Subject: Re: fun with nonlinearity and COLORBAR
Posted by pgrigis on Fri, 22 Oct 2010 14:37:32 GMT
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On Oct 21, 10:34 pm, Jeremy Bailin <astroco...@gmail.com> wrote:
> On Oct 21, 3:35 pm, David Fanning <n...@dfanning.com> wrote:
>
>
>
>> Jeremy Bailin writes:
>>> I'm looking for advice on a plot I'm making that uses David's COLORBAR
>>> routine. The problem is that the mapping between color index in the
>>> image and data value is quite non-linear - and not a simple
>>> transformation, either (it's generated via histogram equalization).
>
>>> There are a few ways I can imagine having it look. So first, from an
>>> aesthetics (and ease-of-understanding) standpoint, which would be
>>> best?
>>> 1. The colorbar has one line for each color index, and is annotated
>>> using 6 evenly-spaced divisions, but the numbers marking those
>>> divisions are not evenly distributed.
>>> 2. The colorbar has one line for each color index, the annotations
>>> are evenly spaced in *value*, but are spaced unevenly along the color
>>> bar.
>>> 3. The colorbar is annotated using 6 evenly-spaced divisions that
>>> have evenly-spaced numbers, and the colors within the color bar vary
>>> (i.e. the mapping between row up the color bar and color index is no
>>> longer linear).
>
>>> The second question is implementation. I can achieve #1 very easily
>>> using COLORBAR. I think that in order to do #2, I would need to
>>> essentially roll my own version of COLORBAR that changes the
>>> annotation locations - are there any shortcuts that would let me use
>>> the existing routine? To do #3, my best idea is to regenerate a new
>>> (non-linearly altered) color table, and then use the existing COLORBAR
>>> routine. Any caveats with that, or any easier ways to do it?
>
>>> Alternatively, what other ideas do people have for conveying this kind
>>> of information?
>
>> If you are talking about six discrete colors, I would use
>> the discrete color bar, DCBAR.
>
>> I have implemented something like number 1, equally spaced
>> divisions, with non-linear values, using FSC_Colorbar (new
>> name!) in this article:
>
>> http://www.dfanning.com/map_tips/precipmap.html

>
>> I had to use a tick formatting function to do it correctly.
>
>> 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.")
>
> Ah yes, FSC_COLORBAR. ;-) I haven't switched to 8.0 yet, so I'm still
> safe from that issue for now...
>
> It's a continuous color bar (basically color table 4 with a slight
> modification). I've got a feeling that #3 is the aesthetically-correct
> thing to do. Not coincidentally, it's probably the one that requires
> the most work. Ah well...

Well, to get a quick idea of the possibility download
http://hea-www.cfa.harvard.edu/~pgrigis/idl_stuff/pg_plotima ge.pro

and try this:

```
;set up colorbar
loadct,5
x=[[findgen(256)],[findgen(256)]]

;plot colorbar

;uniform ticks, uniform colors
pg_plotimage,x
;uniform ticks, stretched colors
pg_plotimage,alog(x+1)

;weird ticks
pg_plotimage,x,xtickv=[10,100,120,150,220],xticks=4,/xst

;logscaling
pg_plotimage,alog(x+1),/xlog,/xst
```

Have fun exploring - hopefully you'll be able to find a good
rerpresentation
for your purpose (and when you do you can use more proper tools then
my image plotter).

Ciao,
Paolo

>
> -Jeremy.