Subject: Re: Color tables
Posted by J.D. Smith on Tue, 23 Nov 1999 08:00:00 GMT
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David Fanning wrote:
>
> Karsten Thiel (thiel@ph4.physik.uni-goettingen.de) writes:
>
>> I'm facing a problem concerning the color tables. I would like to
>> display a large array with some negativ
>> values. Till now I'm doing this with TVSCL, but the information where
>> the values are negativ is very important for me. So how are the
>> pre-defined color tables defined? Which table is the best for my
>> problem?
>
> Well, Karsten, I hate to tell you, but NONE of the color
> tables are best for your problem. And, in fact, if
> colors *are* important to you (and they must be or you wouldn't
> be writing) then you had better ditch TVSCL too. :-)
>
> Let me give you an example. Suppose you have data in
> a variable named "array". And suppose you would like to
> see the positive values of the data in the Red Temperature
> color table. But you would like to see the negative values
> of your data in a yellow color.
>
> Then you could do something like this. Let's suppose
> you have 200 colors to use. Let's use 199 of them
> for the Red Temperature color scale:
>
>   LoadCT, 3, NColors=199
>
> Let's make the 200th color yellow:
>
>   TVLCT, 255, 255, 0, 199
>
> Now, lets scale the data so that the positive
> values lie in the data range 0 to 198. In other
> words, they will be displayed in the Red Temperature
> colors:
>
>   scaledData = BytScl(array, Min=0, Top=198)
>
> Let's find out where our negative values are:
>
>   negvalues = Where(array LT 0, count)
>
> Make the negative values yellow:

>
>   IF count GT 0 THEN scaledData[negvalues] = 199B
>
> Now, have a look! :-)
>
>   TV, scaledData
>
> It is always better to have some *plan* for using colors
> than to just take whatever IDL seems to offer.
>

Why not use two different colormaps altogether...

```
im=randomu(sd,100,100)-.2 ; some fake data

;; Load red into upper half of color map, and blue into the lower half
loadct,3,BOTTOM=!D.N_COLORS/2 & loadct,1,NCOLORS=!D.N_COLORS/2

;; Scale all positives into the upper half
dpos=bytscl(im,MIN=0.,TOP=!D.N_COLORS/2-1)+!D.N_COLORS/2
;; Scale all negatives into the lower half, in reverse!
dneg=!D.N_COLORS/2-1-bytscl(im,MAX=0.,TOP=!D.N_COLORS/2-1)
;; Put them together
d=dpos*(im ge 0.)+dneg*(im lt 0.)
```

I've loaded red into the top half, blue into the bottom half. The positives are scaled into the top half, and the negatives are scaled in reverse into the bottom half (so that more negative values would be brighter blue). Obviously there are many different possibilities based on this basic scheme. You can also create your own custom colormap, but often it's easiest to scale the data instead.

Good luck,

JD

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