

CDO Reference Card

Climate Data Operators

Version 1.5.8

October 2012

Uwe Schulzweida

Max-Planck-Institute for Meteorology

<http://code.zmaw.de/projects/cdo>

Syntax

| | | |
|-----|-----------|---|
| cdo | [Options] | Operator1 [–Operator2 [–OperatorN]] |
|-----|-----------|---|

Options

| | |
|--------------|---|
| -a | Generate an absolute time axis |
| -b <nbits> | Set the number of bits for the output precision (I8/I16/I32/F32/F64 for nc,nc2,nc4,nc4c; F32/F64 for grb2,srv,ext,ieg; 1-24 for grb,grb2) Add L or B for Little or Big endian byteorder |
| -f <format> | Outputformat: grb,grb2,nc,nc2,nc4,nc4c,srv,ext,ieg |
| -g <grid> | Grid or file name |
| | Grid names: r<NX>x<NY>, n<N>, gme<NI> |
| -h | Help information for the operators |
| -M | Indicate that the I/O streams have missing values |
| -m <missval> | Set the default missing value (default: -9e+33) |
| -O | Overwrite existing output file, if checked |
| -R | Convert GRIB1 data from reduced to regular grid |
| -r | Generate a relative time axis |
| -s | Silent mode |
| -t <table> | Set the parameter table name or file |
| | Predefined tables: echam4 echam5 mpiom1 |
| -V | Print the version number |
| -v | Print extra details for some operators |
| -z szip | SZIP compression of GRIB1 records |

Operators

Information

| | |
|------------|--|
| info | Dataset information listed by parameter identifier |
| infor | Dataset information listed by parameter name |
| map | Dataset information and simple map |
| <operator> | ifiles |

| | |
|------------|--|
| sinfo | Short information listed by parameter identifier |
| sinfor | Short information listed by parameter name |
| <operator> | ifiles |

| | |
|------------|---|
| diff | Compare two datasets listed by parameter id |
| diffn | Compare two datasets listed by parameter name |
| <operator> | ifile1 ifile2 |

| | |
|------------|----------------------|
| npar | Number of parameters |
| nlevel | Number of levels |
| nyear | Number of years |
| nmon | Number of months |
| ndate | Number of dates |
| ntime | Number of timesteps |
| <operator> | ifile |

| | |
|--------------|-----------------------|
| showformat | Show file format |
| showcode | Show code numbers |
| showname | Show variable names |
| showstdname | Show standard names |
| showlevel | Show levels |
| showltype | Show GRIB level types |
| showyear | Show years |
| showmon | Show months |
| showdate | Show date information |
| showtime | Show time information |
| showtimestam | Show timestamp |
| <operator> | ifile |

| | |
|------------|---------------------------|
| pardes | Parameter description |
| griddes | Grid description |
| zaxisdes | Z-axis description |
| vct | Vertical coordinate table |
| <operator> | ifile |

File operations

| | |
|------------|----------------------|
| copy | Copy datasets |
| cat | Concatenate datasets |
| <operator> | ifiles ofile |

| | |
|----------------|-------------------|
| replace | Replace variables |
| replace ifile1 | ifile2 ofile |

| | |
|------------|--|
| merge | Merge datasets with different fields |
| mergetime | Merge datasets sorted by date and time |
| <operator> | ifiles ofile |

| | |
|-------------|-------------------------------|
| splitlevel | Split code numbers |
| splitparam | Split parameter identifiers |
| splitname | Split variable names |
| splitlevel | Split levels |
| splitgrid | Split grids |
| splitzaxis | Split z-axes |
| splittabnum | Split parameter table numbers |
| <operator> | ifile obase |

| | |
|------------|---------------|
| splithour | Split hours |
| splitlevel | Split days |
| splitmon | Split months |
| splitseas | Split seasons |
| splityear | Split years |
| <operator> | ifile obase |

| | |
|----------------------------------|----------------------|
| splitsel | Split time selection |
| splitsel,nsets[,noffset[,nskip]] | ifile obase |

Selection

| | |
|------------|----------------------------------|
| selparam | Select parameters by identifier |
| delparam | Delete parameters by identifier |
| <operator> | ,params ifile ofile |
| selcode | Select parameters by code number |
| delcode | Delete parameters by code number |
| <operator> | ,codes ifile ofile |

| | |
|---------------------|------------------------------------|
| selname | Select parameters by name |
| delname | Delete parameters by name |
| <operator> | ,names ifile ofile |
| selstdname | Select parameters by standard name |
| selstdname,stdnames | ifile ofile |

| | |
|----------------------|--------------------------------|
| sellevel | Select levels |
| sellevel,levels | ifile ofile |
| sellevelidx | Select levels by index |
| sellevelidx,levelidx | ifile ofile |
| selgrid | Select grids |
| selgrid,grids | ifile ofile |
| selzaxis | Select z-axes |
| selzaxis,zaxes | ifile ofile |
| selltype | Select GRIB level types |
| selltype,ltypes | ifile ofile |
| seltabnum | Select parameter table numbers |
| seltabnum,tabnums | ifile ofile |

| | |
|----------------------------|---------------------|
| selimestep | Select timesteps |
| selimestep,timesteps | ifile ofile |
| seltime | Select times |
| seltime,times | ifile ofile |
| selhour | Select hours |
| selhour,hours | ifile ofile |
| selday | Select days |
| selday,days | ifile ofile |
| selmon | Select months |
| selmon,months | ifile ofile |
| selyear | Select years |
| selyear,years | ifile ofile |
| selseas | Select seasons |
| selseas,seasons | ifile ofile |
| seldate | Select dates |
| seldate,date1[,date2] | ifile ofile |
| selmon | Select single month |
| selmon,month[,nts1[,nts2]] | ifile ofile |

| | |
|----------------------------------|---------------------------------|
| sellonlatbox | Select a longitude/latitude box |
| sellonlatbox,lon1,lon2,lat1,lat2 | ifile ofile |
| selindexbox | Select an index box |
| selindexbox,idx1,idx2,idy1,idy2 | ifile ofile |

Conditional selection

| | |
|------------|---------------------|
| ifthen | If then |
| ifnotthen | If not then |
| <operator> | ifile1 ifile2 ofile |

| | |
|---------------------------------|--------------|
| ifthenelse | If then else |
| ifthenelse ifile1 ifile2 ifile3 | ofile |

| | |
|------------|----------------------|
| ifthenc | If then constant |
| ifnotthenc | If not then constant |
| <operator> | ,c ifile ofile |

Comparison

| | |
|------------|---------------------|
| eq | Equal |
| ne | Not equal |
| le | Less equal |
| lt | Less than |
| ge | Greater equal |
| gt | Greater than |
| <operator> | ifile1 ifile2 ofile |

| | |
|------------|------------------------|
| eqc | Equal constant |
| nec | Not equal constant |
| lec | Less equal constant |
| ltc | Less than constant |
| gec | Greater equal constant |
| gtc | Greater than constant |
| <operator> | ,c ifile ofile |

Modification

| | |
|-----------------|--------------------------|
| setpartab | Set parameter table |
| setpartab,table | ifile ofile |
| setcode | Set code number |
| setcode,code | ifile ofile |
| setparam | Set parameter identifier |
| setparam,param | ifile ofile |
| setname | Set variable name |
| setname,name | ifile ofile |
| setunit | Set variable unit |
| setunit,unit | ifile ofile |
| setlevel | Set level |
| setlevel,level | ifile ofile |
| setltype | Set GRIB level type |
| setltype,ltype | ifile ofile |

| | |
|------------------------------|---------------------|
| setdate | Set date |
| setdate,date | ifile ofile |
| settime | Set time of the day |
| settime,time | ifile ofile |
| setday | Set day |
| setday,day | ifile ofile |
| setmon | Set month |
| setmon,month | ifile ofile |
| setyear | Set year |
| setyear,year | ifile ofile |
| settunits | Set time units |
| settunits,units | ifile ofile |
| settaxis | Set time axis |
| settaxis,date,time[,inc] | ifile ofile |
| setreftime | Set reference time |
| setreftime,date,time[,units] | ifile ofile |
| setcalendar | Set calendar |
| setcalendar,calendar | ifile ofile |
| shifttime | Shift timesteps |
| shifttime,sval | ifile ofile |

| | |
|-------------------------------|------------------------------|
| chcode | Change code number |
| chcode,oldcode,newcode[,...] | ifile ofile |
| chparam | Change parameter identifier |
| chparam,oldparam,newparam,... | ifile ofile |
| chname | Change variable name |
| chname,oldname,newname,... | ifile ofile |
| chunit | Change variable unit |
| chunit,oldunit,newunit,... | ifile ofile |
| chlevel | Change level |
| chlevel,oldlev,newlev,... | ifile ofile |
| chlevelc | Change level of one code |
| chlevelc,code,oldlev,newlev | ifile ofile |
| chlevelv | Change level of one variable |
| chlevelv,name,oldlev,newlev | ifile ofile |

| | |
|----------------------|--------------------|
| setgrid | Set grid |
| setgrid,grid | ifile ofile |
| setgridtype | Set grid type |
| setgridtype,gridtype | ifile ofile |
| setgridarea | Set grid cell area |
| setgridarea,gridarea | ifile ofile |

| | |
|----------------|-------------|
| setzaxis | Set z-axis |
| setzaxis,zaxis | ifile ofile |

| | |
|---------------------------|-----------------------|
| setgatt | Set global attribute |
| setgatt,attname,attstring | ifile ofile |
| setgatts | Set global attributes |
| setgatts,attfile | ifile ofile |

| | |
|-----------|------------------|
| invertlat | Invert latitudes |
| invertlat | ifile ofile |

| | |
|-----------|---------------|
| invertlev | Invert levels |
| invertlev | ifile ofile |

| | |
|--------------------|--------------|
| maskregion | Mask regions |
| maskregion,regions | ifile ofile |

| | |
|-----------------------------------|-------------------------------|
| masklonlatbox | Mask a longitude/latitude box |
| masklonlatbox,lon1,lon2,lat1,lat2 | ifile ofile |
| maskindexbox | Mask an index box |
| maskindexbox,idx1,idx2,idy1,idy2 | ifile ofile |

| | |
|-------------------------------------|--|
| setclonlatbox | Set a longitude/latitude box to constant |
| setclonlatbox,c,lon1,lon2,lat1,lat2 | ifile ofile |
| setcindexbox | Set an index box to constant |
| setcindexbox,c,idx1,idx2,idy1,idy2 | ifile ofile |

| | |
|--------------|----------------|
| enlarge | Enlarge fields |
| enlarge,grid | ifile ofile |

| | |
|---|-------------------------------|
| setmissval | Set a new missing value |
| setmissval,newmiss ifile ofile | |
| setctomiss | Set constant to missing value |
| setmisstoc | Set missing value to constant |
| < operator >,c ifile ofile | |
| setrtomiss | Set range to missing value |
| setvrange | Set valid range |
| < operator >,rmin,rmax ifile ofile | |

Arithmetic

| | |
|-----------------------------------|---------------------------------------|
| expr | Evaluate expressions |
| expr,instr ifile ofile | |
| exprf | Evaluate expressions from script file |
| exprf,filename ifile ofile | |

| | |
|---------------------------------------|-----------------------|
| abs | Absolute value |
| int | Integer value |
| nint | Nearest integer value |
| pow | Power |
| sqr | Square |
| sqrt | Square root |
| exp | Exponential |
| ln | Natural logarithm |
| log10 | Base 10 logarithm |
| sin | Sine |
| cos | Cosine |
| tan | Tangent |
| asin | Arc sine |
| acos | Arc cosine |
| reci | Reciprocal value |
| < operator > ifile ofile | |

| | |
|---|--------------------------|
| addc | Add a constant |
| subc | Subtract a constant |
| mulc | Multiply with a constant |
| divc | Divide by a constant |
| < operator >,c ifile ofile | |

| | |
|---|---------------------------|
| add | Add two fields |
| sub | Subtract two fields |
| mul | Multiply two fields |
| div | Divide two fields |
| min | Minimum of two fields |
| max | Maximum of two fields |
| atan2 | Arc tangent of two fields |
| < operator > ifile1 ifile2 ofile | |

| | |
|---|------------------------------|
| monadd | Add monthly time series |
| monsub | Subtract monthly time series |
| monmul | Multiply monthly time series |
| monddiv | Divide monthly time series |
| < operator > ifile1 ifile2 ofile | |

| | |
|---|---|
| ymonadd | Add multi-year monthly time series |
| ymonsub | Subtract multi-year monthly time series |
| ymonmul | Multiply multi-year monthly time series |
| ymonddiv | Divide multi-year monthly time series |
| < operator > ifile1 ifile2 ofile | |

| | |
|---|---------------------------------------|
| ydayadd | Add multi-year daily time series |
| ydaysub | Subtract multi-year daily time series |
| ydaymul | Multiply multi-year daily time series |
| ydaydiv | Divide multi-year daily time series |
| < operator > ifile1 ifile2 ofile | |

| | |
|---|--|
| yhouradd | Add multi-year hourly time series |
| yhoursub | Subtract multi-year hourly time series |
| yhourmul | Multiply multi-year hourly time series |
| yhourdiv | Divide multi-year hourly time series |
| < operator > ifile1 ifile2 ofile | |

| | |
|---------------------------------------|------------------------------|
| muldpm | Multiply with days per month |
| divdpm | Divide by days per month |
| muldpy | Multiply with days per year |
| divdpy | Divide by days per year |
| < operator > ifile ofile | |

Statistical values

| | |
|---------------------------------|-----------------------|
| Available statistical functions | < stat > |
| minimum | min |
| maximum | max |
| sum | sum |
| mean | mean |
| average | avg |
| variance | var |
| standard deviation | std |

| | |
|---------------------------------------|-----------------------|
| consects | Consecutive Timesteps |
| < operator > ifile ofile | |

| | |
|--|-------------------------------------|
| ens< stat > | Statistical values over an ensemble |
| < operator > ifiles ofile | |
| enspctl | Ensemble percentiles |
| enspctl,p ifiles ofile | |

| | |
|--|---|
| ensrkhistspace | Ranked Histogram averaged over time |
| ensrkhisttime | Ranked Histogram averaged over space |
| ensroc | Ensemble Receiver Operating characteristics |
| < operator > obsfile ensfiles ofile | |

| | |
|--|---------------------------------|
| enscrps | Ensemble CRPS and decomposition |
| enscrps rfile ifiles ofilebase | |
| ensbrs | Ensemble Brier score |
| ensbrs,x rfile ifiles ofilebase | |

| | |
|---------------------------------------|---------------------------------|
| fld< stat > | Statistical values over a field |
| < operator > ifile ofile | |
| fldpctl | Field percentiles |
| fldpctl,p ifile ofile | |

| | |
|---------------------------------------|--------------------------|
| zon< stat > | Zonal statistical values |
| < operator > ifile ofile | |
| zonpctl | Zonal percentiles |
| zonpctl,p ifile ofile | |

| | |
|---------------------------------------|-------------------------------|
| mer< stat > | Meridional statistical values |
| < operator > ifile ofile | |
| merpctl | Meridional percentiles |
| merpctl,p ifile ofile | |

| | |
|---|------------------------------------|
| gridbox< stat > | Statistical values over grid boxes |
| < operator >,nx,ny ifile ofile | |

| | |
|---------------------------------------|-----------------------------|
| vert< stat > | Vertical statistical values |
| < operator > ifile ofile | |

| | |
|---|-------------------------------|
| timsel< stat > | Time range statistical values |
| < operator >,nsets[,noffset[,nskip]] ifile ofile | |

| | |
|---|------------------------|
| timselfpctl | Time range percentiles |
| timselfpctl,p,nsets[,noffset[,nskip]] ifile1 ifile2 ifile3 ofile | |

| | |
|---|----------------------------|
| run< stat > | Running statistical values |
| < operator >,nts ifile ofile | |

| | |
|-----------------------------------|---------------------|
| runpctl | Running percentiles |
| runpctl,p,nts ifile1 ofile | |

| | |
|---------------------------------------|---------------------------------------|
| tim< stat > | Statistical values over all timesteps |
| < operator > ifile ofile | |

| | |
|---|------------------|
| timpctl | Time percentiles |
| timpctl,p ifile1 ifile2 ifile3 ofile | |

| | |
|---------------------------------------|---------------------------|
| hour< stat > | Hourly statistical values |
| < operator > ifile ofile | |

| | |
|--|--------------------|
| hourpctl | Hourly percentiles |
| hourpctl,p ifile1 ifile2 ifile3 ofile | |

| | |
|---------------------------------------|--------------------------|
| day< stat > | Daily statistical values |
| < operator > ifile ofile | |

| | |
|---|-------------------|
| daypctl | Daily percentiles |
| daypctl,p ifile1 ifile2 ifile3 ofile | |

| | |
|---------------------------------------|----------------------------|
| mon< stat > | Monthly statistical values |
| < operator > ifile ofile | |

| | |
|---|---------------------|
| monpctl | Monthly percentiles |
| monpctl,p ifile1 ifile2 ifile3 ofile | |

| | |
|---------------------------------------|---------------------------|
| year< stat > | Yearly statistical values |
| < operator > ifile ofile | |

| | |
|--|--------------------|
| yearpctl | Yearly percentiles |
| yearpctl,p ifile1 ifile2 ifile3 ofile | |

| | |
|---------------------------------------|-----------------------------|
| seas< stat > | Seasonal statistical values |
| < operator > ifile ofile | |

| | |
|--|----------------------|
| seaspctl | Seasonal percentiles |
| seaspctl,p ifile1 ifile2 ifile3 ofile | |

| | |
|---------------------------------------|--------------------------------------|
| yhour< stat > | Multi-year hourly statistical values |
| < operator > ifile ofile | |

| | |
|---------------------------------------|-------------------------------------|
| yday< stat > | Multi-year daily statistical values |
| < operator > ifile ofile | |

| | |
|--|------------------------------|
| ydaypctl | Multi-year daily percentiles |
| ydaypctl,p ifile1 ifile2 ifile3 ofile | |

| | |
|---------------------------------------|---------------------------------------|
| ymon< stat > | Multi-year monthly statistical values |
| < operator > ifile ofile | |

| | |
|--|--------------------------------|
| ymonpctl | Multi-year monthly percentiles |
| ymonpctl,p ifile1 ifile2 ifile3 ofile | |

| | |
|---------------------------------------|--|
| yseas< stat > | Multi-year seasonal statistical values |
| < operator > ifile ofile | |

| | |
|---|---------------------------------|
| yseaspctl | Multi-year seasonal percentiles |
| yseaspctl,p ifile1 ifile2 ifile3 ofile | |

| | |
|---|---|
| ydrun< stat > | Multi-year daily running statistical values |
| < operator >,nts ifile ofile | |

| | |
|---|--------------------------------------|
| ydrunpctl | Multi-year daily running percentiles |
| ydrunpctl,p,nts ifile1 ifile2 ifile3 ofile | |

Correlation and co.

| | |
|-----------------------------------|---------------------------|
| fldcor | Correlation in grid space |
| fldcor ifile1 ifile2 ofile | |

| | |
|-----------------------------------|-----------------------|
| timcor | Correlation over time |
| timcor ifile1 ifile2 ofile | |

| | |
|-------------------------------------|--------------------------|
| fldcovar | Covariance in grid space |
| fldcovar ifile1 ifile2 ofile | |

| | |
|-------------------------------------|----------------------|
| timcovar | Covariance over time |
| timcovar ifile1 ifile2 ofile | |

Regression

| | |
|---------------------------|------------|
| regres | Regression |
| regres ifile ofile | |

| | |
|----------------------------|---------|
| detrend | Detrend |
| detrend ifile ofile | |

| | |
|----------------------------------|-------|
| trend | Trend |
| trend ifile ofile1 ofile2 | |

| | |
|--|----------------|
| subtrend | Subtract trend |
| subtrend ifile1 ifile2 ifile3 ofile | |

EOFs

| | |
|--|--|
| eof | Calculate EOFs in spatial or time space |
| eoftime | Calculate EOFs in time space |
| eofspatial | Calculate EOFs in spatial space |
| eof3d | Calculate 3-Dimensional EOFs in time space |
| < operator >,neof ifile ofile1 ofile2 | |

| | |
|-------------------------------------|--|
| eofcoeff | Calculate principal coefficients of EOFs |
| eofcoeff ifile1 ifile2 obase | |

Interpolation

| | |
|--|-------------------------------------|
| remapbil | Bilinear interpolation |
| remapbic | Bicubic interpolation |
| remapdis | Distance-weighted average remapping |
| remapnn | Nearest neighbor remapping |
| remapcon | First order conservative remapping |
| remapcon2 | Second order conservative remapping |
| remaplaf | Largest area fraction remapping |
| < operator >,grid ifile ofile | |

| | |
|--|--|
| genbil | Generate bilinear interpolation weights |
| genbic | Generate bicubic interpolation weights |
| gendis | Generate distance-weighted average remap weights |
| gennn | Generate nearest neighbor remap weights |
| gencon | Generate 1st order conservative remap weights |
| gencon2 | Generate 2nd order conservative remap weights |
| genlaf | Generate largest area fraction remap weights |
| < operator >,grid ifile ofile | |

| | |
|---------------------------------------|----------------------|
| remap | SCRIP grid remapping |
| remap,grid,weights ifile ofile | |

| | |
|---------------------------------------|-----------------------------|
| remapeta | Remap vertical hybrid level |
| remapeta,vct[,oro] ifile ofile | |

| | |
|----------------------------------|---------------------------------------|
| ml2pl | Model to pressure level interpolation |
| ml2pl,plevels ifile ofile | |
| ml2hl | Model to height level interpolation |
| ml2hl,hlevels ifile ofile | |

| | |
|------------------------------------|----------------------------|
| intlevel | Linear level interpolation |
| intlevel,levels ifile ofile | |

| | |
|---|--|
| intlevel3d | Linear level interpolation onto a 3d vertical coordinate |
| intlevelx3d | like intlevel3d but with extrapolation |
| < operator >,icoordinate ifile1 ifile2 ofile | |

| | |
|--|---------------------------------|
| inttime | Interpolation between timesteps |
| inttime,date,time[,inc] ifile ofile | |

| | |
|-------------------------------|---------------------------------|
| intntime | Interpolation between timesteps |
| intntime,n ifile ofile | |

| | |
|--|---------------------------------|
| intyear | Interpolation between two years |
| intyear,years ifile1 ifile2 obase | |

Transformation

| | |
|---------------------------------------|--------------------------------|
| sp2gp | Spectral to gridpoint |
| sp2gpl | Spectral to gridpoint (linear) |
| gp2sp | Gridpoint to spectral |
| gp2spl | Gridpoint to spectral (linear) |
| < operator > ifile ofile | |
| sp2sp | Spectral to spectral |
| sp2sp,trunc ifile ofile | |

| | |
|---------------------------------------|---|
| dv2uv | Divergence and vorticity to U and V wind |
| dv2uvl | Divergence and vorticity to U and V wind (linear) |
| uv2dv | U and V wind to divergence and vorticity |
| uv2dvl | U and V wind to divergence and vorticity (linear) |
| dv2ps | D and V to velocity potential and stream function |
| < operator > ifile ofile | |

Import /Export

| | |
|----------------------------------|-------------------------|
| import_binary | Import binary data sets |
| import_binary ifile ofile | |

| | |
|---------------------------------|--------------------------|
| import_cmsaf | Import CM-SAF HDF5 files |
| import_cmsaf ifile ofile | |

| | |
|--------------------------------|--------------------------|
| import_amsr | Import AMSR binary files |
| import_amsr ifile ofile | |

| | |
|-------------------------|-------------|
| input | ASCII input |
| input,grid ofile | |

| | |
|---------------------------------|---------------------|
| inputsrv | SERVICE ASCII input |
| inputext | EXTRA ASCII input |
| < operator > ofile | |

| | |
|------------------------------------|----------------------|
| output | ASCII output |
| output ifiles | |
| outputf | Formatted output |
| outputf,format,nelem ifiles | |
| outputint | Integer output |
| outputsrv | SERVICE ASCII output |
| outputtext | EXTRA ASCII output |
| < operator > ifiles | |

Miscellaneous

| | |
|---------------------------------|---|
| gradsdes1 | GrADS data descriptor file (version 1 GRIB map) |
| gradsdes2 | GrADS data descriptor file (version 2 GRIB map) |
| < operator > ifile | |

| | |
|---------------------------------------|--------------------|
| bandpass | Bandpass filtering |
| bandpass,fmin,fmax ifile ofile | |
| lowpass | Lowpass filtering |
| lowpass,fmax ifile ofile | |
| highpass | Highpass filtering |
| highpass,fmin ifile ofile | |

| | |
|---------------------------------------|-------------------|
| gridarea | Grid cell area |
| gridweights | Grid cell weights |
| < operator > ifile ofile | |

| | |
|----------------------------|-------------------|
| smooth9 | 9 point smoothing |
| smooth9 ifile ofile | |

| | |
|--|---|
| setvals | Set list of old values to new values |
| setvals,oldval,newval[,...] ifile ofile | |
| setrtoc | Set range to constant |
| setrtoc,rmin,rmax,c ifile ofile | |
| setrtoc2 | Set range to constant others to constant2 |
| setrtoc2,rmin,rmax,c,c2 ifile ofile | |

| | |
|----------------------------|--------------------|
| timsort | Sort over the time |
| timsort ifile ofile | |

| | |
|---------------------------------|--|
| const | Create a constant field |
| const,const.grid ofile | |
| random | Create a field with random numbers |
| random,grid[,seed] ofile | |
| stdatm | Create values for pressure and temperature for hydro |
| stdatm,levels ofile | |

| | |
|-----------------------------------|-------------------|
| rotuvb | Backward rotation |
| rotuvb,u,v,... ifile ofile | |

| | |
|----------------------------|----------------------|
| mastrfu | Mass stream function |
| mastrfu ifile ofile | |

| | |
|--|---------------------|
| histcount | Histogram count |
| histsum | Histogram sum |
| histmean | Histogram mean |
| histfreq | Histogram frequency |
| < operator >,bounds ifile ofile | |

| | |
|--|--|
| sethalo | Set the left and right bounds of a field |
| sethalo,lhalo,rhalo ifile ofile | |

| | |
|--------------------------------|-----------------------|
| wct | Windchill temperature |
| wct ifile1 ifile2 ofile | |

| | |
|---------------------------------|--|
| fdns | Frost days where no snow index per time period |
| fdns ifile1 ifile2 ofile | |

| | |
|-------------------------------|--|
| strwin | Strong wind days index per time period |
| strwin[,v] ifile ofile | |

| | |
|---------------------------|--|
| strbre | Strong breeze days index per time period |
| strbre ifile ofile | |

| | |
|---------------------------|--|
| strgal | Strong gale days index per time period |
| strgal ifile ofile | |

| | |
|-------------------------|--------------------------------------|
| hurr | Hurricane days index per time period |
| hurr ifile ofile | |

Climate indices

| | |
|--------------------------------|--|
| eca_cdd | Consecutive dry days index per time period |
| eca_cdd[,R] ifile ofile | |

| | |
|----------------------------|--|
| eca_cfd | Consecutive frost days index per time period |
| eca_cfd ifile ofile | |

| | |
|--------------------------------|---|
| eca_csu | Consecutive summer days index per time period |
| eca_csu[,T] ifile ofile | |

| | |
|--------------------------------|--|
| eca_cwd | Consecutive wet days index per time period |
| eca_cwd[,R] ifile ofile | |

| | |
|--|---|
| eca_cwdi | Cold wave duration index wrt mean of reference period |
| eca_cwdi[,nday[,T]] ifile1 ifile2 ofile | |

| | |
|--|---|
| eca_cwfi | Cold-spell days index wrt 10th percentile of reference period |
| eca_cwfi[,nday] ifile1 ifile2 ofile | |

| | |
|------------------------------------|--|
| eca_etr | Intra-period extreme temperature range |
| eca_etr ifile1 ifile2 ofile | |

| | |
|---------------------------|----------------------------------|
| eca_fd | Frost days index per time period |
| eca_fd ifile ofile | |

| | |
|---|-----------------------------|
| eca_gsl | Growing season length index |
| eca_gsl[,nday[,T[,fland]]] ifile1 ifile2 ofile | |

| | |
|-------------------------------------|-------------------------------------|
| eca_hd | Heating degree days per time period |
| eca_hd[,T1[,T2]] ifile ofile | |

| | |
|--|---|
| eca_hwdi | Heat wave duration index wrt mean of reference period |
| eca_hwdi[,nday[,T]] ifile1 ifile2 ofile | |

| | |
|--|---|
| eca_hwfi | Warm spell days index wrt 90th percentile of reference period |
| eca_hwfi[,nday] ifile1 ifile2 ofile | |

| | |
|---------------------------|--------------------------------|
| eca_id | Ice days index per time period |
| eca_id ifile ofile | |

| | |
|-------------------------------------|---|
| eca_r75p | Moderate wet days wrt 75th percentile of reference period |
| eca_r75p ifile1 ifile2 ofile | |

| | |
|--|--|
| eca_r75ptot | Precipitation percent due to R75p days |
| eca_r75ptot ifile1 ifile2 ofile | |

| | |
|-------------------------------------|--|
| eca_r90p | Wet days wrt 90th percentile of reference period |
| eca_r90p ifile1 ifile2 ofile | |

| | |
|--|--|
| eca_r90ptot | Precipitation percent due to R90p days |
| eca_r90ptot ifile1 ifile2 ofile | |

| | |
|-------------------------------------|---|
| eca_r95p | Very wet days wrt 95th percentile of reference period |
| eca_r95p ifile1 ifile2 ofile | |

| | |
|--|--|
| eca_r95ptot | Precipitation percent due to R95p days |
| eca_r95ptot ifile1 ifile2 ofile | |

| | |
|-------------------------------------|--|
| eca_r99p | Extremely wet days wrt 99th percentile of reference period |
| eca_r99p ifile1 ifile2 ofile | |

| | |
|--|--|
| eca_r99ptot | Precipitation percent due to R99p days |
| eca_r99ptot ifile1 ifile2 ofile | |

| | |
|-----------------------------|--|
| eca_pd | Precipitation days index per time period |
| eca_pd,x ifile ofile | |

| | |
|---------------------------------------|---|
| eca_r10mm | Heavy precipitation days index per time period |
| eca_r20mm | Very heavy precipitation days index per time period |
| < operator > ifile ofile | |

| | |
|--------------------------------|--------------------------------|
| eca_rr1 | Wet days index per time period |
| eca_rr1[,R] ifile ofile | |

| | |
|--------------------------------------|--|
| eca_rx1day | Highest one day precipitation amount per time period |
| eca_rx1day[,mode] ifile ofile | |

| | |
|-----------------------------------|---|
| eca_rx5day | Highest five-day precipitation amount per time period |
| eca_rx5day[,x] ifile ofile | |

| | |
|--------------------------------|--|
| eca_sdi | Simple daily intensity index per time period |
| eca_sdi[,R] ifile ofile | |

| | |
|-------------------------------|-----------------------------------|
| eca_su | Summer days index per time period |
| eca_su[,T] ifile ofile | |

| | |
|--------------------------------------|---|
| eca_tg10p | Cold days percent wrt 10th percentile of reference period |
| eca_tg10p ifile1 ifile2 ofile | |

| | |
|--------------------------------------|---|
| eca_tg90p | Warm days percent wrt 90th percentile of reference period |
| eca_tg90p ifile1 ifile2 ofile | |

| | |
|--------------------------------------|---|
| eca_tn10p | Cold nights percent wrt 10th percentile of reference period |
| eca_tn10p ifile1 ifile2 ofile | |

| | |
|--------------------------------------|---|
| eca_tn90p | Warm nights percent wrt 90th percentile of reference period |
| eca_tn90p ifile1 ifile2 ofile | |

| | |
|-------------------------------|---------------------------------------|
| eca_tr | Tropical nights index per time period |
| eca_tr[,T] ifile ofile | |

| | |
|--------------------------------------|--|
| eca_tx10p | Very cold days percent wrt 10th percentile of reference period |
| eca_tx10p ifile1 ifile2 ofile | |

| | |
|--------------------------------------|--|
| eca_tx90p | Very warm days percent wrt 90th percentile of reference period |
| eca_tx90p ifile1 ifile2 ofile | |