CDO Reference Card

Climate Data Operators
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Syntax

cdo	[Options]	Operators

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	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	<*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
showstdname	Show standard 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	Copy datasets
cat	Concatenate datasets
Syntax	<*operator*> ifiles ofile

replace	Replace variables
Syntax	**replace ifile1 ifile2 ofile**

merge	Merge datasets with different fields
mergetime	Merge datasets sorted by date and time
Syntax	<*operator*> ifiles ofile

splitcode	Split codes
splitvar	Split variables
splitlevel	Split levels
splitgrid	Split grids
splitzaxis	Split zaxis
splitrec	Split records
Syntax	<*operator*> ifile oprefix

splithour	Split hours
splitday	Split days
splitmon	Split months
splitseas	Split seasons
splityear	Split years
Syntax	<*operator*> ifile oprefix

Selection

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

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

selstdname	Select standard names
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

seltabnum	Select parameter table numbers
Syntax	**seltabnum**,*tabnums* ifile ofile

selrec	Select records
Syntax	**selrec**,*records* ifile ofile

seltimestep	Select time steps
Syntax	**seltimestep**,*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

selseas	Select seasons
Syntax	**selseas**,*seasons* ifile ofile

seldate	Select dates
Syntax	**seldate**,*date1[,date2]* 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	If then
ifnotthen	If not then
Syntax	<*operator*> ifile1 ifile2 ofile

ifthenelse	If then else
Syntax	**ifthenelse ifile1 ifile2 ifile3 ofile**

ifthenc	If then constant
ifnotthenc	If not then constant
Syntax	<*operator*>,*c* ifile ofile

Comparison

eq	Equal
ne	Not equal
le	Less equal
lt	Less than
ge	Greater equal
gt	Greater than
Syntax	<*operator*> ifile1 ifile2 ofile

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	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

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

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

Arithmetic

expr	Evaluate expressions
Syntax	**expr**,*instr* ifile ofile

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

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

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

add	Add two fields
sub	Subtract two fields
mul	Multiply two fields
div	Divide two fields
min	Minimum of two fields
max	Maximum of two fields
atan2	Arc tangent of two fields
Syntax	<*operator*> ifile1 ifile2 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
invertlondes	Invert longitude description
invertlatdata	Invert latitude data
invertlondata	Invert longitude data
Syntax	<*operator*> 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	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

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

muldpm	Multiply with days per month
divdpm	Divide by days per month
muldpy	Multiply with days per year
divdpy	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\>* `ifiles 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 a field with random values
Syntax	**random**,*grid* `ofile`

vardup	Duplicate variables
Syntax	**vardup** `ifile ofile`
varmul	Multiply variables
Syntax	**varmul**,*nmul* `ifile ofile`

gradsdes1	GrADS data descriptor file (version 1 GRIB map)
gradsdes2	GrADS data descriptor file (version 2 GRIB map)
Syntax	*\<operator\>* `ifile`

rotuvb	Backward rotation
Syntax	**rotuvb**,*u*,*v*,*...* `ifile ofile`

mastrfu	Mass stream function
Syntax	**mastrfu** `ifile ofile`