Subject: Re: Statistic codes: Significance level
Posted by Craig Markwardt on Tue, 02 Mar 2004 09:32:44 GMT
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"Andry William (Please remove \".spam\")" <andry@ya.com.spam> writes:

> Dear all:
>
> I am processing some long term time series of various data.
> I computed the long term trends using the REGRESS fuction.
> However, I need to also give the significance level of the
> trends. I have been looking around for a code to do it but
> have not found anything.

What do you mean by "significance level of the trend?" Do you mean you want to estimate a confidence interval of the slope parameter to your fit? Can you supply uncertainty estimates for your time series? If yes to both, then routines like LINFIT or MPFITFUN can do this (Bob points you in the right direction). If you can't supply uncertainty estimates, then any estimated significance levels are irrelevant. Also, if your trend model is non-linear, then estimated confidence regions provided by these routines are not reliable, and you need to make a chi-square confidence grid, as described in Bevington or Numerical Recipes.

But "significance level" can have other meanings too. Sometimes this can mean the goodness of the fit, in which case you would want to compute the probability of chance occurrence of having a chi-square value greater or less than a certain value (usually you would want to do this when the fit is bad). MPCHITEST can help you there.

"Significance level of the trend" could also mean a comparison of the fit with and without a trend. In that case you will want to perform an F-test for that addition of the trend parameters. You can read about this in Bevington, and use MPFTEST to compute the probabilities. You will need two fitted chi-saure values: one with, and one without, the trend.

Good luck,
Craig

P.S. MP* routines are at

http://cow.physics.wisc.edu/~craigm/idl/idl.html (under fitting)