Subject: Re: Reading USGS DEMs
Posted by Richard Olsen on Tue, 21 Mar 1995 16:37:52 GMT
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arthurb733@aol.com (ArthurB733) wrote:
>
> ...
  I was wondering if anyone knows of existing IDL
> procedures for reading USGS DEMs, ...
>
> Arthur Brandt
>   art@pima.gov

The ENVI layered product, also available from RSI, will
read in DEM's and display them. VERY nice package, but
real pricey...I took a hack at it once, and found the
format a little obscure - the USGS site has the documentation..

rc olsen
naval postgraduate school
no US gov't endorsement implied.....

Subject: Re: Reading USGS DEMs
Posted by moersch on Wed, 22 Mar 1995 06:43:49 GMT
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In article <3klgmi$noh@newsbf02.news.aol.com> arthurb733@aol.com (ArthurB733) writes:

> I'm new to IDL and to this group. Please forgive me if this subject has
> come up before. I was wondering if anyone knows of existing IDL
> procedures for reading USGS DEMs, or does someone have pointers to offer
> on the topic?

I wrote the attached short bit of code a while ago to do this. It's
not very fancy, but it should do the job for you.

Jeff Moersch
Astronomy and Space Sciences
Cornell University
moersch@astrosun.tn.cornell.edu

----cut here----
pro demread, filename, demarr

; Reads in a standard 1201x1201 USGS Digital Elevation Map.

```
hdr=''
linehdr=''
alt1=intarr(146)
alt2=intarr(170)
alt3=intarr(170)
alt4=intarr(170)
alt5=intarr(170)
alt6=intarr(170)
alt7=intarr(170)
alt8=intarr(35)
openr, 1, filename
readf,1,hdr
for i=0,1200 do begin
 readf,1,linehdr,alt1,format='(a147,146i6)'
 readf,1,alt2,format='(170i6)'
 readf,1,alt3,format='(170i6)'
 readf,1,alt4,format='(170i6)'
 readf,1,alt5,format='(170i6)'
 readf,1,alt6,format='(170i6)'
 readf,1,alt7,format='(170i6)'
 readf,1,alt8,format='(35i6)'
 demarr(i,0:145)=alt1
 demarr(i,146:315)=alt2
 demarr(i,316:485)=alt3
 demarr(i,486:655)=alt4
 demarr(i,656:825)=alt5
 demarr(i,826:995)=alt6
 demarr(i,996:1165)=alt7
 demarr(i,1166:1200)=alt8
endfor
close,1
end
----cut here----
--
```

Subject: Re: Reading USGS DEMs
Posted by zawodny on Wed, 22 Mar 1995 13:26:47 GMT
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In article <3klgmi$noh@newsbf02.news.aol.com> arthurb733@aol.com (ArthurB733) writes:

> I'm new to IDL and to this group. Please forgive me if this subject has
> come up before. I was wondering if anyone knows of existing IDL
> procedures for reading USGS DEMs, or does someone have pointers to offer
> on the topic?

Well, I may have something for you to chew on as well. I wrote these

awhile back to work with a CDROM put out by MicroMap. They have DEM files on the disk, but I have no idea if it a the "Standard Format".
Anyway here are two programs. CVTDEM gets the data off of the CDROM and writes it to a binary files (the originals were in ASCII). DEM then plots the data up.

Look it over, (watch out of the .sig at the end of this message)

```
pro cvtdem,file

; Open the database
 openr,1,'/mnt/USA/DEM/W109W130.DEM'
 openw,2,'/work/W109W130.DEM.bin'

; Record structures
 in  = assoc(1,bytarr(6012))
 b   = {DEM,lat:0.,lon:0.,z:intarr(120,10)}
 out = assoc(2,b)
 i   = 0

; Loop until EOF
 while not eof(1) do begin
 ; Grab a record
  a = in(i)

 ; Extract the lat and lon fields and convert to floating point
  b.lat = float(string(a(0:3)))+float(string(a(4:7)))/60.
  b.lon = float(string(a(8:11)))

  j     = 7
  for k=0,9 do begin
   for l=0,119 do begin
   ; Update offset
    j        = j+5
   ; Convert altitude field to integer
    b.z(119-l,k) = fix(string(a(j:j+4)))
   endfor
  endfor
  out(i) = b
  i      = i+1
 endwhile
close,1
close,2
end


pro dem,print=print,color=color,logscale=logscale
```

```
; Process output options
 if keyword_set(print) then begin
  set_graph,/cps,/land
  cos37 = cos(37.5/!radeg)
  ydel  = (1.-cos37)/2.
  pos   = [0,ydel,1.,1.-ydel]
  image = bytarr(1200,600)
  thk   = 5
 endif else begin
 ; Make a window to display the image in
  set_graph,/x
  window,xsiz=1200,ysiz=600,colors=256
  pos   = [0,0,1.,1.]
  thk   = 3
 endelse
 if keyword_set(color) then loadct,color else loadct,0
 tvlct,[255,0],[255,0],[255,0],254

; Open the database
 openr,1,'/usr0/map-data/usa/0.5-min/W060W086.DEM.bin'

; Record structure
 b  = {DEM,lat:0.,lon:0.,z:intarr(120,10)}
 in = assoc(1,b)
 i   = 1284

 while not eof(1) do begin
 ; Grab a record
  b   = in(i)

 ; Convert lat-lon to x-y
  xo  = fix(1080-(b.lon-75.)*120) ; one pixel = 0.5 minutes
  yo  = fix((b.lat-35.)*120+.5) ; one pixel = 0.5 minutes
  if((xo gt 1080) or (xo lt 0)) then goto,jump

 ; Convert altitude to color via a log-scale
  if keyword_set(logscale) then begin
   sub = byte(alog10(b.z*100.+1.)*35) < 253B
  endif else begin
   sub = (byte((b.z < 5000)/20)+3B)
  endelse

  if keyword_set(print) then begin
   image(xo,yo) = sub
  endif else begin
   tv,sub,xo,yo
  endelse
```

```
JUMP:  i = i+1
  if(i gt 2200) then goto,next
; Loop until EOF
 endwhile

NEXT: close,1
 if keyword_set(print) then tv,image,0,pos(1),xsiz=1,ysiz=cos37,/norm
 !x.margin = [0,0]
 !y.margin = [0,0]
  maps,0,0,/cyl,ran=[-85,-75,35,40],/noeras,/hires,grid=1,pos= pos $
  ,mcolor=254,mthick=thk,gcolor=254,gres=.25,gthick=thk
 maps,0,0,/cyl,ran=[-85,-75,35,40],/noeras,/hires,pos=pos $
  ,mcolor=255,gcolor=255,gres=.25
end
```

--

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