
Subject: CONTOUR problem

Posted by [Reginald Tang](#) on Tue, 01 Oct 1996 07:00:00 GMT

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Hello,

I would appreciate helpful suggestions to a problem i've been having with plotting contour lines in IDL.

I am plotting over a stereographic projection of the Northern hemisphere centered on the North Pole and I am getting a weird "jump" of all levels of the contour lines towards the pole around latitude -10 degrees. My plot looks a bit like a pie-chart with a 10-degree slice taken out of it. Otherwise, the plot is perfectly acceptable (as compared with output using DISPLAA). I use the following statement:

```
CONTOUR, H, LON, LAT
```

where H is height data to be contoured and is a 36x16 array and LON is a 36-vector containing the longitude lines going from 0 to 180 and -170 to -10. LAT is a 16-vector going from 90 (North pole) to 0 (Equator).

There are only 455 data points to be plotted, and their positions are concentric and regularly spaced wrt longitude and latitude. however, data from latitude 90 to 66 are spaced 20 degrees apart in longitude, as opposed to 10 at lower latitudes than 66.

I've tried giving H, LON and LAT as three arrays of the same dimensions to CONTOUR (an alternative suggested in the Reference) but this inexplicably gave me a chaotic mess. A colleague and I have checked and double-checked the contents of the parameters to make sure they are OK.

Any help, hints or clarifying questions will be appreciated. I hope it's not a bug in IDL but just something i overlooked!

Reg

Environment Canada
4905 Dufferin
Downsview, Ontario
M3H 5T4
(416)739-4711

Subject: Re: Contour Problem

Posted by [Christopher Lee](#) on Sat, 24 Apr 2004 11:39:58 GMT

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On Fri, 23 Apr 2004 17:11:11 -0500, Jeff Patrick wrote:

```
> I keep getting the following error in my code and I can't figure out why.  
> Any help would be appreciated.  
>  
> % Internal error: Triangulation is invalid.  
>  
> CONTOUR, X, Y, Z, IRREGULAR=1, ISOTROPIC=1, /CLOSED, /CELL_FILL, /OVERPLOT,  
> .....  
> each array is 32400 in size.  
>  
> Thank you,  
>  
> Jeff  
> jeff.patrick@computer.org
```

Your getting the error because the contour function calls the triangulate function internally, which throws an error on your data. If you can separate the data from the Widget program, do it :) (save it to a file).

Then run TRIANGULATE on the data, if that throws an error, it probably will, something is wrong with the data. e.g

There are identical points in the data, triangulate works (in a fluffy, wordy kind of way) by drawing circles which have the points on the circumference. If the points are identical, it can't work. (This would be my guess).

There are colinear points which otherwise satisfy the Delauney Triangulation algorithm, (good luck finding these). The triangle will be 'flat', i.e not a triangle. If this is going to happen, it would most likely happen on the first three points, which are needed to bootstrap the algorithm.

Chris.

Subject: Re: Contour Problem
Posted by [btt](#) on Mon, 26 Apr 2004 13:22:14 GMT
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Christopher Lee wrote:

```
> On Fri, 23 Apr 2004 17:11:11 -0500, Jeff Patrick wrote:  
>  
>  
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>>
```

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>>

>

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> Triangulation algorithm, (good luck finding these). The triangle will be
> 'flat', i.e not a triangle. If this is going to happen, it would most
> likely happen on the first three points, which are needed to bootstrap the
> algorithm.

>

Hello,

The GRID_INPUT (IDL 5.5+) can be used to fish out the duplicate data
triplets before the call to TRIANGULATE. See the DUPLICATES keywprd to
GRID_INPUT.

Ben

Subject: Re: Contour Problem

Posted by [Jeff Patrick](#) on Mon, 26 Apr 2004 16:04:33 GMT

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I've checked the latitude and longitude and do not see any duplicate data,
so I guess my next question is what data type (int, single, double, etc.) is
Contour looking for? I could see that it may think there is duplicate data
if it is rounding the values I'm sending it. Also does Contour use the
value stored in the zero (0) index of the array (it seems that other IDL
function may not)?

Thanks for the help on this,

Jeff

"Christopher Lee" <lc@127.0.0.1> wrote in message
news:pan.2004.04.24.11.39.58.346601@127.0.0.1...

> On Fri, 23 Apr 2004 17:11:11 -0500, Jeff Patrick wrote:

>

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why.

>> Any help would be appreciated.

>>

>> % Internal error: Triangulation is invalid.

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>> CONTOUR, X, Y, Z, IRREGULAR=1, ISOTROPIC=1, /CLOSED, /CELL_FILL,
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>> Thank you,
>>
>> Jeff
>> jeff.patrick@computer.org
>
> Your getting the error because the contour function calls the triangulate
> function internally, which throws an error on your data. If you can
> separate the data from the Widget program, do it :) (save it to a file).
>
> Then run TRIANGULATE on the data, if that throws an error, it probably
> will, something is wrong with the data. e.g
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> There are identical points in the data, triangulate works (in a fluffy,
> wordy kind of way) by drawing circles which have the points on the
> circumference. If the points are identical, it can't work. (This would be
> my guess).
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> Triangulation algorithm, (good luck finding these). The triangle will be
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> likely happen on the first three points, which are needed to bootstrap the
> algorithm.
>
> Chris.
```

Subject: Re: Contour Problem

Posted by [James Kuyper](#) on Mon, 26 Apr 2004 18:14:09 GMT

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Jeff Patrick wrote:

```
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> so I guess my next question is what data type (int, single, double, etc.) is
> Contour looking for? I could see that it may think there is duplicate data
> if it is rounding the values I'm sending it. Also does Contour use the
```

Near-duplicates are just as bad as duplicates, and there doesn't have to be any explicit rounding to make that true. 'b' is a duplicate of 'c' for practical purposes, if you need to calculate "a/(b-c)" for values of 'a', 'b', and 'c' for which b-c is so close to 0 that the calculation would overflow.

Subject: Re: CONTOUR problem
Posted by [Wox](#) on Wed, 27 Aug 2008 08:06:55 GMT
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On Tue, 26 Aug 2008 16:21:05 -0700 (PDT), xiao <littleddna@gmail.com>
wrote:

> HI~ everyone~ i use the contour pro to display a 2Darray named s11.
> And I wrote it like this:
>
> CONTOUR,s11,range,vangle,xrange=[0,180],yrange=[0,90],ytitl e='Viewing
> zenith angle',xtitle='Relative azimuth angle',/C_LABELS
>
> But the xrange and yrange do not work and it only labeled on line in
> the image , Any one see where the problem is ?
>
> Thank you very much~

```
nlevels=5  
CONTOUR,s11,range,vangle,xrange=[0,180],yrange=[0,90],xstyl e=1,ystyle=1,ytitle='Viewing  
zenith angle',xtitle='Relative azimuth  
angle',C_LABELS=replicate(1,nlevels)
```

To know how many levels there are (nlevels), you must set the LEVELS
keyword yourself., otherwise make nlevels big enough.

Subject: Re: CONTOUR problem
Posted by [xiao zhang](#) on Wed, 27 Aug 2008 14:02:51 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Aug 27, 3:06 am, Wox <nom...@hotmail.com> wrote:

> On Tue, 26 Aug 2008 16:21:05 -0700 (PDT), xiao <littledd...@gmail.com>
> wrote:
>
>> HI~ everyone~ i use the contour pro to display a 2Darray named s11.
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```
> zenith angle',xtitle='Relative azimuth
> angle',C_LABELS=replicate(1,nlevels)
>
> To know how many levels there are (nlevels), you must set the LEVELS
> keyword yourself., otherwise make nlevels big enough.
```

Thanks , it works. but the xrange still does not work.....

Subject: Re: CONTOUR problem
Posted by [xiao zhang](#) on Wed, 27 Aug 2008 14:09:05 GMT
[View Forum Message](#) <> [Reply to Message](#)

```
On Aug 27, 9:02 am, xiao <littledd...@gmail.com> wrote:
> On Aug 27, 3:06 am, Wox <nom...@hotmail.com> wrote:
>
>
>
>> On Tue, 26 Aug 2008 16:21:05 -0700 (PDT), xiao <littledd...@gmail.com>
>> wrote:
>
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>>> And I wrote it like this:
>
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>>> zenith angle',xtitle='Relative azimuth angle',/C_LABELS
>
>>> But the xrange and yrange do not work and it only labeled on line in
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>> To know how many levels there are (nlevels), you must set the LEVELS
>> keyword yourself., otherwise make nlevels big enough.
>
> Thanks , it works. but the xrange still does not work.....
```

Btw, how can I set the intervals of the contour ?
thanx

Subject: Re: CONTOUR problem
Posted by [David Fanning](#) on Wed, 27 Aug 2008 14:13:26 GMT
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xiao writes:

> Thanks , it works. but the xrange still does not work.....

Set the [XY]Style keywords to 1 to force exact axis scaling.
This is, IMHO, almost always necessary when using the CONTOUR
command. You can find more information about the anemic
CONTOUR command here:

<http://www.dfanning.com/documents/tips.html#Graphics2d>

Cheers,

David

--

David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: <http://www.dfanning.com/>
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: CONTOUR problem
Posted by [David Fanning](#) on Wed, 27 Aug 2008 14:14:45 GMT
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xiao writes:

> Btw, how can I set the intervals of the contour ?

<http://www.dfanning.com/tips/nlevels.html>

Cheers,

David

--

David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: <http://www.dfanning.com/>
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: CONTOUR problem
Posted by [xiao zhang](#) on Wed, 27 Aug 2008 14:16:59 GMT

On Aug 27, 9:14 am, David Fanning <n...@dfanning.com> wrote:

> xiao writes:
>> Btw, how can I set the intervals of the contour ?
>
> <http://www.dfanning.com/tips/nlevels.html>
>
> Cheers,
>
> David
> --
> David Fanning, Ph.D.
> Fanning Software Consulting, Inc.
> Coyote's Guide to IDL Programming:<http://www.dfanning.com/>
> Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Thank you ,David :)

Subject: Re: CONTOUR problem

Posted by [xiao zhang](#) on Wed, 27 Aug 2008 14:41:23 GMT

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On Aug 27, 9:16 am, xiao <littledd...@gmail.com> wrote:

> On Aug 27, 9:14 am, David Fanning <n...@dfanning.com> wrote:
>
>> xiao writes:
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>> David Fanning, Ph.D.
>> Fanning Software Consulting, Inc.
>> Coyote's Guide to IDL Programming:<http://www.dfanning.com/>
>> Sepore ma de ni thui. ("Perhaps thou speakest truth.")
>
> Thank you ,David :)

Sorry, another question....why i always get red as the back ground color when i use this statement?

!P.background=255 i thought it should be white.... :(

Subject: Re: CONTOUR problem
Posted by [David Fanning](#) on Wed, 27 Aug 2008 14:51:58 GMT
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xiao writes:

> Sorry, another question....why i always get red as the back ground
> color when i use this statement?
>
> !P.background=255 i thought it should be white.... :(

http://www.dfanning.com/color_tips/colorchp3.html

Cheers,

David

--

David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: <http://www.dfanning.com/>
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: CONTOUR problem
Posted by [Wox](#) on Wed, 27 Aug 2008 15:00:58 GMT
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On Wed, 27 Aug 2008 07:41:23 -0700 (PDT), xiao <littledddna@gmail.com>
wrote:

> Sorry, another question....why i always get red as the back ground
> color when i use this statement?
>
> !P.background=255 i thought it should be white.... :(

The quick answer would be:

```
device,decomposed=0
!P.background=255
  CONTOUR,s11,range,vangle,xrange=[0,180],yrange=[0,90],color
=0,xstyle=1,ystyle=1,ytitle='Viewing
zenith angle',xtitle='Relative azimuth angle',C_LABELS=replicate(1,10)
```

=> note the xstyle,ystyle and color keywords

Subject: Re: CONTOUR problem

Posted by [xiao zhang](#) on Wed, 27 Aug 2008 15:02:09 GMT

[View Forum Message](#) <> [Reply to Message](#)

On Aug 27, 10:00 am, Wox <nom...@hotmail.com> wrote:

> On Wed, 27 Aug 2008 07:41:23 -0700 (PDT), xiao <littledd...@gmail.com>
> wrote:

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> zenith angle',xtitle='Relative azimuth angle',C_LABELS=replicate(1,10)
>
> => note the xstyle,ystyle and color keywords

THanks~ I got it ~ :)

Subject: Re: Contour Problem

Posted by [David Fanning](#) on Mon, 25 Jul 2011 18:13:03 GMT

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Alexa writes:

> I think this is probably a pretty easy problem but I could get help
> that'd be great.
>
> I'm making a contour plot and and I want to change the values of the
> axes so I'm doing
>
> x=[-6, 0]
> y=[-3, 1]
>
> Contour, x, y, z
>
> But I get an error that says that x and y need to be 2D arrays, but
> aren't those already 2D arrays? Do I have the syntax wrong?

Well, usually the syntax of the Contour plot is like this:

Contour, z, x, y

Maybe you want something like this:

```
s = Size(z, /Dimensions)
x = Scale_Vector(Findgen(s[0]), -6, 0)
y = Scale_Vector(Findgen(s[1]), -3, 1)
Contour, z, x, y
```

You can find Scale_Vector here:

http://www.idlcoyote.com/programs/scale_vector.pro

You might need other routines from the Coyote Library, too.
It is best to download the whole thing.

http://www.idlcoyote.com/code_tips/installcoyote.php

Cheers,

David

--

David Fanning, Ph.D.

Fanning Software Consulting, Inc.

Coyote's Guide to IDL Programming: <http://www.idlcoyote.com/>

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