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This script uses a seisworks Hie xyz export file, converts it to lat/long coordinates and generates a GMT plot

This script produces a study area map with an overlay horizon and point data

Apart from the 1st line a '#' means GMT will not read that line.

To run faster run the Pre-processing just once and then 'turn it off' with a #

A few things to remember

- 1) http://gmt.soest.hawaii.edu/gmt/doc/html/GMT_Docs/node25.html < This is the GMT bible. Go here if you have any issues, read this before you ask for help you will find it here and you will then not forget it
- 2) If you change something re-save under a different name and keep track of what you have saved
- 3) Change 1 thing at a time and WRITE DOWN WHAT YOU DID before and after
- 4) make sure all files are in the same folder as the .sh or type in the directory extensions
- 5) at first this is the most annoying and terrible program but you will get better and you will be able to make better images here than in seisworks, Zmap or illustrator

There are other options, like contours, polygon lines etc not included in this script

Read the GMT bible for more information.

```
#!/bin/sh -x
```

```
#define constants ←this way you don't have to change the script every time you change horizon
```

```
#-----  
#-----
```

```
#----- Hie Seiswoks export file -----
```

This is the file that comes directly from Seisworks. It must be in the same folder as the .sh file

If you want to change the depth/surface horizon you just change this line;

for example change from MJR_Seafloor_-Meters_Export to MJR_Q_Sand_Meters_Export

```
Seisworks=MJR_Seafloor_-Meters_Export
```

```
#----- Pre-processing constants -----
```

```
Seisworks_Lat_Long=MJR_Seafloor_Ft_export_lat_long
```

```
Mean=MJR_Seafloor_Ft_export_lat_long_mean
```

```
Surface=MJR_Seafloor_Ft_export_Seisworks_mean_surface
```

```
#----- Color gradient -----
```

```
Gradient=CWB_downlap_Surface_Seisworks_grad_SA
```

```
#----- Map region and size -----
```

This will change the ultimate size and region of the image (the white and black box around the image)

```
region=-92.6371/-92.2929/27.2804/27.7176
```

```
map=M6.0
```

```
#----- Ouput Post script file -----
```

This is what the file will be called, if you do not change this each time it will overwrite your previous file (Hence the long names I made)

```
target=MJR_Seafloor_Structure_StratAmp_Abs_globe
```

```
#-----  
#-----
```

```
#-----Hie Amplitude export file -----
This is your overlay file, in this case its amplitude
Amplitude=MJR_Seafloor_Amp_Abs
```

```
#-----Amp Pre-Processing Constants-----
Again remember you have to do Pre-processing for all horizons
Amplitude_Lat_Long=MJR_Amplitude_Export_Lat_Long
Amplitude_Mean=MJR_Amplitude_Lat_Long_Mean
Amp_Surface=MJR_Amplitude_Mean_Surface
```

```
#-----Amp Color Gradient -----
Amp_Gradient=MJR_Amplitude_Color_Gradient
```

```
#----- Amp Map Region and Size-----
Amp_region=-92.6371/-92.2929/27.2804/27.7176
Amp_Map=M6.0
```

```
#-----
#-----
```

```
#Workflow script
```

```
#----- Data pre-processing -----
```

```
Seisworks exports data as XYZ in feet, GMT works in minutes and seconds, therefore you need to pre-process the data
Look up in the GMT bible for information on variables and what all this means
```

```
#mapproject $Seisworks -I -Jul5/365214 -R-97.49161314/-90:0:0/0:0:0/29:0:0 -V >
$Seisworks_Lat_Long
```

```
#blockmean $Seisworks_Lat_Long -R267.324/267.757/27.1289/27.7013 -I1c -V > $Mean
```

```
#surface $Mean -G$Surface.grd -R267.324/267.757/27.1289/27.7013 -I0.0001 -V
```

```
#-----Amp Data Pre-processing-----
```

```
Again remember you have to do Pre-processing for all horizons
```

```
#mapproject $Amplitude -I -Jul5/365214 -R-97.49161314/-90:0:0/0:0:0/29:0:0 -V >
$Amplitude_Lat_Long
```

```
#blockmean $Amplitude_Lat_Long -R267.324/267.757/27.1289/27.7013 -I1c -V >
```

```
$Amplitude_Mean
```

```
#surface $Amplitude_Mean -G$Amp_Surface.grd -R267.324/267.757/27.1289/27.7013 -
I0.0001 -V
```

```
#-----
```

```
#----- Seisworks map -----
```

```
This is your main body of script. You can change the color bar ranges (-Tmin/max/interval) and color bar here I have
used globe but rainbow and ocean look good too. The GMT window will tell you what your max and min
values of Z are. I would stick to whole numbers, personally.
```

```
makecpt -Cglobe -I -T-30000/30000/1000 -V -Z > Amplitude_SA.cpt
```

```
grdgradient $Surface.grd -G$Gradient.grd -A25 -Nt -V
```

```
grdgradient $Amp_Surface.grd -G$Amp_Gradient.grd -A25 -Nt -V
```

```
psbasemap -R$region -J$map -G128 -Bf0.1a0.2EwSn -Lf267.25/27.4/.5/10 -
T267.25/27.25/3 -Xc -Yc -P -K -V > $target.ps
```

```
Look up grdimage in the GMT bible before messing with the script. This is the most influential line of the script
grdimage $Amp_Surface.grd -CAmplitude_SA.cpt -I$Gradient.grd -R$region -E300 -P
-V -K -O -J$map >> $target.ps
```

```
At the end you need a color bar scale. (-B) is the labeling interval -D is the location
```

```
psscale -CAmplitude_SA.cpt -B5000 -O -D4.2/1.8/3.5/0.5 -V >> $target.ps
```

Everything underneath this is just XYZ point data

```
#psxy Field_bndry_block_polygon.txt -R$region -J$map -M@ -W4/255/0/0 -O -V -K >>
$target.ps
#psxy Blue_TVDSS_Penetrations.txt -R$region -J$map -M@ -Sc.05 -W10/0/0/100 -O -V
-K >> $target.ps
#psxy Mac_and_Ser_location.txt -R$region -J$map -M@ -Ss.1 -G255/0/0 -W10/255/0/0
-O -V -K >> $target.ps
#psxy Yellow_TVDSS_Penetrations.txt -R$region -J$map -M@ -Sc.05 -W10/100/100/0 -
O -V -K >> $target.ps
#psxy block_polygon.txt -R$region -J$map -M@ -W2/255/0/0 -O -V -K >> $target.ps
#psxy OR001.txt -R$region -J$map -M@ -Sc.05 -W10/0/0/0 -O -V -K >> $target.ps
#psxy MAC_1.txt -R$region -J$map -M@ -Sc.05 -W10/180/0/0 -O -V -K >> $target.ps
#psxy MAC_3ST1.txt -R$region -J$map -M@ -Sc.05 -W10/180/180/0 -O -V -K >>
$target.ps
#psxy MAC_A002.txt -R$region -J$map -M@ -Sc.05 -W10/180/180/180 -O -V -K >>
$target.ps
#psxy MAC_BH001.txt -R$region -J$map -M@ -Sc.05 -W10/0/0/180 -O -V -K >>
$target.ps
#psxy datarequestcoords.txt -R$region -J$map -M@ -W10/0/1/0 -O -V -K >>
$target.ps
```

#-----