ESPM4295/5295 Software and Data Access

We are using ArcGIS Pro as our primary instruction software, version 2.4 or later, in this class. We strongly encourage you to use ArcGIS Pro in this class. You may have learned with ArcMap or a previous version of the software, but you should transition to and use ArcGIS Pro in this class. While our class projects might be done with other versions of ArcGIS, it will involve extra work on your part, because we likely won't be able to answer some questions quickly or surely, as it is going on three years since we converted.

Due to Covid-19 risks during the Fall 2020 semester, most of you will most often access ArcGIS Pro from a home computer. You may access the software from home either A) through a web browser using Citrix/Apps to Go, a specialized software combination, described below, or by B) installing a copy of the ArcGIS Pro software on to your home computer. Access through a web browser and internet connection will be best for most students, as sufficiently fast internet access is now common, although not universal. Many of you may not have a newer, relatively powerful computer running Microsoft Windows, so browser/virtual computer access is your only at-home option. Some of you may have slow internet connection and/or a newer, faster, ArcGIS Pro-compatible computer at home, and be comfortable installing and troubleshooting software. It may then be more efficient for those of you to install the ArcGIS Pro software on your home computer, rather than access it through the internet.

If you have a Mac, you cannot run ArcGIS Pro under the standard Apple operating system, MacOS. ArcGIS Pro operates in native mode only under the Windows operating system. Software like Bootcamp allows you to set up a Mac computer to dual boot, one option being into MS Windows. Windows may also run on a Mac using Windows emulator software, e.g., Parallels Desktop. Unless you already have one of these softwares installed and working on their computer, Mac users will probably find it much easier to access ArcGIS Pro through a web browser/virtual computer.

Setting Up Your Computer to use ArcGIS Pro Through a Browser/Virtual Computer
First, you should install the Citrix Workspace, as outlined by the UMN Information Technology (IT) website at:

 https://it.umn.edu/services-technologies/how-tos/how-install-citrix-workspace-formerly

Your home computer is not a UMN managed device, so don't use the instructions near the top of the web page for UMN managed devices, and rather following the subsequent instructions on that web page for your Windows or MacOS operating system. For both Windows and Mac OS's, the install source in the page above for installing Citrix is currently:

https://www.citrix.com/downloads/workspace-app/

Use this download/install the Citrix software on your computer.

You only need to install the Citrix Workspace once, a software helper will reside on your computer to interact with the virtual computer server.

Once Citrix is installed, and you have rebooted your computer, you may open your browser and type the URL apps.umn.edu.

This should ask you to login; use your UMN ID and password. After authentication, click on the CFANS Desktop displayed near the top of the screen. Depending on your browser download configuration, this will either automatically start the CFANS desktop, opening a Windows screen with applications after a bit, or it will download a .ica file to your downloads folder. If it only downloads the file, but does not start the desktop automatically, find the file, and double click on it. This should open a new virtual computer with the CFANS desktop.

Examples/illustrations of this process are at:

https://it.umn.edu/services-technologies/how-tos/appstogo-log-in-access-apps

You may then work on the desktop as if it were a local computer. However, there are a few differences, primarily with file systems, that you must be careful with, or you will either make the system painfully slow, and/or lose your work.

File Systems and Efficient Computing on the CFANS Desktop/Virtual Computer
Your virtual computer accessed through CFANS Desktop, once set up properly, is linked to at least two drives, an H: and an L: drive. The L: drive should have a directory named for your class, e.g., L:\ESPM4295. This is a read-only directory that contains base data and documents for this class. You will need to copy data from this L: drive to your virtual computer before you work on it.

You should develop two habits in this class to make your life easier.

First, be very consistent in copying any data you have worked on and wish to save from your virtual computer onto your H: drive or other "persistent" drive before exiting from your virtual computer. The data on your virtual computer disappear when the computer shuts down. If you restart another session, the server creates a new virtual computer from scratch, and doesn't resuscitate your files.

Second, always copy your data to the virtual machine's Windows desktop folder, or another local machine folder on the virtual machine before you start work in ArcGIS Pro, so that you work with data on the virtual machine "local" drive. If you don't do this, processing will likely take much more time, ArcGIS Pro is more prone to crash, and you will likely lose data. The virtual computers are assigned memory both to run the software and store data. If your data are stored on a network drive elsewhere, the time delay between ArcGIS asking for the data and it being delivered over the network to the virtual machine may cause interrupts. ArcGIS often doesn't handle these interrupts very gracefully, and so will bog down, and in some instances stop working. You need to copy all your files to a virtual machine drive (somewhere on the C drive, often directly to the virtual computer desktop) before you do all your work, so that all the files "local" to the machine. But when you are done, you need to remember the first point above, to copy your files back to a non-virtual machine drive, so that you don't lose your work.

When you are done working with ArcGIS in a session, after saving your data to the H or other permanent storage space, you should logout of the virtual machine. Click on the small down arrow near the top-center of the desktop screen, and then select CTRL+ALT+DEL from the top of the list, and select Sign Out. If you don't, this will keep the virtual machine running in the background, and tie up resources, slowing down the system for everyone.

As an option, you can register your UMN assigned Google drive using Kumo, making your google drive available within the Apps To Go software. You only need to do this once. Follow the instructions here:

https://it.umn.edu/services-technologies/how-tos/appstogo-register-your-google-drive-kumo

In addition, you may wish to access the L: drive when not using Apps To Go, e.g., to copy the original data files quickly, or review other materials. Instructions on mapping a drive are at:

https://it.umn.edu/services-technologies/how-tos/connect-shared-drive-or-network-folder

In this process, you will need to specify our class L drive is at \\files.umn.edu\cfans\labs

If you successfully install the Citrix software, and you can access the ArcGIS Pro via a virtual computer, you don't need to read or do the next section, on installing a "stand-alone" copy of ArcGIS Pro on your home computer. You can skip this section, and jump to the "Accessing/Downloading Data Files from Class Drives" that follows.

If you do want a copy of ArcGIS Pro on your home computer, and your computer can support it, apply the following section.

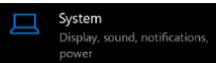**Installing ArcGIS Pro Software on Your Home Computer**
Some of you may choose to install ArcGIS Pro on your home computer. First you must ensure you're your computer can support ArcGIS Pro. System requirements at the time of this writing, late July 2020, for the latest release of ArcGIS Pro are at the website:

https://pro.arcgis.com/en/pro-app/get-started/arcgis-pro-system-requirements.htm

As with all URL's, the page may have changed since this writing, so a web search on "ArcGIS Pro system requirements" should list the requirements. You can then check your current computer to see if it meets the minimum or recommended requirements. Currently ArcGIS Pro requires a 64 bit Windows system. Generally, the software performance in unsatisfactory at the minimum specifications listed for ArcGIS Pro, and you should have at least the recommended specification for computer memory, storage, and speed.

You may discover your computers specifications with a click on the Windows start icon at the left end of the bottom bar:

Then a click on the gear-shaped settings icon:

Then a click on the Systems option, near the upper left:

Then click on the About option at the bottom of the left-column list:
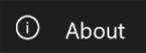
This should list the Device Specifications about half-way down the right hand panel, most importantly the processer type, installed RAM, and if the operating system is 64-bit. You may have to look up the specific processor model and enter this into a web search to determine the number of processer cores, and compare that number to the ArcGIS Pro requirements.

You may also need to check the system disk storage available, under Storage, near the middle of the left column of the System menu:
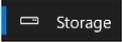
Finally, you should go back to the main Windows Settings page and use Updates and Security to apply any relevant updates, if any are pending. Windows verifies that the update is appropriate for your setup, and stops installing them on older, unsupported then systems. After applying any update, make sure the latest update that is installed meets the ArcGIS Pro requirements for your operating system.

There is a Google doc with the link below that describes how to download and install ArcGIS Pro.

https://docs.google.com/document/d/1tN72F393rl3bpk6kqGNy7wMSJhB-AnZdCaIjlreKePE/edit

Accessing/Downloading Data Files From Class Drives

Besides installing the ArcGIS Pro software, you'll also need access to the class data files. While you could come in to the lab, sign in to one of the computers, and download the files to a portable drive, it would be easier, more flexible, and less time consuming to access the files by mapping the L: and H: drives to your home computer.

This requires establishing a VPN connection, instructions here: https://it.umn.edu/services-technologies/virtual-private-network-vpn

Instructions for mapping a network drive are at:

https://it.umn.edu/services-technologies/how-tos/connect-shared-drive-or-network-folder

In this process, you will need to specify our class L drive is at \\files.umn.edu\cfans\labs