Subject: Apply a shapefile to raster images in IDL
Posted by envi35 on Sat, 02 Oct 2004 21:29:13 GMT

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Dear Listers,
I'm a novice in IDL, not sure if my questions are totally improper. I
want to use an Arcview format shapefile as a mask, to a huge number of
raster images, which are in a polar stereographic grid format with
separate image data files and lat/lon files. I would really appreciate
if you could give me any hint about the following questions:

1. How to read the shapefile into an IDL variable?
2. How to tailor the shapefile to my raster image grid?
3. If the above questions are not proper or impossible in IDL, would
you give me some suggestions to do the work?

Thank you in advance,
Jenny

Subject: Re: Apply a shapefile to raster images in IDL
Posted by c_jengo on Tue, 05 Oct 2004 16:18:00 GMT

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Jenny,
This suggestion is based on three assumptions:
1. You have ENVI+IDL (sounds like it)
2. There is only one shapefile for all the files (also sounds like it)
3. Your image files are georeferenced or the lat/lon files give a
lat/lon point for every pixel in the image (known as an Internal
Geometry Model (IGM) file), or you can otherwise georeference them.

While not trivial (especially for a novice), there is a way to do this
using ENVI routines.

First, convert your shapefile to an ENVI vector file (EVF) by clicking
Vector > Open Vector File > Shapefile (I don't think there is a
documented way to do this programmatically).

Next, write an IDL program that iterates through your files and does
the following:
-Open your image and IGM files (ENVI_OPEN_FILE)
-Create a Geographic Lookup Table (GLT) file (ENVI_GLT_DOIT)
-Apply the GLT to create a georeferenced image
(ENVI_GEOREF_FROM_GLT_DOIT)
-Open the vector file (ENVI_EVF_OPEN)
-Loop through the records and extract the vector coordinates
(ENVI_EVF_READ_RECORD)

-Close the vector file (ENVI_EVF_CLOSE)
-Convert these lat/lon points to file coordinates referenced to your
georeferenced image (ENVI_CONVERT_FILE_COORDINATES)
-Create a region of interest (ENVI_CREATE_ROI)
-Populate the ROI with your points (ENVI_DEFINE_ROI)
-Get the address of every pixel within the ROI (ENVI_GET_ROI)
-Create an array with the same dimensions as your georeferenced image
(BYTARR)
-Set pixels within ROIs equal to 1 (ex: myImage[roi_addr] = 1)
-Save the mask to a temp file or memory (ENVI_WRITE_ENVI_FILE
ENVI_ENTER_DATA)
-Apply the mask to your image (ENVI_MASK_APPLY_DOIT)
-Be sure to clean up your files (ENVI_FILE_MNG)

And that's it! Nothing to it, eh? ;-) Sorry if I missed a step or
two, I was going off the top of my head. Hope this at least gets you
started...

Chris

envi35@yahoo.ca (Jenny) wrote in message
news:<c371324e.0410021329.26d3e286@posting.google.com>...
> Dear Listers,
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> you give me some suggestions to do the work?
>
> Thank you in advance,
> Jenny

Subject: Re: Apply a shapefile to raster images in IDL
Posted by lbusett on Thu, 07 Oct 2004 12:08:27 GMT
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Hi Jenny,

    If your images are all of the same size I think that you can solve
your problem simply by using ENVI.

1: Open one of your images and load it in a display

2: Convert your shapefile to an ENVI vector file (EVF) by clicking
> Vector > Open Vector File > Shapefile

3: Load your vector on the display where you have loaded your
image (In the "available vectors list" select the vector, then click
on "load" and then on "Diplay# (your_display)"

4:In the "Vector Parameters" window that appears, select "File >
Export active layer to ROI"

5: Select "basic tools > masking > build mask" and select your
display

6: Select "Options > Import ROIS", then select the ROI you created
from your vector and click on "OK". Next, choose a name for the mask
file that you want to create and click on "Apply". Now, in the
"available bands list you should see a new image, which has value 0
outside the vector and 1 inside it.

7: Now, you can use this "0-1" image as a mask for your image. Go
to Basic tools > apply mask. Select one of the images that you want to
mask, then click on "Select mask band" and select the mask image.
Click on "OK".

If you have many images and you don't want to repeat n-times the
last step you can use an IDL procedure that automatically opens the
images and apply the mask on each one.
I think that something like this should work: it's a simple
modification of the example program that you can find on the ENVI
User's guide.

```
pro multiple_mask

  ; Select input files (Select all your images)

  files_list  = dialog_pickfile(/READ,title ='Select input$
files',/multiple_files)

  ; Select the mask File

  mask_file =  dialog_pickfile(/read, title = 'Select Mask File')
  envi_open_file, mask_file, r_fid=m_fid

  ; Count the number of files

  num_files = N_elements (files_list)

  for count = 0, num_files-1 do begin

  ; Selects the n- file. Output file name is
"input_file_name"+"-masked"
```

```
  in_file = files_list [count]
  out_file =files_list [count]+'-masked'
 envi_open_file, in_file, r_fid=fid
   if (fid eq -1 or m_fid eq -1) then return


 ; get some useful information and set the output filename.
    envi_file_query, fid, ns=ns, nl=nl, nb=nb, bname=bname

 ; Set the keyword parameters
   dims = [-1l, 0, ns-1, 0, nl-1]
 pos  = lindgen(nb)
  m_pos = [0]

 ; Call the 'doit' to apply the mask

 envi_mask_apply_doit, fid=fid, pos=pos, dims=dims,m_fid=m_fid,$
  m_pos=m_pos, value=0, out_name=out_file, in_memory=0, $
  r_fid=r_fid

 endfor

end
```

I hadn't fully tested it, but it should work.

Hope this helps,

Lorenzo

Subject: Re: Apply a shapefile to raster images in IDL
Posted by envi35 on Fri, 08 Oct 2004 18:23:47 GMT
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Hi Everyone,
Thank you very much for your reply. I've taken Lorenzo's suggestion,
and it works really well. This is a great group, especially to a
novice... Though just began to use IDL a couple of weeks ago, I found
it is a golden mine, worthy to dig hard :-(.

Best Regards to all!
Jenny

lbusett@yahoo.it (Lorenzo Busetto) wrote in message
news:<e4da268.0410070408.60d07040@posting.google.com>...
> Hi Jenny,

>
>   If your images are all of the same size I think that you can solve
> your problem simply by using ENVI.
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>   1: Open one of your images and load it in a display
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> on "load" and then on "Diplay# (your_display)"
>   4:In the "Vector Parameters" window that appears, select "File >
> Export active layer to ROI"
>   5: Select "basic tools > masking > build mask" and select your
> display
>   6: Select "Options > Import ROIS", then select the ROI you created
> from your vector and click on "OK". Next, choose a name for the mask
> file that you want to create and click on "Apply". Now, in the
> "available bands list you should see a new image, which has value 0
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> to Basic tools > apply mask. Select one of the images that you want to
> mask, then click on "Select mask band" and select the mask image.
> Click on "OK".
>
>   If you have many images and you don't want to repeat n-times the
> last step you can use an IDL procedure that automatically opens the
> images and apply the mask on each one.
> I think that something like this should work: it's a simple
> modification of the example program that you can find on the ENVI
> User's guide.
>
> pro multiple_mask
>
>   ; Select input files (Select all your images)
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>   files_list = dialog_pickfile(/READ,title ='Select input$
> files',/multiple_files)
>
>   ; Select the mask File
>
>   mask_file = dialog_pickfile(/read, title = 'Select Mask File')
>   envi_open_file, mask_file, r_fid=m_fid
>
>   ; Count the number of files
>
>   num_files = N_elements (files_list)
>
>   for count = 0, num_files-1 do begin

```
>
>    ; Selects the n- file. Output file name is
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>
>    in_file = files_list [count]
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>    envi_open_file, in_file, r_fid=fid
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>     r_fid=r_fid
>
>    endfor
>
> end
>
> I hadn't fully tested it, but it should work.
>
> Hope this helps,
>
> Lorenzo
```

Subject: Re: Apply a shapefile to raster images in IDL
Posted by David Fanning on Fri, 08 Oct 2004 18:38:48 GMT
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Jenny writes:

> Thank you very much for your reply. I've taken Lorenzo's suggestion,
> and it works really well. This is a great group, especially to a
> novice... Though just began to use IDL a couple of weeks ago, I found
> it is a golden mine, worthy to dig hard :-(.

Oh, yes, lot's of great eccentrics here. You will like it. :-)

Cheers,

David

--
David W. Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http:/www.dfanning.com/
Phone: 970-221-0438, IDL Book Orders: 1-888-461-0155

Subject: Re: Apply a shapefile to raster images in IDL
Posted by envi35 on Fri, 08 Oct 2004 18:54:51 GMT
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Hi Everyone,
Thank you all very much. I've taken Chris+Lorenzo's suggestions, and
it works really well. Though just started to learn IDL a couple of
weeks ago, I found it is a golden mine, worthy to dig hard. :-(
With Fortran background, it seems not too hard for me to jump to IDL
direct graphics. Since the IDL object is more powerful, I think it is
time for me to learn object programming (really scared!). I'm
wondering if someone could give me some advices on how to start with
the object...

Best regards,
Jenny

lbusett@yahoo.it (Lorenzo Busetto) wrote in message
news:<e4da268.0410070408.60d07040@posting.google.com>...
> Hi Jenny,
>
>   If your images are all of the same size I think that you can solve
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>
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> I hadn't fully tested it, but it should work.
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> Hope this helps,
>
> Lorenzo

Subject: Re: Apply a shapefile to raster images in IDL
Posted by Jonathan Greenberg on Mon, 11 Oct 2004 20:29:29 GMT
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Jenny (and others):

   We've been developing a "bridge" between raster and vector formats
(designed, primarily, for optimized extraction of raster data from vector
coverages) -- if anyone wants to check it out, go to
http://starspan.casil.ucdavis.edu/ -- this code is open source, and we'd
love to get feedback on it. Right now its designed for unix boxes (macos x
people shouldn't have TOO much of a problem compiling it), and its not for
the unix novice since I don't think we have a makefile at this point, but if
you'd like to check it out, please do!

--j

On 10/2/04 2:29 PM, in article
c371324e.0410021329.26d3e286@posting.google.com, "Jenny" <envi35@yahoo.ca>
wrote:

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Subject: Re: Apply a shapefile to raster images in IDL
Posted by Adam Erickson on Wed, 19 Aug 2015 22:03:34 GMT
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On Monday, October 11, 2004 at 1:29:29 PM UTC-7, Jonathan Greenberg wrote:
> Jenny (and others):
>
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>
> --j
>
>
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>> you give me some suggestions to do the work?
>>
>> Thank you in advance,
>> Jenny

I know this is an old message, but I suggest using QGIS for zonal statistics :) It's much more
efficient. Read my reply here: https://groups.google.com/forum/#!topic/comp.lang.idl-pvwave

/4E5kR9DxybQ

Cheers,

Adam