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Subject: Re: Minimum Noise Fraction Doubts...

Posted by [Jeff N.](#) on Fri, 26 Oct 2007 14:45:43 GMT

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On Oct 26, 6:39 am, Nuno Vilaça <nuno.avs...@gmail.com> wrote:

> Dear all,

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> I am going to use artificial neural networks (anns) to classify  
> different urban land-uses in belgium's flemish region. The other land  
> uses that not urban will be classified in braoder classes such as  
> agriculture, forest, water, others, etc etc. For this i will use modis  
> imagery covering 2001 to 2006.

> I have made area fraction images (afis) from land use raster datasets  
> covering flanders. These datasets were provided by specialised belgium  
> agencies. From these datasets i calculated the percentage of each land  
> use occupation in a pixel size of 250 \* 250 m<sup>2</sup> (same pixel size as the  
> modis imagery resolution that i 'll use). This operation gives me at  
> the end the so called afis.

> These afis only cover brussels region, but they will work as reference  
> imagery to train the anns. After training the anns for the brussels  
> area, i can extrapolate these anns for the entire flemish region.

> As i said before, i will use modis imagery with 250 \* 250 m<sup>2</sup>  
> resolution, so the red and nir bands and also cleaned ndvi images,  
> i.e. without clouds, snow, etc etc... i now have an image in the red,  
> nir and ndvi for each month of 2005. This is the methodology how the  
> images were obtained:

>

> I took the S1 (daily) images of Europe  
> Convert the Europe-S1 to Europe-S10 (WGSlatlon)  
> Cut out Belgium and convert to B72  
> Composit the Belgium-S10 BEL 72 images to S30 images  
> This was done for the red and nir band. They are 250m, the other bands  
> (blue, green,...) are 500m or more  
> Out of the red and Nir S30 image, I calculated the NDVI

>

> I now need to perform either a pca (principal component analysis) or a  
> mnf (minimum noise fraction) to select which images i will use with  
> the anns to calculate classify the different urban land uses in  
> flanders. For what i read, mnf seems a better alternative to the pca  
> methodology. i then wish to calculate the mnf for the 2005 imagery (i  
> only have 2005 and 2003 imagery for now, but only ndvi for 2003). The  
> problem is how to do it using exclusively envi. I thought that i  
> should create a stack layer of all the monthly images with both red,  
> nir and ndvi images, which i did. From this stack layer i choosed the  
> menu transform -> mnf rotation -> forward mnf -> estimate noise  
> statistics from data. The output of this procedure goes as an attached  
> file.

>

> i think that my methodology is not correct because: mnf should be  
> between bands and not images, right? So, i should pick band red, nir  
> and ndvi for january and see which one has less correlation with the  
> others, and perform each month separately? Because i am doing an mnf  
> to 12 images \* 3 bands (red, nir and ndvi) i don't know if this is  
> correct... envi gives me an mnf graph where the first 5 images have  
> the highest eigenvalues. And supposing it's correct and looking at the  
> output graph from envi, i should use the eigenvalues of the first 5  
> images, because after these the correlation between images is strong?  
> But still, the xx axis of this graph shows the number of images and  
> not the bands, so , how correct can this be (i used 33 images for  
> 2005)? Anyway, if i look at the 5 first images given by the mnf  
> results, they look ok, and i can see that they not coincide with the  
> images composing the stack layer (there is no alphabetical match as i  
> took the images to form the stack layer by alphabetical order). I can  
> also see that it seems that no flags exist (absence of data due to  
> snow, ocean, etc etc). The values of the images can be lower than 0  
> but also around 75 (ocean), i do not know if you can tell something  
> from this.  
>  
> thank you for your help!  
>  
> nuno

I'm not familiar with your datasets, nor am i completely sure what your exact problem is, so forgive me if i've completely mistaken your question. But my read on this is that you've compiled one huge image cube that is the combination of several multiband image cubes taken at different times. So you have all the bands for all the times compiled into one big dataset. If that's true, i would agree that this isn't the best way - it just doesn't sound like that image cube has any physical meaning anymore. Now, it's actually a fairly common practice to build image cubes such that every band in the image cube is, instead of being a measure of all wavelengths at a given time (the normal case), in fact a measure of a single wavelength at different times - a multitemporal cube vs. a multispectral cube. I suggest you consider doing it this way. In your case you'd build a "red band" cube for each point in the time series, a "nir band" cube for each time point, and an "ndvi cube." You'd have to do three different mnf's, then perhaps combine the results, but that makes more sense to me.

Jeff

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