CDO Reference Card

Climate Data Operators Version 1.4.1 December 2009

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http://www.mpimet.mpg.de/cdo

File operations

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pardes

griddes

vct

zaxisdes

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

Options -a -b < nbits >

Syntax

-a	Generate an absolute time axis
-b < nbits >	Set the number of bits for the output precision
	(32/64 for nc,nc2,nc4,srv,ext,ieg; 1 - 32 for grb)
	Add L or B for Little or Big endian byteorder
$-\mathbf{f} < format >$	Output file format (grb,nc,nc2,nc4,srv,ext,ieg)
-g < grid >	Grid name or file
	Available grids: t <res>grid, r<nx>x<ny></ny></nx></res>
-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	Generate a relative time axis
-s	Silent mode
-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
-z szip	Compress GRIB records with szip

Dataset information listed by code number

Operators

Information

mio	Dataset information listed by code number
infov	Dataset information listed by variable name
map	Dataset information and simple map
Syntax	<pre><operator> ifiles</operator></pre>
sinfo	Short dataset information listed by code number
sinfov	Short dataset information listed by variable name
Syntax	<pre><operator> ifiles</operator></pre>
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 date information
showtime	Show time information
showtimestam	p Show timestamp
Syntax	<pre><operator> ifile</operator></pre>

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
mergetime	Merge datasets sorted by date and time
Syntax	<pre><operator> ifiles ofile</operator></pre>
splitcode	Split code numbers
splitname	Split variable names
splitlevel	Split levels
splitgrid	Split grids
splitzaxis	Split z-axes
splittabnum	Split parameter table numbers
Syntax	<pre><operator> ifile oprefix</operator></pre>
splithour	Split hours
splitday	Split days
splitmon	Split months
splitseas	Split seasons
splityear	Split years
Syntax	<pre><operator> ifile oprefix</operator></pre>
splitsel	Split time selection
Syntax	splitsel,nsets[,noffset[,nskip]] ifile oprefix

Parameter description

Vertical coordinate table

Grid description Z-axis description

<operator> ifile

Selection

ı		
y	selcode	Select variables by code number
	delcode	Delete variables by code number
	Syntax	<pre><operator>,codes ifile ofile</operator></pre>
	selname	Select variables by name
	delname	Delete variables by name
	Syntax	<pre><operator>,varnames ifile ofile</operator></pre>
	selstdname	Select variables by standard name
	Syntax	selstdname,stdnames ifile ofile
٦	sellevel	Select levels
	Syntax	sellevel, levels ifile ofile
	sellevidx	Select levels by index
	Syntax	sellevidx, levidx ifile ofile
	selgrid	Select grids
	Syntax	selgrid, grids ifile ofile
	selzaxis	Select z-axes
	Syntax	selzaxis,zaxes ifile ofile
	selltype	Select GRIB level types
	Syntax	selltype,ltypes ifile ofile
	seltabnum	Select parameter table numbers
	Syntax	seltabnum,tabnums ifile ofile

seltimestep	Select time steps	1 5
Syntax	seltimestep, timesteps ifile ofile	
seltime	Select times	1
Syntax	seltime, times ifile ofile	
selhour	Select hours	1
Syntax	selhour, hours ifile ofile	
selday	Select days	5
Syntax	selday,days ifile ofile	
selmon	Select months	1
Syntax	selmon, months ifile ofile	
selyear	Select years	1
Syntax	selyear, years ifile ofile	
selseas	Select seasons	1
Syntax	selseas,seasons ifile ofile	
seldate	Select dates	1
Syntax	seldate,date1[,date2] ifile ofile	
selsmon	Select single month	
Syntax	selsmon,month[,nts1[,nts2]] ifile ofile	
sellonlatbox	Select a longitude/latitude box	1 2
Syntax	sellonlatbox,lon1,lon2,lat1,lat2 ifile ofile	
selindexbox	Select an index box	Ī
Syntax	selindexbox,idx1,idx2,idy1,idy2 ifile ofile	
		' I

Conditional selection

ifthen	If then
ifnotthen	If not then
Syntax	<pre><operator> ifile1 ifile2 ofile</operator></pre>
ifthenelse	If then else
Syntax	ifthenelse ifile1 ifile2 ifile3 ofile
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ifthenc	If then constant
v	

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 than constant
	Greater equal constant
	Greater than constant
Syntax	<pre><operator>,c ifile ofile</operator></pre>
	V

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 of the day
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[, units] 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,oldname,newname, 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,name,oldlev,newlev ifile ofile
	setgrid	Set grid

setgrid	Set grid
Syntax	setgrid,grid ifile ofile
setgridtype	Set grid type
Syntax	setgridtype,gridtype ifile ofile
setzaxis	Set z-axis
Syntax	setzaxis,zaxis ifile ofile

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

Syntax	invertlat ifile ofile			
Syntax	invertlat ifile ofile			
invertlat	Invert latitudes			

masklonlatbox Mask a longitude/latitude box

Syntax	invertlev ifile ofile
maskregion	Mask regions
Syntax	maskregion, regions ifile ofile

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	

enlarge	Enlarge fields	
Syntax	${\bf setcindexbox}, c, idx1, idx2, idy1, idy2 \ {\tt ifile}$	ofile
BCCCIIICABOA	bet all findex box to constant	

Syntax	enlarge, grid ifile ofile			
setmissval	Set a new missing value			
Syntax	setmissval,newmiss 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			
setvrange	Set valid range			

<operator>,rmin,rmax ifile ofile

Arithmetic		zon <stat> Zonal statistical values</stat>	Regression		Formatted I/	O
expr	Evaluate expressions	Syntax <operator> ifile ofile zonpctl Zonal percentiles </operator>	regres	Regression	input	ASCII input
Syntax	expr,instr ifile ofile	Syntax zonpctl,p ifile ofile	Syntax	regres ifile ofile	Syntax	input,grid ofile
exprf	Evaluate expressions from script file				inputsrv	SERVICE ASCII input
Syntax	exprf, filename ifile ofile	mer < STAT > Meridional statistical values	detrend	Detrend	inputext	EXTRA ASCII input
abs	Absolute value	Syntax < operator > ifile ofile	Syntax	detrend ifile ofile	Syntax	<pre><operator> ofile</operator></pre>
int	Integer value	merpctl Meridional percentiles	trend	Trend	output	ASCII output
nint	Nearest integer value	Syntax merpctl,p ifile ofile	Syntax	trend ifile ofile1 ofile2	Syntax	output ifiles
pow	Power	vert <stat> Vertical statistical values</stat>	subtrend	Subtract trend	outputf	Formatted output
sqr	Square	Syntax < operator > ifile ofile	Syntax	subtract trend subtrend ifile1 ifile2 ifile3 ofile	Syntax	outputf, format, nelem ifiles
sqrt	Square root	timsel < STAT > Time range statistical values	Symax	Subtrend IIIIe1 IIIIe2 IIIIe3 OIIIe	outputint	Integer output
exp	Exponential	Syntax < operator > , nsets[, noffset[, nskip]] ifile ofile			outputsry	SERVICE ASCII output
ln	Natural logarithm	2 2 2 22			outputext	EXTRA ASCII output
log10	Base 10 logarithm	timselpctl Time range percentiles	T. 4 1. 4		Syntax	
sin	Sine	Syntax timselpctl,p,nsets[,noffset[,nskip]] ifile1 ifile2	Interpolation			*
cos	Cosine	run <stat> Running statistical values</stat>	remapbil	Bilinear interpolation		
tan	Tangent	Syntax <operator>,nts ifile ofile</operator>	remapbic	Bicubic interpolation	Miscellaneous	S
asin	Arc sine	runpctl Running percentiles	remapdis	Distance-weighted average remapping	gridarea	Grid cell area
acos	Arc cosine	Syntax runpctl,p,nts ifile1 ofile	remapnn	Nearest neighbor remapping	gridweights	Grid cell weights
reci	Reciprocal value		remapcon	First order conservative remapping	Syntax	<pre><operator> ifile ofile</operator></pre>
Syntax	<pre><operator> ifile ofile</operator></pre>	tim <stat> Statistical values over all time steps</stat>	remapcon2	Second order conservative remapping	gradsdes1	GrADS data descriptor file (version 1 GRIB map)
addc	Add a constant	Syntax < operator > ifile ofile	remaplaf	Largest area fraction remapping	gradsdes2	GrADS data descriptor file (version 2 GRIB map)
subc	Subtract a constant	timpctl Time percentiles	Syntax	<pre><operator>,grid ifile ofile</operator></pre>	Syntax	<pre>< operator > ifile</pre>
mulc	Multiply with a constant	Syntax timpctl,p ifile1 ifile2 ifile3 ofile	genbil	Generate bilinear interpolation weights	smooth9	9 point smoothing
divc	Divide by a constant	hour < STAT > Hourly statistical values	genbic	Generate bicubic interpolation weights		9 point smoothing smooth9 ifile ofile
Syntax	< operator >, c ifile ofile	Syntax < operator > ifile ofile	gendis	Generate distance-weighted average remap weights	Syntax	SHOOTH9 IIIIe oille
add	Add two fields	· · ·	gennn	Generate nearest neighbor remap weights	setrtoc	Set range to constant
sub	Subtract two fields	hourpctl Hourly percentiles	gencon	Generate 1st order conservative remap weights	Syntax	setrtoc,rmin,rmax,c ifile ofile
mul	Multiply two fields	Syntax hourpctl,p ifile1 ifile2 ifile3 ofile	gencon2	Generate 2nd order conservative remap weights	setrtoc2	Set range to constant others to constant2
div	Divide two fields	day <stat> Daily statistical values</stat>	genlaf	Generate largest area fraction remap weights	Syntax	setrtoc2,rmin,rmax,c,c2 ifile ofile
min	Minimum of two fields	Syntax < operator > ifile ofile	Syntax	<pre><operator>,grid ifile ofile</operator></pre>	timsort	Sort over the time
max	Maximum of two fields	daypctl Daily percentiles	remap	SCRIP grid remapping	Syntax	timsort ifile ofile
atan2	Arc tangent of two fields	Syntax daypctl,p ifile1 ifile2 ifile3 ofile	Syntax	remap,grid,weights ifile ofile	const	Create a constant field
Syntax	<pre><operator> ifile1 ifile2 ofile</operator></pre>		intonnoloto	PINGO grid interpolation	Syntax	const,const,grid ofile
monadd	Add monthly time series	mon < STAT > Monthly statistical values	interpolate Syntax	interpolate, grid ifile ofile	random	Create a field with random values
monsub	Subtract monthly time series	Syntax < operator > ifile ofile	,		Syntax	
monmul	Multiply monthly time series	monpctl Monthly percentiles	remapeta	Remap vertical hybrid level		,
mondiv	Divide monthly time series	Syntax monpctl,p ifile1 ifile2 ifile3 ofile	Syntax	remapeta, vct[,oro] ifile ofile	rotuvb	Backward rotation
Syntax	$<\!operator\!>$ ifile1 ifile2 ofile	year < STAT > Yearly statistical values	ml2pl	Model to pressure level interpolation	Syntax	rotuvb,u,v, ifile ofile
ymonadd	Add multi-year monthly time series	Syntax <operator> ifile ofile</operator>	Syntax	ml2pl,plevels ifile ofile	mastrfu	Mass stream function
ymonsub	Subtract multi-year monthly time series	1	ml2hl	Model to height level interpolation	Syntax	mastrfu ifile ofile
ymonmul	Multiply multi-year monthly time series	yearpctl Yearly percentiles	Syntax	ml2hl,hlevels ifile ofile	histcount	Histogram count
ymondiv	Divide multi-year monthly time series	Syntax yearpctl,p ifile1 ifile2 ifile3 ofile	intlevel	Linear level interpolation	histsum	Histogram sum
Syntax	< operator > ifile1 ifile2 ofile	seas <stat> Seasonal statistical values</stat>	Syntax	intlevel, levels ifile ofile	histmean	Histogram mean
muldpm	Multiply with days per month	Syntax < operator > ifile ofile		,	histfreq	Histogram frequency
divdpm	Divide by days per month	seaspctl Seasonal percentiles	inttime	Interpolation between time steps	Syntax	<pre><operator>,bounds ifile ofile</operator></pre>
muldpy	Multiply with days per year	Syntax seaspctl,p ifile1 ifile2 ifile3 ofile	Syntax	inttime,date,time[,inc] ifile ofile Interpolation between time steps	sethalo	Set the left and right bounds of a field
divdpy	Divide by days per year		intntime Syntax	intntime, n ifile ofile		sethalo,lhalo,rhalo ifile ofile
Syntax	< operator > ifile ofile	yhour < STAT > Multi-year hourly statistical values				
`		Syntax < operator > ifile ofile	intyear	Interpolation between two years	wct	Windchill temperature
		yday <stat> Multi-year daily statistical values</stat>	Syntax	intyear, years ifile1 ifile2 oprefix		wct ifile1 ifile2 ofile
G:		Syntax < operator > ifile ofile			fdns	Frost days where no snow index per time period
Statistical val	ues	ydaypctl Multi-year daily percentiles			Syntax	fdns ifile1 ifile2 ofile
Availa	able statistical functions $ \langle STAT \rangle $	Syntax ydaypctl,p ifile1 ifile2 ifile3 ofile			strwin	Strong wind days index per time period
minimu	ım min	0 0 1 7	Transformation	on		strwin[,v] ifile ofile
maxim	um max	ymon <stat> Multi-year monthly statistical values</stat>	sp2gp	Spectral to gridpoint		
sum	sum	Syntax < operator > ifile ofile	sp2gpl	Spectral to gridpoint (linear)	strbre	Strong breeze days index per time period
mean	mean	ymonpctl Multi-year monthly percentiles	gp2sp	Gridpoint to spectral	Syntax	strbre ifile ofile
average	_	Syntax ymonpctl,p ifile1 ifile2 ifile3 ofile	gp2spl	Gridpoint to spectral (linear)	strgal	Strong gale days index per time period
varianc		yseas < STAT > Multi-year seasonal statistical values	Syntax	<pre><operator> ifile ofile</operator></pre>	Syntax	strgal ifile ofile
standar	rd deviation std	Syntax < operator > ifile ofile	sp2sp	Spectral to spectral	hurr	Hurricane days index per time period
ens < STAT >	Statistical values over an ensemble		Syntax	sp2sp,trunc ifile ofile		hurr ifile ofile
Syntax	<pre><operator> ifiles ofile</operator></pre>	yseaspctl Multi-year seasonal percentiles	spcut	Cut spectral wave number	·	I AMCD bin flor
enspctl	Ensemble percentiles	Syntax yseaspctl,p ifile1 ifile2 ifile3 ofile	Syntax	spcut,wnums ifile ofile	import_amsr	Import AMSR binary files import_amsr ifile ofile
Syntax	enspctl,p ifiles ofile	ydrun <stat> Multi-year daily running statistical values</stat>	dv2uv	Divergence and vorticity to U and V wind		
fld < STAT >	Statistical values over a field	Syntax < operator > ,nts ifile ofile	dv2uvl	Divergence and vorticity to U and V wind (linear)		Import CM-SAF HDF5 files
Syntax	<pre><pre><pre><pre><pre><pre><pre>falled</pre></pre></pre></pre></pre></pre></pre>	ydrunpctl Multi-year daily running percentiles	uv2dv	U and V wind to divergence and vorticity	Syntax	import_cmsaf ifile ofile
fldpctl	Field percentiles	Syntax ydrunpctl,p,nts ifile1 ifile2 ifile3 ofile	uv2dvl	U and V wind to divergence and vorticity (linear)	import_binary	Import binary data sets
Syntax	fldpctl,p ifile ofile		Syntax	<pre><operator> ifile ofile</operator></pre>		import_binary ifile ofile
		,				