

# CDO Reference Card

Climate Data Operators

Version 1.5.4

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

## Syntax

cdo	[Options]	Operator1 [ –Operator2 [ –OperatorN ] ]
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## 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 srv,ext,ieg; 1-24 for grb,grb2)
-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	
splitcode	Split code numbers
splitparam	Split parammeter identifiers
splitname	Split variable names
splitlevel	Split levels
splitgrid	Split grids
splitzaxis	Split z-axes
splittabnum	Split parameter table numbers
<operator> ifile obase	
splthour	Split hours
spltday	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,levidx 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	

sel timestep	Select timesteps
sel timestep,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	
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	
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

<b>expr</b>	Evaluate expressions
<b>expr,instr ifile ofile</b>	
<b>exprf</b>	Evaluate expressions from script file
<b>exprf,filename ifile ofile</b>	
<b>abs</b>	Absolute value
<b>int</b>	Integer value
<b>nint</b>	Nearest integer value
<b>pow</b>	Power
<b>sqr</b>	Square
<b>sqrt</b>	Square root
<b>exp</b>	Exponential
<b>ln</b>	Natural logarithm
<b>log10</b>	Base 10 logarithm
<b>sin</b>	Sine
<b>cos</b>	Cosine
<b>tan</b>	Tangent
<b>asin</b>	Arc sine
<b>acos</b>	Arc cosine
<b>reci</b>	Reciprocal value
<b>&lt;operator&gt; ifile ofile</b>	
<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
<b>&lt;operator&gt; ,c ifile ofile</b>	
<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
<b>&lt;operator&gt; ifile1 ifile2 ofile</b>	
<b>monadd</b>	Add monthly time series
<b>monsub</b>	Subtract monthly time series
<b>monmul</b>	Multiply monthly time series
<b>monddiv</b>	Divide monthly time series
<b>&lt;operator&gt; ifile1 ifile2 ofile</b>	
<b>ymonadd</b>	Add multi-year monthly time series
<b>ymonsub</b>	Subtract multi-year monthly time series
<b>ymonmul</b>	Multiply multi-year monthly time series
<b>ymonddiv</b>	Divide multi-year monthly time series
<b>&lt;operator&gt; ifile1 ifile2 ofile</b>	
<b>ydayadd</b>	Add multi-year daily time series
<b>ydaysub</b>	Subtract multi-year daily time series
<b>ydaymul</b>	Multiply multi-year daily time series
<b>ydaydiv</b>	Divide multi-year daily time series
<b>&lt;operator&gt; ifile1 ifile2 ofile</b>	
<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
<b>&lt;operator&gt; ifile ofile</b>	

Statistical values

Available statistical functions	<b>&lt;stat&gt;</b>
minimum	<b>min</b>
maximum	<b>max</b>
sum	<b>sum</b>
mean	<b>mean</b>
average	<b>avg</b>
variance	<b>var</b>
standard deviation	<b>std</b>
<b>consects</b>	Consecutive Timesteps
<b>&lt;operator&gt; ifile ofile</b>	

<b>ens&lt;stat&gt;</b>	Statistical values over an ensemble
<b>&lt;operator&gt; ifiles ofile</b>	
<b>enspctl</b>	Ensemble percentiles
<b>enspctl,p ifiles ofile</b>	
<b>ensrkhistspace</b>	Ranked Histogram averaged over time
<b>ensrkhisttime</b>	Ranked Histogram averaged over space
<b>ensroc</b>	Ensemble Receiver Operating characteristics
<b>&lt;operator&gt; obsfile ensfiles ofile</b>	
<b>enscrps</b>	Ensemble CRPS and decomposition
<b>enscrps rfile ifiles ofilebase</b>	
<b>ensbrs</b>	Ensemble Brier score
<b>ensbrs,x rfile ifiles ofilebase</b>	
<b>fld&lt;stat&gt;</b>	Statistical values over a field
<b>&lt;operator&gt; ifile ofile</b>	
<b>fldpctl</b>	Field percentiles
<b>fldpctl,p ifile ofile</b>	
<b>zon&lt;stat&gt;</b>	Zonal statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>zonpctl</b>	Zonal percentiles
<b>zonpctl,p ifile ofile</b>	
<b>mer&lt;stat&gt;</b>	Meridional statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>merpctl</b>	Meridional percentiles
<b>merpctl,p ifile ofile</b>	
<b>gridbox&lt;stat&gt;</b>	Statistical values over grid boxes
<b>&lt;operator&gt; ,nx,,ny ifile ofile</b>	
<b>vert&lt;stat&gt;</b>	Vertical statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>timsel&lt;stat&gt;</b>	Time range statistical values
<b>&lt;operator&gt; ,nsets[,noffset[,nskip]] ifile ofile</b>	
<b>timselfctl</b>	Time range percentiles
<b>timselfctl,p,nsets[,noffset[,nskip]] ifile1 ifile2 ifile3 ofile</b>	
<b>run&lt;stat&gt;</b>	Running statistical values
<b>&lt;operator&gt; ,nts ifile ofile</b>	
<b>runpctl</b>	Running percentiles
<b>runpctl,p,nts ifile1 ofile</b>	
<b>tim&lt;stat&gt;</b>	Statistical values over all timesteps
<b>&lt;operator&gt; ifile ofile</b>	
<b>timpctl</b>	Time percentiles
<b>timpctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>hour&lt;stat&gt;</b>	Hourly statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>hourpctl</b>	Hourly percentiles
<b>hourpctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>day&lt;stat&gt;</b>	Daily statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>daypctl</b>	Daily percentiles
<b>daypctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>mon&lt;stat&gt;</b>	Monthly statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>monpctl</b>	Monthly percentiles
<b>monpctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>year&lt;stat&gt;</b>	Yearly statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>yearpctl</b>	Yearly percentiles
<b>yearpctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>seas&lt;stat&gt;</b>	Seasonal statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>seaspctl</b>	Seasonal percentiles
<b>seaspctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>yhour&lt;stat&gt;</b>	Multi-year hourly statistical values
<b>&lt;operator&gt; ifile ofile</b>	

<b>yday&lt;stat&gt;</b>	Multi-year daily statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>ydaypctl</b>	Multi-year daily percentiles
<b>ydaypctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>ymon&lt;stat&gt;</b>	Multi-year monthly statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>ymonpctl</b>	Multi-year monthly percentiles
<b>ymonpctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>yseas&lt;stat&gt;</b>	Multi-year seasonal statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>yseaspctl</b>	Multi-year seasonal percentiles
<b>yseaspctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>ydrun&lt;stat&gt;</b>	Multi-year daily running statistical values
<b>&lt;operator&gt; ,nts ifile ofile</b>	
<b>ydrunpctl</b>	Multi-year daily running percentiles
<b>ydrunpctl,p,nts ifile1 ifile2 ifile3 ofile</b>	

Correlation and co.

<b>fldcor</b>	Correlation in grid space
<b>fldcor ifile1 ifile2 ofile</b>	
<b>timcor</b>	Correlation over time
<b>timcor ifile1 ifile2 ofile</b>	
<b>fldcovar</b>	Covariance in grid space
<b>fldcovar ifile1 ifile2 ofile</b>	
<b>timcovar</b>	Covariance over time
<b>timcovar ifile1 ifile2 ofile</b>	

Regression

<b>regres</b>	Regression
<b>regres ifile ofile</b>	
<b>detrend</b>	Detrend
<b>detrend ifile ofile</b>	
<b>trend</b>	Trend
<b>trend ifile ofile1 ofile2</b>	
<b>subtrend</b>	Subtract trend
<b>subtrend ifile1 ifile2 ifile3 ofile</b>	

EOFs

<b>eof</b>	Calculate EOFs in spatial or time space
<b>eoftime</b>	Calculate EOFs in time space
<b>eofspatial</b>	Calculate EOFs in spatial space
<b>eof3d</b>	Calculate 3-Dimensional EOFs in time space
<b>&lt;operator&gt; ,neof ifile ofile1 ofile2</b>	
<b>eofcoeff</b>	Calculate principal coefficients of EOFs
<b>eofcoeff ifile1 ifile2 obase</b>	

Interpolation

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

<b>genbil</b>	Generate bilinear interpolation weights
<b>genbic</b>	Generate bicubic interpolation weights
<b>gendis</b>	Generate distance-weighted average remap weights
<b>gennn</b>	Generate nearest neighbor remap weights
<b>gencon</b>	Generate 1st order conservative remap weights
<b>gencon2</b>	Generate 2nd order conservative remap weights
<b>genlaf</b>	Generate largest area fraction remap weights
<b>&lt;operator&gt; ,grid ifile ofile</b>	
<b>remap</b>	SCRIP grid remapping
<b>remap ,grid ,weights ifile ofile</b>	
<b>remapeta</b>	Remap vertical hybrid level
<b>remapeta ,vct[,oro] ifile ofile</b>	
<b>ml2pl</b>	Model to pressure level interpolation
<b>ml2pl ,plevels ifile ofile</b>	
<b>ml2hl</b>	Model to height level interpolation
<b>ml2hl ,hlevels ifile ofile</b>	
<b>intlevel</b>	Linear level interpolation
<b>intlevel ,levels ifile ofile</b>	
<b>intlevel3d</b>	Linear level interpolation onto a 3d vertical coordinate
<b>intlevelx3d</b>	like intlevel3d but with extrapolation
<b>&lt;operator&gt; ,icoordinate ifile1 ifile2 ofile</b>	
<b>inttime</b>	Interpolation between timesteps
<b>inttime ,date ,time[,inc] ifile ofile</b>	
<b>intntime</b>	Interpolation between timesteps
<b>intntime ,n ifile ofile</b>	
<b>intyear</b>	Interpolation between two years
<b>intyear ,years ifile1 ifile2 obase</b>	

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)
<b>&lt;operator&gt; ifile ofile</b>	
<b>sp2sp</b>	Spectral to spectral
<b>sp2sp ,trunc ifile ofile</b>	
<b>dv2uv</b>	Divergence and vorticity to U and V wind
<b>dv2u vl</b>	Divergence and vorticity to U and V wind (linear)
<b>uv2dv</b>	U and V wind to divergence and vorticity
<b>uv2d vl</b>	U and V wind to divergence and vorticity (linear)
<b>dv2ps</b>	D and V to velocity potential and stream function
<b>&lt;operator&gt; ifile ofile</b>	

Import/Export

<b>import_binary</b>	Import binary data sets
<b>import_binary ifile ofile</b>	
<b>import_cmsaf</b>	Import CM-SAF HDF5 files
<b>import_cmsaf ifile ofile</b>	
<b>import_amsr</b>	Import AMSR binary files
<b>import_amsr ifile ofile</b>	
<b>input</b>	ASCII input
<b>input ,grid ofile</b>	
<b>inputsrv</b>	SERVICE ASCII input
<b>inputext</b>	EXTRA ASCII input
<b>&lt;operator&gt; ofile</b>	
<b>output</b>	ASCII output
<b>output ifiles</b>	
<b>outputf</b>	Formatted output
<b>outputf ,format ,nelem ifiles</b>	
<b>outputint</b>	Integer output
<b>outputsrv</b>	SERVICE ASCII output
<b>outputext</b>	EXTRA ASCII output
<b>&lt;operator&gt; ifiles</b>	

Miscellaneous

<b>gradsdes1</b>	GrADS data descriptor file (version 1 GRIB map)
<b>gradsdes2</b>	GrADS data descriptor file (version 2 GRIB map)
< operator > ifile	
<b>bandpass</b>	Bandpass filtering
<b>bandpass,fmin,fmax</b> ifile ofile	
<b>lowpass</b>	Lowpass filtering
<b>lowpass,fmax</b> ifile ofile	
<b>highpass</b>	Highpass filtering
<b>highpass,fmin</b> ifile ofile	
<b>gridarea</b>	Grid cell area
<b>gridweights</b>	Grid cell weights
< operator > ifile ofile	
<b>smooth9</b>	9 point smoothing
<b>smooth9</b> ifile ofile	
<b>setvals</b>	Set list of old values to new values
<b>setvals,oldval,newval[,...]</b> ifile ofile	
<b>setrtoc</b>	Set range to constant
<b>setrtoc,rmin,rmax,c</b> ifile ofile	
<b>setrtoc2</b>	Set range to constant others to constant2
<b>setrtoc2,rmin,rmax,c,c2</b> ifile ofile	
<b>timsort</b>	Sort over the time
<b>timsort</b> ifile ofile	
<b>const</b>	Create a constant field
<b>const,const.grid</b> ofile	
<b>random</b>	Create a field with random numbers
<b>random.grid[,seed]</b> ofile	
<b>stdatm</b>	Create values for pressure and temperature for hybrid
<b>stdatm,levels</b> ofile	
<b>rotuvb</b>	Backward rotation
<b>rotuvb,u,v,...</b> ifile ofile	
<b>mastrfu</b>	Mass stream function
<b>mastrfu</b> ifile ofile	
<b>histcount</b>	Histogram count
<b>histsum</b>	Histogram sum
<b>histmean</b>	Histogram mean
<b>histfreq</b>	Histogram frequency
< operator >,bounds ifile ofile	
<b>sethalo</b>	Set the left and right bounds of a field
<b>sethalo,lhalo,rhalo</b> ifile ofile	
<b>wct</b>	Windchill temperature
<b>wct</b> ifile1 ifile2 ofile	
<b>fdns</b>	Frost days where no snow index per time period
<b>fdns</b> ifile1 ifile2 ofile	
<b>strwin</b>	Strong wind days index per time period
<b>strwin[,v]</b> ifile ofile	
<b>strbre</b>	Strong breeze days index per time period
<b>strbre</b> ifile ofile	
<b>strgal</b>	Strong gale days index per time period
<b>strgal</b> ifile ofile	
<b>hurr</b>	Hurricane days index per time period
<b>hurr</b> ifile ofile	

Climate indices

<b>eca_cdd</b>	Consecutive dry days index per time period
<b>eca_cdd[,R]</b> ifile ofile	
<b>eca_cfd</b>	Consecutive frost days index per time period
<b>eca_cfd</b> ifile ofile	
<b>eca_csu</b>	Consecutive summer days index per time period
<b>eca_csu[,T]</b> ifile ofile	
<b>eca_cwd</b>	Consecutive wet days index per time period
<b>eca_cwd[,R]</b> ifile ofile	

<b>eca_cwdi</b>	Cold wave duration index wrt mean of reference period
<b>eca_cwdi[,nday[,T]]</b> ifile1 ifile2 ofile	
<b>eca_cwfi</b>	Cold-spell days index wrt 10th percentile of reference period
<b>eca_cwfi[,nday]</b> ifile1 ifile2 ofile	
<b>eca_etr</b>	Intra-period extreme temperature range
<b>eca_etr</b> ifile1 ifile2 ofile	
<b>eca_fd</b>	Frost days index per time period
<b>eca_fd</b> ifile ofile	
<b>eca_gsl</b>	Growing season length index
<b>eca_gsl[,nday[,T[,fland]]]</b> ifile1 ifile2 ofile	
<b>eca_hd</b>	Heating degree days per time period
<b>eca_hd[,T1[,T2]]</b> ifile ofile	

<b>eca_hwdi</b>	Heat wave duration index wrt mean of reference period
<b>eca_hwdi[,nday[,T]]</b> ifile1 ifile2 ofile	
<b>eca_hwfi</b>	Warm spell days index wrt 90th percentile of reference period
<b>eca_hwfi[,nday]</b> ifile1 ifile2 ofile	
<b>eca_id</b>	Ice days index per time period
<b>eca_id</b> ifile ofile	
<b>eca_pd</b>	Precipitation days index per time period
<b>eca_pd,x</b> ifile ofile	
<b>eca_r10mm</b>	Heavy precipitation days index per time period
<b>eca_r20mm</b>	Very heavy precipitation days index per time period
< operator > ifile ofile	

<b>eca_r75p</b>	Moderate wet days wrt 75th percentile of reference period
<b>eca_r75p</b> ifile1 ifile2 ofile	
<b>eca_r75ptot</b>	Precipitation percent due to R75p days
<b>eca_r75ptot</b> ifile1 ifile2 ofile	
<b>eca_r90p</b>	Wet days wrt 90th percentile of reference period
<b>eca_r90p</b> ifile1 ifile2 ofile	
<b>eca_r90ptot</b>	Precipitation percent due to R90p days
<b>eca_r90ptot</b> ifile1 ifile2 ofile	

<b>eca_r95p</b>	Very wet days wrt 95th percentile of reference period
<b>eca_r95p</b> ifile1 ifile2 ofile	
<b>eca_r95ptot</b>	Precipitation percent due to R95p days
<b>eca_r95ptot</b> ifile1 ifile2 ofile	
<b>eca_r99p</b>	Extremely wet days wrt 99th percentile of reference period
<b>eca_r99p</b> ifile1 ifile2 ofile	
<b>eca_r99ptot</b>	Precipitation percent due to R99p days
<b>eca_r99ptot</b> ifile1 ifile2 ofile	
<b>eca_rr1</b>	Wet days index per time period
<b>eca_rr1[,R]</b> ifile ofile	

<b>eca_rx1day</b>	Highest one day precipitation amount per time period
<b>eca_rx1day[,mode]</b> ifile ofile	
<b>eca_rx5day</b>	Highest five-day precipitation amount per time period
<b>eca_rx5day[,x]</b> ifile ofile	
<b>eca_sdii</b>	Simple daily intensity index per time period
<b>eca_sdii[,R]</b> ifile ofile	
<b>eca_su</b>	Summer days index per time period
<b>eca_su[,T]</b> ifile ofile	

<b>eca_tg10p</b>	Cold days percent wrt 10th percentile of reference period
<b>eca_tg10p</b> ifile1 ifile2 ofile	
<b>eca_tg90p</b>	Warm days percent wrt 90th percentile of reference period
<b>eca_tg90p</b> ifile1 ifile2 ofile	
<b>eca_tn10p</b>	Cold nights percent wrt 10th percentile of reference period
<b>eca_tn10p</b> ifile1 ifile2 ofile	
<b>eca_tn90p</b>	Warm nights percent wrt 90th percentile of reference period
<b>eca_tn90p</b> ifile1 ifile2 ofile	
<b>eca_tr</b>	Tropical nights index per time period
<b>eca_tr[,T]</b> ifile ofile	
<b>eca_tx10p</b>	Very cold days percent wrt 10th percentile of reference period
<b>eca_tx10p</b> ifile1 ifile2 ofile	

<b>eca_tx90p</b>	Very warm days percent wrt 90th percentile of reference period
<b>eca_tx90p</b> ifile1 ifile2 ofile	