

CDO Reference Card

Climate Data Operators
Version 1.0.0
June 2006

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Syntax

cdo	[Options]	Operators
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Options

-a	Convert from relative to absolute time axis
-f <i><format></i>	Output file format (grb, nc, nc2, srv, ext, ieg)
-g <i><grid></i>	Grid name or file Available grids: t<RES>grid, r<NX>x<NY>
-h	Help information for the operators
-m <i><missval></i>	Set the default missing value (default: -9e+33)
-p <i><prec></i>	Set the precision of the output data in bytes (4/8 for nc, nc2, srv, ext; 1/2/3 for grb)
-R	Convert GRIB data from reduced to regular grid
-r	Convert from absolute to relative time axis
-t <i><table></i>	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 map	Dataset information Dataset information and simple map
Syntax	<operator> ifiles

sinfo	Short dataset information
Syntax	<operator> ifile

diff	Compare two datasets
Syntax	<operator> ifile1 ifile2

ncode	Number of codes
nvar	Number of variables
nlevel	Number of levels
nyear	Number of years
nmon	Number of months
ndate	Number of dates
ntime	Number of time steps
Syntax	<operator> ifile

showcode	Show codes
showvar	Show variable names
showlevel	Show levels
showyear	Show years
showmon	Show months
showdate	Show dates
showtime	Show time steps
Syntax	<operator> ifile

vardes	Variable description
griddes	Grid description
vct	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 splitvar splitlevel splitlevel splitlevel splitlevel splitlevel splitlevel	Split codes Split variables Split levels Split grids Split zaxis Split records
Syntax	<operator> ifile oprefix

splithour splitlevel splitlevel splitlevel splitlevel splitlevel splitlevel	Split hours Split days Split months Split seasons Split years
Syntax	<operator> ifile oprefix

Selection

selcode delcode	Select codes Delete codes
Syntax	<operator> ,codes ifile ofile

selvar delvar	Select variables Delete variables
Syntax	<operator> ,vars ifile ofile

sellevel	Select levels
Syntax	sellevel, levels ifile ofile

selgrid	Select grids
Syntax	selgrid, grids ifile ofile

selgridname	Select grid by name
Syntax	selgridname, gridnames ifile ofile

selzaxis	Select zaxis
Syntax	selzaxis, zaxis ifile ofile

selzaxisname	Select zaxis by name
Syntax	selzaxisname, zaxisnames ifile ofile

seltabnum	Select parameter table number
Syntax	seltabnum, tabnum 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

sellonlatbox	Select lon/lat box
Syntax	sellonlatbox, lon1, lon2, lat1, lat2 ifile ofile

selindexbox	Select 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

ifthen ifnotthen	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 than 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

setvar	Set variable name
Syntax	setvar, name ifile ofile

setlevel	Set level
Syntax	setlevel, level 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

chvar	Change variable name
Syntax	chvar, 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	Invert latitude
invertlon	Invert longitude
invertlatdes	Invert latitude description
invertlonides	Invert longitude description
invertlatdata	Invert latitude data
invertlondata	Invert longitude data
Syntax	<operator> ifile ofile

masklonlatbox	Mask lon/lat box
Syntax	masklonlatbox, lon1, lon2, lat1, lat2 ifile ofile

maskindexbox	Mask index box
Syntax	maskindexbox, 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

exprf	Evaluate expressions from script file
Syntax	exprf, filename ifile ofile

abs sqr sqrt exp ln log10 sin cos tan asin acos atan	Absolute value Square Square root Exponential Natural logarithm Base 10 logarithm Sine Cosine Tangent Arc sine Arc cosine Arc tangent
Syntax	<operator> ifile ofile

addc subc mulc divc	Add a constant Subtract a constant Multiply with a constant Divide by a constant
Syntax	<operator> ,c ifile ofile

add sub mul div min max atan2	Add two fields Subtract two fields Multiply two fields Divide two fields Minimum of two fields Maximum of two fields Arc tangent of two fields
Syntax	<operator> ifile1 ifile2 ofile

ymonadd ymonsub ymonmul ymonddiv	Add multi-year monthly time average Subtract multi-year monthly time average Multiply multi-year monthly time average Divide multi-year monthly time average
Syntax	<operator> ifile1 ifile2 ofile

muldpm divdpm muldpy divdpy	Multiply with days per month Divide by days per month Multiply with days per year Divide by days per year
Syntax	<operator> ifile ofile

Statistical values

ensmin	Ensemble minimum
ensmax	Ensemble maximum
enssum	Ensemble sum
ensmean	Ensemble mean
ensavg	Ensemble average
ensstd	Ensemble standard deviation
ensvar	Ensemble variance
Syntax	<operator> ifile ofile
fldmin	Field minimum
fldmax	Field maximum
fldsum	Field sum
fldmean	Field mean
fldavg	Field average
fldstd	Field standard deviation
fldvar	Field variance
Syntax	<operator> ifile ofile
zonmin	Zonal minimum
zonmax	Zonal maximum
zonsum	Zonal sum
zonmean	Zonal mean
zonavg	Zonal average
zonstd	Zonal standard deviation
zonvar	Zonal variance
Syntax	<operator> ifile ofile
mermin	Meridional minimum
mermax	Meridional maximum
mersum	Meridional sum
mermean	Meridional mean
meravg	Meridional average
merstd	Meridional standard deviation
mervar	Meridional variance
Syntax	<operator> ifile ofile
vertmin	Vertical minimum
vertmax	Vertical maximum
vertsum	Vertical sum
vertmean	Vertical mean
vertavg	Vertical average
vertstd	Vertical standard deviation
Syntax	<operator> ifile ofile
selmin	Time range minimum
selmax	Time range maximum
selsum	Time range sum
selmean	Time range mean
selavg	Time range average
selstd	Time range standard deviation
Syntax	<operator>,nsets[,noffset[,nskip]] ifile ofile
runmin	Running minimum
runmax	Running maximum
runsum	Running sum
runmean	Running mean
runavg	Running average
runstd	Running standard deviation
Syntax	<operator>,nts ifile ofile
timmin	Time minimum
timmax	Time maximum
timsum	Time sum
timmean	Time mean
timavg	Time average
timstd	Time standard deviation
Syntax	<operator> ifile ofile
hourmin	Hourly minimum
hourmax	Hourly maximum
hoursum	Hourly sum
hourmean	Hourly mean
houravg	Hourly average
hourstd	Hourly standard deviation
Syntax	<operator> ifile ofile

daymin	Daily minimum
daymax	Daily maximum
daysum	Daily sum
daymean	Daily mean
dayavg	Daily average
daystd	Daily standard deviation
Syntax	<operator> ifile ofile
monmin	Monthly minimum
monmax	Monthly maximum
monsum	Monthly sum
monmean	Monthly mean
monavg	Monthly average
monstd	Monthly standard deviation
Syntax	<operator> ifile ofile
yearmin	Yearly minimum
yearmax	Yearly maximum
yearsum	Yearly sum
yearmean	Yearly mean
yearavg	Yearly average
yearstd	Yearly standard deviation
Syntax	<operator> ifile ofile
seasmin	Seasonally minimum
seasmax	Seasonally maximum
seassum	Seasonally sum
seasmean	Seasonally mean
seasavg	Seasonally average
seasstd	Seasonally standard deviation
Syntax	<operator> ifile ofile
ydaymin	Multi-year daily minimum
ydaymax	Multi-year daily maximum
ydaymean	Multi-year daily mean
ydayavg	Multi-year daily average
ydaystd	Multi-year daily standard deviation
Syntax	<operator> ifile ofile
ymonmin	Multi-year monthly minimum
ymonmax	Multi-year monthly maximum
ymonmean	Multi-year monthly mean
ymonavg	Multi-year monthly average
ymonstd	Multi-year monthly standard deviation
Syntax	<operator> ifile ofile
yseasmin	Multi-year seasonally minimum
yseasmax	Multi-year seasonally maximum
yseasmean	Multi-year seasonally mean
yseasavg	Multi-year seasonally average
yseasstd	Multi-year seasonally standard deviation
Syntax	<operator> ifile ofile

Regression

detrend	Detrend
Syntax	detrend ifile ofile
trend	Trend
Syntax	trend ifile ofile1 ofile2
subtrend	Subtract trend
Syntax	subtrend ifile1 ifile2 ifile3 ofile

Interpolation

remapbil	Bilinear interpolation
remapbic	Bicubic interpolation
remapcon	Conservative remapping
remapdis	Distance-weighted averaging
Syntax	<operator>,.grid ifile ofile
genbil	Generate bilinear interpolation weights
genbic	Generate bicubic interpolation weights
gencon	Generate conservative interpolation weights
gendis	Generate distance-weighted averaging weights
Syntax	<operator>,.grid ifile ofile

remap	SCRIP grid remapping
Syntax	remap,.grid,.weights ifile ofile
interpolate	PINGO grid interpolation
intgridbil	Bilinear grid interpolation
Syntax	<operator>,.grid ifile ofile
ml2pl	Model to pressure level interpolation
Syntax	ml2pl,.plevels ifile ofile
ml2hl	Model to height level interpolation
Syntax	ml2hl,.hlevels ifile ofile
inttime	Time interpolation
Syntax	inttime,date,time[,inc] ifile ofile
intyear	Year interpolation
Syntax	intyear,years ifile1 ifile2 oprefix

Transformation

sp2gp	Spectral to gridpoint
sp2gpl	Spectral to gridpoint linear
gp2sp	Gridpoint to spectral
gp2spl	Gridpoint to spectral linear
Syntax	<operator> ifile ofile
sp2sp	Spectral to spectral
Syntax	sp2sp,trunc ifile ofile
uv2dv	U and V wind to divergence and vorticity
dv2uv	Divergence and vorticity to U and V wind
Syntax	<operator> ifile ofile

Formatted I/O

input	ASCII input
Syntax	input,.grid ofile
inputsrv	SERVICE input
inputext	EXTRA input
Syntax	<operator> ofile
output	ASCII output
Syntax	output ifiles
outputf	Formatted output
Syntax	outputf,format,nelem ifiles
outputint	Integer output
outputsrv	SERVICE output
outputext	EXTRA output
Syntax	<operator> ifiles

Miscellaneous

timsort	Sort over the time
Syntax	timsort ifile ofile
const	Create a constant field
Syntax	const,const,.grid ofile
random	Create field with random values
Syntax	random,.grid ofile
vardup	Duplicate variables
Syntax	vardup ifile ofile
varmul	Multiply variables
Syntax	varmul,nmul ifile ofile
gradsdes	GrADS data descriptor file
gradsdes2	GrADS data descriptor file (version 2 map)
Syntax	<operator> ifile
rotuvb	Backward rotation
Syntax	rotuvb,u,v,... ifile ofile
mastrfu	Mass stream function
Syntax	mastrfu ifile ofile