
Subject: trigrd + triangulate -> zero values -> ignore zeros on cgcontour

Posted by [jkobori19](#) on Thu, 23 Jan 2014 11:56:34 GMT

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

Dear All,

I'm having problem with a contour plot, which is actually not a problem, because the routine works fine,

I just want to make a little modification:

I have an M X N matrix, created with trigrd + triangulate. The input data (z component) has a min value of 12, but the output matrix has a min value of 0, I guess this is normal.

What I would like to do is to ignore this zeros when creating the contour plot with cgcontour, i.e. where the matrix has a value of 0, it will appear as a white area on the plot, and the rest of them will appear normally as it should be.

Could You guys give some help?

Joe

Subject: Re: trigrd + triangulate -> zero values -> ignore zeros on cgcontour

Posted by [Matthew Argall](#) on Thu, 23 Jan 2014 12:09:25 GMT

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

> What I would like to do is to ignore this zeros when creating the contour plot with cgcontour,

Have you tried the MISSINGVALUE keyword to cgContour?

Subject: Re: trigrd + triangulate -> zero values -> ignore zeros on cgcontour

Posted by [Yngvar Larsen](#) on Thu, 23 Jan 2014 12:09:54 GMT

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

What happens if you set the MISSING keyword of TRIGRID to !values.f_nan? The 0 value you observe is just the default value that TRIGRID uses if MISSING is not set.

I haven't checked whether CONTOUR handles NaNs well, but it should according to the documentation.

--

Yngvar

On Thursday, 23 January 2014 12:56:34 UTC+1, jkob...@gmail.com wrote:

> Dear All,

>

>

>
> I'm having problem with a contour plot, which is actually not a problem, because the routine works fine,
>
> I just want to make a little modification:
>
>
>
> I have an M X N matrix, created with trigrid + triangulate. The input data (z component) has
>
> a min value of 12, but the output matrix has a min value of 0, I guess this is normal.
>
> What I would like to do is to ignore this zeros when creating the contour plot with cgcontour,
>
> i.e. where the matrix has a value of 0, it will appear as a white area on the plot, and the rest of them will appear normally as it should be.
>
>
>
> Could You guys give some help?
>
>
>
> Joe

Subject: Re: trigrid + triangulate -> zero values -> ignore zeros on cgcontour
Posted by [jkobori19](#) on Thu, 23 Jan 2014 12:17:35 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Thursday, January 23, 2014 1:09:25 PM UTC+1, Matthew Argall wrote:
>> What I would like to do is to ignore this zeros when creating the contour plot with cgcontour,
>
>
>
> Have you tried the MISSINGVALUE keyword to cgContour?

Hi,

it gives an error: CONTOUR: Invalid value specified for keyword LEVELS: No finite elements.

Subject: Re: trigrid + triangulate -> zero values -> ignore zeros on cgcontour
Posted by [jkobori19](#) on Thu, 23 Jan 2014 12:19:56 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Thursday, January 23, 2014 1:09:25 PM UTC+1, Matthew Argall wrote:

>> What I would like to do is to ignore this zeros when creating the contour plot with cgcontour,
>
>
>
> Have you tried the MISSINGVALUE keyword to cgContour?

It has no effect on the output.

Subject: Re: trigrig + triangulate -> zero values -> ignore zeros on cgcontour
Posted by [David Fanning](#) on Thu, 23 Jan 2014 12:36:39 GMT
[View Forum Message](#) <> [Reply to Message](#)

jkobori19@gmail.com writes:

>
> On Thursday, January 23, 2014 1:09:25 PM UTC+1, Matthew Argall wrote:
>>> What I would like to do is to ignore this zeros when creating the contour plot with cgcontour,
>>
>>
>>
>> Have you tried the MISSINGVALUE keyword to cgContour?
>
> Hi,
>
> it gives an error: CONTOUR: Invalid value specified for keyword LEVELS: No finite elements.

That seems odd. I presume you have downloaded and are using the latest version of the Coyote Library?

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

Can I see the way you are calling the program?

Cheers,

David

--

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

Subject: Re: trigrig + triangulate -> zero values -> ignore zeros on cgcontour
Posted by [jkobori19](#) on Thu, 23 Jan 2014 12:44:00 GMT

On Thursday, January 23, 2014 1:36:39 PM UTC+1, David Fanning wrote:

> jkobori19@gmail.com writes:

>

>

>

>>

>

>> On Thursday, January 23, 2014 1:09:25 PM UTC+1, Matthew Argall wrote:

>

>>>> What I would like to do is to ignore this zeros when creating the contour plot with cgcontour,

>

>>>

>

>>>

>

>>>

>

>>> Have you tried the MISSINGVALUE keyword to cgContour?

>

>>

>

>> Hi,

>

>>

>

>> it gives an error: CONTOUR: Invalid value specified for keyword LEVELS: No finite elements.

>

>

>

> That seems odd. I presume you have downloaded and are using the latest

>

> version of the Coyote Library?

>

>

>

> http://www.idlcoyote.com/code_tips/fixcoyoteprogram.php

>

>

>

> Can I see the way you are calling the program?

>

>

>

> Cheers,

>

>

>

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

Hi David,

the code (without missingvalue):

```
TRIANGULATE, theta0i, thetaobsi, tr, b
```

```
mx=TRIGRID(theta0i, thetaobsi, ydi, tr, nx=res, ny=res, $  
xgrid=xo, ygrid=yo, max_value=25)
```

```
levels=50
```

```
step = (Max(mx) - Min(mx)) / levels
```

```
userLevels = IndGen(levels) * step + Min(mx)
```

```
cgcontour, mx, xo, yo, /fill, xstyle=3, ystyle=3, $  
levels=userLevels, xrange=[0.07,0.44], yrange=[0.04,0.45], $  
xtitle="Jet half opening angle [rad]", $  
ytitle="Observer half angle [rad]", $  
Position=[0.1, 0.1, 0.83, 0.95], $  
charthick=2, charsize=1.5, thick=3
```

```
cgColorbar, range=[12, 25], title="AB magnitude", $  
/reverse, /vertical, /fit, $  
divisions=7, charthick=2, charsize=1.5
```

Subject: Re: trigrid + triangulate -> zero values -> ignore zeros on cgcontour
Posted by [jkobori19](#) on Thu, 23 Jan 2014 12:52:27 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Thursday, January 23, 2014 1:44:00 PM UTC+1, jkob...@gmail.com wrote:

> On Thursday, January 23, 2014 1:36:39 PM UTC+1, David Fanning wrote:

>

>> jkobori19@gmail.com writes:

```
>
>>
>
>>
>
>>
>
>>>
>
>>
>
>>> On Thursday, January 23, 2014 1:09:25 PM UTC+1, Matthew Argall wrote:
>
>>
>
>>>> > What I would like to do is to ignore this zeros when creating the contour plot with
cgcontour,
>
>>
>
>>>>
>
>>
>
>>>>
>
>>
>
>>>>
>
>>
>
>>>> Have you tried the MISSINGVALUE keyword to cgContour?
>
>>
>
>>>
>
>>
>
>>> Hi,
>
>>
>
>>>
>
>>
>
```

```
>>> it gives an error: CONTOUR: Invalid value specified for keyword LEVELS: No finite
elements.
>
>>
>
>>
>
>>
>
>> That seems odd. I presume you have downloaded and are using the latest
>
>>
>
>> version of the Coyote Library?
>
>>
>
>>
>
>>
>
>> http://www.idlcoyote.com/code_tips/fixcoyoteprogram.php
>
>>
>
>>
>
>>
>
>> Can I see the way you are calling the program?
>
>>
>
>>
>
>>
>
>> Cheers,
>
>>
>
>>
>
>>
>
>> David
>
>>
```

```
>
>>
>
>>
>
>> --
>
>>
>
>> David Fanning, Ph.D.
>
>>
>
>> Fanning Software Consulting, Inc.
>
>>
>
>> Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
>
>>
>
>> Sepore ma de ni thue. ("Perhaps thou speakest truth.")
>
>
>
> Hi David,
>
>
>
>
>
> the code (without missingvalue):
>
>
>
> TRIANGULATE, theta0i, thetaobsi, tr, b
>
>
>
> mx=TRIGRID(theta0i, thetaobsi, ydi, tr, nx=res, ny=res, $
>
> xgrid=xo, ygrid=yo, max_value=25)
>
>
>
> levels=50
>
> step = (Max(mx) - Min(mx)) / levels
```



```
>
> userLevels = IndGen(levels) * step + Min(mx)
>
>
>
> cgcontour, mx, xo, yo, /fill, xstyle=3, ystyle=3, $
>
> levels=userLevels, xrange=[0.07,0.44], yrange=[0.04,0.45], $
>
> xtitle="Jet half opening angle [rad]", $
>
> ytitle="Observer half angle [rad]", $
>
> Position=[0.1, 0.1, 0.83, 0.95], $
>
> charthick=2, charsize=1.5, thick=3
>
>
>
> cgColorbar, range=[12, 25], title="AB magnitude", $
>
> /reverse, /vertical, /fit, $
>
> divisions=7, charthick=2, charsize=1.5
```

Sorry, I forgot that of course I'm using the latest Coyote Library.

Subject: Re: trigrd + triangulate -> zero values -> ignore zeros on cgcontour
Posted by [David Fanning](#) on Thu, 23 Jan 2014 13:12:16 GMT
[View Forum Message](#) <> [Reply to Message](#)

jkobori19@gmail.com writes:

> the code (without missingvalue):

Well, don't know. I can't reproduce the error with code that is similar to yours. Nor can I explain how such an error might occur from looking at the code. Sorry. :-(

Cheers,

David

--

David Fanning, Ph.D.

Fanning Software Consulting, Inc.

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

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

Subject: Re: trigrid + triangulate -> zero values -> ignore zeros on cgcontour
Posted by [jkobori19](#) on Thu, 23 Jan 2014 13:27:19 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Thursday, January 23, 2014 2:12:16 PM UTC+1, David Fanning wrote:

> jkobori19@gmail.com writes:

>

>

>

>> the code (without missingvalue):

>

>

>

> Well, don't know. I can't reproduce the error with code that is similar

>

> to yours. Nor can I explain how such an error might occur from looking

>

> at the code. Sorry. :-(

>

>

>

> Cheers,

>

>

>

> David

>

> --

>

> David Fanning, Ph.D.

>

> Fanning Software Consulting, Inc.

>

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

>

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

It's OK, I'm trying to create the plot also in R, maybe I can do that there.
Thank You very much for the help anyway!

Subject: Re: trigrid + triangulate -> zero values -> ignore zeros on cgcontour
Posted by [Matthew Argall](#) on Thu, 23 Jan 2014 14:31:24 GMT
[View Forum Message](#) <> [Reply to Message](#)

> it gives an error: CONTOUR: Invalid value specified for keyword LEVELS: No finite elements.

>> userLevels = IndGen(levels) * step + Min(mx)

Your "userLevels" do not have any finite elements. Check to see what they are. Perhaps set the /NAN keyword in the Min function.

```
IDL> data = dist(256)
IDL> userlevels = indgen(10)
IDL> userlevels = cgscalerector(userlevels, min(data), max(data))
IDL> print, userlevels
    0.00000    20.1133    40.2265    60.3398    80.4530
    100.566    120.680    140.793    160.906    181.019
IDL> cgcontour, data, /fill, LEVELS=userlevels
```

```
IDL> userlevels[3] = !values.f_nan
IDL> cgcontour, data, /fill, LEVELS=userlevels
IDL> userlevels += !values.f_nan
IDL> print, finite(userlevels)
    0 0 0 0 0 0 0 0 0 0
IDL> cgcontour, data, /fill, LEVELS=userlevels
% CONTOUR: Invalid value specified for keyword LEVELS: No
    finite elements.
% CONTOUR: Invalid value specified for keyword LEVELS: No
    finite elements.
% CONTOUR: Invalid value specified for keyword LEVELS: No
    finite elements.
```

Subject: Re: trigrd + triangulate -> zero values -> ignore zeros on cgcontour
Posted by [jkobori19](#) on Thu, 23 Jan 2014 15:47:37 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Thursday, January 23, 2014 3:31:24 PM UTC+1, Matthew Argall wrote:
>> it gives an error: CONTOUR: Invalid value specified for keyword LEVELS: No finite elements.
>
>
>
>>> userLevels = IndGen(levels) * step + Min(mx)
>
>
>
> Your "userLevels" do not have any finite elements. Check to see what they are. Perhaps set the
> /NAN keyword in the Min function.
>
>
>
> IDL> data = dist(256)
>
> IDL> userlevels = indgen(10)
>

```

> IDL> userlevels = cgscalevector(userlevels, min(data), max(data))
>
> IDL> print, userlevels
>
>    0.00000    20.1133    40.2265    60.3398    80.4530
>
>    100.566    120.680    140.793    160.906    181.019
>
> IDL> cgcontour, data, /fill, LEVELS=userlevels
>
>
>
> IDL> userlevels[3] = !values.f_nan
>
> IDL> cgcontour, data, /fill, LEVELS=userlevels
>
> IDL> userlevels += !values.f_nan
>
> IDL> print, finite(userlevels)
>
>    0  0  0  0  0  0  0  0  0  0  0
>
> IDL> cgcontour, data, /fill, LEVELS=userlevels
>
> % CONTOUR: Invalid value specified for keyword LEVELS: No
>
>    finite elements.
>
> % CONTOUR: Invalid value specified for keyword LEVELS: No
>
>    finite elements.
>
> % CONTOUR: Invalid value specified for keyword LEVELS: No
>
>    finite elements.

```

Hi,

actually, for some reason now it doesn't give an error when using missingvalue... And it works fine! I don't know what did I do wrong so far, but the plot seems to be OK now. I just change the elements of matrix to zero, where the particular value is greater then, let's say, 27, then applying the missingvalue keyword, and everything looks good!

Thank You very much guys!

Actually, one more thing: when I ignore zeros, there will be less color levels on the plot, since the color corresponding to zero disappears. Is there a solution for this?

Subject: Re: trigrid + triangulate -> zero values -> ignore zeros on cgcontour
Posted by [David Fanning](#) on Thu, 23 Jan 2014 16:36:08 GMT
[View Forum Message](#) <> [Reply to Message](#)

jkobori19@gmail.com writes:

> Actually, one more thing: when I ignore zeros, there will be less color levels on the plot, since the color corresponding to zero disappears. Is there a solution for this?

Define more levels? Add a background color? Up to you, I guess. :-)

Cheers,

David

--

David Fanning, Ph.D.

Fanning Software Consulting, Inc.

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

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

Subject: Re: trigrid + triangulate -> zero values -> ignore zeros on cgcontour
Posted by [jkobori19](#) on Wed, 29 Jan 2014 14:19:31 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Thursday, January 23, 2014 5:36:08 PM UTC+1, David Fanning wrote:

> jkobori19@gmail.com writes:

>

>

>

>> Actually, one more thing: when I ignore zeros, there will be less color levels on the plot, since the color corresponding to zero disappears. Is there a solution for this?

>

>

>

> Define more levels? Add a background color? Up to you, I guess. :-)

>

>

>

> Cheers,

>

>

>

> David

>

> --

>

> David Fanning, Ph.D.

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

Unfortunately, defining more levels doesn't solve my problem. I would like to set the color levels so that they ignore the zeros and the starting level would correspond to the next value in the matrix. E.g., the elements start from a value of 13.83, the max value is 29.98. The color table is 33 (cgloadct, 33), so the cgcolorbar shows colors from red to blue with continous transition, but the colors on the cgcontour are only from yellow to red. I'm sorry if the solution is actually simple, I'm just a little bit confused with these color levels.

Subject: Re: trigrid + triangulate -> zero values -> ignore zeros on cgcontour
Posted by [Phillip Bitzer](#) on Wed, 29 Jan 2014 16:17:29 GMT
[View Forum Message](#) <> [Reply to Message](#)

Well, there's always RTFM :-)

"Ignoring" values is simple. Simple start your levels at a value greater than the one you want to ignore. Case in point:

n=101 ;number of grid pts

```
;define the grid  
x = findgen(n)/(n-1) & y = findgen(n)/(n-1)  
xGrid = x # REPLICATE(1., n)  
yGrid = REPLICATE(1., n) # y
```

```
z = SQRT(xGrid^2 + yGrid^2) ;make some data
```

```
levels = [0., 0.25, 0.5, 0.75, 1.]  
;levels = [0.25, 0.5, 0.75, 1.] ;uncomment this out to "ignore" < 0.25  
nLevels = N_ELEMENTS(levels)
```

```
cgLOADCT, 33, RGB_TABLE=rgb ;get a palette, but don't load the table
```

```
colorInd = cgSCALEVECTOR(LINDGEN(nLevels), 0, 255) ;select some colors from the paleete  
rgbNew = rgb[colorInd, *] ;get *just* these colors
```

```
cgContour, z, x, y, LEVELS=levels, PALETTE=rgbNew, /CELL_FILL ;plot with only the colors you  
want
```

```
tNames = [STRCOMPRESS(levels, /REMOVE), ' '] ;get some ticknames
```

```
;plot the colorbar, with your palette  
cgCOLORBAR, PALETTE=rgbNew, Divisions = nLevels, /FIT, TICKNAMES=tNames, /DISCRETE
```

Notice I don't actually load any color tables. There's no need.

Using the palette as I do above allows you to be a little more explicit with the colors you send to (cg)Contour and cgColorBar. I prefer to do these sort of plots in this manner. I also rarely need a continuous color bar - my work is usually much better suited for discrete cb's - so this allows me to ensure the colors match in the contour and cb.
