CDO Reference Card

Climate Data Operators
Version 1.0.3
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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

Modification (continued)

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

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

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
ydaysum	Multi-year daily sum
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
ymonsum	Multi-year monthly sum
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
yseassum	Multi-year seasonally sum
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
intntime	Time interpolation
Syntax	**intntime**,*n* 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