

ESPM4295/5295 Software and Data Access

We are using ArcGIS Pro as our primary instruction software, version 2.8 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 2021 semester, and generally for ease of work, most of you will access ArcGIS Pro from a home computer. You may most easily access the software from home through a web browser using Citrix Workspace/Apps to Go, a specialized software combination, described below. There is also an option for installing a copy of the ArcGIS Pro software on to your home computer, but this will apply to very few of you, because you need a relatively powerful, new computer, and the home installation is a bit more complicated. See Andy if you want to pursue an ArcGIS Pro home install.

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, usually in your Downloads folder, 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 several drives, including an S: and W: drive, but also an L and an H: drive. We'll mostly be using the S: and W. The S: drive should have a directory named for your class, e.g., S:\ESPM4295W for the undergraduates. This is a read-only directory that contains base data and documents for this class. You will need to copy data from this S: drive to your virtual computer before you work on it. There is also a read/write directory on the S: drive for each class, e.g., S:\ESPM5295share. You can create a sub-directory in that folder with your name/initials, and use it for long-term storage.

The W: should be persistent for you, so that you may create a directory there, save data to the directory, and have it available next time you log in.

Note that the C: drive on the virtual machine goes away forever when you log out of the virtual machine or close your Citrix Workspace session. Any data you haven't copied to your W or S or other drive will be lost.

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

First, 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.

Next, be very consistent in copying any data you have worked on and wish to save from your virtual computer C: drive back your W:, H:, S:, 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. 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 W: 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>