Subject: fast svdc for Singular Value Decomposition?
Posted by ivitseva on Mon, 03 Dec 2012 08:41:18 GMT
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Dear All,

I'm running a Singular Value Decomposition in IDL using the svdc routine. The goal is to perform an extended EOF analysis (or extended PCA).

My input is a covariance matrix built from two time series images, each with 348 bands and with a spatial dimension of ns=360 columns * nl=180 rows.
The covariance matrix becomes an [space,space] matrix (i.e. a dimension of [(ns*nl),(ns*nl)] that is too big, my script did not finish after 3 days so I've terminated the run.

Is there maybe a fast way to perform this decomposition?

I guess there should be a mathematical workaround for Singular Value Decomposition of this large matrix but I must confess here I'm reaching my limits. I would be very grateful for an answer, our research is at halt at the moment because of this problem.

It would be great if somebody could tell me how to improve the run time?
Basically I read the two time series, then form a [nb,ns*nl] two dimensional array from both time series, make a subset of the two arrays ignoring NaN, and then form the covariance matrix as cov=(1/nb-1)*(array1##transpose(array2)). This becomes a very large matrix and then svdc,cov,W,U,V is almost impossible to compute.

Thank you very much in advance,
Eva