
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
tv!ct,[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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