Subject: Resample (neighborhood averaging) a 3D array with missing data
Posted by zhangj.sdu on Mon, 02 Dec 2013 01:51:50 GMT
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Hello, everyone:

I want to resample a 128x20000x32 (sample,line, band) image with missing data into a 32x5000x32 image, using neighborhood averaging over 4x4 pixels.
The REBIN function cannot help, since it has no NaN keyword like MEAN; The "Average Arrays with Missing Data" tip in the "Examples To Illuminate the IDL Way" is for two arrays (http://www.idlcoyote.com/idl_way/smallexamples.html).

The total amount of images is hundreds of gigabytes. Is there any fast solution to this?

Thanks.
Clark

Subject: Re: Resample (neighborhood averaging) a 3D array with missing data
Posted by Matthew Argall on Mon, 02 Dec 2013 04:55:09 GMT
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You could try using SMOOTH(array, WIDTH=4, /NAN), then replace NANs in the original array by the result of the smooth. Then use REBIN.

Subject: Re: Resample (neighborhood averaging) a 3D array with missing data
Posted by zhangj.sdu on Mon, 02 Dec 2013 10:35:02 GMT
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On Monday, December 2, 2013 12:55:09 PM UTC+8, Matthew Argall wrote:
> You could try using SMOOTH(array, WIDTH=4, /NAN), then replace NANs in the original array by the result of the smooth. Then use REBIN.

Thanks, Matthew. It doesn't work when the NaNs are on the edge of 4x4 pixels.

When averaging over each 4x4 pixels sub-image, the NaNs within them should be ignored, like MEAN(sub-image, /NaN)

Clark

Subject: Re: Resample (neighborhood averaging) a 3D array with missing data
Posted by lecacheux.alain on Mon, 02 Dec 2013 10:35:47 GMT
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Le lundi 2 décembre 2013 02:51:50 UTC+1, zhang...@gmail.com a écrit :

> Hello, everyone:
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> I want to resample a 128x20000x32 (sample,line, band) image with missing data into a 32x5000x32 image, using neighborhood averaging over 4x4 pixels.
>
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>
> The total amount of images is hundreds of gigabytes. Is there any fast solution to this?
>
>
>
> Thanks.
>
> Clark

resampled_array = mean(mean(reform(array,4,32,4,5000,32,/OVER),DIM=1,/NAN),DIM=2,/NAN)

alx.

Subject: Re: Resample (neighborhood averaging) a 3D array with missing data
Posted by lecacheux.alain on Mon, 02 Dec 2013 10:39:19 GMT
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Le lundi 2 décembre 2013 11:35:47 UTC+1, alx a écrit :
> Le lundi 2 décembre 2013 02:51:50 UTC+1, zhang...@gmail.com a écrit :
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>> Hello, everyone:
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>> Thanks.
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>> Clark
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>
> resampled_array = mean(mean(reform(array,4,32,4,5000,32,/OVER),DIM=1,/NAN),DIM=2,/NAN)
>
>
>
> alx.

Maybe faster would be:
resampled_array=mean(transpose(reform(array,4,32,4,5000,32,/ OVER),[0,2,1,3]), DIM=1,/NAN)

alx.

Subject: Re: Resample (neighborhood averaging) a 3D array with missing data
Posted by lecacheux.alain on Mon, 02 Dec 2013 10:44:03 GMT
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Le lundi 2 décembre 2013 11:39:19 UTC+1, alx a écrit :
> Le lundi 2 décembre 2013 11:35:47 UTC+1, alx a écrit :
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>> Le lundi 2 décembre 2013 02:51:50 UTC+1, zhang...@gmail.com a écrit :
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>>> Hello, everyone:
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>>> Thanks.
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>>> Clark
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>> resampled_array = mean(mean(reform(array,4,32,4,5000,32,/OVER),DIM=1,/NAN),DIM
=2,/NAN)
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>> alx.
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> Maybe faster would be:
>
> resampled_array=mean(transpose(reform(array,4,32,4,5000,32,/ OVER),[0,2,1,3]),
DIM=1,/NAN)
>
>
>
> alx.

Sorry, I forgot a more REFORM !

resampled_array=mean(reform(transpose(reform(array,4,32,4,50
00,32,/OVER),[0,2,1,3]),8,32,5000,32,/OVER),DIM=1,/NAN)

Subject: Re: Resample (neighborhood averaging) a 3D array with missing data
Posted by Moritz Fischer on Mon, 02 Dec 2013 10:47:58 GMT
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>>
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>> alx.
>
> Sorry, I forgot a more REFORM !
>
> resampled_array=mean(reform(transpose(reform(array,4,32,4,50
00,32,/OVER),[0,2,1,3]),8,32,5000,32,/OVER),DIM=1,/NAN)
>

... and I think the "8" should be a "16" (= 4 x 4). But you made your
point ;-)

Subject: Re: Resample (neighborhood averaging) a 3D array with missing data
Posted by zhangj.sdu on Tue, 03 Dec 2013 00:28:50 GMT
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On Monday, December 2, 2013 6:47:58 PM UTC+8, Moritz Fischer wrote:
>>>
>
>>>
>
>>> alx.
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>>
>

>> Sorry, I forgot a more REFORM !
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>>
>
>> resampled_array=mean(reform(transpose(reform(array,4,32,4,50
00,32,/OVER),[0,2,1,3]),8,32,5000,32,/OVER),DIM=1,/NAN)
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> ... and I think the "8" should be a "16" (= 4 x 4). But you made your
>
> point ;-)

This is exactly what I need. Thanks, ALX, Moritz.
Clark
