

CDO Reference Card

Climate Data Operator
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<https://code.mpimet.mpg.de/projects/cdo>

Syntax

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

Options

| | |
|----------------------------------|---|
| -a | Generate an absolute time axis |
| -b <i><nbits></i> | Set the number of bits for the output precision (18/116/132/F32/F64 for nc1,nc2,nc4,nc4c; F32/F64 for grb2,srv,ext,ieg; 1-24 for grb1,grb2) Add L or B for Little or Big endian byteorder |
| -f <i><format></i> | Outputformat: grb1,grb2,nc1,nc2,nc4,nc4c,srv,ext,ieg |
| -g <i><grid></i> | Grid or file name |
| -h | Grid names: r<NX>x<NY>, n<N>, gme<NI> |
| -M | Help information for the operators |
| -m <i><missval></i> | Indicate that the I/O streams have missing values |
| -O | Set the default missing value (default: -9e+33) |
| -R | Overwrite existing output file, if checked |
| -r | Convert GRIB1 data from reduced to regular grid |
| -s | Generate a relative time axis |
| -t <i><table></i> | Silent mode |
| -V | Set the parameter table name or file |
| -v | Predefined tables: echam4 echam5 mpiom1 |
| -z <i>gzip</i> | Print the version number |
| | Print extra details for some operators |
| | 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> infile | |
| sinfo | Short information listed by parameter identifier |
| sinfo | Short information listed by parameter name |
| <operator> infile | |
| xsinfo | Extra short information listed by parameter name |
| xsinfo | Extra short information listed by parameter identifier |
| <operator> infile | |
| diff | Compare two datasets listed by parameter id |
| diffn | Compare two datasets listed by parameter name |
| <operator>[,options] infile1 infile2 | |
| npar | Number of parameters |
| nlevel | Number of levels |
| nyear | Number of years |
| nmon | Number of months |
| ndate | Number of dates |
| ntime | Number of timesteps |
| ngridpoints | Number of gridpoints |
| ngrids | Number of horizontal grids |
| <operator> infile | |

| | |
|-----------------------------------|---|
| showformat | Show file format |
| showcode | Show code numbers |
| showname | Show variable names |
| showstdname | Show standard names |
| showlevel | Show levels |
| showtype | Show GRIB level types |
| showyear | Show years |
| showmon | Show months |
| showdate | Show date information |
| showtime | Show time information |
| showtimestamp | Show timestamp |
| <operator> infile | |
| showattribute | Show a global attribute or a variable attribute |
| showattribute[,attributes] | infile |
| partab | Parameter table |
| codetab | Parameter code table |
| griddes | Grid description |
| zaxisdes | Z-axis description |
| vct | Vertical coordinate table |
| <operator> infile | |

File operations

| | |
|---|--|
| apply | Apply operators on each input file. |
| apply,operators infile | |
| copy | Copy datasets |
| clone | Clone datasets |
| cat | Concatenate datasets |
| <operator> infile outfile | |
| tee | Duplicate a data stream |
| tee,outfile2 infile outfile1 | |
| pack | Pack data |
| pack infile outfile | |
| unpack | Unpack data |
| unpack infile outfile | |
| bitrounding | Bit rounding |
| bitrounding[,parameter] | infile outfile |
| replace | Replace variables |
| replace infile1 infile2 outfile | |
| duplicate | Duplicates a dataset |
| duplicate[,ndup] infile outfile | |
| mergegrid | Merge grid |
| mergegrid infile1 infile2 outfile | |
| merge | Merge datasets with different fields |
| mergetime | Merge datasets sorted by date and time |
| <operator> infile outfile | |
| splitcode | 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>[,parameter] infile obase | |
| splithour | Split hours |
| splitday | Split days |
| splitseas | Split seasons |
| splityear | Split years |
| splityearmon | Split in years and months |
| <operator> infile obase | |
| splitmon | Split months |
| splitmon[,format] infile obase | |
| splitset | Split time selection |
| splitset1,nsets[,nofiset[,nskip]] infile obase | |
| splitdate | Splits a file into dates |
| splitdate infile obase | |

| | |
|--------------------------------------|----------------------------|
| distgrid | Distribute horizontal grid |
| distgrid,nx[,ny] infile obase | |

| | |
|---|-------------------------|
| collgrid | Collect horizontal grid |
| collgrid[,nx[,names]] infile outfile | |

Selection

| | |
|--|--|
| select | Select fields |
| delete | Delete fields |
| <operator>,parameter infile outfile | |
| selmulti | Select multiple fields |
| delmulti | Delete multiple fields |
| changemulti | Change identification of multiple fields |
| <operator>,selection-specification infile outfile | |
| selparam | Select parameters by identifier |
| delparam | Delete parameters by identifier |
| <operator>,parameter infile outfile | |
| selcode | Select parameters by code number |
| delcode | Delete parameters by code number |
| <operator>,codes infile outfile | |
| selname | Select parameters by name |
| delname | Delete parameters by name |
| <operator>,names infile outfile | |
| selstdname | Select parameters by standard name |
| selstdname,stdnames infile outfile | |
| sellevel | Select levels |
| sellevel,levels infile outfile | |
| sellevidx | Select levels by index |
| sellevidx,levidx infile outfile | |
| selgrid | Select grids |
| selgrid,grids infile outfile | |
| selzaxis | Select z-axes |
| selzaxis,zaxes infile outfile | |
| selzaxisname | Select z-axes by name |
| selzaxisname,zaxisnames infile outfile | |
| seltype | Select GRIB level types |
| seltype,ltypes infile outfile | |
| seltabnum | Select parameter table numbers |
| seltabnum,tabnums infile outfile | |
| sel timestep | Select timesteps |
| sel timestep,timesteps infile outfile | |
| seltime | Select times |
| seltime,times infile outfile | |
| selhour | Select hours |
| selhour,hours infile outfile | |
| selday | Select days |
| selday,days infile outfile | |
| selmonth | Select months |
| selmonth,months infile outfile | |
| selyear | Select years |
| selyear,years infile outfile | |
| selseason | Select seasons |
| selseason,seasons infile outfile | |
| seldate | Select dates |
| seldate,startdate[,enddate] infile outfile | |
| selmon | Select single month |
| selmon,month[,nts1[,nts2]] infile outfile | |
| sel lonlatbox | Select a longitude/latitude box |
| sel lonlatbox,lon1,lon2,lat1,lat2 infile outfile | |
| sel indexbox | Select an index box |
| sel indexbox,idx1,idx2,idy1,idy2 infile outfile | |
| selregion | Select cells inside regions |
| selregion,regions infile outfile | |
| selcircle | Select cells inside a circle |
| selcircle[,parameter] infile outfile | |
| selgridcell | Select grid cells |
| delgridcell | Delete grid cells |
| <operator>,indices infile outfile | |

| | |
|---|---------------|
| samplegrid | Resample grid |
| samplegrid,factor infile outfile | |

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|---|----------------------|
| selyearidx | Select year by index |
| selyearidx infile1 infile2 outfile | |

| | |
|---|----------------------|
| bottomvalue | Extract bottom level |
| topvalue | Extract top level |
| <operator> infile outfile | |
| isosurface | Extract isosurface |
| isosurface,isovalue infile outfile | |

Conditional selection

| | |
|---|--|
| ifthen | If then |
| ifnotthen | If not then |
| <operator> infile1 infile2 outfile | |
| ifthenelse | If then else |
| ifthenelse infile1 infile2 infile3 outfile | |
| ifthennc | If then constant |
| ifnotthenc | If not then constant |
| <operator>,c infile outfile | |
| reducegrid | Reduce input file variables to locations, where mask |
| reducegrid,mask[,limitCoordsOutput] infile outfile | |

Comparison

| | |
|---|---|
| eq | Equal |
| ne | Not equal |
| le | Less equal |
| lt | Less than |
| ge | Greater equal |
| gt | Greater than |
| <operator> infile1 infile2 outfile | |
| 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 infile outfile | |
| ymoneq | Compare time series with Equal |
| ymonne | Compare time series with NotEqual |
| ymonle | Compare time series with LessEqual |
| ymonlt | Compares if time series with LessThan |
| ymonge | Compares if time series with GreaterEqual |
| ymongt | Compares if time series with GreaterThan |
| <operator> infile1 infile2 outfile | |

Modification

| | |
|--|---------------------|
| setattribute | Set attributes |
| setattribute,attributes infile outfile | |
| setpartabp | Set parameter table |
| setpartabn | Set parameter table |
| <operator>,table[,convert] infile outfile | |

| | |
|--|--------------------------|
| setcodetab | Set parameter code table |
| setcodetab,table infile outfile | |
| setcode | Set code number |
| setcode,code infile outfile | |
| setparam | Set parameter identifier |
| setparam,param infile outfile | |
| setname | Set variable name |
| setname,name infile outfile | |
| setunit | Set variable unit |
| setunit,unit infile outfile | |
| setlevel | Set level |
| setlevel,level infile outfile | |
| setltype | Set GRIB level type |
| setltype,ltype infile outfile | |
| setmaxsteps | Set max timesteps |
| setmaxsteps,maxsteps infile outfile | |

| | |
|--|---------------------|
| setdate | Set date |
| setdate,date infile outfile | |
| settime | Set time of the day |
| settime,time infile outfile | |
| setday | Set day |
| setday,day infile outfile | |
| setmon | Set month |
| setmon,month infile outfile | |

| | |
|--|----------------|
| setyear | Set year |
| setyear,year infile outfile | |
| setunits | Set time units |
| setunits,units infile outfile | |

| | |
|--|--------------------|
| settaxis | Set time axis |
| settaxis,date,time[,inc] infile outfile | |
| settbounds | Set time bounds |
| settbounds,frequency infile outfile | |
| setreftime | Set reference time |
| setreftime,date,time[,units] infile outfile | |

| | |
|--|-----------------|
| setcalendar | Set calendar |
| setcalendar,calendar infile outfile | |
| shifttime | Shift timesteps |
| shifttime,shift Value infile outfile | |

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

| | |
|--|--------------------|
| setgrid | Set grid |
| setgrid,grid infile outfile | |
| setgridtype | Set grid type |
| setgridtype,gridtype infile outfile | |
| setgridarea | Set grid cell area |
| setgridarea,gridarea infile outfile | |
| setgridmask | Set grid mask |
| setgridmask,gridmask infile outfile | |

| | |
|--|-----------------------|
| setzaxis | Set z-axis |
| setzaxis,zaxis infile outfile | |
| genlevelbound: | Generate level bounds |
| genlevelbounds[,zbot[,ztop]] infile outfile | |

| | |
|---|------------------|
| invertlat | Invert latitudes |
| invertlat infile outfile | |

| | |
|---|---------------|
| invertlev | Invert levels |
| invertlev infile outfile | |

| | |
|--|---------|
| shiftx | Shift x |
| shifty | Shift y |
| <operator> ,ishift<i>i</i>,j,cyclic<i>i</i>,j,coord<i>i</i> infile outfile | |

| | |
|--|--------------|
| maskregion | Mask regions |
| maskregion,regions infile outfile | |

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

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

| | |
|--|----------------|
| enlarge | Enlarge fields |
| enlarge,grid infile outfile | |

| | |
|--|-------------------------------|
| setmissval | Set a new missing value |
| setmissval,newmiss infile outfile | |
| setctomiss | Set constant to missing value |
| setmisstoc | Set missing value to constant |
| <operator> >,c infile outfile | |

| | |
|--|---------------------------------------|
| setrtomiss | Set range to missing value |
| setvrange | Set valid range |
| <operator> >,rmin,rmax infile outfile | |
| setmisstonn | Set missing value to nearest neighbor |
| setmisstonn infile outfile | |

| | |
|--|--|
| setmisstodis | Set missing value to distance-weighted average |
| setmisstodis[,neighbors] infile outfile | |

| | |
|--|------------------------------------|
| vertfillmiss | Vertical filling of missing values |
| vertfillmiss[,parameter] infile outfile | |

| | |
|---|------------------------------------|
| timfillmiss | Temporal filling of missing values |
| timfillmiss[,parameter] infile outfile | |

| | |
|---|------------------------------|
| setgridcell | Set the value of a grid cell |
| setgridcell,parameter infile outfile | |

Arithmetic

| | |
|---|---|
| expr | Evaluate expressions |
| expr,instr infile outfile | |
| exprf | Evaluate expressions script |
| exprf,filename infile outfile | |
| aexpr | Evaluate expressions and append results |
| aexpr,instr infile outfile | |
| aexprf | Evaluate expression script and append results |
| aexprf,filename infile outfile | |

| | |
|--|-----------------------|
| 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 |
| atan | Arc tangent |
| reci | Reciprocal value |
| not | Logical NOT |
| <operator> > infile outfile | |

| | |
|--|-----------------------------------|
| addc | Add a constant |
| subc | Subtract a constant |
| mulc | Multiply with a constant |
| divc | Divide by a constant |
| minc | Minimum of a field and a constant |
| maxc | Maximum of a field and a constant |
| <operator> >,c infile outfile | |

| | |
|--|---------------------------|
| 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> > infile1 infile2 outfile | |

| | |
|--|----------------------------|
| dayadd | Add daily time series |
| daysub | Subtract daily time series |
| daymul | Multiply daily time series |
| daydiv | Divide daily time series |
| <operator> > infile1 infile2 outfile | |

| | |
|--|------------------------------|
| monadd | Add monthly time series |
| monsub | Subtract monthly time series |
| monmul | Multiply monthly time series |
| monddiv | Divide monthly time series |
| <operator> > infile1 infile2 outfile | |

| | |
|--|-----------------------------|
| yearadd | Add yearly time series |
| yearsub | Subtract yearly time series |
| yearmul | Multiply yearly time series |
| yeardiv | Divide yearly time series |
| <operator> > infile1 infile2 outfile | |

| | |
|--|--|
| 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> > infile1 infile2 outfile | |

| | |
|--|---------------------------------------|
| 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> > infile1 infile2 outfile | |

| | |
|--|---|
| 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> > infile1 infile2 outfile | |

| | |
|--|--|
| yseasadd | Add multi-year seasonal time series |
| yseassub | Subtract multi-year seasonal time series |
| yseasmul | Multiply multi-year seasonal time series |
| yseasdiv | Divide multi-year seasonal time series |
| <operator> > infile1 infile2 outfile | |

| | |
|--|------------------------------|
| 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> > infile outfile | |

| | |
|--|--|
| mulcoslat | Multiply with the cosine of the latitude |
| divcoslat | Divide by cosine of the latitude |
| <operator> > infile outfile | |

Statistical values

| | | |
|--------------------|---------------------------------|---------------------|
| | Available statistical functions | <stat> |
| minimum | min | |
| maximum | max | |
| range | range | |
| sum | sum | |
| mean | mean | |
| average | avg | |
| variance | var, var1 | |
| standard deviation | std, std1 | |

| | |
|---|-----------------------------------|
| timcumsum | Cumulative sum over all timesteps |
| timcumsum infile outfile | |

| | |
|--|-----------------------|
| consects | Consecutive Timesteps |
| <operator> > infile outfile | |

| | |
|--|---------------------------------------|
| vars<stat> | Statistical values over all variables |
| <operator> > infile outfile | |

| | |
|---|-------------------------------------|
| ens<stat> | Statistical values over an ensemble |
| ensskew | Ensemble skewness |
| enskurt | Ensemble kurtosis |
| ensmedian | Ensemble median |
| <operator> > infiles outfile | |
| enspctl | Ensemble percentiles |
| enspctl,p infiles outfile | |

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

| | |
|---|---------------------------------|
| enscrps | Ensemble CRPS and decomposition |
| enscrps rfile infiles outfilebase | |
| ensbrs | Ensemble Brier score |
| ensbrs,x rfile infiles outfilebase | |

| | |
|--|---------------------------------|
| fld<stat> | Statistical values over a field |
| <operator> > infile outfile | |
| fldint | Field integral |
| <operator> >,weights infile outfile | |
| fldskew | Field skewness |
| fldkurt | Field kurtosis |
| fldmedian | Field median |
| fldcount | Field count |
| <operator> > infile outfile | |
| fldpctl | Field percentiles |
| fldpctl,p infile outfile | |

| | |
|--|--------------------------|
| zon<stat> | Zonal statistical values |
| <operator> > infile outfile | |
| zonmean[,zonaldeg] infile outfile | |

| | |
|--|-------------------|
| zonskew | Zonal skewness |
| zonkurt | Zonal kurtosis |
| zonmedian | Zonal median |
| <operator> > infile outfile | |
| zonpctl | Zonal percentiles |
| zonpctl,p infile outfile | |

| | |
|--|-------------------------------|
| mer<stat> | Meridional statistical values |
| merskew | Meridional skewness |
| merkurt | Meridional kurtosis |
| mermedian | Meridional median |
| <operator> > infile outfile | |
| merpctl | Meridional percentiles |
| merpctl,p infile outfile | |

| | |
|--|------------------------------------|
| gridbox<stat> | Statistical values over grid boxes |
| gridboxskew | Gridbox skewness |
| gridboxkurt | Gridbox kurtosis |
| gridboxmedian | Gridbox median |
| <operator> >,nx,ny infile outfile | |

| | |
|---|--------------------------------------|
| remap<stat> | Remaps source points to target cells |
| remapskew | Remap skewness |
| remapkurt | Remap kurtosis |
| remapmedian | Remap median |
| <operator> >,grid infile outfile | |

| | |
|--|-----------------------------|
| vert<stat> | Vertical statistical values |
| <operator> >,weights infile outfile | |

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

| | |
|---|------------------------|
| timselfpctl | Time range percentiles |
| timselfpctl,p,nsets[,noffset[,nskip]] infile1 infile2 infile3 outfil | |

| | |
|--|----------------------------|
| run<stat> | Running statistical values |
| <operator> >,nts infile outfile | |

| | |
|---|---------------------|
| runpctl | Running percentiles |
| runpctl,p,nts infile outfile | |

| | |
|--|---------------------------------------|
| tim<stat> | Statistical values over all timesteps |
| <operator> > infile outfile | |

| | |
|--|---|
| timpctl | Time percentiles |
| timpctl,p infile1 infile2 infile3 outfile | |
| hour < stat > | Hourly statistical values |
| < operator > | infile outfile |
| hourpctl | Hourly percentiles |
| hourpctl,p infile1 infile2 infile3 outfile | |
| day < stat > | Daily statistical values |
| < operator > | infile outfile |
| daypctl | Daily percentiles |
| daypctl,p infile1 infile2 infile3 outfile | |
| mon < stat > | Monthly statistical values |
| < operator > | infile outfile |
| monpctl | Monthly percentiles |
| monpctl,p infile1 infile2 infile3 outfile | |
| yearmonmean | Yearly mean from monthly data |
| yearmonmean infile outfile | |
| year < stat > | Yearly statistical values |
| yearminidx | Yearly minimum indices |
| yearmaxidx | Yearly maximum indices |
| < operator > | infile outfile |
| yearpctl | Yearly percentiles |
| yearpctl,p infile1 infile2 infile3 outfile | |
| seas < stat > | Seasonal statistical values |
| < operator > | infile outfile |
| seaspctl | Seasonal percentiles |
| seaspctl,p infile1 infile2 infile3 outfile | |
| yhour < stat > | Multi-year hourly statistical values |
| < operator > | infile outfile |
| dhour < stat > | Multi-day hourly statistical values |
| < operator > | infile outfile |
| yday < stat > | Multi-year daily statistical values |
| < operator > | infile outfile |
| ydaypctl | Multi-year daily percentiles |
| ydaypctl,p infile1 infile2 infile3 outfile | |
| ymon < stat > | Multi-year monthly statistical values |
| < operator > | infile outfile |
| ymonpctl | Multi-year monthly percentiles |
| ymonpctl,p infile1 infile2 infile3 outfile | |
| yseas < stat > | Multi-year seasonal statistical values |
| < operator > | infile outfile |
| yseaspctl | Multi-year seasonal percentiles |
| yseaspctl,p infile1 infile2 infile3 outfile | |
| ydrun < stat > | Multi-year daily running statistical values |
| < operator > ,nts | infile outfile |
| ydrunpctl | Multi-year daily running percentiles |
| ydrunpctl,p,nts infile1 infile2 infile3 outfile | |

Correlation and co.

| | |
|---|---------------------------|
| fldcor | Correlation in grid space |
| fldcor infile1 infile2 outfile | |
| timcor | Correlation over time |
| timcor infile1 infile2 outfile | |
| fldcovar | Covariance in grid space |
| fldcovar infile1 infile2 outfile | |
| timcovar | Covariance over time |
| timcovar infile1 infile2 outfile | |

Regression

| | |
|---|---------------------------------|
| regres | Regression |
| regres[,equal] infile outfile | |
| detrend | Detrend |
| detrend[,equal] infile outfile | |
| trend | Trend |
| trend[,equal] infile outfile1 outfile2 | |
| addtrend | Add trend |
| subtrend | Subtract trend |
| < operator > [,equal] | infile1 infile2 infile3 outfile |

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 | infile outfile1 outfile2 |
| eofcoeff | Calculate principal coefficients of EOFs |
| eofcoeff infile1 infile2 obase | |

Interpolation

| | |
|--|--|
| remapbil | Bilinear interpolation |
| genbil | Generate bilinear interpolation weights |
| < operator > ,grid | infile outfile |
| remapbic | Bicubic interpolation |
| genbic | Generate bicubic interpolation weights |
| < operator > ,grid | infile outfile |
| remapnn | Nearest neighbor remapping |
| gennn | Generate nearest neighbor remap weights |
| < operator > ,grid | infile outfile |
| remapdis | Distance weighted average remapping |
| gendis | Generate distance weighted average remap weights |
| < operator > ,grid [,neighbors] | infile outfile |
| remapcon | First order conservative remapping |
| gencon | Generate 1st order conservative remap weights |
| < operator > ,grid | infile outfile |
| remapcon2 | Second order conservative remapping |
| gencon2 | Generate 2nd order conservative remap weights |
| < operator > ,grid | infile outfile |
| remaplaf | Largest area fraction remapping |
| genlaf | Generate largest area fraction remap weights |
| < operator > ,grid | infile outfile |
| remap | Grid remapping |
| remap.grid,weights infile outfile | |
| remapeta | Remap vertical hybrid level |
| remapeta,vct[,oro] infile outfile | |

| | |
|-------------------------------------|--|
| ml2pl | Model to pressure level interpolation |
| ml2pl,plevels infile outfile | |
| ml2hl | Model to height level interpolation |
| ml2hl,hlevels infile outfile | |
| ap2pl | Air pressure to pressure level interpolation |
| ap2pl,plevels infile outfile | |

| | |
|--|--|
| gh2hl | Geometric height to height level interpolation |
| gh2hl,hlevels infile outfile | |
| intlevel | Linear level interpolation |
| intlevel.parameter infile outfile | |

| | |
|-----------------------------|--|
| intlevel3d | Linear level interpolation onto a 3D vertical coordi |
| intlevelx3d | like intlevel3d but with extrapolation |
| < operator > ,tgtcoordinate | infile1 infile2 outfile |

| | |
|---|---------------------------------|
| inttime | Interpolation between timesteps |
| inttime,date,time[,inc] infile outfile | |
| intntime | Interpolation between timesteps |
| intntime,n infile outfile | |

| | |
|--|---------------------------------|
| intyear | Interpolation between two years |
| intyear,years infile1 infile2 obase | |

Transformation

| | |
|----------------------------|-----------------------|
| sp2gp | Spectral to gridpoint |
| gp2sp | Gridpoint to spectral |
| < operator > [,type—trunc] | infile outfile |

| | |
|--------------------------------------|----------------------|
| sp2sp | Spectral to spectral |
| sp2sp,truncate infile outfile | |

| | |
|-----------------------------|---|
| dv2ps | D and V to velocity potential and stream function |
| dv2ps infile outfile | |

| | |
|--------------------------|--|
| dv2uv | Divergence and vorticity to U and V wind |
| uv2dv | U and V wind to divergence and vorticity |
| < operator > [,gridtype] | infile outfile |

| | |
|---------------------------------------|------------------------|
| fourier | Fourier transformation |
| fourier,epsilon infile outfile | |

Import/Export

| | |
|-------------------------------------|--------------------------|
| import_binary | Import binary data sets |
| import_binary infile outfile | |
| import.cmsaf | Import CM-SAF HDF5 files |
| import.cmsaf infile outfile | |

| | |
|-----------------------------------|--------------------------|
| import_amrs | Import AMSR binary files |
| import_amrs infile outfile | |

| | |
|----------------------------------|---------------------|
| input | ASCII input |
| input.grid[,axis] outfile | |
| inputsrv | SERVICE ASCII input |
| inputtext | EXTRA ASCII input |
| < operator > | outfile |

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

| | |
|--|--------------|
| outputtab | Table output |
| outputtab.parameter infiles outfile | |

| | |
|-----------------|-----------------------------|
| gmtxyz | GMT xyz format |
| gmtcells | GMT multiple segment format |
| < operator > | infile |

Miscellaneous

| | |
|-------------------------------------|----------------------------|
| gradsdes | GrADS data descriptor file |
| gradsdes[,mapversion] infile | |

| | |
|------------------------------------|-------------------------------|
| after | ECHAM standard post processor |
| after[,vct] infiles outfile | |

| | |
|--|--------------------|
| bandpass | Bandpass filtering |
| bandpass,fmin,fmax infile outfile | |
| lowpass | Lowpass filtering |
| lowpass,fmax infile outfile | |
| highpass | Highpass filtering |
| highpass,fmin infile outfile | |

| | |
|--------------------|-------------------|
| gridarea | Grid cell area |
| gridweights | Grid cell weights |
| < operator > | infile outfile |

| | |
|--|--------------------|
| smooth | Smooth grid points |
| smooth[,options] infile outfile | |
| smooth9 | 9 point smoothing |
| smooth9 infile outfile | |

| | |
|-------------------------------|--|
| smooth9 infile outfile | |
|-------------------------------|--|

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

| | |
|---|--|
| gridcellindex | Get grid cell index from lon/lat point |
| gridcellindex[,parameter] infile | |

| | |
|------------------------------------|---|
| const | Create a constant field |
| const,const.grid outfile | |
| random | Create a field with random numbers |
| random.grid[,seed] outfile | |
| topo | Create a field with topography |
| topo[,grid] outfile | |
| seq | Create a time series |
| seq,start,end[,inc] outfile | |
| stdatm | Create values for pressure and temperature for hydr |
| stdatm,levels outfile | |

| | |
|-------------------------------|--------------------|
| timsort | Sort over the time |
| timsort infile outfile | |

| | |
|--|-------------------------------------|
| uvDestag | Destaggering of u/v wind components |
| uvDestag,u,v[,/-/+0.5[,/-/+0.5]] infile outfile | |
| rotuvNorth | Rotate u/v wind to North pole. |
| projuvLatLon | Cylindrical Equidistant projection |
| < operator > ,u,v | infile outfile |

| | |
|--------------------------------------|-------------------|
| rotuvb | Backward rotation |
| rotuvb,u,v,... infile outfile | |

| | |
|--|---------------------------------|
| mrotuvb | Backward rotation of MPIOM data |
| mrotuvb infile1 infile2 outfile | |

| | |
|-------------------------------|----------------------|
| mastrfu | Mass stream function |
| mastrfu infile outfile | |

| | |
|------------------------|---------------------|
| sealevelpressur | Sea level pressure |
| gheight | Geopotential height |
| < operator > | infile outfile |

| | |
|--------------------------|--|
| adisit | Potential temperature to in-situ temperature |
| adipot | In-situ temperature to potential temperature |
| < operator > [,pressure] | infile outfile |

| | |
|---|------------------------------|
| rhopot | Calculates potential density |
| rhopot[,pressure] infile outfile | |

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

| | |
|---|---------------------------|
| sethalo | Set the bounds of a field |
| sethalo[,parameter] infile outfile | |

| | |
|------------------------------------|-----------------------|
| wct | Windchill temperature |
| wct infile1 infile2 outfile | |

| | |
|-------------------------------------|--|
| fdns | Frost days where no snow index per time period |
| fdns infile1 infile2 outfile | |

| | |
|----------------------------------|--|
| strwin | Strong wind days index per time period |
| strwin[,v] infile outfile | |

| | |
|------------------------------|--|
| strbre | Strong breeze days index per time period |
| strbre infile outfile | |

| | |
|------------------------------|--|
| strgal | Strong gale days index per time period |
| strgal infile outfile | |

| | |
|----------------------------|--------------------------------------|
| hurr | Hurricane days index per time period |
| hurr infile outfile | |

| | |
|--|-----------|
| cmorlite | CMOR lite |
| cmorlite,table[,convert] infile outfile | |

| | |
|--------------------------|-------------------------|
| verifygrid | Verify grid coordinates |
| verifygrid infile | |

| | |
|---|-----------------|
| hpdegrade | Degrade healpix |
| hpupgrade | Upgrade healpix |
| <operator> [,parameter infile outfile] | |

NCL

| | |
|---|------------------------------------|
| uv2vr_cfd | U and V wind to relative vorticity |
| uv2dv_cfd | U and V wind to divergence |
| <operator> [,u,v,boundOpt,outMode] infile outfile | |