CDO	Reference	Card
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Climate Data Operators Version 1.0.8 June 2007

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Syntax

cdo	Options	Operator

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)
$-\mathbf{f} < format >$	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
$-\mathbf{t} $	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

Operators			
Information			
info	Dataset information listed by code number		
infov	Dataset information listed by variable name		
map	Dataset information and simple map		
Syntax	< operator > ifiles		
sinfo	Short dataset information listed by code number		
sinfov	Short dataset information listed by variable name		
Syntax	< operator > ifile		
diff	Compare two datasets listed by code number		
diffv	Compare two datasets listed by variable name		
Syntax	<pre><operator> ifile1 ifile2</operator></pre>		
npar	Number of parameters		
nlevel	Number of levels		
nyear	Number of years		
nmon	Number of months		
ndate	Number of dates		
ntime	Number of time steps		
Syntax	<pre><operator> ifile</operator></pre>		
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 dates		
showtime	Show time steps		
Syntax	<pre><operator> ifile</operator></pre>		
pardes	Parameter description		
griddes	Grid description		
vct	Vertical coordinate table		
Syntax	<pre><operator> ifile</operator></pre>		

seltime

selhour

selday

selmon

selyear

selseas

seldate

selsmon

Syntax

Syntax

Syntax

Syntax

Syntax

Syntax

Syntax

Syntax

Select times

Select hours

Select days

Select months

Select seasons

Select single month

Select years

Select dates

seltime, times ifile ofile

selhour, hours ifile ofile

selday, days ifile ofile

selmon, months ifile ofile

selyear, years ifile ofile

selseas, seasons ifile ofile

seldate,date1[,date2] ifile ofile

selsmon, month[,nts1[,nts2]] ifile ofile

File operation	ns	
copy	Copy datasets	
cat	Concatenate datasets	
Syntax	<pre><operator> ifiles ofile</operator></pre>	
replace	Replace variables	
Syntax	replace ifile1 ifile2 ofile	
merge	Merge datasets with different fields	
merge mergetime	Merge datasets with different fields Merge datasets sorted by date and time	
Syntax	<pre><pre>< operator > ifiles ofile</pre></pre>	
v	*	
splitcode	Split code numbers Split variable names	
splitname splitlevel	Split levels	
splitgrid	Split grids	
splitzaxis	Split zaxis	
Syntax	<pre><pre>< operator > ifile oprefix</pre></pre>	
•	•	
splithour	Split hours	
splitday	Split days	
splitmon splitseas	Split months Split seasons	
splitseas	Split years	
Syntax	<pre>spint years <pre><operator> ifile oprefix</operator></pre></pre>	
•	•	
splitsel	Split time selection	
Syntax	splitsel,nsets[,noffset[,nskip]] ifile oprefix	
Selection selcode		
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sellonlatbox	Select a longitude/latitude box	chcode	Change code number
Syntax	sellonlatbox, lon1, lon2, lat1, lat2 ifile ofile	Syntax	<pre>chcode,oldcode,newcode[,] ifile ofile</pre>
selindexbox	Select an index box	chname	Change variable name
Syntax	selindexbox,idx1,idx2,idy1,idy2 ifile ofile	Syntax	chname,ovar,nvar, ifile ofile
		chlevel	Change level
		Syntax	chlevel,oldlev,newlev, ifile ofile
		chlevelc	Change level of one code
Conditional se	election	Syntax	chlevelc,code,oldlev,newlev ifile ofile
	election	chlevelv	Change level of one variable
ifthen	If then	Syntax	chlevelv,var,oldlev,newlev ifile ofile
ifnotthen	If not then	setgrid	Set grid
Syntax	<pre><operator> ifile1 ifile2 ofile</operator></pre>	Syntax	setgrid,grid ifile ofile
ifthenelse	If then else	setgridtype	Set grid type
Syntax	ifthenelse ifile1 ifile2 ifile3 ofile	Syntax	setgridtype,gridtype ifile ofile
ifthenc	If then constant	setzaxis	Set zaxis
ifnotthenc	If not then constant	Syntax	setzaxis,zaxis ifile ofile
Syntax	<operator>,c ifile ofile</operator>	sotratt	Set global attribute

setgatt

setgatts

invertlat

Syntax

Comparison

	Equal
	Not equal
	Less equal
	Less than
	Greater equal
	Greater than
Syntax	<pre><operator> ifile1 ifile2 ofile</operator></pre>
	Equal constant
	Not equal constant
	Less equal constant
	Less then constant
	Greater equal constant
	Greater then constant
Syntax	<pre><operator>,c ifile ofile</operator></pre>
	v

Set parameter table

Set code number ${f setcode}, code$ ifile ofile

Set variable name

setpartab, table ifile ofile

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

Modification setpartab

setcode

setname

Syntax

Syntax

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
settunits	Set time units
Syntax	settunits, 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

invertion	invert iongitude
invertlatdes	Invert latitude description
invertiondes	Invert longitude description
invertlatdata	Invert latitude data
invertlondata	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 ofil

Set global attribute

Set global attributes

Invert latitude

setgatts, attfile ifile ofile

setgatt, attname, attstring 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

	Symax	emarge,gra iiiie oiiie
	setmissval	Set a new missing value
	Syntax	setmissval, miss ifile ofile
	setctomiss	Set constant to missing value
	setmisstoc	Set missing value to constant
	Syntax	< operator >, c ifile ofile
_	setrtomiss	Set range to missing value
	Syntax	setrtomiss.rmin.rmax ifile ofile

Arithmetic

asin

Syntax

	11110111	ii iuiiiiicuic					
ı	expr		Evaluate expressions				
1		Syntax	expr,instr ifile ofile				
ı	exprf		Evaluate expressions from script				
1		Syntax	exprf, filename ifile ofile				
l	abs		Absolute value				
l	int		Integer value				
1	nint		Nearest integer value				
ı	\mathbf{sqr}		Square				
Į	\mathbf{sqrt}		Square root				
ı	exp		Exponential				
	ln		Natural logarithm				
ı	log10		Base 10 logarithm				
	\sin		Sine				
I	cos		Cosine				
ı	tan		Tangent				

Arc sine

Arc cosine

Arc tangent

 $<\!operator\!>$ ifile ofile

Systex Coperators of the control of			_					
Maily	addc	Add a constant	vertmin	Vertical minimum	yearmin	Yearly minimum	subtrend	Subtract trend
Section Personal	subc	Subtract a constant	vertmax	Vertical maximum	yearmax	Yearly maximum	Syntax	subtrend ifile1 ifile2 ifile3 ofile
Section Sect	mulc	Multiply with a constant	vertsum	Vertical sum	yearsum	Yearly sum		
March Section Sectio	divc	Divide by a constant	vertmean	Vertical mean	yearmean	Yearly mean		
Mode	Syntax	< operator >, c ifile ofile	vertavg	Vertical average	yearavg	Yearly average		
Second Second Secon	add	Add two fields	vertvar	Vertical variance	yearvar	Yearly variance	Interpolation	
			vertstd	Vertical standard deviation	yearstd	Yearly standard deviation	nomonhil	Dilinger interneletion
			Syntax	< operator > ifile ofile	Syntax	<pre><operator> ifile ofile</operator></pre>		* * * * * * * * * * * * * * * * * * * *
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Second Minimum of two fields Minimum of two fiel								
Second								
Second					seasmin		Syntax	
The stage of state of the personal pe				S .	seasmax		genbil	Generate bilinear interpolation weights
Settle country of the				0 0	seassum	Seasonal sum	genbic	Generate bicubic interpolation weights
Second control Seco	ymonadd			S .	seasmean	Seasonal mean	gencon	Generate conservative interpolation weights
Spite Sequence with the state of the state o	ymonsub	v v			seasavg	Seasonal average	gendis	Generate distance-weighted averaging weights
Syntax Concerner with the state of the state				2 22	seasvar	Seasonal variance	Syntax	<pre><operator>,grid ifile ofile</operator></pre>
System Company with object or season of the company	ymondiv		timselpctl	~ ·	seasstd	Seasonal standard deviation	roman	SCRIP grid remanning
Second procession Content of the process of the	Syntax	< operator > ifile1 ifile2 ofile	Syntax	<pre>timselpctl,p,nsets[,noffset[,nskip]] ifile1 ifile2 i</pre>	Syntax	<pre><operator> ifile ofile</operator></pre>		
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Booking Multiply with days per year Paramon Para	_						interpolate	PINGO grid interpolation
Processing Pro				S .	v			
Part Common System Part				S .			Syntax	<pre><operator>,grid ifile ofile</operator></pre>
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Statistical values Part P					ydaymean	ů ů		- / 1/
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Statistical values			runpctl	Running percentiles			ml2hl	
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timmax Essemble minimum Essemble minimum Essemble minimum Essemble maximum Essemble maximum Essemble maximum Essemble maximum Essemble maximum Essemble maximum Essemble winding	Statistical val	lues	timmin	Time minimum	vdavnetl	Multi-year daily percentiles	inttime	Time interpolation
comman C	Statistical val	iucs						
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Essemble same timwarg Time average timwarg tim					ymonmin		1.1	
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Ridesum Nourrean	ensstd Syntax enspctl Syntax	Ensemble standard deviation <pre><operator> ifiles ofile Ensemble percentiles enspctl,p ifiles ofile</operator></pre>	timpetl Syntax	Time percentiles timpctl,p ifile1 ifile2 ifile3 ofile Hourly minimum	ymonvar ymonstd Syntax ymonpctl	Multi-year monthly variance Multi-year monthly standard deviation <operator> ifile ofile Multi-year monthly percentiles</operator>	sp2gp	Spectral to gridpoint
Field sum Field sum Field sum Field sum Field waran Field waran Field warance Field variance Field standard deviation Syntax Operators if it of ite	ensstd Syntax enspctl Syntax	Ensemble standard deviation <pre><operator> ifiles ofile Ensemble percentiles enspctl,p ifiles ofile</operator></pre>	timpctl Syntax hourmin hourmax	Time percentiles timpctl,p ifile1 ifile2 ifile3 ofile Hourly minimum Hourly maximum	ymonvar ymonstd Syntax ymonpctl Syntax	Multi-year monthly variance Multi-year monthly standard deviation < operator > ifile ofile Multi-year monthly percentiles ymonpctl,p ifile1 ifile2 ifile3 ofile	sp2gp sp2gpl	Spectral to gridpoint Spectral to gridpoint (linear)
Field mean Field warage Field warage Field variance Field percentiles Syntax coperator > if ile of ile	ensstd Syntax enspctl Syntax fldmin	Ensemble standard deviation <operator> ifiles ofile Ensemble percentiles enspctl,p ifiles ofile Field minimum</operator>	timpctl Syntax hourmin hourmax hoursum	Time percentiles timpctl,p ifile1 ifile2 ifile3 ofile Hourly minimum Hourly maximum Hourly sum	ymonvar ymonstd Syntax ymonpctl Syntax yseasmin	Multi-year monthly variance Multi-year monthly standard deviation < operator > ifile ofile Multi-year monthly percentiles ymonpctl,p ifile1 ifile2 ifile3 ofile Multi-year seasonal minimum	$\begin{array}{c} \mathrm{sp2gp} \\ \mathrm{sp2gpl} \\ \mathrm{gp2sp} \end{array}$	Spectral to gridpoint Spectral to gridpoint (linear) Gridpoint to spectral
Field avariance Field avariance Field variance Fi	ensstd Syntax enspetl Syntax fldmin fldmax	Ensemble standard deviation <operator> ifiles ofile Ensemble percentiles enspctl,p ifiles ofile Field minimum Field maximum</operator>	timpctl Syntax hourmin hourmax hoursum hourmean	Time percentiles timpctl,p ifile1 ifile2 ifile3 ofile Hourly minimum Hourly maximum Hourly sum Hourly mean	ymonvar ymonstd Syntax ymonpctl Syntax yseasmin yseasmax	Multi-year monthly variance Multi-year monthly standard deviation <operator> ifile ofile Multi-year monthly percentiles ymonpctl,p ifile1 ifile2 ifile3 ofile Multi-year seasonal minimum Multi-year seasonal maximum</operator>	sp2gp sp2gpl gp2sp gp2spl	Spectral to gridpoint Spectral to gridpoint (linear) Gridpoint to spectral Gridpoint to spectral (linear)
fidstar Field variance Field percentiles Field percentile	ensstd Syntax enspctl Syntax fldmin fldmax fldsum	Ensemble standard deviation <operator> ifiles ofile Ensemble percentiles enspctl,p ifiles ofile Field minimum Field maximum Field sum</operator>	timpetl Syntax hourmin hourmax hoursum hourmean houravg	Time percentiles timpctl,p ifile1 ifile2 ifile3 ofile Hourly minimum Hourly maximum Hourly sum Hourly mean Hourly average	ymonvar ymonstd Syntax ymonpetl Syntax yseasmin yseasmax yseassum	Multi-year monthly variance Multi-year monthly standard deviation <operator> ifile ofile Multi-year monthly percentiles ymonpctl,p ifile1 ifile2 ifile3 ofile Multi-year seasonal minimum Multi-year seasonal maximum Multi-year seasonal sum</operator>	sp2gp sp2gpl gp2sp gp2spl Syntax	Spectral to gridpoint Spectral to gridpoint (linear) Gridpoint to spectral Gridpoint to spectral (linear) < operator > ifile ofile
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Syntax S	ensstd Syntax enspetl Syntax fldmin fldmax fldsum fldmean fldavg	Ensemble standard deviation <operator> ifiles ofile Ensemble percentiles enspetl.p ifiles ofile Field minimum Field maximum Field sum Field average</operator>	timpetl Syntax hourmin hourmax hoursum hourmean houravg hourvar hourstd	Time percentiles timpctl,p ifile1 ifile2 ifile3 ofile Hourly minimum Hourly maximum Hourly sum Hourly mean Hourly average Hourly variance Hourly standard deviation	ymonvar ymonstd Syntax ymonpctl Syntax yseasmin yseasmax yseassum yseasmean yseasavg	Multi-year monthly variance Multi-year monthly standard deviation <operator> ifile ofile Multi-year monthly percentiles ymonpctl,p ifile1 ifile2 ifile3 ofile Multi-year seasonal minimum Multi-year seasonal sum Multi-year seasonal mean Multi-year seasonal average</operator>	sp2gp sp2gpl gp2sp gp2spl syntax sp2sp Syntax	Spectral to gridpoint Spectral to gridpoint (linear) Gridpoint to spectral Gridpoint to spectral (linear) <operator> ifile ofile Spectral to spectral sp2sp,trunc ifile ofile</operator>
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Miscellaneous	S		
gradsdes1 gradsdes2	GrADS data descriptor file (version 1 GRIB map) GrADS data descriptor file (version 2 GRIB map)	eca_r10mm Syntax	Heavy precipitation days index per time period eca_r10mm ifile ofile
Syntax smooth9	<pre>< operator > ifile 9 point smoothing</pre>	eca_r20mm Syntax	Very heavy precipitation days index per time period eca_r20mm ifile ofile
Syntax	smooth9 ifile ofile Sort over the time	eca_r75p Syntax	Moderate wet days wrt 75th percentile of reference eca_r75p ifile1 ifile2 ofile
Syntax	timsort ifile ofile Create a constant field	eca_r75ptot Syntax	Precipitation percent due to R75p days eca_r75ptot ifile1 ifile2 ofile
Syntax	const,const,grid ofile Create a field with random values	eca_r90p Syntax	Wet days wrt 90th percentile of reference period eca_r90p ifile1 ifile2 ofile
Syntax	random,grid ofile Backward rotation	eca_r90ptot Syntax	Precipitation percent due to R90p days eca_r90ptot ifile1 ifile2 ofile
Syntax	rotuvb,u,v, ifile ofile Mass stream function	eca_r95p Syntax	Very wet days wrt 95th percentile of reference perk eca_r95p ifile1 ifile2 ofile
Syntax	mastrfu ifile ofile Histogram count	eca_r95ptot Syntax	Precipitation percent due to R95p days eca_r95ptot ifile1 ifile2 ofile
histsum histmean histfreq	Histogram sum Histogram mean Histogram frequency	eca_r99p Syntax	Extremely wet days wrt 99th percentile of reference eca_r99p ifile1 ifile2 ofile
Syntax	<pre><operator>,bins ifile ofile</operator></pre> Windchill temperature (C)	eca_r99ptot Syntax	Precipitation percent due to R99p days eca_r99ptot ifile1 ifile2 ofile
Syntax	wct ifile1 ifile2 ofile Frost days where no snow index per time period	eca_rr1 Syntax	Wet days index per time period eca_rr1 ifile ofile
Syntax	fdns ifile1 ifile2 ofile Strong wind days index per time period	eca_rx1day Syntax	Highest one day precipitation amount per time per eca_rx1day[,mode] ifile ofile
Syntax	strwin[,v] ifile ofile Strong breeze days index per time period	eca_rx5day Syntax	Highest five-day precipitation amount per time per eca_rx5day[,x] ifile ofile
Syntax	strbre ifile ofile Strong gale days index per time period	eca_sdii Syntax	Simple daily intensity index per time period eca_sdii ifile ofile
Syntax	strgal ifile ofile Hurricane days index per time period	eca_su Syntax	Summer days index per time period eca_su[,T] ifile ofile
Syntax	hurr ifile ofile	eca_tg10p Syntax	Cold days percent wrt 10th percentile of reference eca_tg10p ifile1 ifile2 ofile
ECA indices		eca_tg90p Syntax	Warm days percent wrt 90th percentile of reference eca_tg90p ifile1 ifile2 ofile
eca_cdd Syntax	Consecutive dry days index per time period eca_cdd ifile ofile	eca_tn10p Syntax	Cold nights percent wrt 10th percentile of reference eca.tn10p ifile1 ifile2 ofile
eca_cfd Syntax	Consecutive frost days index per time period eca_cfd ifile ofile	eca_tn90p Syntax	Warm nights percent wrt 90th percentile of referencea_tn90p ifile1 ifile2 ofile
eca_csu Syntax	Consecutive summer days index per time period $\mathbf{eca_csu}[,T]$ ifile ofile	eca_tr Syntax	Tropical nights index per time period eca_tr[, T] ifile ofile
eca_cwd Syntax	Consecutive wet days index per time period eca_cwd ifile ofile	eca_tx10p Syntax	Very cold days percent wrt 10th percentile of referencetx10p ifile1 ifile2 ofile
eca_cwdi Syntax	Cold wave duration index wrt mean of reference pe eca_cwdi[,nday[,T]] ifile1 ifile2 ofile	eriod eca_tx90p Syntax	Very warm days percent wrt 90th percentile of refe eca_tx90p ifile1 ifile2 ofile
eca_cwfi Syntax	Cold-spell days index wrt 10th percentile of referer eca_cwfi[,nday] ifile1 ifile2 ofile	ace period	
eca_etr Syntax	Intra-period extreme temperature range eca_etr ifile1 ifile2 ofile		
eca_fd Syntax	Frost days index per time period eca_fd ifile ofile		
eca_gsl Syntax	Growing season length index eca_gsl[,nday[,T]] ifile ofile		
eca_hd Syntax	Heating degree days per time period eca_hd[,T1[,T2]] ifile ofile		
eca_hwdi Syntax	Heat wave duration index wrt mean of reference pe eca_hwdi[,nday[,T]] ifile1 ifile2 ofile	eriod	
eca_hwfi Syntax	Warm spell days index wrt 90th percentile of referencea_hwfi[,nday] ifile1 ifile2 ofile	ence period	
eca_id Syntax	Ice days index per time period eca_id ifile ofile		