Module IV: Spatially calculating the SA index

- Use and familiarization of grads program and model (how to output; how to play with grads)

- How to use the preset grads codes for the index

- Viewing the outputs in grads

- Overlaying in photoshop (optional)

THE CONTROL FILES

- **What are they?**
  - These are text files that are used in the **Grads** program to describe the contents of the binary files (metadata)
  - In this training we made control files for rainfall, discharge, soil moistures and groundwater level
- **Where are they?**
  - For this training, these files are placed in a separate folder "control files" as well as together with the monthly binary outputs
  - However, you can place them wherever you want as long as you modify/change where the location of the datasets can be found.
- **Who made them?**
  - Us! You can make them yourselves too. Details are in the next slide.

Sample control file (formatted for grads)

```
*control file for monthly surface soil wetness
TITLE   monthly-mean surface soil wetness
DSET    ^wsfc.%m2%y4
OPTIONS sequential yrev template
FILEHEADER      0
UNDEF   -9999
*    nx    Southwest longitude         Southwest latitude
XDEF    166  LINEAR  120.0416333396  0.0096496283
YDEF    175  LINEAR   14.664288483   0.0092523169
ZDEF      1  LEVELS  0
TDEF    228  LINEAR  01Jan1982  01mo
*
VARS  1
wsfc    0   1   surface soil wetness,%
ENDVARS
```

Dataset location

In sequential order with y values reversed (S-N)

Binary data has no header

Datasets with values -9999 are undefined

nx

ny

Dx=(x1-x2)/nx

Dy=(y1-y2)/ny

Dataset only has 1 level

Time increment

Start date

# of binaries

Only 1 variable = wsfc

variable used

Description of variable

Spatially calculating SA using grads codes

- The normalization steps done in the excel sheets must similarly be done in the **Grads** codes

- Change the location and scale for each month (using the values used in the excel sheet)

- Change the mean and average using the monthly values from the excel sheet

- Select the month that you want to look into

- Modify the graphical output part accordingly

For this training, we will do only discharge…

Open (start Menu)--cygwin-X---x-term
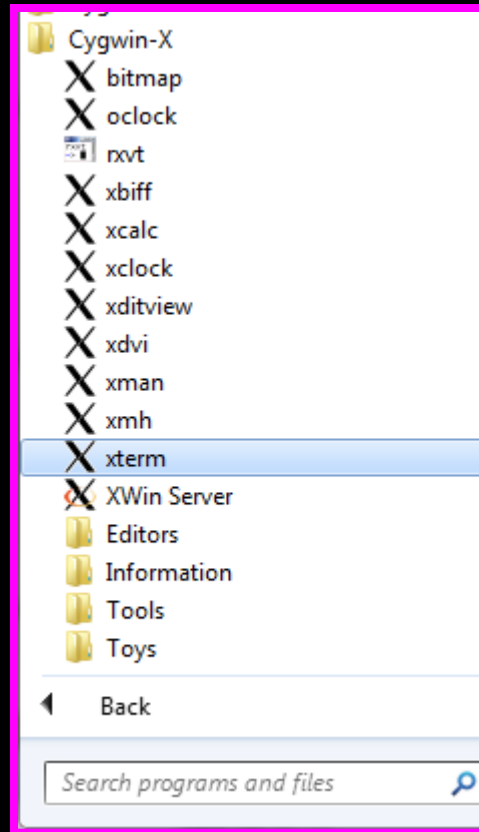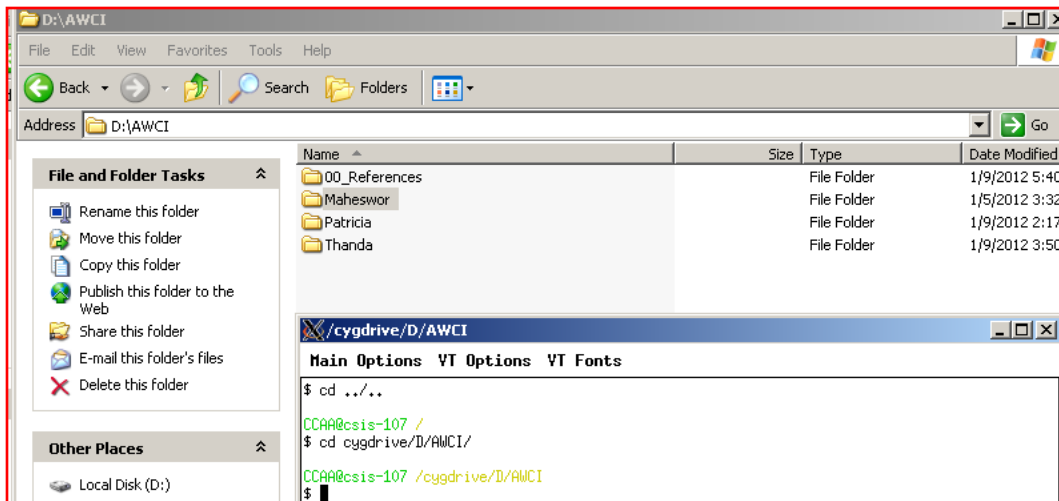
Type in:
$ cd ../..
$ cd /dias/groups/dias-4-4-08/AWCI_MEMBERS_FOLDER/USER-country/country/Drought.Training/
*Open directory in a separate window and find which trainor made your basin
$ cd dias/groups/dias-4-4-08/AWCI_MEMBERS_FOLDER/USER-country/country/WEBDHM/output_Philippines/other

$ grads
$grads: Index_DISCHARGE.gs

Viewing the outputs in grads

- Outputs from **Grads** are like pictures of the maps in *file*.png

- Open in any picture viewer

- To identify the hotspots, you can overlay them using any photo editor software (grads software does not overlap colors)

- Another option is **ArcGIS**, however you have to define the colors grid by grid (not included in the training)

- A third option is ERDAS imagine (not included in the training)

- Adobe Illustrator and Adobe Photoshop can be used
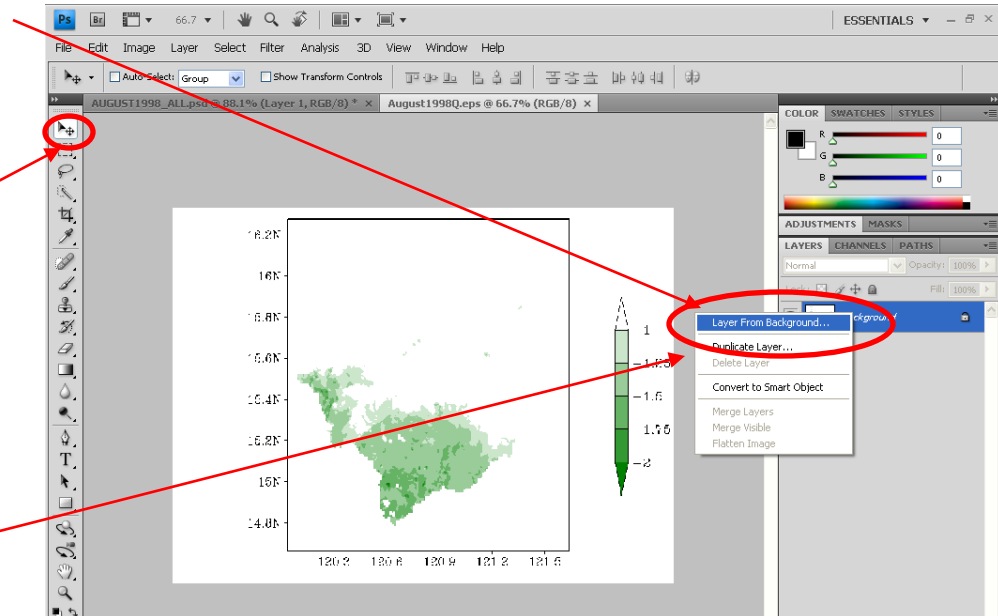
Sample selected drought years for each basin

Participating Country	Basin	Drought Year Selected
Mongolia	Tuul	1986 Sept
Pakistan	Soan	1985 Sept
Thailand	Ping	1999 March
Philippines	Pampanga	1998 August

OPTIONAL: Using Photoshop and adobe illustrator to find hotspots

Step 1: convert file.png to file.eps **(using adobe illustrator)**

Step 2: overlay using photoshop the file.eps

*open eps file in **photoshop**, right click on the layer, click layer on background, this should remove the lock

*pull out the tab of the eps file. Drag to your desired layer

*Adjust using the move icon on the left

*make sure the files are adjusted so that the underlying files also show up by adjusting opacity (right click on layer and click blending options(eg.darken) of each layer.

------------------------end of session---------------