
Subject: crazy contour

Posted by [news.qwest.net](#) on Wed, 02 May 2007 17:08:59 GMT

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I have come across a strange problem with a contour plot.
I have an array that is 2048 by 1025, with a minimum of 0
and a max of 10.
The values all vary smoothly.

If I contour with levels = findgen(10)+1, /fill
the right edge of the plot has a problem (the contours do not
go to the edge, even though they should.) It implies the data goes
to zero in that last column (it does not).
This creates a ps file about about 1 mb.

If I do a contour with levels = findgen(10)+1, /cell
then it plots properly, but is really slow, and creates a 20mb
ps file.

This is a very simple plot. There is only one
maximum per column, monotonically decreasing off that
maximum, and no NaNs or other weird points.

Anyone have any ideas on what is going on? It almost seems
like a bug in the contouring algorithm at the right hand edge of the plot,
but I really don't have time to look into it any more.
(I rotated a shade_surf command with shade= keyword and
blanked out the zaxis labels to create a very nice facsimile of
the contour plot I wanted.)

Cheers,
bob

PS David, what do you thing the problem is?
-just kidding :)

Subject: Re: crazy contour

Posted by [David Fanning](#) on Wed, 02 May 2007 17:56:39 GMT

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R.G. Stockwell writes:

> Anyone have any ideas on what is going on? It almost seems
> like a bug in the contouring algorithm at the right hand edge of the plot,
> but I really don't have time to look into it any more.
> (I rotated a shade_surf command with shade= keyword and

> blanked out the zaxis labels to create a very nice facsimile of
> the contour plot I wanted.)

I presume you have XSTYLE=1 and YSTYLE=1 set, as you should
on ALL contour plots. I think the problem is that you are
looking at the "hole" in the contour plot and *thinking*
that is the problem.

http://www.dfanning.com/tips/contour_hole.html

This could probably be fixed if your levels started
with your minimum value. I would set the levels like this:

```
step = (Max(array) - Min(array)) / 10  
levels = Indgen(10) * step + Min(array)
```

If that doesn't solve the problem, then I'd like to
see that array, cause I don't really believe the story. :-)

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: crazy contour

Posted by news.qwest.net on Wed, 02 May 2007 18:54:50 GMT

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"David Fanning" <news@dfanning.com> wrote in message
news:MPG.20a27ebfac10f124989f75@news.frii.com...

> I presume you have XSTYLE=1 and YSTYLE=1 set, as you should
> on ALL contour plots.

Yes. !x.style =1 and !y.style =1 in the startup.

I think the problem is that you are
> looking at the "hole" in the contour plot and *thinking*
> that is the problem.

That is not the problem. There is a "hole" where a maximum should
be, not a minimum. The behaviour remains when I create levels both
above and below the range of the data.

One odd thing, using /fill the file size 0.4mb. I just created the file using /cell and it is a whopping 78Mb (yes megabytes). Obviously something crazy is going on, that cell is handling it (in a thrashing sort of way) and fill is dropping it.

I'll reduce the code and post it.

```
>
> http://www.dfanning.com/tips/contour_hole.html
>
> This could probably be fixed if your levels started
> with your minimum value. I would set the levels like this:
>
> step = (Max(array) - Min(array)) / 10
> levels = Indgen(10) * step + Min(array)
>
> If that doesn't solve the problem, then I'd like to
> see that array, cause I don't really believe the story. :-)
```

:O

Thanks for the response. BTW idl 6.3 on windows.
IDL Version 6.3, Microsoft Windows (Win32 x86 m32). (c) 2006, Research Systems, Inc.

Subject: Re: crazy contour

Posted by news.qwest.net on Wed, 02 May 2007 19:00:46 GMT

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"R.G. Stockwell" <no@email.please> wrote in message
news:4638de7b\$0\$505\$815e3792@news.qwest.net...

```
>
> I'll reduce the code and post it.
```

Note: this seems to be a problem with the ps code (I bet). Perhaps I have a bad ps driver or something. It would be interesting to see if anyone reproduces my problem. The thing to look for is: on the left hand plot, at time = 2048. That column of the plot should continue the peak of the chirp signal (i.e. the signal goes right to the edge). On my postscript file, the chirp ends at around time = 2000, and those final columns are

all "0", i.e. they are black. The plot on the right (using /cell) is correct.
I see this problem in ps only, the problem does not appear if I plot to screen.

```
len = 256.*8
t = findgen(len)
dt = 1

h = 10*cos(2!*pi*(40+t/7.2)*t/len)
s = s_trans(h,samp=dt)

loadct,0
set_plot,'ps'
name='c:\temp\crazycontour.ps'
device,filename=name,color=0,xsize=6.5,xoffset=1,yoffset=2,y size=3,/inches

!p.charsize=1.
!P.multi=[0,2,1]
levels = findgen(15) - 2

contour,abs(s.st),s.time,s.freq,levels=levels,/fill,$
xtitle='Time',ytitle='Frequency',title='(a) ST'

; this below creates the correct contour plot,
; HOWEVER on my system it creates a 77mb ps file.
; So go ahead and see what happens.
contour,abs(s.st),s.time,s.freq,levels=levels,/cell,$
xtitle='Time',ytitle='Frequency',title='(a) ST'

device,/close
set_plot,'win'

end
```

The ST function is located at:
http://www.cora.nwra.com/~stockwel/rgspages/S-Transform/s_trans.pro

Subject: Re: crazy contour
Posted by [David Fanning](#) on Wed, 02 May 2007 19:04:12 GMT
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R.G. Stockwell writes:

> One odd thing, using /fill the file size 0.4mb. I just created the file
> using /cell and it is a whopping 78Mb (yes megabytes). Obviously
> something crazy is going on, that cell is handling it (in a thrashing sort
> of way)
> and fill is dropping it.
>
> I'll reduce the code and post it.

Oh, oh. I'm becoming convinced.

What about this as an off-the wall suggestion. Do the fill part of the contour plot (without axes) in the Z graphics buffer with CELL_FILL. Then take a snapshot of this portion of the window for later display with something like TVIMAGE in the PS file. Add your actual contour values on top of this image (CONTOUR with NOERASE).

I'm going to guess that should reduce the size of the file (which I'm sure are due to LOTS of polygons) considerably. Probably to less than a filled contour with FILL. :-)

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: crazy contour

Posted by [David Fanning](#) on Wed, 02 May 2007 19:09:52 GMT

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R.G. Stockwell writes:

> Note: this seems to be a problem with the ps code (I bet). Perhaps I
> have a bad ps driver or something. It would be interesting to see if
> anyone reproduces my problem.

I have a better idea! I think it is your PostScript *viewer*.
Have you actually printed the PostScript file?

In any case, I don't see the problem after running your code. It looks fine in my viewer. I don't really have

a PostScript printer.

Cheers,

DAvid

--

David Fanning, Ph.D.

Fanning Software Consulting, Inc.

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Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: crazy contour

Posted by news.qwest.net on Wed, 02 May 2007 19:12:28 GMT

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"David Fanning" <news@dfanning.com> wrote in message
news:MPG.20a28e8962669003989f79@news.frii.com...

> R.G. Stockwell writes:

>

>> One odd thing, using /fill the file size 0.4mb. I just created the file
>> using /cell and it is a whopping 78Mb (yes megabytes). Obviously
>> something crazy is going on, that cell is handling it (in a thrashing
>> sort
>> of way)
>> and fill is dropping it.

>>

>> I'll reduce the code and post it.

>

> Oh, oh. I'm becoming convinced.

>

> What about this as an off-the wall suggestion. Do the
> fill part of the contour plot (without axes) in the Z
> graphics buffer with CELL_FILL. Then take a snapshot
> of this portion of the window for later display with
> something like TVIMAGE in the PS file. Add your
> actually contour values on top of this image
> (CONTOUR with NOERASE).

Yes, good suggestion. I had tried creating the plot on screen,
and captured it and wrote a jpeg file, the quality was not nearly
good enough for publication. I ended up doing the following:

```
shade_surf,abs(s.st),s.time,s.freq,shade=bytsc1(abs(s.st)),  
xtitle='Time',ytitle='Frequency',az=0,ax=90,$  
ztickname = [' ',' ',' ',' ',' ',' ']
```

(the blank z ticknames remove a tiny bit of clutter that appears from the z labels)

Cheers,
bob

Subject: Re: crazy contour
Posted by [news.qwest.net](#) on Wed, 02 May 2007 19:25:37 GMT
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"David Fanning" <news@dfanning.com> wrote in message
news:MPG.20a28fef59ddc9ad989f7a@news.frii.com...

> R.G. Stockwell writes:

>

>> Note: this seems to be a problem with the ps code (I bet). Perhaps I
>> have a bad ps driver or something. It would be interesting to see if
>> anyone reproduces my problem.

>

> I have a better idea! I think it is your PostScript *viewer*.

> Have you actually printed the PostScript file?

A-HA!

Well, my printer is directly connected to my recycle bin - saves
a lot of time.

I printed it out, and I would say that the "problem" is greatly reduced.
It still appears that there is a thin column of "zero" at the end of the
figure. My ghostview is downlevel 4.6 instead of 4.8 which seems to
be the current version.

So, do you think the 78 mb /cell file is a normal result for a contour
plot like this?

Thanks for the help!

Cheers,
bob

Subject: Re: crazy contour
Posted by [David Fanning](#) on Wed, 02 May 2007 19:39:26 GMT
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R.G. Stockwell writes:

> So, do you think the 78 mb /cell file is a normal result for a contour
> plot like this?

Well, I think CELL_FILL produces a LOT of polygons. Even with your FILL method I got a warning about lots of polygons. So it is probably not out of the question. Have you tried to make a PDF file from it? Maybe that will be smaller. Most printers will accept that now.

Cheers,

David

--

David Fanning, Ph.D.

Fanning Software Consulting, Inc.

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Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: crazy contour

Posted by [MarioIncandenza](#) on Wed, 02 May 2007 19:51:30 GMT

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Bob,

In my experience, 25MB, 50MB, 75MB, 130MB, right on up until a crash, when you use CONTOUR,/CELL_FILL in a PostScript context. I'm sure someone else could explain it better, but PostScript files have a raster resolution which is used internally by IDL, which is best described as "very, very high." I don't know how to determine the "effective raster resolution" that CONTOUR is using.

When I have to do these plots, I make the contour plot using /CELL_FILL in the Z buffer, and then place it on the PS image. It would be nice if we could put some "pixel-size" magic into CONTOUR (like TV has), but I'm not aware of any solutions along those lines.

--Edward H.

Subject: Re: crazy contour

Posted by [news.qwest.net](#) on Wed, 02 May 2007 20:13:41 GMT

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"Ed Hyer" <ejhyer@gmail.com> wrote in message

news:1178135490.340567.286010@e65g2000hsc.googlegroups.com.. .

> Bob,
>
> In my experience, 25MB, 50MB, 75MB, 130MB, right on up until a crash,
> when you use CONTOUR,/CELL_FILL in a PostScript context. I'm sure
> someone else could explain it better, but PostScript files have a
> raster resolution which is used internally by IDL, which is best
> described as "very, very high." I don't know how to determine the
> "effective raster resolution" that CONTOUR is using.
>
> When I have to do these plots, I make the contour plot using /
> CELL_FILL in the Z buffer, and then place it on the PS image. It would
> be nice if we could put some "pixel-size" magic into CONTOUR (like TV
> has), but I'm not aware of any solutions along those lines.
>
> --Edward H.

I will look into the z buffer approach (both you and David mentioned it)
the next time I come across a similar problem. The rotated shade_surf
works well too (for a scalable postscript file).

Thanks,
bob

Subject: Re: crazy contour

Posted by news.qwest.net on Wed, 02 May 2007 20:18:02 GMT

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"David Fanning" <news@dfanning.com> wrote in message
news:MPG.20a296d7788d155a989f7d@news.frii.com...

> R.G. Stockwell writes:
>
>> So, do you think the 78 mb /cell file is a normal result for a contour
>> plot like this?
>
> Well, I think CELL_FILL produces a LOT of polygons. Even with
> your FILL method I got a warning about lots of polygons. So
> it is probably not out of the question. Have you tried to make
> a PDF file from it? Maybe that will be smaller. Most printers
> will accept that now.
>
> 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.")

I always get the 'too many polygons' message. I just figured that was a leftover from when IDL ran on IBM 386SX computers and you were only allowed 12 polygons and four colors.

Seriously, this is not an unusual array to plot, and it only had 12 contours. It's not like i was trying to calculate googol factorial or something like that.

I'll look into the z buffer and pdf solutions when I run into this problem again. The file is for inclusion into latex, which can handle these other types of files now.

Cheers,
bob

Subject: Re: crazy contour

Posted by [David Fanning](#) on Wed, 02 May 2007 20:25:36 GMT

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R.G. Stockwell writes:

- > I always get the 'too many polygons' message. I just figured that was
- > a leftover from when IDL ran on IBM 386SX computers and you
- > were only allowed 12 polygons and four colors.
- > Seriously, this is not an unusual array to plot, and it only had
- > 12 contours. It's not like i was trying to calculate googol factorial
- > or something like that.

I think the PostScript device is due for some serious maintenance. Maybe we could convince ITTVIS to set up a program whereby we could designate that some of our maintenance dollars go for things we really need. :-)

Cheers,

David

--

David Fanning, Ph.D.

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