Subject: Draft documentation for setting up and running AIM/PLUM

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AIMPLUM (Asia-Pacific Integrated Model/Platform for Land‐Use and Environmental

Model), parsimonious land-use model

PLUM is a simple conceptual model of the socioeconomic processes that determine global agricultural land use change for 157 countries (Engström et al., 2016)

**System requirements**

*Install:*

GAMS

Git for windows

Tortoise git (choose commit as-is)

Cygwin (enable **all** netcdf functions after selecting “full” from the drop-down menu)

* Cygwin requires a Linux distribution to run commands such as bash. To run a Linux distribution, enable the Windows Subsystem for Linux (open the powershell as an administrator and run [Enable-WindowsOptionalFeature -Online -FeatureName Microsoft-Windows-Subsystem-Linux]) or use the GUI *Turn Windows features on or off* then reboot. Download and install a distribution of your liking from Microsoft Store (e.g Ubuntu, SUSE, Debian etc). You need to create a username and password to use the distribution. After successful setup, run the update command [sudo apt update] to update the repository cache from which packages will be installed. This is because the cache of a newly installed system is empty (does not contain available packages). Then, install “netcdf” package [sudo apt install netcdf]. The code examples are for Ubuntu on WSL. We use “sudo” because installing packages is an administrator task. “apt” is a package manager that downloads and installs packages from the Ubuntu archive.

**Next steps**

set path to Cygwin/bin, GAMS/32 (your version of GAMS)

create a directory and clone the model from github repository

Apply Switch to establish a branch directory

Copy any missing data i.e land\_map\_rcp.gdx into the data folder

**Running the model**

Start by selecting the scenario in the execution batch file (\AIMPLUM\shell\all\_execution3\_sec.bat). Selections made in the execution file override any defaults in the files that are called. To run a batch file from the “shell” folder, simply double-click on it.

**Minor (own) revisions**

Change directory paths of gams files from prog\prog to AIMPLUM\prog

In gdx2csv.bat file, set scenario to presently running scenario.

In gdx2nc\_20W.sh file, set scenario to presently running scenario.

In the csv2nc2.bat file, edit the directory after the keyword “bash” to reflect the location of the .sh file. Change from backslash (\) to forward slash (/)

**Scenarios**

Scenarios in the model are divided into socio-economic i.e the SSPs, climate policy i.e the RCP forcing levels and Impact, Adaptation and Vulnerability i.e whether the trajectory will be without climate change or will favour biodiversity. The SSPs range from 1 to find and there are sub-categories according to differences in trade, demography and afforestation. The table below summarizes the SSPs included in AIMPLUM model.

|  |  |  |
| --- | --- | --- |
| Name | Description |  |
| SSP1 |  |  |
| SSP1p | Follows SSP2 trajectory but with some underlying differences with regards to environmental policies |  |
| SSP1pDEM |  |  |
| SSP1pTECHTRADE |  |  |
| SSP2 |  |  |
| SSP2\_protect |  |  |
| SSP2NoAff |  |  |
| SSP2NoBio |  |  |
| SSP3 |  |  |
| SSP4 |  |  |
| SSP5 |  |  |