

## **Introduction to Computing in GeoSciences**

### **Log On, Network Drives, Email/Web, Printing, Help, Log Off**

This session covers basic *but critically useful* access to the School of GeoSciences computer network and computing resources. Further IT induction information, including full regulations and mandatory training on topics such as Data Protection and Information Security training, is outlined on the School IT web pages via [www.geos.ed.ac.uk/it](http://www.geos.ed.ac.uk/it). This site will require your Edinburgh EASE login which we will look at first. Once logged in you will be redirected to the fully accessible internal website (but with longer *URL* address) at: [www.ed.ac.uk/geosciences/intranet/it](http://www.ed.ac.uk/geosciences/intranet/it). You can type shorter URLs if preferred.

This practical session functions as an *introduction*, with this document acting as *guided reference* material, but also as an important *test* that various computing accounts and settings have been made correctly. You should therefore use this opportunity to check that everything is in order *before* further teaching activities commence.

Computer lab access is provided on campus in School labs, and in centrally managed Open-Access labs provided by the University's Information Services Division. Most computers run Windows though some Apple Macs are also available. A number of remote working options also exist, with multiple operating systems and devices supported.

We also highly recommend briefly reviewing the extensive help information and literature available on the Information Services web pages via [www.is.ed.ac.uk](http://www.is.ed.ac.uk) or [www.ed.ac.uk/is](http://www.ed.ac.uk/is) either of which will redirect you to the fully accessible site at [www.ed.ac.uk/information-services](http://www.ed.ac.uk/information-services). Use whichever route/format works best for you!

### **Actions!**

→ An arrow is used to indicate a key step you should undertake, or key knowledge

(→) Optional or case/context specific items are shown in parentheses (brackets)



Critical actions to follow/warnings to note are shown with a warning exclamation!



Shows other information, useful later but of lower priority during the practical

### **Using On-screen Practicals! – Arranging Multiple Windows**

→ Widescreen monitors are provided in University computing labs to facilitate wholly digital on-screen instruction, with both practical guide and relevant software package(s) both visible. To arrange multiple windows side-by-side for this purpose use the cursor (arrow) keys as required while holding down the Windows key . This allows you to have all of: instructions document, software package(s) for analysis, a text editor for making notes, and say a web page all grouped together.

## Targets for this Session

You should know how to:

- **Log on** to a Windows **Managed Desktop PC**
- Know where to access key IT information and training (School IT or UoE IS)
- Know how to access online University services from **MyEd**
- Locate your *personal network drive(s)* (**M:** and/or **R:**)
- **Access Netdata** in GeoSciences (**G:**) and other networked resources (**P:**, **U:**)
- Know how to **map** network drives, e.g. teaching resources, manually if required
- Access your **University Email** (and to read it regularly; at least twice daily)
- Access your **Office365** from MyEd including **Email, Calendar, OneDrive**
- Access and navigate the **School Website**
- Access the **Learn** Virtual Learning Environment (VLE)
- Use **Learn** for submission of course work and for tutoring duties
- Print documents when required, and know where to do this
- Know how to use graphics appropriately for both web and print; save/print PDFs
- For those who require to manipulate datasets, know how to use **Text Editors**
- Know how to find IT help (on/offline), e.g. for printing or file space issues
- **Log off** Windows

Additional info is also given for later reference on remote working options:

- *Setting up a VPN connection to allow remote desktop and drive mapping connections from outside the University network (e.g. from home)*
- *Connecting externally to network resources including home directory (**M:**), UoE Datastore (**R:**) and others, e.g. netdata (**G:**), scratch (**S:**) or University (**U:**)*
- *Accessing key software from home: remote web apps, remote desktop, or your own local installation*

## 1 Getting Connected: *University Login/UUN and The MyEd portal*

- In a lab on-campus you can log in to a fixed desktop PC using your **University login (EASE)** details. These credentials are also used for all online services within the University and all systems should be synchronised to a single sign-on identity *when you set your details*. New students should have received an email during the application process (or possibly in early August) prompting them to register details.
- If you have **not** set these already you can do this now via a web browser if connected to the internet (e.g. on a mobile device) – *see box below*. Alternatively you can attempt to login with the *initial* password sent to you during the application process. You can then set your University/EASE details once logged in, which will include setting a permanent password known only to you. If you require your initial password we can obtain it for you – please ask.
- You may need to ‘wake’ the PC by nudging the mouse, or pressing any key which should bring up a welcome screen. To bring up the login prompt you can press any key (or click) *once more*. When the input box appears, log in (on) with your **UUN** (i.e. **University Username**). For students this is your matriculation number preceded by a lowercase s (for student), all as one word, e.g. **s1234567**. Staff or visitor usernames take an alternative format based on first initial and surname (e.g. **jbloggs**, or **v1jblogg**; note: usernames are limited to 8 characters, e.g. **isurna99**). All being well you will be logged you will now be logged in to Windows.
- Once logged in you can check that you all passwords are synchronised by checking that you can also log in to the MyEd web portal. Open any web browser from the Start menu () and go to the following address: [www.myed.ed.ac.uk](http://www.myed.ed.ac.uk). Click on **Login to MyEd**, you will be taken to the *Your University Login* page and asked to enter your details. From the MyEd portal you can access various services such as **Office 365 Email**, **Apps**, and **OneDrive**, the **Learn** virtual learning environment, plus much useful information relating to your study/research. We will return to look at MyEd a little later after checking some key settings.

- (→) **If you have not yet set up your University login (i.e. password and secrets):** If you have **not** already set your University login details then you can click on the **Setup your University Login** link directly below the **Login to MyEd** button which will prompt for your **University Username (UUN)** and initial temporary password sent to you by email. This may require a mobile device, or dedicated kiosk where available in certain labs. IS web pages can also advise on setting up wifi connections to Edinburgh’s eduroam service. See the information at [www.ed.ac.uk/students/new-students/ready-university/top-6-tasks](http://www.ed.ac.uk/students/new-students/ready-university/top-6-tasks) and [www.ed.ac.uk/students/new-students](http://www.ed.ac.uk/students/new-students) including **IT Support** information.
- (→) Once registered you should be able to login in to MyEd using your username, and your *newly set* password which you should use from now on.

## 2 Finding Network Drives and your GeoSciences Home Directory

### 2.1 Network Drives: Home Dir; University Drive; Mapping On or Off-Site

- On a lab (or virtual/remote) Windows system there will be a number of network drives; actually 'shared' folders which are configured (i.e. *mapped*) to appear in Windows' File Explorer as virtual 'drives'. File Explorer can be found via **Start ► Windows System ► File Explorer**.  You can also manually map further drive letters to any shared network resources to which you require access.
- **Note:** On some virtual/cloud Windows systems access to File Explorer or a similar file manager program may be limited, however there should always be two main drives, called **M:** and **U:**, automatically available to you within applications or programs in any University Windows environment. **We will check these shortly.**
- **M:** is your default University-provided network storage location, or home directory, which is a location on a Linux (or other) server (for GeoSciences students this is on a School server) but mapped/assigned in Windows to the drive letter M: Critically this storage location is regularly backed up – something to consider carefully during studies or research! Research students also have access to storage/workspace on the University Datastore which is usually mapped to **R:** in Windows.
- **U:** is the universally-provided University 'drive' which offers access to much useful information, e.g. cloud printer drivers, or to School specific info, teaching data or even software – e.g. in **U:\SCE\GEOS** (Note: SCE = Science and Engineering).
- **Off-site working? Connecting from home/elsewhere? Mapping Drives...**  
When working remotely you will need to take some extra steps to access these folders. You can however access them from various operating system platforms including both Windows and Mac. In Windows specifically, you can map these (or other) network folders/directories yourself to one of various Windows drive letters. Historically, C: is used for the local hard disk, D: for a second disk or e.g. a DVD drive and network locations can start using drive letters beyond this, e.g. G: – more later, and M:, U: You should use the same drive letters as in a University lab setting as far as possible – doing so will only help programs run more smoothly!
- Off-site working requires you to set up something called a VPN connection on your device such that you are then able to access these network locations off-campus.



**But what if I just want to upload a file to/download from my homedir?  
Or, I am unable to connect to VPN connections... Answer: SFTP**

It is possible to connect to the GeoSciences network using an **SFTP** client such as the one provided by **MobaXTerm** for Windows users, or that built into Macs. **Cyberduck** is another option for Mac (and Windows) users. We'll not look at this today but Windows users may want to install **MobaXTerm** as used in UoE.

## 2.2 Checking your GeoSciences Computing Account; Mapping Netdata

→ As well as your centrally provided (University-wide) computing facilities (namely your login access to lab PCs and MyEd etc.), as a GeoSciences student you will also be provided with a *local* (“geos”) *computing account*. This provides access to School-based services such as your GeoSciences home directory (mapped to M: as described above), local shared teaching resource network drives, and also the GeoSciences Linux server cluster (a group of specialist Linux based servers for scientific computing and software development). We will now check that this has been set correctly, and at the same time introduce one key GeoSciences teaching resource – **netdata**.

→ Take a look again at the **File Explorer** window. You might like to note which network drives you have (and note which network locations they point to). You can record these in a physical notebook, digitally in a text file (you can use Notepad, WordPad, Word or a professional grade text editor), or use the space below if you have printed this document (see the section on printing later; you should have access to the **edprintpull** printer service and can print for free within the School using your student card to access the printer devices).

→ Recording these network drives allows us to check that your account is correctly set-up and ready. If you have no network drives, please let us know!

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→ Should your M: drive **not** point to your **GeoSciences** home directory, you can use a *script* shown below to either map this to M: – i.e. if for any reason your M: drive is simply not mapped at all (i.e. it is blank or does not appear), or failing that *if your M: is already occupied*, as **T:**. Your **M:** drive may already be occupied by non-Geosciences drives if you were previously a student here\*, or are a new taught student whose drive mapping has not yet been changed to Geosciences. If both M: and T: are already occupied, confused or receive error messages please ask! \*If you require access to previous UoE storage please contact IT for advice.

→ The script to be run is accessed via the **U: (University)** drive and can be found at: **U:\SCE\GEOS\drive\_mapping\Access Netdata**.

### 2.3 Netdata: GeoSciences Shared Teaching Resource (Practical Data)

- Running this script also adds the **netdata** teaching drive to letter **G:**. This read-only 'drive' is used to provide data for a variety of taught GeoSciences courses, including several involving GIS, Remote Sensing or Science. Due to competition for drives you must run the script each time you login, should you require netdata.
- (→) To avoid having to find this script each time you login, you may find it useful to **right-click** on the script icon then **Send to Desktop (create shortcut)** to place a shortcut to it on your *desktop*. You should then **right-click** on the new shortcut and then **Pin to Taskbar** where it will then be accessible quickly regardless of which program is being used or how many windows are currently open.
- **Note:** After locating your **GeoSciences** home directory, you should create a folder called **PCInduction** there where you can store any work created today – you will use this if attending the UNIX/Linux sessions tomorrow!



**Note:** If you experience any problems running a script such as the **Access Netdata** script above, or such a script is not available, you can easily map network drives manually. To learn how to do this see the relevant **Appendix A** at the end of this document. (**Note:** The **Access Netdata** script should work from all University labs so if you had any problems with this above then please ask for help now!!).

### 2.4 Quick write test: Create a **PCInduction** folder in your geos home dir

- Assuming you have successfully mapped your Geos home dir you should test that you can save successfully to this by creating a new **PCInduction** folder in which to save work from today. Those attending the Linux sessions will see this folder later!
- **Note:** Whenever you map a new network drive that you should have write access to it is always advisable to check before you actually need to save to it!

### 2.5 University Storage Summary

- **Conventional Backed-Up Network Spaces – M:, R:**  
These spaces are backed up, and lie directly *on-network* so interface well with scientific, programming, or other cross-network or intensive applications.
  - **Scratch Temp Work Space (scratch via M: - may also now be mapped as P:)**  
Should you run out of space, each M: drive also contains a link (like a folder) to a temporary workspace called *scratch*. Be aware however that this is not backed up.
  - **OneDrive (Backed-Up) – Storage and Sharing only**  
1Tb of space provided as part of Office365. Great for storage and sharing files with others but no use for intensive or cross-network (e.g. scientific) applications.
- (→) More at [www.geos.ed.ac.uk/it](http://www.geos.ed.ac.uk/it) – see the Getting Started (Induction) link:

### 3 University Email (Webmail via Browser, or Email Client/Apps)

#### 3.1 Email: Primary Communication Method; Mass Broadcast “Howto”

- **Email: Primary Communication Tool: Check Regularly**  
For now email is still the primary means by which staff and/or students will communicate. It is important therefore that you check email regularly. Your email address is based on your **University User Name (UUN)** and for students is of the form **UUN@sms.ed.ac.uk**. For staff the form is usually **UUN@ed.ac.uk**.
- Email is provided at the University by way of Microsoft Office365’s **Outlook** which also provides access to a Calendar, Office Suite Apps, and OneDrive for cross cloud/PC/home storage plus file-sharing. Other groupwork tools are also included. Access is available through MyEd or directly at [www.office365.ed.ac.uk](http://www.office365.ed.ac.uk).
- **Group collaboration – Other Communication Tools for groupwork**  
Group work can be aided by email lists but data legislation friendly services include **Course Discussion Boards** on the Learn Virtual Learning Environment (VLE), and **Microsoft Teams**. The advantages of these systems over other external platforms are tight integration within the wider UoE online ecosystem and all data stored ‘in-house’ reducing data storage or privacy concerns. **Note: MS Teams offers a more secure means to transfer sensitive information in preference to email.**
- **Using Email Lists – Be afraid, be very afraid! (Actually just be very careful!!)**  
Using email lists can be a very effective way at broadcasting information to a wide audience, however often the audience can be too wide! You should take steps to ensure that your message is relevant to all (or as many as possible) members of the list. Alternatively is there is a different or smaller group list you can target?
- **Use Bcc!! (No reply-alls! – watch with Outlook!!) or use GeoSciences’ Mailout**  
Sometimes you might wish to let people use **Reply All** with emails, but it can be annoying with some users pursuing an agenda only of interest to a few members of/on’ the list. **Also watch out for Office365’s Outlook reply option defaulting to Reply All when you select a mail message!!** Either change the drop-down option to **Reply** instead of **Reply All** or **only reply from within the email’s individual pane**. New users often use **Reply All** without realising they are replying to the list rather than an individual! To avoid this risk when using mailing lists, you can use the Bcc field in your email client. Bcc stands for Blind Carbon Copy. You can either simply leave the **To:** field blank (this will show in recipient’s emails as *Undisclosed recipients*) or simply put yourself as the main (sole **To:**) recipient.
- An alternative to mailing lists allowing you to choose all manner of groups and cohorts (staff categories, undergraduate/postgraduate year groups, degree programmes or other categories) is the GeoSciences **Mailout** facility. This can be found on (or via) the IT web pages at [www.geos.ed.ac.uk/it](http://www.geos.ed.ac.uk/it). You can also add extra or external email addresses in the same manner of using Bcc above. Usefully you can also *exclude* people (more positive than it sounds!) – useful for arranging welcome or leaving celebrations for friends, colleagues or other students.

### 3.2 Office 365: Outlook Email, Calendar, OneDrive, More...

- All staff and students use the University's customised Office 365 system for email and calendar functions. These are accessed through a web interface, though email clients can be used, with which you may find it easier to read/search emails!
- A good introduction to all collaboration tools available within the University can be found on the Information Services web pages at:  
[www.ed.ac.uk/information-services/computing/comms-and-collab](http://www.ed.ac.uk/information-services/computing/comms-and-collab)  
and on Office365 specifically at:  
[www.ed.ac.uk/information-services/computing/comms-and-collab/office365](http://www.ed.ac.uk/information-services/computing/comms-and-collab/office365)
- (!→) You can also set up Multi-Factor Authentication (e.g. receiving a code by SMS text to your phone or mobile device) from the first link above. Highly recommended!
- Your account should be automatically activated and you can log-in from MyEd or from [www.office365.ed.ac.uk](http://www.office365.ed.ac.uk). The latter link can also be used to re-activate your account should the automatic activation fail for any reason.

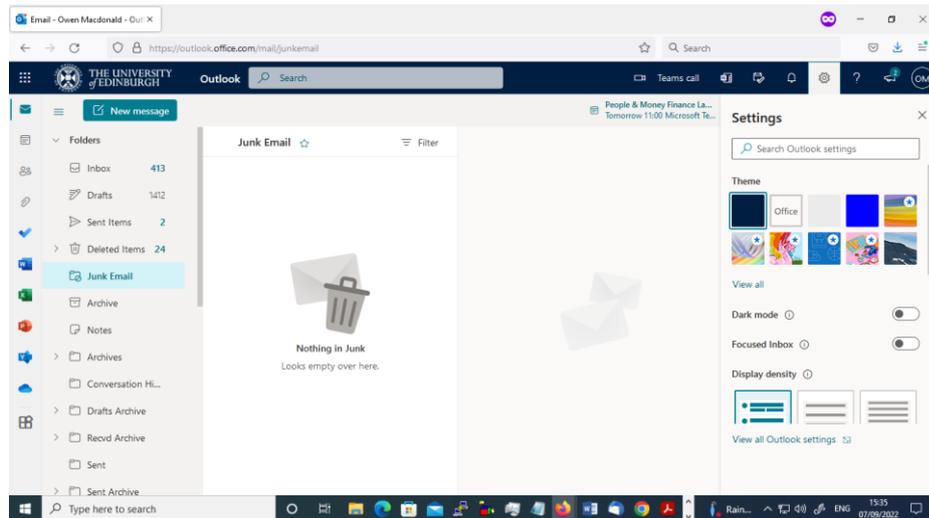


#### Office365: Office Apps, OneDrive Storage, SharePoint File Sharing

Office365 offers a number of modern advantages over traditional systems such as being able to easily connect from phones, tablets or mobile devices and also to work in the *Cloud*. Integrated features include various office applications (*Word, Excel, PowerPoint, Outlook*, etc. plus downloadable app versions of these). Collaborative work can be undertaken with Teams where required, but possibly of most use in a more online world is **OneDrive** which provides you with a very handy 1 Terabyte (Tb) of storage, plus basic file sharing options which can be further extended with sophisticated file access controls via **SharePoint**. While **OneDrive** is very handy for typed/office documents, e.g. essays, and for extra backup/storage, the downside is that direct connectivity with computer file systems (e.g. DOS/Linux command line environments often used in scientific, web server and open source contexts), or even with conventional non-Microsoft desktop programs, can be mixed at best! **Note:** Research students are also given space on the Edinburgh **Datastore** (their **R:** drive) which can be accessed directly across networks and thus can be used to run e.g. computer code.

Again, full information on Office365 (and a multitude of other tools and apps) is available on the University Information Services web pages, e.g.:  
[www.ed.ac.uk/information-services/computing/comms-and-collab/office365](http://www.ed.ac.uk/information-services/computing/comms-and-collab/office365)

### 3.3 Office365: Adjusting Key Outlook Email Settings (Insider Tips!)



- Outlook (Office365 email) offers a number of features worth noting here. You can automatically search for other users simply by typing the start of their name!
- Look out for any **Junk Email** or **SPAM\*** folders. Keep an eye out for any 'intelligent' tools from Microsoft e.g. **Clutter** in case they are overly active in filtering out emails from your inbox!
- You can adjust all settings by clicking the cogwheel icon to the top-right then clicking on the bottom link **View all Outlook settings**. Arguably the most useful other feature is **Automatic Replies** to offer an automated response during vacation times or whenever you are away from University for an extended period. Usefully you can specify different replies to be sent to emails from within or outside the University as appropriate.
- You can also access other settings worth considering or knowing about. These include **Forwarding** and **Sweep** rules which allow you to send certain types of mail to a particular destination or to automate filing of messages.



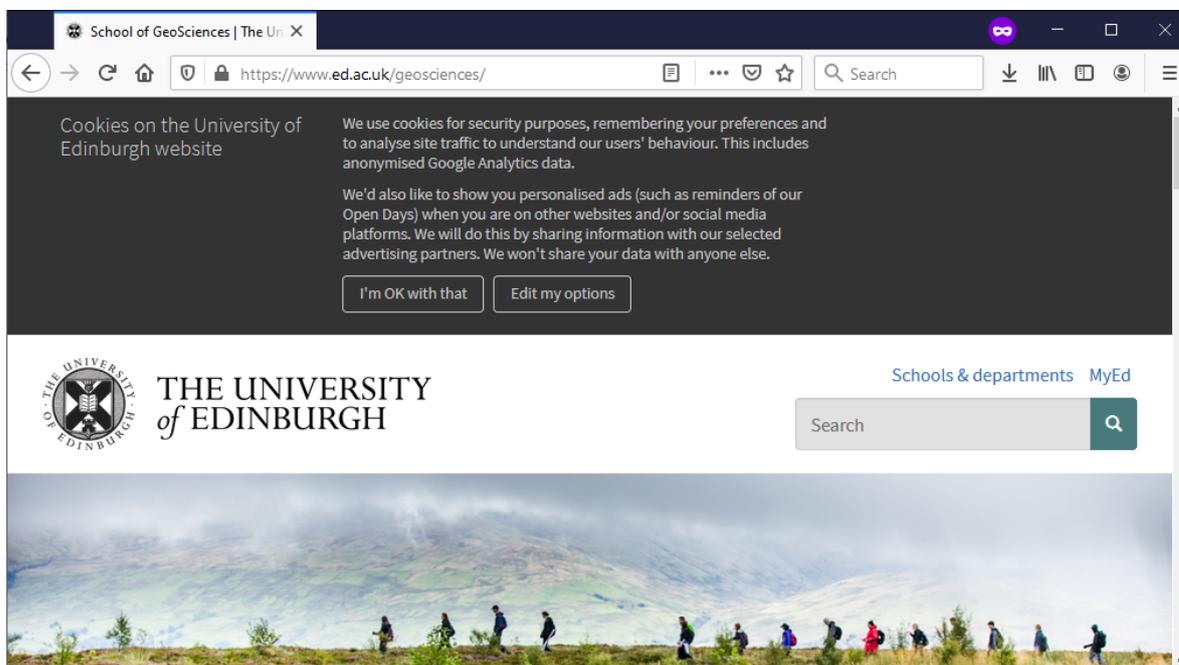
#### **Avoiding SPAM; Digital Literacy; Information Security; Training Available!**

Digital literacy, digital footprints, and information security are hot topics, often being compulsory training for many! Some steps can be taken to minimise the chance of being targeted, hacked, or having your email address harvested for future targeting. **Note:** You do not need to be hacked – email can often be sent supposedly in the name of a legitimate user by faking (or '*spoofing*') that person's email address. You should thus consider changing all online passwords often (email/online service providers do have occasional data breaches), try not to use the same password on multiple sites, employ two-step or multi-factor authentication (e.g. receiving a code by text message), and also consider how openly you advertise your email address (you can also use AT in text which will be read by humans, e.g. on web pages, instead of the @ symbol). SPAM however is inevitable so try to maintain some perspective!

## 4 Accessing the School Website (A Guide to Key Pages/Info Sources)

### 4.1 Introduction and Student Information

→ 'Point' your web browser to the School website via [www.geos.ed.ac.uk](http://www.geos.ed.ac.uk).



The first thing you will notice (other than the big Cookies notice!) is that the URL will change (*redirect*) to:

[www.ed.ac.uk/geosciences/](http://www.ed.ac.uk/geosciences/).

This is in keeping with the standard University of Edinburgh website content management system (CMS) structure, **BUT ALSO**:

→ **Memorise** the shorter URL if possible:

[www.geos.ed.ac.uk](http://www.geos.ed.ac.uk)

Doing so will pay dividends. It forms the basis (and *base URL*) of the GeoSciences file-based web server, useful for various purposes including 'clean' rapid web development, e.g. see [www.geos.ed.ac.uk/~gisteac/wkzero](http://www.geos.ed.ac.uk/~gisteac/wkzero) for copies of these notes. File directories (folders) on the web server can be left *browsable*, or have their contents hidden by using an *index.html* landing page as we've done here. (The above URL automatically returns the page *index.html* if it exists in the *wkzero* folder as if we had typed: [www.geos.ed.ac.uk/~gisteac/wkzero/index.html](http://www.geos.ed.ac.uk/~gisteac/wkzero/index.html).)

These are provided by user **gisteac** (**note: no h!**), the basic web server providing a quick and easy way of distributing files via the web without having to inefficiently email large files. **Note:** Unlike SharePoint (which does offer far more control), the files are quickly available *globally* to non UoE participants by virtue of being on the (world-wide) web. The web server also allows web *scripts* (i.e. code) to be run, either in teaching contexts or for research collaboration. You can learn more at: <https://blogs.ed.ac.uk/geosciences-it-help/personal-web-space/>.

- Return now to the main **GeoSciences** website, via [www.geos.ed.ac.uk](http://www.geos.ed.ac.uk) or directly at the officially published full address [www.ed.ac.uk/geosciences](http://www.ed.ac.uk/geosciences).
- Of most immediate relevance will be the **Staff** and **Student** login links at the bottom of the page or, easier to find, via the **For current students and staff** link at the bottom of the left-hand navigation menu. The layout of such pages is prone to change with time, however relevant items should continue to be obviously named!
- For now follow (click on) the **For current students and staff** link from the left-hand menu. The Student login has some targeted information including a link to the relevant part of the GeoSciences (staff) intranet for PGR students. The Staff login will take you to the Staff intranet.
- Currently, access to the Staff pages is indeed restricted to staff though some of the information contained there may be of use or relevance to students, particularly those also working within the School, e.g. as tutors or demonstrators. We'll take a look at some particularly useful information next.

## 4.2 Tutoring & Demonstrating (PGR Students)

- Information for PGR students interested in applying to be demonstrators and/or tutors on taught courses during their time here can be found linked specifically from the GeoSciences intranet under **Working in the School**.
- **Note:** These positions are offered to PGR students as part of their training however the School may occasionally employ PGT students where specialist skills/experience are required or where courses fail to attract sufficient demonstrators for whatever reason. The process to apply (and relevant links) will then be advertised widely.
- The full direct link however is:  
  
[www.ed.ac.uk/geosciences/intranet/hr/tutoring](http://www.ed.ac.uk/geosciences/intranet/hr/tutoring)
- This includes all information on how to find out about vacancies, how to apply and information on pay and support resources/admin provided by the School.

### 4.3 Computing Information – Geos IT Web Pages; Local IT Support

- Also on the intranet pages is the IT Hub for all manner of locally based IT and computing advice. For staff and postgraduates with more involved research or specialist computing requirements GeoSciences IT Help will in general be your first port of call and in most cases the team to resolve your issue.
- The GeoSciences IT pages can be reached at:

[www.geos.ed.ac.uk/it](http://www.geos.ed.ac.uk/it)

which will automatically redirect to the relevant part of the staff intranet.

- From here you are able to browse IT's help pages on the University Academic blogging service [blogs.ed.ac.uk](http://blogs.ed.ac.uk). The full help documentation can be found directly at: <https://blogs.ed.ac.uk/geosciences-it-help/>.

Information includes general guidance on computing matters including storing data, keeping virus free, printing etc. as well as information on more specific tasks be it using particular software (office/admin or scientific), or e.g. web scripting.

- (→) In addition, should you need help more centrally (e.g. if working in a centrally managed non-School lab or library) or in an emergency you can use the Information Services Helpline [IS.Helpline@ed.ac.uk](mailto:IS.Helpline@ed.ac.uk), or try the **EdHelp** facility linked from the GeoSciences or UoE website, or directly at [www.ed.ac.uk/edhelp](http://www.ed.ac.uk/edhelp).

### 4.4 News, Events, Seminars

- Don't forget the **News** and **Events** sections of the main School website [www.ed.ac.uk/geosciences/news](http://www.ed.ac.uk/geosciences/news) and [www.ed.ac.uk/geosciences/events](http://www.ed.ac.uk/geosciences/events) listing various events and *most* research seminars within the school. As well as official research group seminars the School has various other student or staff-student run talk series and its very own *Professional Seminar Series* the Edinburgh Earth Observatory Seminar Series which aims to build links between academia, industry and government – also conveniently available via [www.eeo.ed.ac.uk/seminars](http://www.eeo.ed.ac.uk/seminars).

## 5 A closer look at MyEd (including P&M and the Learn VLE)

### 5.1 The MyEd Page; People & Money (P&M); Learn VLE

We tested that you could log in to MyEd at the start of the session. Let's return to it and point out some key features to look for before looking at one particularly useful and for many, essential, tool – the **Learn** Virtual Learning Environment (VLE).

- Return to MyEd in your web browser or if necessary open a new browser tab and go to the site [www.myed.ed.ac.uk](http://www.myed.ed.ac.uk). Your University Login/EASE password provides you with access. Further info is available at: [www.ed.ac.uk/information-services/computing/comms-and-collab/myed-portal](http://www.ed.ac.uk/information-services/computing/comms-and-collab/myed-portal)
- MyEd is the gateway to most web-based services within the University. Some services are simply linked while others function within the MyEd interface as channels – some a combination of both. You can use services familiar to you, but you are also able to discover a range of other useful services held in the one place. Importantly, MyEd is also accessible from anywhere in the world – very useful!
- You should take 5-10 minutes to briefly review MyEd now so as to become familiar with the layout and functionality. The MyEd interface consists of a series of drop-down menus for a number of themes or topics, with sub-groups underneath these. You should check that your own personal information is held correctly under **My Information ► People & Money** – usually via the **Company Single Sign-On** link. It is recommended you take a moment to look at P&M – you will need this should you wish to become a tutor or demonstrator or should you have any expenses.
- Now find the **Learn** channel (on the main MyEd homepage for students, or under the *Studies* menu, or under *Teaching and Research* for staff). We will look at this next; key functionality for taught students *and* for anyone looking to be a tutor or demonstrator as this is the University's primary online learning platform with numerous e-learning tools linked to it, e.g. lecture capture, media libraries etc.
- You are very likely a member of at least one course on Learn already, if not you can look out for any *Self-Enrol* courses available (more later). If enrolled, try clicking on a course here to open the course in a new browser tab or window.
- As well as being a *Student* in some courses, you may also undertake tutoring or demonstrating roles in some courses and may have e.g. *Teaching Assistant* status on Learn for these courses.
- It is also possible to be added to Learn courses where you are not formally assessed (i.e. 'sitting-in'). You may need to ask the **Course Organiser**, or **Administrator**, most likely a relevant **MSc Programme Administrator**, to add you as a special '**Class Only**' member in such cases.

## 5.2 Exploring the main Learn Page

- To open Learn click on the **launch button** in the MyEd Learn channel. 
- You will normally be taken to the *Courses* tab of *Learn Ultra* by default. Should you have lots of courses you can use the central drop-down to select between e.g. *Current* [this year's] *Courses*, *Ongoing* (permanently, multiple year) *Courses*, or between whole year courses or those running in only one semester/teaching block. You can also page between these sub-groups by clicking the forward or back (left or right) arrows as required.
- For some, e.g. students taking some courses and assisting on others, the lower down **Filter** drop-down might be of even more use. Here you can select courses you *teach*, *take*, *support* or have *completed* etc.
- You can see more general Learn information either from the **menu options** on the left or from the **Course Catalogue** button to the very top-right. Look out for a wide range of *Self Enrol* short courses or training modules (note however that many of these are now available instead through the new *People & Money* system).
- Finally, look again at a specific course if you have one available to explore.
- Notice the range of tabs across the top of the course layout. Announcements and Messages may be used to communicate with the course cohort. Gradebook and Discussions may prove useful as might other tabs such as Groups or Calendar. By far the most commonly used tab will be Content.
- Content is arranged as a series from top to bottom and may take the form of individual files or web links, or folders grouping other items together. Note that with Learn Ultra folders can only be nested (placed within another folder) 1-level deep. This should help ensure a well-organised course layout. Some courses may require you to work your way through a content item before the next is revealed.
- Finally, as well as the top menu bar, do notice the items down the left-hand side including a list of course staff as well as a set of useful tools including integrated tools for online learning/collaboration (Collaborate/Teams).



### Updating Learn Content (Info for Teaching Assistants/Course Tutors):

If you are tasked with preparing Learn content, e.g. as a course tutor, bear in mind that the *Content* displayed is a front-end just like a normal website, with the actual files usually stored within a course-specific *Content Collection* – a set of folders behind the scenes. **Course content is a front-end web page to an underlying set of file folders (like a local computer or network file system).**

**Key Tip!** If you simply need to update content then load the file to the **Content Collection** (or storage location within Learn) and select the overwrite option, rather than have to delete and re-create or re-organise the entire front-end.

## 6 Printing: Hardcopy Paper or to PDF [FOR REFERENCE/TEST ONLY]

### 6.1 EdPrint/EdPrintPull Cloud Printing (REF/TEST IF DESIRED)

University cloud printing is used within the School however printing is currently free by way of a virtual quota for postgrads/staff. Centrally provided printers (outside of the School) do charge however. The *EdPrint* system is explained in full at: [www.ed.ac.uk/information-services/computing/desktop-personal/edprint](http://www.ed.ac.uk/information-services/computing/desktop-personal/edprint)

The IS web pages include information on printing from personal laptops and other non-University devices, print credit, and a variety of other information. Physical hardcopy printing is achieved at any *EdPrintPull* multi-function printer-copier. Submitted jobs can be printed at any supported device. Jobs are stored on a central server for 24hrs until *printed* at which point they are downloaded – *pulled* – to the local printer. Devices also allow *scan & email* and *photocopying* facilities.

### 6.2 Printing (or Saving) to PDFs; Virtual Printers (REF/TEST)

Often you will need to convert written documents (e.g. Word docs) to a portable document of some type such as (*accessible*) PDF format files. You can often **Save** in **PDF** format (e.g. from Office) however for software that does not offer this facility you will require a *virtual printer* which actually *prints* out to a PDF format file.

There are often several virtual printers available used to create various documents, however PDF is a universal format and is provided by the **Microsoft Print to PDF** (or e.g. **Adobe PDF**) virtual printers shown in the list of printers on most lab PCs.

### 6.3 Preparing Content for Print/Web – Managing Data Volumes (REF)

#### Data/Graphics: Simplification/Reduction, Storage, Web, Data Transfer

Even with large hard disks, powerful processors, fast broadband and generous computer memory (RAM) you should *still* take care to ensure your use of graphics and other data is appropriate to the task being undertaken. This is true for both data and for digital photographs/video/other media. Large images and data will quickly fill a fast, modern, but low capacity, solid state drive (SSD). (See appendix for guidance on working with graphics for research and other outputs.)

Consideration may be required as to the necessary quality (or, more accurately, resolution) of data, photo or video used. In general, whatever the medium, it is best to record at highest quality (space permitting), but a necessary part of the task is to judge at what point it is ok to archive to a final *master* and/or reduce/degrade quality slightly in order to be able to actually share your work with others.

Simplification, or reduction of data or image detail, may often be required either for acceptable computation time, or for display on web pages, data transfer (particularly if working in remote field locations with poor internet connectivity), or even for hardcopy print if rich content proves slow or resource-consuming.

## 6.4 Text Editors: Data Science; Text Formats; Code Listings (REF)

### Use a proper Editor! E.g. Notepad++, PSPad, TextPad, VS Code (IDE)

For those who require to work with code listings or other computer-generated long textual content – use a proper *Text Editor*. You can maintain code indentation and use *syntax highlighting* which will colour your code appropriately depending on which choice of programming language you are using. Proper editors also allow conversion between Windows/Mac/UNIX text formats (i.e. *end-of-line* markers).

Mac users should be well catered for in this regard given the UNIX-like nature of modern Macs underneath the user-friendly interface.

Windows users may be tempted by *Notepad* or *Wordpad*. Don't be! Notepad can be handy for very simple, Windows only, notes but is best forgotten in favour of editors such as: **Notepad++**, **PSPad**, **TextPad** or a fuller Integrated Development Environment provided by the likes of **VSCode**.

**Note:** Some older editors (e.g. **Emacs**) may also be able to run in either text-only or graphical forms *and* on multiple operating systems (e.g. Windows and Linux) so may be worth considering if you plan to do code development across platforms.

### Incorporating Text in Reports; Code Listings

You can include text files/data in reports either by inserting a text file into e.g. a Word document (**Insert ► Text ► Object ► Text From File**) or by copy and paste. Note that *code listings* (or even some *data tables*) are best shown in a *fixed-width (non-proportional)* font e.g. **courier** to preserve alignment of indented text blocks, e.g. in Python in particular which relies on indenting to structure, and for the computer to understand, the code.

## 7 Obtaining IT Help –A Reminder

We recommend you become familiar with the various sources of help information:

- General student help from the University website and **MyEd** portal.
- University Information Services web pages via: [www.is.ed.ac.uk](http://www.is.ed.ac.uk)  
Including extensive IT Help:  
[www.ed.ac.uk/information-services/help-consultancy/it-help](http://www.ed.ac.uk/information-services/help-consultancy/it-help)
- The **EdHelp** facility for students and alumni: [www.ed.ac.uk/edhelp](http://www.ed.ac.uk/edhelp)
- For staff (or should the above fail!) there is the IS Helpline:  
[www.ed.ac.uk/information-services/help-consultancy/contact-helpline](http://www.ed.ac.uk/information-services/help-consultancy/contact-helpline)

Locally, School-specific help is available from the IT team at:

- The GeoSciences IT help web pages via: [www.geos.ed.ac.uk/it/](http://www.geos.ed.ac.uk/it/)

You can email the GeoSciences IT team via [it.geos@ed.ac.uk](mailto:it.geos@ed.ac.uk). Emailing IT ensures the University's Call Management System is used, and that the person in need of help **owns** the call so is kept informed directly rather than via third parties.

## APPENDIX A: Dealing with Graphics (a basic guide)

You should ensure your use of graphics (and other data) is appropriate to the task being undertaken. **Vector** graphics (e.g. drawings created by **Adobe Illustrator** or **Inkscape**) contain lots of geometric information meaning that these graphics can be scaled up in size without introducing distortion, whereas simpler **bitmap** (sometimes called **raster**) graphics (e.g. **Photoshop**, **Paint**, **GIMP**) simply record the colour of each pixel and thus when scaled up become blocky due to the lack of detailed information at sizes larger than the original. Both types have their uses.

### Graphics for Print; Cropping Images

If preparing images for a high-quality paper publication you may be best advised to opt for vector. If you are taking photos however (bitmap/raster) then you will need to ensure that your image resolution is sufficient (i.e. sufficiently small pixel or cell size) for the image to be blown-up to the intended print size. Note however that print resolution is much higher than screen resolution, therefore images need not be nearly so big for screen display, e.g. when displayed on a web page. With modern cameras, images may well be very large in terms of the number of pixels even for printed documents, and excessive image size will rapidly bloat documents. *This can be critical for research papers or posters submitted online that are subject to a maximum allowed file size.*

You should also ensure that cropped areas of images (particularly in e.g. **MS Office**) are deleted. [**Note:** Once images are resampled or cropped the removed information is *gone* so be sure and keep your originals in case you need them!!]

### Web

For web work, you may wish to reduce image *file* size on web pages so as to avoid lengthy download times (e.g. in areas with poor internet connectivity). You can make links to full resolution versions of images available which the viewer can access if they wish. Rather than simply telling the web browser to scale an image to a particular size, in order to make a material difference you will need to **resample** the image to reduce the amount of information (number of pixels) within it. Note that resizing and resampling are thus different things! A simpler way to remember this is that if you are reducing the size of your image you should resample it afterwards so the number of pixels is not excessive for the image size. You should also explore reducing colour (bit) depth if not needed. A 24-bit image that can hold 16.7 million (i.e.  $2^{24}$ ) colours is excessive for a simple two-tone ( $2^1$ ) map of land vs. sea! Several free graphics programs are available.

## **APPENDIX B: (Net)Working *Outside* GeoSciences (Off-Campus)**

### **B.1 Wifi, SFTP, VPN, Remote/Virtual Desktops, Software Licences**

There are many methods of working with your files at home that are much better than simply copying files to a USB stick, then on to your home computer, then back again next time you are on campus! Here we'll outline these in increasing levels of sophistication, providing links to further help on a particular topic or method. A summary is at: <https://blogs.ed.ac.uk/geosciences-it-help/working-remotely/>. Some of the more sophisticated methods require something called a Virtual Private Network (VPN) connection to be made to the Edinburgh network. Using your own devices on campus will also require you to setup eduroam wifi access in any event.

### **B.2 Wireless Access – Eduroam Wifi (All: While on UoE Estate)**

While you can connect to various wifi providers across the city (secure is best!!) you are best to set-up your device(s) for secure eduroam wifi which you can use across the University estate and including University-related buildings such as the Royal Infirmary etc. You can set this up once and connect anywhere where there is eduroam. Your access is associated with your Edinburgh status however eduroam is a 'pan-academia' service allowing you to connect at other institutions using your Edinburgh credentials.

Locally eduroam also provides an integrated VPN connection so you do not need to use a separate VPN connection. However, if connecting off-campus you *will* need to use a VPN connection (after connecting to whatever wifi network) in order to access many services or to access your network drives remotely. See more at [www.ed.ac.uk/information-services/computing/desktop-personal/wifi-networking](http://www.ed.ac.uk/information-services/computing/desktop-personal/wifi-networking).

You can of course still use a USB stick however a better method if you only require a simple solution is to use a Secure FTP client to transfer files. This can also be useful should the VPN service become oversubscribed or temporarily unavailable.

### **B.3 Secure File Transfer Clients – e.g. MobaXTerm, Cyberduck; “SSH” (For those with basic file up/download needs or with VPN issues)**

**SFTP – Secure File Transfer** (Usually through a graphical client program)  
For simple file transfer, allowing you to work on a file off-site entirely on your own machine, you can use an **SFTP** client such as that provided by MobaXTerm (as on Windows lab PCs) or Cyberduck (Windows and Mac) – Macs may have a built-in client (Windows machines have a basic built-in command line SFTP client only). Invaluable in the event of slow or poor/unstable VPN connections.

**SSH** (Simple command line access to remote servers; optional X server graphics)  
Linux users (and others) can use basic **Secure Shell (SSH)** command line access to the GeoSciences Linux server cluster (you are provided with access to all your files in your GeoSciences home directory – what M: is mapped to in Windows).

## **B.4 Virtual Private Network (VPN): Joining the Ed(inburgh) Network (To map network folders on your own PC, Mac, Linux box or laptop)**

To more easily and readily access your files while working *off-site*, you can set-up on your own computer the various network locations normally available to you when working *on-site* (e.g. in a lab).

On a Windows-based computer you can (and normally should) map (or set\*) these to the same drive letter as they would be on-campus (e.g. **M:** to your GeoSciences or other home directory, **U:** for the generic University drive available in computer labs\*\*, or **G:** for the netdata teaching resource in GeoSciences).

Using the same drive letter should help ensure that any software references to stored data or files will match between a University computer and your own. Such software is of course likely to be Windows-specific thus you might need emulation or virtualisation software to create a mini Windows system on a non-Windows machine (e.g. Mac) to run Windows-only software such as ESRI's ArcGIS.

To be able to map your network drives *and* access some other University Services from your own computer you will need to use a **VPN** (connection). This means that your computer will be treated as if it were physically connected to the university network, even when working from home or a remote location.

Remember: You may not require a VPN if connected to eduroam wifi, but otherwise you will need to make the VPN connection first before mapping the drive or running whichever service you require.

If you have problems sustaining a stable VPN connection then note that it is possible to make a VPN connection, make a quick local copy of a file and then simply disconnect the VPN if desired, and/or re-connect the VPN to upload the edited file. (Or you can use SFTP, but a proper VPN-based connection is best.)

(\***Note:** it is possible to make a local copy of the data and use the Windows command prompt **subst** command to simulate a network drive – useful should the VPN suffer downtime or should e.g. patchy wifi cause the connection to keep dropping. E.g. **Right-click on Start > Run >** then type **subst G: C:\workspace** where **C:\workspace** contains a folder **my\_course** just like the hypothetical(!) folder **my\_course** on **netdata** – this assumes you are free to copy the data of course! Your course instructor will advise!)

(\*\*The U: drive is actually a *pseudo-drive* containing merely a set of links to various departmental shared folders held on the Edinburgh DataStore. This is intended to work in University labs but is not guaranteed outwith these. Should this fail to map for whatever reason it is possible to map the individual departmental network location instead though note that your U: file path will no longer match, see below.)

## B.5 Registering for and Setting Up the VPN

The University VPN service requires you to register (i.e. set a special *VPN password* for your usual UUN username ID). IS also recommend specific VPN *client* software called **FortiClient**. The process is detailed on the University web pages and follows these steps:

1. Register for the VPN (**Requires a new and *different password*** to the one you login to MyEd with – the VPN allows direct access to UoE *file systems!*)  
[www.ed.ac.uk/information-services/computing/desktop-personal/vpn/vpn-service-registration](http://www.ed.ac.uk/information-services/computing/desktop-personal/vpn/vpn-service-registration)
2. Install the FortiClient Software and configure it for use:  
There are different instructions for Windows, Mac, iOS and Android  
[www.ed.ac.uk/information-services/computing/desktop-personal/vpn/vpn-service-using](http://www.ed.ac.uk/information-services/computing/desktop-personal/vpn/vpn-service-using)

This page also contains some brief info for connecting via VPN software already built into some operating systems.

## B.6 Adding Network Folders; Mapping Network Drives (Windows)

One of the easiest ways to access all the files you will need for coursework and/or research is to connect network folders to your computer, allowing you to open files just as if they were stored locally on your machine. To be able to do this you will first need to set up the VPN as detailed in the section above.

While a strong and stable internet connection (perhaps wired Ethernet rather than wireless?) will help with reading and writing large files, or working with big datasets, doing this may be slow depending on your connection, thus you can also copy the files to a location local to the machine you are working on at home/remotely and copy the file back once finished. For general e.g. Word document editing, working over the VPN is usually fine though you may wish to work on a local copy in the event of repeated signal drop-out. Be sure however to save back on the Edinburgh network to a regularly *backed-up* location! (**Note:** For documents and *working on your own laptop* OneDrive may be worth considering however it tends not to work so well with all software, e.g. some scientific or mapping software e.g. ArcGIS.)

For most taught students there are typically up to three main network folders to connect that will be needed for data access or storage for coursework. Research students also have a space on the Edinburgh Datastore. We will outline the steps involved for both i) Windows users and ii) Mac users. More, and regularly updated, information however is available on the GeoSciences IT web pages.

<https://blogs.ed.ac.uk/geosciences-it-help/data-storage/personal-storage/>

## i) Mapping Drives (connecting network folders) – Windows

In a Windows environment the locations below should be mapped as required to the **G:**, **M:**, **P:**, (**R:** – note: may be PGR only) drives, and to the **U:** drive where possible, as this is how they will be referred to in course or other University materials, or occasionally in software data files:

**Netdata:** this should be mapped to your **G:** Drive

**Home dir:** this should be mapped to your **M:** Drive

School **Scratch** space: this should be mapped to your P: drive

**Datastore [PGR only]:** this should be mapped to your **R:** Drive

**University:** this should be mapped to your **U:** Drive

### Steps to take/How-to (Windows 10):

1. Connect to the VPN (**using your VPN specific password**).
2. Open a **File Explorer** window then click on **This PC** in the list on the left.
3. Now select the **Computer** menu from across the top of the window.
4. Click the **Map Network Drive** button (or **Map Network Drive** from the drop-down menu immediately below the button)
5. A new window will open; select the **drive letter** you want to map from the dropdown list.
6. Select the drive letter required and enter the following information into the **Folder** box for the relevant folder.

	G:	\\groups.geos.ed.ac.uk\netdata
	M:	\\students.geos.ed.ac.uk\ <i>&lt;your UUN, e.g. s1234567&gt;</i>
	P:	\\students.geos.ed.ac.uk\ <i>&lt;your UUN&gt;</i> \scratch
[PGR Only?]	R:	\\csce.datastore.ed.ac.uk\csce\geos\users\ <i>&lt;your UUN&gt;</i>
	U:*	\\ed.ac.uk\dst\shared

**\*Note:** The **U:** drive actually contains *shortcuts* to real *DataStore* locations for each School within the University. In the event of problems the relevant full address can be used `\\csce.datastore.ed.ac.uk\csce\geos\groups\geos`, but shortcut form will match that used in labs. (**Note:** The lab U: shortcut is only meant for on-site work.)

7. Check the box to **Reconnect at sign in**. (**Note:** You will need to be already connected to the VPN for the drive reconnection to work in *File Explorer*).
8. Check the box to **Connect using different credentials**. (If you don't do this it will try to sign in with the account you logged in to your own personal or home computer, which won't work, rather than your Edinburgh account)
9. Click **Finish**.
10. You will now be prompted to login, use your UUN followed by **.ed.ac.uk**, e.g. **s1234567@ed.ac.uk**. In the event of difficulties try **ED\s1234567** instead. The password here should be your usual Edinburgh password as *synced* when you set your University login – **Note:** This is **not** your VPN password!

***You will have any mapped drives ready to use on your computer as long as you remain connected to the VPN. You will need to reconnect to the VPN upon restarting/rebooting your computer before restoring drive connections.***

**Problems? If so, let's fix them!**

Upon first arriving at the University it can be tricky to distinguish problems due to the VPN service from those due to not having the correct GeoSciences computing account (e.g. M: drive) yet set up, but a little perseverance now will set you up for the rest of the year and beyond. If you are attending these sessions in person much can be checked and verified however you can also problem-solve remotely.

In Windows, you may occasionally receive error messages such as “there are currently no logon servers available to service the logon request” or messages to the effect of *there is already a connection to a particular server using the same username* or similar. This is basically a quirk of Windows and the solution is to disconnect existing connections (**right-click** on them then ► **Disconnect**) and re-make the connections required.

If you are only able to access the universal University U: drive, then your GeoSciences account may not yet have been processed (e.g. if you have only recently registered or matriculated). Equally your access may be entirely limited if not yet properly enrolled. Remember that if you have problems with the U: drive you can attempt to reach the actual locations held on the U: drive when mapping manually. You may like to check with IT if you believe you should be fully registered by now (e.g. you registered more than 3 days ago).

**ii) Connect to Server (connecting network folders) – Apple Mac**

To add network folders on a Mac use the following instructions:

1. Connect to the VPN (**using your VPN specific password**).
2. Switch to the **Finder** (e.g. click anywhere on the desktop)
3. Click on **Go** in the menu bar then **Connect to Server**
4. Enter the following as the server address for the relevant drive:
  - smb://groups.geos.ed.ac.uk/netdata**
  - smb://students.geos.ed.ac.uk/<your UUN, e.g. s1234567>**
  - smb://csce.datastore.ed.ac.uk/csce/geos/users/<your UUN>**
  - smb://ed.ac.uk/dst/shared** (Again in the event of difficulties, you can use the full address: **smb://csce.datastore.ed.ac.uk/csce/geos/groups/geos**)
5. Authenticate using your UUN followed by **.ed.ac.uk**, e.g. **s1234567@ed.ac.uk** [Try the form **ED\s1234567** in the event of difficulties!]

**Problems? Hopefully not, but if so...**

Check if you can reach all drives (i.e. geos drives as well as the central University drive). If you are only able to access the universal University drive, then your GeoSciences account may not yet have been processed (e.g. if you have only recently registered or matriculated). Equally your access may be entirely limited if not yet properly enrolled. Remember that if you have problems with the University shortcut address (**ed.ac.uk/dst/shared**) you can use the full direct address for GeoSciences' area. You may like to check with IT if you believe you should be fully registered by now (e.g. you registered more than 3 days ago).

## B.7 Remote Desktop Connections (Windows Office or Lab PCs)

In the event of difficulties with mapping drives and in the event of requiring access to specialist, resource intensive, or costly software (e.g. commercial scientific, environmental, or database applications) you *may in very limited cases* be offered the ability to make a remote desktop protocol (RDP) connection from your home PC/Mac/Linux machine to a remote (i.e. campus-based) lab PC. PGR students and staff can use a RDP connection to access their dedicated desk or office PC.

Remote Desktop connections allow you to have the remote desktop transferred over a network connection to your current computer. You can also connect from e.g. a lab PC to another PC to which you have been given access.

**Note:** Outwith the Edinburgh/eduroam network, you must first make a VPN connection before you are able to attempt the Remote Desktop connection.

The officially supported platform is built-into Windows (or available from the Mac App Store) – the Microsoft Remote Desktop Connection *client*. A client is a program that acts to send information or instructions to a remote server and to process the returned *served* content in order to display or process it as appropriate.

Other RDP clients do exist and can be used should you encounter problems. MobaXTerm, available within labs on Windows PCs, provides a range of client facilities (RDP, SFTP, SSH – see Linux sessions). Linux users can use a variety of clients – **Remina** is likely *built-in* and the officially supported choice for Linux users.

Students needing to connect to the GeoSciences Linux Cluster (School Linux servers) can also use an RDP client such as Microsoft Remote Desktop Connection to connect using the School's XRDP service (X windows – UNIX/Linux graphics via RDP).

Full instructions for all platforms are available on the IT web pages at:  
<https://blogs.ed.ac.uk/geosciences-it-help/remote-desktop/>

Finally, we will provide information about two further methods of working which may or may not require a VPN connection depending on the specifics involved, including software licensing methods. Do always check IT or IS web pages for the latest advice. Software in particular can be either run standalone on your own computer or depend upon a network connection to GeoSciences to be licensed.

## B.8 Virtual Desktop / Virtual Apps

An alternative to connecting to a physical machine is to connect to a virtual machine where a virtual computer (and operating system platform) instance exists in the cloud (or within a University-specific cloud).

The University has recently adopted a new system called Azure Virtual Desktop. This works by streaming apps to your remote computer. This allows you to run programs directly within your browser in a virtual University environment usually with access to basic drives like M: and U: and/or OneDrive with relative ease. The trade-off is that sometimes systems such as these can be slow with demanding software however all storage at least is on the University network rather than being further slowed by upload and download of data whilst working.

Full information can be found at:

[www.ed.ac.uk/information-services/computing/desktop-personal/avd](http://www.ed.ac.uk/information-services/computing/desktop-personal/avd)

Note that streaming technology is also prone to change over time so also see the other information on remote apps from the parent page, including:

[www.ed.ac.uk/information-services/computing/desktop-personal/remote-software-guidance](http://www.ed.ac.uk/information-services/computing/desktop-personal/remote-software-guidance)

## B.9 Actual Apps / Applications – Standalone Licences / Net Licences

Finally, several applications can also be downloaded due to student or educator status or via the University website through various software deals, including GIS software such as ArcGIS.

In general it is best to run software with a standalone licence file which you should be able to obtain, however you can also (or in some cases it may be necessary to) point software to run from a School licence server over a network connection.

If running at home the latter will take the form of a VPN connection thus a steady connection will be required and wired Ethernet rather than Wifi is recommended. Temporary loss of signal may also lead to sluggish performance so standalone software licences are recommended.

Modern software such as ArcGIS Pro may also be licensed by way of a user registration (as with some other newer software such as graphics packages). You may obtain a GeoSciences *edgeosci* organisational account for ArcGIS Pro from IT and should set up this registration asap if so. **Note:** You will only require this on your own machine or for ArcGIS Online, not on lab PCs which are site licensed already. Further info at: <https://blogs.ed.ac.uk/geosciences-it-help/software/>

For any other solutions not discussed here you can consider running software on a School Linux server via the XRDP service. Those interested in doing so (particularly for scientific, statistical or programming/coding software) are advised to attend the Linux sessions following the timed class for this session or to see the relevant notes. Happy computing!