Notes on how to read ENVI image file in ArcGIS, R, and ENVI.

NPS NDVI and snow metrics data sets are produced with IDL+ENVI programs. The outputs are ENVI image files. Each ENVI image actually includes a flat-binary raster file with an accompanying ASCII header file. For example, The ENVI image for 2015 snow-year snow metrics includes: “2015_snowyear_metrics_v7” and “2015_snowyear_metrics_v7.hdr”.

Read ENVI image file in ArcGIS:

1. Read in ArcGIS application
a. Rename flat_bianry raster file by adding “.dat”. For example, rename “2015_snowyear_metrics_v7” to “2015_snowyear_metrics_v7.dat”
b. Keep the pair of files in the same directory. For example, e:\nps_snow_metrics\data.
c. Use “Connect to folder” in “Catalog” window to add the directory where the ENVI image file pair are.
d. Open “Table of Contents” window, click “layers” to open the ENVI image raster file.

2. Read by python with arcpy module
a. Rename flat_binary raster file by adding “.dat”. For example, rename “2015_snowyear_metrics_v7” to “2015_snowyear_metrics_v7.dat”.
b. Keep the pair of file in the same directory. For example, e:\nps_snow_metrics\data.
c. Python script to convert envi raster file into tiff file:

```
import arcpy
snow_metrics_file=”e:\\nps_snow_metrics\\data\\2015_snowyear_metrics_v7.dat”
snow_metrics_file_tiff=”e:\\nps_snow_metrics\\data_tiff”
arcpy.RasterToOtherForamt_conversion(snow_metrics_file, snow_metrics_tiff, “TIFF”)
```

Read ENVI image file pair in R:

1. Install raster package install.packages("raster")
2. R script to read ENVI image file (in Windows) and convert it into geotif file. envi2geotiff.R file

```
library(raster)
file<-"e:\\nps_snow_metrics\\data\\2015_snowyear_metrics_v7"
file_tif=paste(file,".tif")
y<-brick(file)
# write to a geotiff file (depends on rgdal)
if (require(rgdal)) {
    rf <- writeRaster(y, filename=file_tif, format="GTiff")
}
```

Read ENVI image file in IDL+ENVI programing environment

Following program shows how to read ENVI image file and convert it into geotiff file.

```
;convert ENVI image file pair into a geotiff file
;input is the ENVI image binary  file name. Output is the same file name with ".tif" affix.
pro ENVI2geotiff, file_envi
    file_geotif=file_envi+'.tif'
    ; Launch the application
    e = ENVI()
    ; Create an ENVIRaster
    raster1 = e.OpenRaster(file_envi)
    ; Create a temporary output file
    newFile=file_geotif
    ;Output into a geotiff file
    e.ExportRaster, raster1, newFile, 'TIFF'
    e.close
    return
end
```