeg
Size is 1280, 960
Coordinate System is ` `
Metadata:
  EXIF_XResolution=(72)
  EXIF_YResolution=(72)
  EXIF_ResolutionUnit=2
  EXIF_YCbCrPositioning=1
  EXIF_GPSVersionID=0x2 0x2 00 00
  EXIF_GPSLatitudeRef=N
  EXIF_GPSLatitude=(81) (14) (24.5814)
  EXIF_GPSLongitudeRef=W
  EXIF_GPSLongitude=(126) (47) (30.5148)
Image Structure Metadata:
  SOURCE_COLOR_SPACE=YCbCr
  INTERLEAVE=PIXEL
  COMPRESSION=JPEG
Corner Coordinates:

```



```

B 0.000u 0:00.000
le DirectClass 4.
0e) encountered.
B2) encountered.
af) encountered.

```

ick does not know
look at the images.

. The tiff looks weird,

Using gdal to ask more about the images `gdal`

The Geospatial Data Abstraction Library ([GDAL](#)) library, has tools for identifying both raster (e.g. images) and vector (e.g. line) data that has spatial data attached to it. First try `gdalinfo` on the JPEG image:

```

gdalinfo 20110912-1801.jpeg
Driver: JPEG/JPEG JFIF
Files: 20110912-1801.jpeg
Size is 1280, 960
Coordinate System is ` `
Metadata:
  EXIF_XResolution=(72)
  EXIF_YResolution=(72)
  EXIF_ResolutionUnit=2
  EXIF_YCbCrPositioning=1
  EXIF_GPSVersionID=0x2 0x2 00 00
  EXIF_GPSLatitudeRef=N
  EXIF_GPSLatitude=(81) (14) (24.5814)
  EXIF_GPSLongitudeRef=W
  EXIF_GPSLongitude=(126) (47) (30.5148)
Image Structure Metadata:
  SOURCE_COLOR_SPACE=YCbCr

```

```

COMPRESSION=JPEG
Band 3 Block=1280x1 Type=Byte, ColorInterp=Blue
Image Structure Metadata:
  COMPRESSION=JPEG
researchtools@ubuntu:~/class/05/examples-20110913$
researchtools@ubuntu:~/class/05/examples-20110913$ gdalinfo H11296_5m-hillshade.tif
Driver: GTiff/GeoTIFF
Files: H11296_5m-hillshade.tif
Size is 3205, 1278
Coordinate System is:
GEOGCS["WGS 84",
  DATUM["WGS 1984",
    SPHEROID["WGS 84",6378137,298.2572235629972,
      AUTHORITY["EPSG","7030"]],
    AUTHORITY["EPSG","6326"]],
  PRIMEM["Greenwich",0],
  UNIT["degree",0.0174532925199433],
  AUTHORITY["EPSG","4326"]]
Origin = (-70.778190923162583,43.023240535377035)
Pixel Size = (0.000058406003444,-0.000058406003444)
Metadata:

```



Google

```

Center ( 640.0, 480.0)
Band 1 Block=1280x1 Type=Byte, ColorInterp=Red
Image Structure Metadata:
  COMPRESSION=JPEG
Band 2 Block=1280x1 Type=Byte, ColorInterp=Green
Image Structure Metadata:
  COMPRESSION=JPEG
Band 3 Block=1280x1 Type=Byte, ColorInterp=Blue
Image Structure Metadata:
  COMPRESSION=JPEG

```

JPEG images have special data called "EXIF" tags that can record more than just the image. In this case it has save the GPS location of the ship from when the picture was taken. The ship was at roughly 81 North and 126 West when the picture was taken. That is way up in the Arctic!

Now take a look at the results for the "GeoTiff":

```

gdalinfo H11296_5m-hillshade.tif
Driver: GTiff/GeoTIFF
Files: H11296_5m-hillshade.tif
Size is 3205, 1278

```

```

File Edit View Search Terminal Help
SPHEROID["WGS 84",6378137,298.2572235629972,
AUTHORITY["EPSG","7030"]],
AUTHORITY["EPSG","6326"]],
PRIMEM["Greenwich",0],
UNIT["degree",0.0174532925199433],
AUTHORITY["EPSG","4326"]]
Origin = (-70.778190923162583,43.023240535377035)
Pixel Size = (0.000058406003444,-0.000058406003444)
Metadata:
  AREA_OR_POINT=Area
Image Structure Metadata:
  INTERLEAVE=BAND
Corner Coordinates:
Upper Left  ( -70.7781909,  43.0232405) ( 70d46'41.49"W, 43d 1'23.67"N)
Lower Left  ( -70.7781909,  42.9485977) ( 70d46'41.49"W, 42d56'54.95"N)
Upper Right ( -70.5909997,  43.0232405) ( 70d35'27.60"W, 43d 1'23.67"N)
Lower Right ( -70.5909997,  42.9485977) ( 70d35'27.60"W, 42d56'54.95"N)
Center      ( -70.6845953,  42.9859191) ( 70d41'4.54"W, 42d59'9.31"N)
Band 1 Block=320x2 Type=Byte, ColorInterp=Gray
NoData Value=0
researchtools@ubuntu:~/class/05/examples-20110913$

```

Google

N)
N)
N)
N)

e point on the Earth. In
rectangle defined to say

Now we would like to start creating a script to be able to record and rerun basic operations that we have been doing on the command line.

First you can review what we have done today in the shell with the `history` command. Your results will look different than what I have here:

```

420 gunzip *.gz
422 bunzip2 *.bz2
423 file 0479_20080620_175447_RVCS.all
424 less 0479_20080620_175447_RVCS.all
426 strings 0479_20080620_175447_RVCS.all | wc
427 strings 0479_20080620_175447_RVCS.all | head
428 file *
433 file * | grep image
438 identify *.jpeg *.tif
439 display *.jpeg *.tif
440 gdalinfo 20110912-1801.jpeg
441 ls *.tif
442 gdalinfo H11296_5m-hillshade.tif
443 history

```

```

gdalinfo(1)
NAME
    gdalinfo - .TH "gdalinfo" 1 "Wed Aug 24 2011" "GDAL"
NAME
    gdalinfo - lists information about a raster dataset
SYNOPSIS
    gdalinfo [--help-general] [-mm] [-stats] [-nogcp] [-nomd]
            [-noct] [-checksum] [-mdd domain]* datasetname
DESCRIPTION
    The gdalinfo program lists various information about a GDAL supported raster dataset.
    -mm
        Force computation of the actual min/max values for each band in the dataset.
    -stats
        Read and display image statistics. Force computation if no statistics are stored in an
Manual page gdalinfo(1) line 1

```

Google

Search

Home

Results

1) ...

2) ...

3) ...

4) ...

... point on the Earth. In ...
rectangle defined to say

Now we would like to start creating a script to be able to record and rerun basic operations that we have been doing on the command line.

First you can review what we have done today in the shell with the `history` command. Your results will look different than what I have here:

```

420 gunzip *.gz
422 bunzip2 *.bz2
423 file 0479_20080620_175447_RVCS.all
424 less 0479_20080620_175447_RVCS.all
426 strings 0479_20080620_175447_RVCS.all | wc
427 strings 0479_20080620_175447_RVCS.all | head
428 file *
433 file * | grep image
438 identify *.jpeg *.tif
439 display *.jpeg *.tif
440 gdalinfo 20110912-1801.jpeg
441 ls *.tif
442 gdalinfo H11296_5m-hillshade.tif
443 history

```

```

researchtools@ubuntu: ~/class/05/examples-20110913
File Edit View Search Terminal Help
73 strings 0479_20080620_175447_RVCS.all | grep GGA | head
74 file *.jpeg
75 file * | grep image
76 clear
77 file * | grep image
78 identify *.jpeg *.tif
79 display *.jpeg *.tif
80 clear
81 file * | grep image
82 identify *.jpeg *.tif
83 display *.jpeg *.tif
84 clear
85 gdalinfo 20110912-1801.jpeg
86 gdalinfo H11296_5m-hillshade.tif
87 display *.jpeg *.tif
88 gdalinfo H11296_5m-hillshade.tif
89 man gdalinfo
90 history
researchtools@ubuntu:~/class/05/examples-20110913$ !83
display *.jpeg *.tif

```

Google

(N)
(N)
(N)



emacs23@ubuntu

File Edit Options Buffers Tools Help

Welcome to [GNU Emacs](#), one component of the [GNU/Linux](#) operating system.

Emacs Tutorial	Learn basic keystroke commands
Emacs Guided Tour	Overview of Emacs features at gnu.org
View Emacs Manual	View the Emacs manual using Info
Absence of Warranty	GNU Emacs comes with ABSOLUTELY NO WARRANTY
Copying Conditions	Conditions for redistributing and changing Emacs
Ordering Manuals	Purchasing printed copies of manuals

To start... [Open a File](#) [Open Home Directory](#) [Customize Startup](#)

To quit a partially entered command, type Control-g.

-U:%%- *GNU Emacs* 1% L5 (Fundamental)-----

For information about GNU Emacs and the GNU system, type C-h C-a.

Emacs - a powerful text editor

```

73 strings 0479_20080620_175447_RVCS.all | grep GGA | head
74 file *.jpeg
75 file * | grep image
76 clear
77 file * | grep image
78 identify *.jpeg *.tif
79 display *.jpeg *.tif
80 clear
81 file * | grep image
82 identify *.jpeg *.tif
83 display *.jpeg *.tif
84 clear
85 gdalinfo 20110912-1801.jpeg
86 gdalinfo H11296_5m-hillshade.tif
87 display *.jpeg *.tif
88 gdalinfo H11296_5m-hillshade.tif
89 man gdalinfo
90 history
researchtools@ubuntu:~/class/05/examples-20110913$
display *.jpeg *.tif
researchtools@ubuntu:~/class/05/examples-20110913$

```

Visit New File... C-x C-f

Specify a new file's name, to edit the file: GNU/Linux operating system.

Open file... C-x C-f

Open Directory... C-x C-d

Insert File... C-x i

Close

Save C-x C-s

Save As... C-x C-w

Revert Buffer

Recover Crashed Session

Print Buffer

Print Region

Postscript Print Buffer

Postscript Print Region

Postscript Print Buffer (B+W)

Postscript Print Region (B+W)

Split Window C-x 2

Remove Splits C-x 1

New Frame C-x 5 2

New Frame on Display...

Delete Frame C-x 5 0

Quit C-x C-c

(N)

(N)

(N)

... point on the Earth. In

... rectangle defined to say

... have been doing on the

... lts will look different

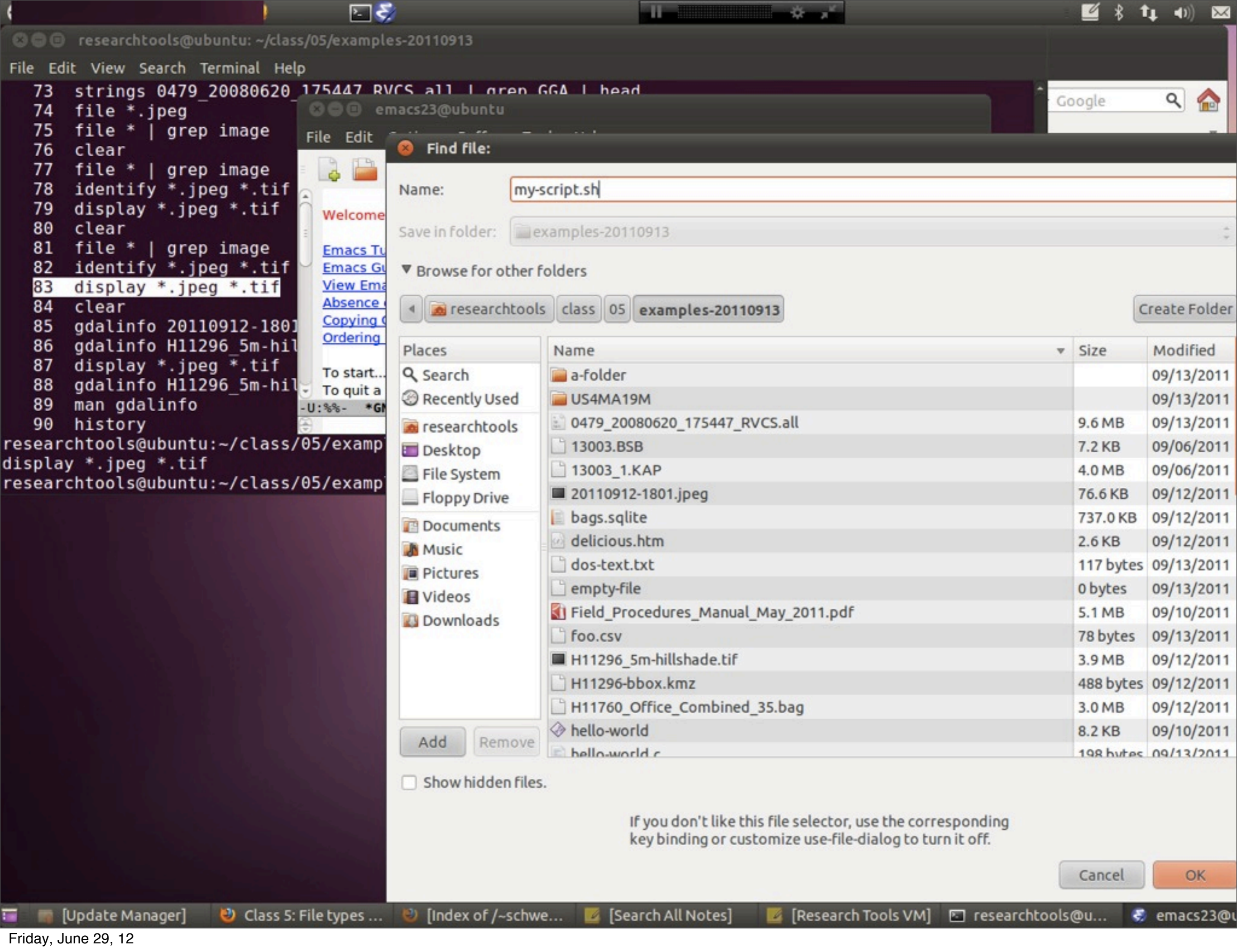
```

439 display *.jpeg *.tif
440 gdalinfo 20110912-1801.jpeg
441 ls *.tif
442 gdalinfo H11296_5m-hillshade.tif
443 history

```

If we want to make it easy to rerun some commands, we will want to start creating "scripts".

Emacs - a powerful text editor



researchtools@ubuntu: ~/class/05/examples-20110913

File Edit View Search Terminal Help

```
73 strings 0479_20080620_175447_RVCS_all | grep GGA | head
74 file *.jpeg
75 file * | grep image
76 clear
77 file * | grep image
78 identify *.jpeg *.tif
79 display *.jpeg *.tif
80 clear
81 file * | grep image
82 identify *.jpeg *.tif
83 display *.jpeg *.tif
84 clear
85 gdalinfo 20110912-1801
86 gdalinfo H11296_5m-hillshade.tif
87 display *.jpeg *.tif
88 gdalinfo H11296_5m-hillshade.tif
89 man gdalinfo
90 history
researchtools@ubuntu:~/class/05/examples-20110913$ display *.jpeg *.tif
researchtools@ubuntu:~/class/05/examples-20110913$
```

emacs23@ubuntu

File Edit

Find file:

Name: my-script.sh

Save in folder: examples-20110913

Browse for other folders

researchtools class 05 examples-20110913

- Places
- Search
- Recently Used
- researchtools
- Desktop
- File System
- Floppy Drive
- Documents
- Music
- Pictures
- Videos
- Downloads

Name	Size	Modified
a-folder		09/13/2011
US4MA19M		09/13/2011
0479_20080620_175447_RVCS.all	9.6 MB	09/13/2011
13003.BSB	7.2 KB	09/06/2011
13003_1.KAP	4.0 MB	09/06/2011
20110912-1801.jpeg	76.6 KB	09/12/2011
bags.sqlite	737.0 KB	09/12/2011
delicious.htm	2.6 KB	09/12/2011
dos-text.txt	117 bytes	09/13/2011
empty-file	0 bytes	09/13/2011
Field_Procedures_Manual_May_2011.pdf	5.1 MB	09/10/2011
foo.csv	78 bytes	09/13/2011
H11296_5m-hillshade.tif	3.9 MB	09/12/2011
H11296-bbox.kmz	488 bytes	09/12/2011
H11760_Office_Combined_35.bag	3.0 MB	09/12/2011
hello-world	8.2 KB	09/10/2011
hello-world.c	198 bytes	09/13/2011

Add Remove

Show hidden files.

If you don't like this file selector, use the corresponding key binding or customize use-file-dialog to turn it off.

Cancel OK


```
researchtools@ubuntu: ~/class/05/examples-20110913
File Edit View Search Terminal Help
75 file * | grep image
76 clear
77 file * | grep image
78 identify *.jpeg *.tif
79 display *.jpeg *.tif
80 clear
81 file * | grep image
82 identify *.jpeg *.tif
83 display *.jpeg *.tif
84 clear
85 gdalinfo 20110912-1801.jpeg
86 gdalinfo H11296_5m-hillshade.tif
87 display *.jpeg *.tif
88 gdalinfo H11296_5m-hillshade.tif
89 man gdalinfo
90 history
researchtools@ubuntu:~/class/05/examples-20110913$ !83
display *.jpeg *.tif
researchtools@ubuntu:~/class/05/examples-20110913$ echo "Hello World"
Hello World
researchtools@ubuntu:~/class/05/examples-20110913$
```

emacs23@ubuntu
File Edit Options Buffers Tools Sh-Script Help
-U:**- my-script.sh All L1 (Shell-script[sh])

researchtools@ubuntu:~/class/05/examples-20110913\$!83

display *.jpeg *.tif

researchtools@ubuntu:~/class/05/examples-20110913\$ echo "Hello World"

Hello World

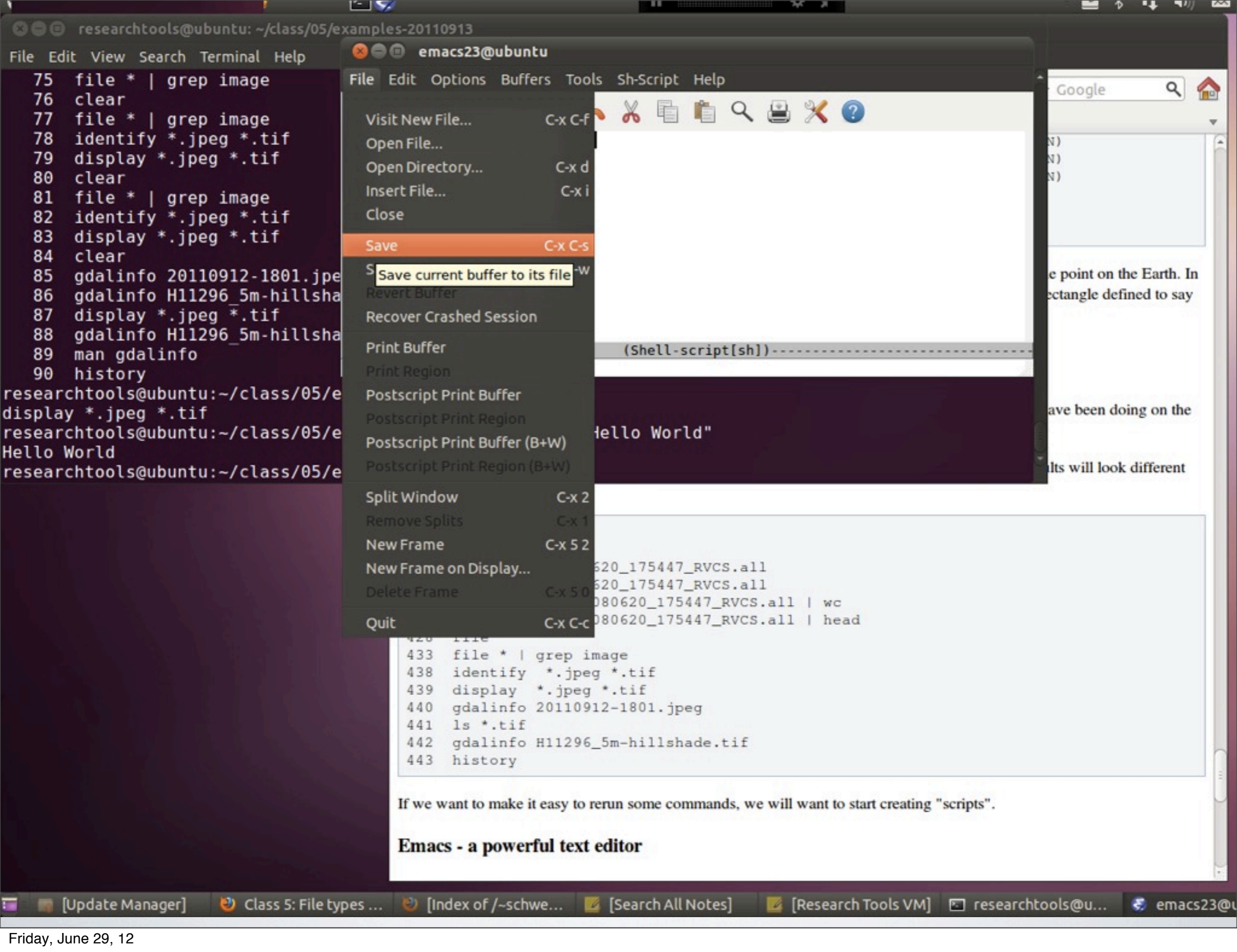
researchtools@ubuntu:~/class/05/examples-20110913\$

than what I have here:

```
420 gunzip *.gz
422 bunzip2 *.bz2
423 file 0479_20080620_175447_RVCS.all
424 less 0479_20080620_175447_RVCS.all
426 strings 0479_20080620_175447_RVCS.all | wc
427 strings 0479_20080620_175447_RVCS.all | head
428 file *
433 file * | grep image
438 identify *.jpeg *.tif
439 display *.jpeg *.tif
440 gdalinfo 20110912-1801.jpeg
441 ls *.tif
442 gdalinfo H11296_5m-hillshade.tif
443 history
```

If we want to make it easy to rerun some commands, we will want to start creating "scripts".

Emacs - a powerful text editor



researchtools@ubuntu: ~/class/05/examples-20110913

File Edit View Search Terminal Help

```
75 file * | grep image
76 clear
77 file * | grep image
78 identify *.jpeg *.tif
79 display *.jpeg *.tif
80 clear
81 file * | grep image
82 identify *.jpeg *.tif
83 display *.jpeg *.tif
84 clear
85 gdalinfo 20110912-1801.jpeg
86 gdalinfo H11296_5m-hillshade.tif
87 display *.jpeg *.tif
88 gdalinfo H11296_5m-hillshade.tif
89 man gdalinfo
90 history
```

```
researchtools@ubuntu:~/class/05/examples-20110913
display *.jpeg *.tif
researchtools@ubuntu:~/class/05/examples-20110913
Hello World
researchtools@ubuntu:~/class/05/examples-20110913
```

emacs23@ubuntu

File Edit Options Buffers Tools Sh-Script Help

- Visit New File... C-x C-f
- Open File...
- Open Directory... C-x d
- Insert File... C-x i
- Close
- Save C-x C-s**
- Save current buffer to its file -w
- Revert Buffer
- Recover Crashed Session
- Print Buffer
- Print Region
- Postscript Print Buffer
- Postscript Print Region
- Postscript Print Buffer (B+W)
- Postscript Print Region (B+W)
- Split Window C-x 2
- Remove Splits C-x 1
- New Frame C-x 5 2
- New Frame on Display...
- Delete Frame C-x 5 0
- Quit C-x C-c



```
(Shell-script[sh])-----
Hello World"
```

```
080620_175447_RVCS.all
080620_175447_RVCS.all
080620_175447_RVCS.all | wc
080620_175447_RVCS.all | head
```

Google

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N)
N)

e point on the Earth. In
rectangle defined to say

ave been doing on the

ults will look different

If we want to make it easy to rerun some commands, we will want to start creating "scripts".

Emacs - a powerful text editor

```
86 gdalinfo H11296_5m-hillshade.tif
87 display *.jpeg *.tif
88 gdalinfo H11296_5m-hillshade.tif
89 man gdalinfo
90 history
```

```
researchtools@ubuntu:~/class/05/examples-20110913$ !83
```

```
display *.jpeg *.tif
```

```
researchtools@ubuntu:~/class/05/examples-20110913$ echo "Hello World"
```

Hello World

```
researchtools@ubuntu:~/class/05/examples-20110913$ ls -ltr | tail
```

```
-rw-r--r-- 1 researchtools researchtools 46393 2011-09-13 05:29 sample-audio.m4a
-rw-r--r-- 1 researchtools researchtools 70310 2011-09-13 05:30 sample-audio.mp3
-rw-r--r-- 1 researchtools researchtools 416460 2011-09-13 05:31 sample-audio.wav
-rw-r--r-- 1 researchtools researchtools 208512 2011-09-13 05:31 sample-audio.ac3
-rw-r--r-- 1 researchtools researchtools 78 2011-09-13 05:33 foo.csv
-rw-r--r-- 1 researchtools researchtools 117 2011-09-13 05:34 dos-text.txt
-rw-r--r-- 1 researchtools researchtools 294 2011-09-13 05:36 sample.org
-rw-r--r-- 1 researchtools researchtools 980 2011-09-13 05:36 sample.tex
-rw-r--r-- 1 researchtools researchtools 64942 2011-09-13 05:37 sample.pdf
-rw-r--r-- 1 researchtools researchtools 27 2012-06-29 08:11 my-script.sh
```

```
researchtools@ubuntu:~/class/05/examples-20110913$ less my-script.sh
```

than what I have here:

```
420 gunzip *.gz
422 bunzip2 *.bz2
423 file 0479_20080620_175447_RVCS.all
424 less 0479_20080620_175447_RVCS.all
426 strings 0479_20080620_175447_RVCS.all | wc
427 strings 0479_20080620_175447_RVCS.all | head
428 file *
433 file * | grep image
438 identify *.jpeg *.tif
439 display *.jpeg *.tif
440 gdalinfo 20110912-1801.jpeg
441 ls *.tif
442 gdalinfo H11296_5m-hillshade.tif
443 history
```

If we want to make it easy to rerun some commands, we will want to start creating "scripts".

Emacs - a powerful text editor

Google search bar with a search icon and a home icon.

...e point on the Earth. In
...ectangle defined to say

...ave been doing on the

...Its will look different

```
echo "Hello from my script"
my-script.sh (END)
```

Google search bar with search icon and home icon.

...e point on the Earth. In
...ectangle defined to say

...ave been doing on the

...lts will look different

than what I have here:

```
420 gunzip *.gz
422 bunzip2 *.bz2
423 file 0479_20080620_175447_RVCS.all
424 less 0479_20080620_175447_RVCS.all
426 strings 0479_20080620_175447_RVCS.all | wc
427 strings 0479_20080620_175447_RVCS.all | head
428 file *
433 file * | grep image
438 identify *.jpeg *.tif
439 display *.jpeg *.tif
440 gdalinfo 20110912-1801.jpeg
441 ls *.tif
442 gdalinfo H11296_5m-hillshade.tif
443 history
```

If we want to make it easy to rerun some commands, we will want to start creating "scripts".

Emacs - a powerful text editor

```

89 man gdalinfo
90 history
researchtools@ubuntu:~/class/05/examples-20110913$ !83
display *.jpeg *.tif
researchtools@ubuntu:~/class/05/examples-20110913$ echo "Hello World"
Hello World
researchtools@ubuntu:~/class/05/examples-20110913$ ls -ltr | tail
-rw-r--r-- 1 researchtools researchtools 46393 2011-09-13 05:29 sample-audio.m4a
-rw-r--r-- 1 researchtools researchtools 70310 2011-09-13 05:30 sample-audio.mp3
-rw-r--r-- 1 researchtools researchtools 416460 2011-09-13 05:31 sample-audio.wav
-rw-r--r-- 1 researchtools researchtools 208512 2011-09-13 05:31 sample-audio.ac3
-rw-r--r-- 1 researchtools researchtools 78 2011-09-13 05:33 foo.csv
-rw-r--r-- 1 researchtools researchtools 117 2011-09-13 05:34 dos-text.txt
-rw-r--r-- 1 researchtools researchtools 294 2011-09-13 05:36 sample.org
-rw-r--r-- 1 researchtools researchtools 980 2011-09-13 05:36 sample.tex
-rw-r--r-- 1 researchtools researchtools 64942 2011-09-13 05:37 sample.pdf
-rw-r--r-- 1 researchtools researchtools 27 2012-06-29 08:11 my-script.sh
researchtools@ubuntu:~/class/05/examples-20110913$ less my-script.sh
researchtools@ubuntu:~/class/05/examples-20110913$ source my-script.sh
Hello from my script
researchtools@ubuntu:~/class/05/examples-20110913$

```

Google

(N)
(N)
(N)

... point on the Earth. In
... rectangle defined to say

... have been doing on the

... lts will look different

than what I have here:

```

420 gunzip *.gz
422 bunzip2 *.bz2
423 file 0479_20080620_175447_RVCS.all
424 less 0479_20080620_175447_RVCS.all
426 strings 0479_20080620_175447_RVCS.all | wc
427 strings 0479_20080620_175447_RVCS.all | head
428 file *
433 file * | grep image
438 identify *.jpeg *.tif
439 display *.jpeg *.tif
440 gdalinfo 20110912-1801.jpeg
441 ls *.tif
442 gdalinfo H11296_5m-hillshade.tif
443 history

```

If we want to make it easy to rerun some commands, we will want to start creating "scripts".

Emacs - a powerful text editor

END OF LECTURE 5