

# CDO Reference Card

Climate Data Operators
Version 1.0.8
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## Syntax

cdo	[Options]	Operators
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## Options

-a	Convert from a relative to an absolute time axis
-b <nbits>	Set the number of bits for the output precision (32/64 for nc, nc2, srv, ext, ieg; 1 - 32 for grb)
-f <format>	Output file format (grb, nc, nc2, srv, ext, ieg)
-g <grid>	Grid name or file Available grids: t<RES>grid, r<NX>x<NY>
-h	Help information for the operators
-m <missval>	Set the default missing value (default: -9e+33)
-R	Convert GRIB data from reduced to regular grid
-r	Convert from an absolute to a relative time axis
-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

## Operators

Information	
info infov map	Dataset information listed by code number Dataset information listed by variable name Dataset information and simple map
Syntax	<operator> ifiles
sinfo sinfov	Short dataset information listed by code number Short dataset information listed by variable name
Syntax	<operator> ifile
diff diffv	Compare two datasets listed by code number Compare two datasets listed by variable name
Syntax	<operator> ifile1 ifile2
npar nlevel nyear nmon nmon nmon nmon nmon	Number of parameters Number of levels Number of years Number of months Number of dates Number of time steps
Syntax	<operator> ifile
showformat showcode showname showstdname showlevel showtype showyear showmon showdate showtime	Show file format Show code numbers Show variable names Show standard names Show levels Show GRIB level types Show years Show months Show dates Show time steps
Syntax	<operator> ifile
pardes griddes vct	Parameter description Grid description Vertical coordinate table
Syntax	<operator> ifile

File operations	
copy cat	Copy datasets Concatenate datasets
Syntax	<operator> ifiles ofile
replace	Replace variables
Syntax	replace ifile1 ifile2 ofile
merge mergetime	Merge datasets with different fields Merge datasets sorted by date and time
Syntax	<operator> ifiles ofile
splitcode splitname splitlevel splitgrid splitzaxis splitrec	Split code numbers Split variable names Split levels Split grids Split zaxis Split records
Syntax	<operator> ifile oprefix
splithour splitday splitmon splitseas splityear	Split hours Split days Split months Split seasons Split years
Syntax	<operator> ifile oprefix

## Selection

selcode delcode	Select variables by code number Delete variables by code number
Syntax	<operator>,codes ifile ofile
selname delname	Select variables by name Delete variables by name
Syntax	<operator>,vars ifile ofile
selstdname	Select variables by standard name
Syntax	selstdname,stdnames ifile ofile
sellevel	Select levels
Syntax	sellevel,levels ifile ofile
selgrid	Select grids
Syntax	selgrid,grids ifile ofile
selgridname	Select grids by name
Syntax	selgridname,gridnames ifile ofile
selzaxis	Select zaxes
Syntax	selzaxis,zaxes ifile ofile
selzaxisname	Select zaxes by name
Syntax	selzaxisname,zaxisnames ifile ofile
seltype	Select GRIB level types
Syntax	seltype,ltypes ifile ofile
seltabnum	Select parameter table numbers
Syntax	seltabnum,tabnums ifile ofile
selrec	Select records
Syntax	selrec,records ifile ofile
selimestep	Select time steps
Syntax	selimestep,timesteps ifile ofile
seltime	Select times
Syntax	seltime,times ifile ofile
selhour	Select hours
Syntax	selhour,hours ifile ofile
selday	Select days
Syntax	selday,days ifile ofile
selmon	Select months
Syntax	selmon,months ifile ofile
selyear	Select years
Syntax	selyear,years ifile ofile
seleas	Select seasons
Syntax	seleas,seasons ifile ofile
seldate	Select dates
Syntax	seldate,date1[,date2] ifile ofile
selsmon	Select single month
Syntax	selsmon,month[,nts1[,nts2]] ifile ofile

sellonlatbox	Select a longitude/latitude box
Syntax	sellonlatbox,lon1,lon2,lat1,lat2 ifile ofile
selindexbox	Select an index box
Syntax	selindexbox,idx1,idx2,idy1,idy2 ifile ofile
Conditional selection	
ifthen ifnotthen	If then If not then
Syntax	<operator> ifile1 ifile2 ofile
ifthenelse	If then else
Syntax	ifthenelse ifile1 ifile2 ifile3 ofile
ifthenc ifnotthenc	If then constant If not then constant
Syntax	<operator>,<c ifile ofile

## Comparison

eq ne le lt ge gt	Equal Not equal Less equal Less than Greater equal Greater than
Syntax	<operator> ifile1 ifile2 ofile
eqc nec lec ltc gec gtc	Equal constant Not equal constant Less equal constant Less then constant Greater equal constant Greater then constant
Syntax	<operator>,<c ifile ofile

## Modification

setpartab	Set parameter table
Syntax	setpartab,table ifile ofile
setcode	Set code number
Syntax	setcode,code ifile ofile
setname	Set variable name
Syntax	setname,name ifile ofile
setlevel	Set level
Syntax	setlevel,level ifile ofile
setltype	Set GRIB level type
Syntax	setltype,ltype ifile ofile
setdate	Set date
Syntax	setdate,date ifile ofile
settime	Set time
Syntax	settime,time ifile ofile
setday	Set day
Syntax	setday,day ifile ofile
setmon	Set month
Syntax	setmon,month ifile ofile
setyear	Set year
Syntax	setyear,year ifile ofile
setunits	Set time units
Syntax	setunits,units ifile ofile
settaxis	Set time axis
Syntax	settaxis,date,time[,inc] ifile ofile
setreftime	Set reference time
Syntax	setreftime,date,time ifile ofile
setcalendar	Set calendar
Syntax	setcalendar,calendar ifile ofile
shifttime	Shift time steps
Syntax	shifttime,sval ifile ofile

chcode	Change code number
Syntax	chcode,oldcode,newcode[,...] ifile ofile
chname	Change variable name
Syntax	chname,ovar,nvar,... ifile ofile
chlevel	Change level
Syntax	chlevel,oldlev,newlev,... ifile ofile
chlevelc	Change level of one code
Syntax	chlevelc,code,oldlev,newlev ifile ofile
chlevelv	Change level of one variable
Syntax	chlevelv,var,oldlev,newlev ifile ofile
setgrid	Set grid
Syntax	setgrid,grid ifile ofile
setgridtype	Set grid type
Syntax	setgridtype,gridtype ifile ofile
setzaxis	Set zaxis
Syntax	setzaxis,zaxis ifile ofile
setgatt	Set global attribute
Syntax	setgatt,attname,attstring ifile ofile
setgatts	Set global attributes
Syntax	setgatts,attfile ifile ofile
invertlat invertlon invertlatdes invertlonides invertlatdata invertlondata	Invert latitude Invert longitude Invert latitude description Invert longitude description Invert latitude data Invert longitude data
Syntax	<operator> ifile ofile
maskregion	Mask regions
Syntax	maskregion,regions ifile ofile
masklonlatbox	Mask a longitude/latitude box
Syntax	masklonlatbox,lon1,lon2,lat1,lat2 ifile ofile
maskindexbox	Mask an index box
Syntax	maskindexbox,idx1,idx2,idy1,idy2 ifile ofile
setclonlatbox	Set a longitude/latitude box to constant
Syntax	setclonlatbox,c,lon1,lon2,lat1,lat2 ifile ofile
setcindexbox	Set an index box to constant
Syntax	setcindexbox,c,idx1,idx2,idy1,idy2 ifile ofile
enlarge	Enlarge fields
Syntax	enlarge,grid ifile ofile
setmissval	Set a new missing value
Syntax	setmissval,miss ifile ofile
setctomiss setmisstoc	Set constant to missing value Set missing value to constant
Syntax	<operator>,<c ifile ofile
setrtomiss	Set range to missing value
Syntax	setrtomiss,rmin,rmax ifile ofile

## Arithmetic

expr	Evaluate expressions
Syntax	expr,instr ifile ofile
exprpf	Evaluate expressions from script file
Syntax	exprpf,filename ifile ofile
abs int nint sqr sqrt exp ln log10 sin cos tan asin acos atan	Absolute value Integer value Nearest integer value Square Square root Exponential Natural logarithm Base 10 logarithm Sine Cosine Tangent Arc sine Arc cosine Arc tangent
Syntax	<operator> ifile ofile

<b>addc</b>	Add a constant
<b>subc</b>	Subtract a constant
<b>mulc</b>	Multiply with a constant
<b>divc</b>	Divide by a constant
Syntax	<i>&lt;operator&gt;</i> , <i>c</i> ifile ofile
<b>add</b>	Add two fields
<b>sub</b>	Subtract two fields
<b>mul</b>	Multiply two fields
<b>div</b>	Divide two fields
<b>min</b>	Minimum of two fields
<b>max</b>	Maximum of two fields
<b>atan2</b>	Arc tangent of two fields
Syntax	<i>&lt;operator&gt;</i> ifile1 ifile2 ofile
<b>ymonadd</b>	Add multi-year monthly time average
<b>ymonsul</b>	Subtract multi-year monthly time average
<b>ymonmul</b>	Multiply multi-year monthly time average
<b>ymondiv</b>	Divide multi-year monthly time average
Syntax	<i>&lt;operator&gt;</i> ifile1 ifile2 ofile

<b>muldpm</b>	Multiply with days per month
<b>divdpm</b>	Divide by days per month
<b>muldpy</b>	Multiply with days per year
<b>divdpy</b>	Divide by days per year
Syntax	<i>&lt;operator&gt;</i> ifile ofile

#### Statistical values

<b>ensmin</b>	Ensemble minimum
<b>ensmax</b>	Ensemble maximum
<b>enssum</b>	Ensemble sum
<b>ensmean</b>	Ensemble mean
<b>ensavg</b>	Ensemble average
<b>ensvar</b>	Ensemble variance
<b>ensstd</b>	Ensemble standard deviation
Syntax	<i>&lt;operator&gt;</i> ifiles ofile
<b>enspctl</b>	Ensemble percentiles
Syntax	<b>enspctl</b> , <i>p</i> ifiles ofile

<b>fldmin</b>	Field minimum
<b>fldmax</b>	Field maximum
<b>fldsum</b>	Field sum
<b>fldmean</b>	Field mean
<b>fldavg</b>	Field average
<b>fldvar</b>	Field variance
<b>fldstd</b>	Field standard deviation
Syntax	<i>&lt;operator&gt;</i> ifile ofile
<b>fldpctl</b>	Field percentiles
Syntax	<b>fldpctl</b> , <i>p</i> ifile ofile

<b>zonmin</b>	Zonal minimum
<b>zonmax</b>	Zonal maximum
<b>zonsum</b>	Zonal sum
<b>zonmean</b>	Zonal mean
<b>zonavg</b>	Zonal average
<b>zonvar</b>	Zonal variance
<b>zonstd</b>	Zonal standard deviation
Syntax	<i>&lt;operator&gt;</i> ifile ofile
<b>zonpctl</b>	Zonal percentiles
Syntax	<b>zonpctl</b> , <i>p</i> ifile ofile

<b>mermin</b>	Meridional minimum
<b>mermax</b>	Meridional maximum
<b>mersum</b>	Meridional sum
<b>mermean</b>	Meridional mean
<b>meravg</b>	Meridional average
<b>mervar</b>	Meridional variance
<b>merstd</b>	Meridional standard deviation
Syntax	<i>&lt;operator&gt;</i> ifile ofile
<b>merpctl</b>	Meridional percentiles
Syntax	<b>merpctl</b> , <i>p</i> ifile ofile

<b>vertmin</b>	Vertical minimum
<b>vertmax</b>	Vertical maximum
<b>vertsum</b>	Vertical sum
<b>vertmean</b>	Vertical mean
<b>vertavg</b>	Vertical average
<b>vertvar</b>	Vertical variance
<b>vertstd</b>	Vertical standard deviation
Syntax	<i>&lt;operator&gt;</i> ifile ofile

<b>selmin</b>	Time range minimum
<b>selmax</b>	Time range maximum
<b>selsum</b>	Time range sum
<b>selmean</b>	Time range mean
<b>selavg</b>	Time range average
<b>selvar</b>	Time range variance
<b>selstd</b>	Time range standard deviation
Syntax	<i>&lt;operator&gt;</i> , <i>nsets</i> [ <i>noffset</i> [ <i>nskip</i> ]] ifile ofile

<b>selepctl</b>	Time range percentiles
Syntax	<b>selepctl</b> , <i>p,nsets</i> [ <i>noffset</i> [ <i>nskip</i> ]] in1 in2 in3 out

<b>runmin</b>	Running minimum
<b>runmax</b>	Running maximum
<b>runsum</b>	Running sum
<b>runmean</b>	Running mean
<b>runavg</b>	Running average
<b>runvar</b>	Running variance
<b>runstd</b>	Running standard deviation
Syntax	<i>&lt;operator&gt;</i> , <i>nts</i> ifile ofile

<b>runpctl</b>	Running percentiles
Syntax	<b>runpctl</b> , <i>p,nts</i> ifile1 ofile

<b>timmin</b>	Time minimum
<b>timmax</b>	Time maximum
<b>tisum</b>	Time sum
<b>timmean</b>	Time mean
<b>timavg</b>	Time average
<b>timvar</b>	Time variance
<b>timstd</b>	Time standard deviation
Syntax	<i>&lt;operator&gt;</i> ifile ofile

<b>timpctl</b>	Time percentiles
Syntax	<b>timpctl</b> , <i>p</i> ifile1 ifile2 ifile3 ofile

<b>hourmin</b>	Hourly minimum
<b>hourmax</b>	Hourly maximum
<b>hoursum</b>	Hourly sum
<b>hourmean</b>	Hourly mean
<b>houravg</b>	Hourly average
<b>hourvar</b>	Hourly variance
<b>hourstd</b>	Hourly standard deviation
Syntax	<i>&lt;operator&gt;</i> ifile ofile

<b>hourpctl</b>	Hourly percentiles
Syntax	<b>hourpctl</b> , <i>p</i> ifile1 ifile2 ifile3 ofile

<b>daymin</b>	Daily minimum
<b>daymax</b>	Daily maximum
<b>daysum</b>	Daily sum
<b>daymean</b>	Daily mean
<b>dayavg</b>	Daily average
<b>dayvar</b>	Daily variance
<b>daystd</b>	Daily standard deviation
Syntax	<i>&lt;operator&gt;</i> ifile ofile

<b>daypctl</b>	Daily percentiles
Syntax	<b>daypctl</b> , <i>p</i> ifile1 ifile2 ifile3 ofile

<b>monmin</b>	Monthly minimum
<b>monmax</b>	Monthly maximum
<b>monsum</b>	Monthly sum
<b>monmean</b>	Monthly mean
<b>monavg</b>	Monthly average
<b>monvar</b>	Monthly variance
<b>monstd</b>	Monthly standard deviation
Syntax	<i>&lt;operator&gt;</i> ifile ofile

<b>monpctl</b>	Monthly percentiles
Syntax	<b>monpctl</b> , <i>p</i> ifile1 ifile2 ifile3 ofile

<b>yearmin</b>	Yearly minimum
<b>yearmax</b>	Yearly maximum
<b>yearsum</b>	Yearly sum
<b>yearmean</b>	Yearly mean
<b>yearavg</b>	Yearly average
<b>yearvar</b>	Yearly variance
<b>yearstd</b>	Yearly standard deviation
Syntax	<i>&lt;operator&gt;</i> ifile ofile

<b>yearpctl</b>	Yearly percentiles
Syntax	<b>yearpctl</b> , <i>p</i> ifile1 ifile2 ifile3 ofile

<b>seasmin</b>	Seasonal minimum
<b>seasmax</b>	Seasonal maximum
<b>seassum</b>	Seasonal sum
<b>seasmean</b>	Seasonal mean
<b>seasavg</b>	Seasonal average
<b>seasvar</b>	Seasonal variance
<b>seasstd</b>	Seasonal standard deviation
Syntax	<i>&lt;operator&gt;</i> ifile ofile

<b>seaspctl</b>	Seasonal percentiles
Syntax	<b>seaspctl</b> , <i>p</i> ifile1 ifile2 ifile3 ofile

<b>ydaymin</b>	Multi-year daily minimum
<b>ydaymax</b>	Multi-year daily maximum
<b>ydaysum</b>	Multi-year daily sum
<b>ydaymean</b>	Multi-year daily mean
<b>ydayavg</b>	Multi-year daily average
<b>ydayvar</b>	Multi-year daily variance
<b>ydaystd</b>	Multi-year daily standard deviation
Syntax	<i>&lt;operator&gt;</i> ifile ofile

<b>ydaypctl</b>	Multi-year daily percentiles
Syntax	<b>ydaypctl</b> , <i>p</i> ifile1 ifile2 ifile3 ofile

<b>ymonmin</b>	Multi-year monthly minimum
<b>ymonmax</b>	Multi-year monthly maximum
<b>ymonsum</b>	Multi-year monthly sum
<b>ymonmean</b>	Multi-year monthly mean
<b>ymonavg</b>	Multi-year monthly average
<b>ymonvar</b>	Multi-year monthly variance
<b>ymonstd</b>	Multi-year monthly standard deviation
Syntax	<i>&lt;operator&gt;</i> ifile ofile

<b>ymonpctl</b>	Multi-year monthly percentiles
Syntax	<b>ymonpctl</b> , <i>p</i> ifile1 ifile2 ifile3 ofile

<b>yseasmin</b>	Multi-year seasonal minimum
<b>yseasmax</b>	Multi-year seasonal maximum
<b>yseassum</b>	Multi-year seasonal sum
<b>yseasmean</b>	Multi-year seasonal mean
<b>yseasavg</b>	Multi-year seasonal average
<b>yseasvar</b>	Multi-year seasonal variance
<b>yseasstd</b>	Multi-year seasonal standard deviation
Syntax	<i>&lt;operator&gt;</i> ifile ofile

<b>yseaspctl</b>	Multi-year seasonal percentiles
Syntax	<b>yseaspctl</b> , <i>p</i> ifile1 ifile2 ifile3 ofile

<b>ydrunmin</b>	Multi-year daily running minimum
<b>ydrunmax</b>	Multi-year daily running maximum
<b>ydrunsum</b>	Multi-year daily running sum
<b>ydrunmean</b>	Multi-year daily running mean
<b>ydrunavg</b>	Multi-year daily running average
<b>ydrunvar</b>	Multi-year daily running variance
<b>ydrunstd</b>	Multi-year daily running standard deviation
Syntax	<i>&lt;operator&gt;</i> , <i>nts</i> ifile ofile

<b>ydrunpctl</b>	Multi-year daily running percentiles
Syntax	<b>ydrunpctl</b> , <i>p,nts</i> ifile1 ifile2 ifile3 ofile

#### Regression

<b>detrend</b>	Detrend
Syntax	<b>detrend</b> ifile ofile

<b>trend</b>	Trend
Syntax	<b>trend</b> ifile ofile1 ofile2

<b>subtrend</b>	Subtract trend
Syntax	<b>subtrend</b> ifile1 ifile2 ifile3 ofile

#### Interpolation

<b>remapbil</b>	Bilinear interpolation
<b>remapbic</b>	Bicubic interpolation
<b>remapcon</b>	Conservative remapping
<b>remapdis</b>	Distance-weighted averaging
Syntax	<i>&lt;operator&gt;</i> <i>&gt;</i> , <i>grid</i> ifile ofile

<b>genbil</b>	Generate bilinear interpolation weights
<b>genbic</b>	Generate bicubic interpolation weights
<b>gencon</b>	Generate conservative interpolation weights
<b>gendis</b>	Generate distance-weighted averaging weights
Syntax	<i>&lt;operator&gt;</i> <i>&gt;</i> , <i>grid</i> ifile ofile

<b>remap</b>	SCRIP grid remapping
Syntax	<b>remap</b> , <i>grid,weights</i> ifile ofile

<b>interpolate</b>	PINGO grid interpolation
<b>intgridbil</b>	Bilinear grid interpolation
Syntax	<i>&lt;operator&gt;</i> <i>&gt;</i> , <i>grid</i> ifile ofile

<b>remapeta</b>	Remap model level
Syntax	<b>remapeta</b> , <i>vct</i> [ <i>oro</i> ] ifile ofile

<b>ml2pl</b>	Model to pressure level interpolation
Syntax	<b>ml2pl</b> , <i>plevels</i> ifile ofile
<b>ml2hl</b>	Model to height level interpolation
Syntax	<b>ml2hl</b> , <i>hlevels</i> ifile ofile

<b>inttime</b>	Time interpolation
Syntax	<b>inttime</b> , <i>date,time</i> [ <i>inc</i> ] ifile ofile

<b>intntime</b>	Time interpolation
Syntax	<b>intntime</b> , <i>n</i> ifile ofile

<b>intyear</b>	Year interpolation
Syntax	<b>intyear</b> , <i>years</i> ifile1 ifile2 oprefix

#### Transformation

<b>sp2gp</b>	Spectral to gridpoint
<b>sp2gpl</b>	Spectral to gridpoint (linear)
<b>gp2sp</b>	Gridpoint to spectral
<b>gp2spl</b>	Gridpoint to spectral (linear)
Syntax	<i>&lt;operator&gt;</i> ifile ofile

<b>sp2sp</b>	Spectral to spectral
Syntax	<b>sp2sp</b> , <i>trunc</i> ifile ofile

<b>dv2uv</b>	Divergence and vorticity to U and V wind
<b>dv2uvl</b>	Divergence and vorticity to U and V wind (linear)
<b>uv2dv</b>	U and V wind to divergence and vorticity
<b>uv2dvl</b>	U and V wind to divergence and vorticity (linear)
Syntax	<i>&lt;operator&gt;</i> ifile ofile

#### Formatted I/O

<b>input</b>	ASCII input
Syntax	<b>input</b> , <i>grid</i> ofile
<b>inputsrv</b>	SERVICE input
<b>inputext</b>	EXTRA input
Syntax	<i>&lt;operator&gt;</i> ofile

<b>output</b>	ASCII output
Syntax	<b>output</b> ifiles
<b>outputf</b>	Formatted output
Syntax	<b>outputf</b> , <i>format,nelem</i> ifiles

<b>outputint</b>	Integer output
<b>outputsrv</b>	SERVICE output
<b>outputext</b>	EXTRA output
Syntax	<i>&lt;operator&gt;</i> ifiles

Miscellaneous

<b>gradsdes1</b>	GrADS data descriptor file (version 1 GRIB map)
<b>gradsdes2</b>	GrADS data descriptor file (version 2 GRIB map)
Syntax	< <i>operator</i> > <b>ifile</b>
<b>timsort</b>	Sort over the time
Syntax	<b>timsort ifile ofile</b>
<b>const</b>	Create a constant field
Syntax	<b>const, const, grid ofile</b>
<b>random</b>	Create a field with random values
Syntax	<b>random, grid ofile</b>
<b>rotuvb</b>	Backward rotation
Syntax	<b>rotuvb, u, v, ... ifile ofile</b>
<b>mastrfu</b>	Mass stream function
Syntax	<b>mastrfu ifile ofile</b>
<b>wct</b>	Windchill temperature (C)
Syntax	<b>wct ifile1 ifile2 ofile</b>
<b>fdns</b>	Frost days where no snow index per time period
Syntax	<b>fdns ifile1 ifile2 ofile</b>
<b>strwin</b>	Strong wind days index per time period
Syntax	<b>strwin[,v] ifile ofile</b>
<b>strbre</b>	Strong breeze days index per time period
Syntax	<b>strbre ifile ofile</b>
<b>strgal</b>	Strong gale days index per time period
Syntax	<b>strgal ifile ofile</b>
<b>hurr</b>	Hurricane days index per time period
Syntax	<b>hurr ifile ofile</b>

ECA indices

<b>eca_cdd</b>	Consecutive dry days index per time period
Syntax	<b>eca_cdd ifile ofile</b>
<b>eca_cfd</b>	Consecutive frost days index per time period
Syntax	<b>eca_cfd ifile ofile</b>
<b>eca_csu</b>	Consecutive summer days index per time period
Syntax	<b>eca_csu[,T] ifile ofile</b>
<b>eca_cwd</b>	Consecutive wet days index per time period
Syntax	<b>eca_cwd ifile ofile</b>
<b>eca_cwdi</b>	Cold wave duration index wrt mean of reference period
Syntax	<b>eca_cwdi[,nday[,T]] ifile1 ifile2 ofile</b>
<b>eca_cwfi</b>	Cold-spell days index wrt 10th percentile of reference period
Syntax	<b>eca_cwfi[,nday] ifile1 ifile2 ofile</b>
<b>eca_etr</b>	Intra-period extreme temperature range
Syntax	<b>eca_etr ifile1 ifile2 ofile</b>
<b>eca_fd</b>	Frost days index per time period
Syntax	<b>eca_fd ifile ofile</b>
<b>eca_gsl</b>	Growing season length index
Syntax	<b>eca_gsl[,nday[,T]] ifile ofile</b>
<b>eca_hd</b>	Heating degree days per time period
Syntax	<b>eca_hd[,T1[,T2]] ifile ofile</b>
<b>eca_hwdi</b>	Heat wave duration index wrt mean of reference period
Syntax	<b>eca_hwdi[,nday[,T]] ifile1 ifile2 ofile</b>
<b>eca_hwfi</b>	Warm spell days index wrt 90th percentile of reference period
Syntax	<b>eca_hwfi[,nday] ifile1 ifile2 ofile</b>
<b>eca_id</b>	Ice days index per time period
Syntax	<b>eca_id ifile ofile</b>
<b>eca_r10mm</b>	Heavy precipitation days index per time period
Syntax	<b>eca_r10mm ifile ofile</b>
<b>eca_r20mm</b>	Very heavy precipitation days index per time period
Syntax	<b>eca_r20mm ifile ofile</b>
<b>eca_r75p</b>	Moderate wet days wrt 75th percentile of reference period
Syntax	<b>eca_r75p ifile1 ifile2 ofile</b>

<b>eca_r75ptot</b>	Precipitation percent due to R75p days
Syntax	<b>eca_r75ptot ifile1 ifile2 ofile</b>
<b>eca_r90p</b>	Wet days wrt 90th percentile of reference period
Syntax	<b>eca_r90p ifile1 ifile2 ofile</b>
<b>eca_r90ptot</b>	Precipitation percent due to R90p days
Syntax	<b>eca_r90ptot ifile1 ifile2 ofile</b>
<b>eca_r95p</b>	Very wet days wrt 95th percentile of reference period
Syntax	<b>eca_r95p ifile1 ifile2 ofile</b>
<b>eca_r95ptot</b>	Precipitation percent due to R95p days
Syntax	<b>eca_r95ptot ifile1 ifile2 ofile</b>
<b>eca_r99p</b>	Extremely wet days wrt 99th percentile of reference period
Syntax	<b>eca_r99p ifile1 ifile2 ofile</b>
<b>eca_r99ptot</b>	Precipitation percent due to R99p days
Syntax	<b>eca_r99ptot ifile1 ifile2 ofile</b>
<b>eca_rr1</b>	Wet days index per time period
Syntax	<b>eca_rr1 ifile ofile</b>
<b>eca_rx1day</b>	Highest one day precipitation amount per time period
Syntax	<b>eca_rx1day[,mode] ifile ofile</b>
<b>eca_rx5day</b>	Highest five-day precipitation amount per time period
Syntax	<b>eca_rx5day[,x] ifile ofile</b>
<b>eca_sdii</b>	Simple daily intensity index per time period
Syntax	<b>eca_sdii ifile ofile</b>
<b>eca_su</b>	Summer days index per time period
Syntax	<b>eca_su[,T] ifile ofile</b>
<b>eca_tg10p</b>	Cold days percent wrt 10th percentile of reference period
Syntax	<b>eca_tg10p ifile1 ifile2 ofile</b>
<b>eca_tg90p</b>	Warm days percent wrt 90th percentile of reference period
Syntax	<b>eca_tg90p ifile1 ifile2 ofile</b>
<b>eca_tn10p</b>	Cold nights percent wrt 10th percentile of reference period
Syntax	<b>eca_tn10p ifile1 ifile2 ofile</b>
<b>eca_tn90p</b>	Warm nights percent wrt 90th percentile of reference period
Syntax	<b>eca_tn90p ifile1 ifile2 ofile</b>
<b>eca_tr</b>	Tropical nights index per time period
Syntax	<b>eca_tr[,T] ifile ofile</b>
<b>eca_tx10p</b>	Very cold days percent wrt 10th percentile of reference period
Syntax	<b>eca_tx10p ifile1 ifile2 ofile</b>
<b>eca_tx90p</b>	Very warm days percent wrt 90th percentile of reference period
Syntax	<b>eca_tx90p ifile1 ifile2 ofile</b>