

NAME

cokrig - performs cokriging on data-set consisting of irregular distributed points.

SYNOPSIS

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cokrig [[-so] | [-sr]] [[-v variance-matrices] | [-p variance-parameters]]  
[-n neighbor_file] [[-g kriging-net] | [-G file]]  
[-d bands] [-a] [-u missingval] [-id simple_interpolation]  
[[-t] | [-T feature_file]] [-ln] [-I detection-levels]  
[-h] [-c Catchment_file] [-f log_file] [-4] [-w]  
< Data_file > Kriging_file  
use of s-option :  
[-so order ['r' range] ['m' #support]]  
[-sr range ['m' #support]]  
use of g-option :  
[-g ['x' min_x max_x] ['y' min_y max_y] ['step' dx dy] ['size' ncols nrows]]  
use of v-option :  
[-v var_file lags [directions]]
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DESCRIPTION

Cokrig is a universal cokriging-program, that estimates points by use of irregular distributed data-points. Input consists of 3 HIPS-files. The dataset is read from std.input in the IMSOR defined "IRREGULAR"-format. The first-order neighbors of the datapoints are specified by option *n* and the variance-structure used in the kriging-system is specified by option *v*

Output is a HIPS-file consisting of 2*N frames. The first N frames contain kriging-estimates, and the last N frames contain estimated kriging-variances.

The kriging system fails if several support-points have equal x- and y-coordinates. To check for the occurrence of these points the program "equalpoints" is advised.

OPTIONS

- so** support-points are selected within a specified order of neighborhood. The neighborhood-order is determined by the Delauney-triangulation specified by option *n* be set. If a maximum number is specified (*#support*) the supports with the lowest order, and secondarily the smallest distance, are chosen.
- sr** support-points are selected within a specified euclidean range. If a maximum number of supports is set (*#support*), the points with the smallest distances are chosen.
- v** the file containing variance-matrices. The matrices are read from a HIPS-file, generated by the "crossv"-program, and the header-field "seq_name" specifies whether the file contains covariance- or semivariogram-matrices. The number of variance-lags is set to (*lags*), and if the number of directions differs from 1 the number of directions is also set (*directions*). Variance-values are calculated by linear interpolation between the given values. For distances bigger than the greatest matrice-lag, variance-values are set equal to the values of this matrice.
- p** The variance-structure is given as spheric functions. This is only possible in case of separate kriging. The parameters of the functions are written in an ascii-file. Each line in this file must contain 6 columns: the feature number (not used by the program) followed by 5 parameters which specifies the double-spheric function: a1, a2, c0 c1, c2. The single-spheric function is specified by setting a1=c1=0. If a1 is set to a negative number, simple interpolation is performed on this particular feature. The interpolation-method is determined by the key used in option *id*.
- a** specifies that separate kriging is performed instead of cokriging.
- d** d is number of constraints in kriging-system. Simpel cokriging= 0 , ordinary cokriging= 1 (default), universal cokriging with 1. order drift = 3 , universal cokriging with 2. order drift = 6.
- G** kriging-points are placed in a file of irregular format.

- g** kriging-points are placed in a regular net, limited by lower and upper x- and y-coordinates (*min_x*, *max_x*, *min_y*, *max_y*). Default-values of grid-limits are limits of data-set. The kriging-points are equaspaced, specified either by jump-distance (*step*) or by number of points (*size*) in the x- and y-directions. The kriging-net is default written as a HIPS-frame with #columns= number of points in x-direction and with #rows = number of points in y-direction.
- h** specifies that the kriging-net is NOT written to a regular HIPS-frame. (Only possible together with option *g*).
- n** name of file containing first-order neighbors of points in data-set. Generated by program "delaunN".
- id** simple interpolation is performed instead of kriging. Different interpolation-methods are possible: 1=nearest neighbor , 2=local mean, 3=local median, 4=inverse distance, 5=inverse squared distance, 6=local maximum, 7=local minimum, 8=local variance, 9=no. of support points, 99=no interpolation. The interpolations are performed on the support specified by option 'so' or 'sr'. Variance-structure (option 'v' or 'p') is not needed. Variance-frames are not created.
- u** features are undersampled and the value of missing observations is set equal to *missingval*.
- t** test-kriging. The data-points are kriged. This is done by leaving out the kriging-point itself from the support-set. The kriging-estimates are compared with the observed features, given in the *data_file*. Statistics is written to the logfile. Kriging-points (*-g* and *-G*) are not specified when this option is chosen.
- T** test-kriging. Same as option *t*, except that the kriging-estimates are compared with features read from a separate file. *feat_file* case the feature-set read is incomplete, and the complete feature-set must be specified separately.
- c** file containing Catchment-areas. The file consists of a single frame.
- 4** output is written as floats insted of doubles.
- r** kriging-results are not written to output. Only the logfile is created.

SEE ALSO

asc2irr(1), crossv(1), delaunN(1), equalpoints(1), irr2hips(1), krig(1)

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