Subject: Minimum Noise Fraction Doubts...
Posted by on Fri, 26 Oct 2007 10:39:02 GMT

Dear all,

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 m² (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 m²
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

___