

# CDO Reference Card

Climate Data Operator

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<https://code.mpimet.mpg.de/projects/cdo>

## Syntax

cdo	[Options]	Operator1	[ −Operator2	[ −OperatorN	]
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## Options

-a	Generate an absolute time axis
-b <nbits>	Set the number of bits for the output precision (18/116/132/F32/F64 for nc1,nc2,nc4,nc4c; F32/F64 for grb2,srv,ext,ieg; 1-24 for grb1,grb2)
-f <format>	Add L or B for Little or Big endian byteorder
-g <grid>	Outputformat: grb1,grb2,nc1,nc2,nc4,nc4c,srv,ext,ieg
-h	Grid or file name
-M	Grid names: r<NX>x<NY>, n<N>, gme<NI>
-m <missval>	Help information for the operators
-O	Indicate that the I/O streams have missing values
-R	Set the default missing value (default: -9e+33)
-r	Overwrite existing output file, if checked
-s	Convert GRIB1 data from reduced to regular grid
-t <table>	Generate a relative time axis
-V	Silent mode
-v	Set the parameter table name or file
-z zip	Predefined tables: echam4 echam5 mpiom1
	Print the version number
	Print extra details for some operators
	SZIP compression of GRIB1 records

## Operators

### Information

info	Dataset information listed by parameter identifier
infor	Dataset information listed by parameter name
map	Dataset information and simple map
<operator>	infiles
sinfor	Short information listed by parameter identifier
sinfor	Short information listed by parameter name
<operator>	infiles
diff	Compare two datasets listed by parameter id
diffn	Compare two datasets listed by parameter name
<operator>	[,options] infile1 infile2
npar	Number of parameters
nlevel	Number of levels
nyear	Number of years
nmon	Number of months
ndate	Number of dates
ntime	Number of timesteps
ngridpoints	Number of gridpoints
ngrids	Number of horizontal grids
<operator>	infile

showformat	Show file format
showcode	Show code numbers
showname	Show variable names
showstdname	Show standard names
showatts	Show all attributes
showattsglob	Show all global attributes
showlevel	Show levels
showltype	Show GRIB level types
showyear	Show years
showmon	Show months
showdate	Show date information
showtime	Show time information
showtimestam	Show timestamp
<operator>	infile
showattribute	Show a global attribute or a variable attribute
showattribute,attribute	infile
showattsvar	Show all variable attributes.
showattsvar[,var_nm]	infile
partab	Parameter table
codetab	Parameter code table
griddes	Grid description
zaxisdes	Z-axis description
vct	Vertical coordinate table
<operator>	infile

### File operations

copy	Copy datasets
cat	Concatenate datasets
<operator>	infiles outfile
tee	Duplicate a data stream
tee infile outfile1 outfile2	
replace	Replace variables
replace infile1 infile2 outfile	
duplicate	Duplicates a dataset
duplicate[,ndup]	infile outfile
mergegrid	Merge grid
mergegrid infile1 infile2 outfile	
merge	Merge datasets with different fields
mergetime	Merge datasets sorted by date and time
<operator>	infiles outfile
splitcode	Split code numbers
splitparam	Split parameter identifiers
splitname	Split variable names
splitlevel	Split levels
splitgrid	Split grids
splitzaxis	Split z-axes
splittabnum	Split parameter table numbers
<operator>	[,params] infile obase
splitlhour	Split hours
splitday	Split days
splitseas	Split seasons
splityear	Split years
splityearmon	Split in years and months
<operator>	infile obase
splitmon	Split months
splitmon[,format]	infile obase
splitsel	Split time selection
splitsel,nsets[,noffset[,nskip]]	infile obase
distgrid	Distribute horizontal grid
distgrid,nx[,ny]	infile obase
collgrid	Collect horizontal grid
collgrid[,nx[,names]]	infiles outfile

### Selection

select	Select fields
delete	Delete fields
<operator>	,params infile outfile
selmulti	Select multiple fields
delmulti	Delete multiple fields
changemulti	Change identification of multiple fields
<operator>	,selection-specification infile outfile
selparam	Select parameters by identifier
delparam	Delete parameters by identifier
<operator>	,params infile outfile
selcode	Select parameters by code number
delcode	Delete parameters by code number
<operator>	,codes infile outfile
selname	Select parameters by name
delname	Delete parameters by name
<operator>	,names infile outfile
selstdname	Select parameters by standard name
selstdname,stdnames	infile outfile
sellevel	Select levels
sellevel,levels	infile outfile
sellevidx	Select levels by index
sellevidx,levidx	infile outfile
selgrid	Select grids
selgrid,grids	infile outfile
selzaxis	Select z-axes
selzaxis,zaxes	infile outfile
selzaxisname	Select z-axes by name
selzaxisname,zaxisnames	infile outfile
selltype	Select GRIB level types
selltype,ltypes	infile outfile
seltabnum	Select parameter table numbers
seltabnum,tabnums	infile outfile
sel timestep	Select timesteps
sel timestep,timesteps	infile outfile
seltime	Select times
seltime,times	infile outfile
selhour	Select hours
selhour,hours	infile outfile
selday	Select days
selday,days	infile outfile
selmonth	Select months
selmonth,months	infile outfile
selyear	Select years
selyear,years	infile outfile
selseason	Select seasons
selseason,seasons	infile outfile
seldate	Select dates
seldate,startdate[,enddate]	infile outfile
selmon	Select single month
selmon,month[,nts1[,nts2]]	infile outfile

sel lonlatbox	Select a longitude/latitude box
sel lonlatbox,lon1,lon2,lat1,lat2	infile outfile
sel indexbox	Select an index box
sel indexbox,idx1,idx2,idy1,idy2	infile outfile

sel gridcell	Select grid cells
del gridcell	Delete grid cells
<operator>	,indexes infile outfile

samplegrid	Resample grid
samplegrid,factor	infile outfile

### Conditional selection

ifthen	If then
ifnotthen	If not then
<operator>	infile1 infile2 outfile
ifthenelse	If then else
ifthenelse infile1 infile2 infile3 outfile	

ifthen	If then constant
ifnotthen	If not then constant
<operator>	,c infile outfile
reducegrid	Reduce input file variables to locations, where mask
reducegrid,mask[,limitCoordsOutput]	infile outfile

### Comparison

eq	Equal
ne	Not equal
le	Less equal
lt	Less than
ge	Greater equal
gt	Greater than
<operator>	infile1 infile2 outfile
eqc	Equal constant
ne	Not equal constant
lec	Less equal constant
ltc	Less than constant
gec	Greater equal constant
gtc	Greater than constant
<operator>	,c infile outfile

### Modification

setattribute	Set attributes
setattribute,attributes	infile outfile
setpartabp	Set parameter table
setpartabn	Set parameter table
<operator>	,table[,convert] infile outfile
setcodetab	Set parameter code table
setcodetab,table	infile outfile
setcode	Set code number
setcode,code	infile outfile
setparam	Set parameter identifier
setparam,param	infile outfile
setname	Set variable name
setname,name	infile outfile
setunit	Set variable unit
setunit,unit	infile outfile
setlevel	Set level
setlevel,level	infile outfile
setltype	Set GRIB level type
setltype,ltype	infile outfile
setdate	Set date
setdate,date	infile outfile
settime	Set time of the day
settime,time	infile outfile
setday	Set day
setday,day	infile outfile
setmon	Set month
setmon,month	infile outfile
setyear	Set year
setyear,year	infile outfile
setunits	Set time units
setunits,units	infile outfile
settaxi	Set time axis
settaxi,date,time[,inc]	infile outfile
settbounds	Set time bounds
settbounds,frequency	infile outfile
setreftime	Set reference time
setreftime,date,time[,units]	infile outfile
setcalendar	Set calendar
setcalendar,calendar	infile outfile
shifttime	Shift timesteps
shifttime,sval	infile outfile

<b>chcode</b>	Change code number
<b>chcode,oldcode,newcode[,...] infile outfile</b>	
<b>chparam</b>	Change parameter identifier
<b>chparam,oldparam,newparam,... infile outfile</b>	
<b>chname</b>	Change variable or coordinate name
<b>chname,oldname,newname,... infile outfile</b>	
<b>chunit</b>	Change variable unit
<b>chunit,oldunit,newunit,... infile outfile</b>	
<b>chlevel</b>	Change level
<b>chlevel,oldlev,newlev,... infile outfile</b>	
<b>chlevelc</b>	Change level of one code
<b>chlevelc,code,oldlev,newlev infile outfile</b>	
<b>chlevelv</b>	Change level of one variable
<b>chlevelv,name,oldlev,newlev infile outfile</b>	

<b>setgrid</b>	Set grid
<b>setgrid,grid infile outfile</b>	
<b>setgridtype</b>	Set grid type
<b>setgridtype,gridtype infile outfile</b>	
<b>setgridarea</b>	Set grid cell area
<b>setgridarea,gridarea infile outfile</b>	
<b>setgridmask</b>	Set grid mask
<b>setgridmask,gridmask infile outfile</b>	

<b>setzaxis</b>	Set z-axis
<b>setzaxis,zaxis infile outfile</b>	
<b>genlevelbound:</b>	Generate level bounds
<b>genlevelbounds[,zbot[,ztop]] infile outfile</b>	

<b>invertlat</b>	Invert latitudes
<b>invertlat infile outfile</b>	

<b>invertlev</b>	Invert levels
<b>invertlev infile outfile</b>	

<b>shiftx</b>	Shift x
<b>shifty</b>	Shift y
<b>&lt; operator &gt; ,<i>inshift<sub>i</sub></i>,<i>j</i>,<i>cyclic<sub>i</sub></i>,<i>j</i>,<i>coord<sub>i</sub></i> infile outfile</b>	

<b>maskregion</b>	Mask regions
<b>maskregion,regions infile outfile</b>	

<b>masklonlatbox</b>	Mask a longitude/latitude box
<b>masklonlatbox,lon1,lon2,lat1,lat2 infile outfile</b>	
<b>maskindexbox</b>	Mask an index box
<b>maskindexbox,idx1,idx2,idy1,idy2 infile outfile</b>	

<b>setclonlatbox</b>	Set a longitude/latitude box to constant
<b>setclonlatbox,c,lon1,lon2,lat1,lat2 infile outfile</b>	
<b>setcindexbox</b>	Set an index box to constant
<b>setcindexbox,c,idx1,idx2,idy1,idy2 infile outfile</b>	

<b>enlarge</b>	Enlarge fields
<b>enlarge,grid infile outfile</b>	

<b>setmissval</b>	Set a new missing value
<b>setmissval,newmiss infile outfile</b>	
<b>setctomiss</b>	Set constant to missing value
<b>setmisstoc</b>	Set missing value to constant
<b>&lt; operator &gt; ,<i>c</i> infile outfile</b>	
<b>setrtomiss</b>	Set range to missing value
<b>setvrange</b>	Set valid range
<b>&lt; operator &gt; ,<i>rmin</i>,<i>rmax</i> infile outfile</b>	
<b>setmisstonn</b>	Set missing value to nearest neighbor
<b>setmisstonn infile outfile</b>	
<b>setmisstodis</b>	Set missing value to distance-weighted average
<b>setmisstodis[,neighbors] infile outfile</b>	

### Arithmetic

<b>expr</b>	Evaluate expressions
<b>expr,instr infile outfile</b>	
<b>exprf</b>	Evaluate expressions script
<b>exprf,filename infile outfile</b>	
<b>aexpr</b>	Evaluate expressions and append results
<b>aexpr,instr infile outfile</b>	
<b>aexprf</b>	Evaluate expression script and append results
<b>aexprf,filename infile outfile</b>	

<b>abs</b>	Absolute value
<b>int</b>	Integer value
<b>nint</b>	Nearest integer value
<b>pow</b>	Power
<b>sqr</b>	Square
<b>sqrt</b>	Square root
<b>exp</b>	Exponential
<b>ln</b>	Natural logarithm
<b>log10</b>	Base 10 logarithm
<b>sin</b>	Sine
<b>cos</b>	Cosine
<b>tan</b>	Tangent
<b>asin</b>	Arc sine
<b>acos</b>	Arc cosine
<b>atan</b>	Arc tangent
<b>reci</b>	Reciprocal value
<b>not</b>	Logical NOT
<b>&lt; operator &gt; infile outfile</b>	

<b>adde</b>	Add a constant
<b>subc</b>	Subtract a constant
<b>mulc</b>	Multiply with a constant
<b>divc</b>	Divide by a constant
<b>minc</b>	Minimum of a field and a constant
<b>maxc</b>	Maximum of a field and a constant
<b>&lt; operator &gt; ,<i>c</i> infile outfile</b>	

<b>add</b>	Add two fields
<b>sub</b>	Subtract two fields
<b>mul</b>	Multiply two fields
<b>div</b>	Divide two fields
<b>min</b>	Minimum of two fields
<b>max</b>	Maximum of two fields
<b>atan2</b>	Arc tangent of two fields
<b>&lt; operator &gt; infile1 infile2 outfile</b>	

<b>monadd</b>	Add monthly time series
<b>monsub</b>	Subtract monthly time series
<b>monmul</b>	Multiply monthly time series
<b>mondiv</b>	Divide monthly time series
<b>&lt; operator &gt; infile1 infile2 outfile</b>	

<b>yhouradd</b>	Add multi-year hourly time series
<b>yhoursub</b>	Subtract multi-year hourly time series
<b>yhourmul</b>	Multiply multi-year hourly time series
<b>yhourdiv</b>	Divide multi-year hourly time series
<b>&lt; operator &gt; infile1 infile2 outfile</b>	

<b>ydayadd</b>	Add multi-year daily time series
<b>ydaysub</b>	Subtract multi-year daily time series
<b>ydaymul</b>	Multiply multi-year daily time series
<b>ydaydiv</b>	Divide multi-year daily time series
<b>&lt; operator &gt; infile1 infile2 outfile</b>	

<b>ymonadd</b>	Add multi-year monthly time series
<b>ymonsub</b>	Subtract multi-year monthly time series
<b>ymonmul</b>	Multiply multi-year monthly time series
<b>ymondiv</b>	Divide multi-year monthly time series
<b>&lt; operator &gt; infile1 infile2 outfile</b>	

<b>yseasadd</b>	Add multi-year seasonal time series
<b>yseassub</b>	Subtract multi-year seasonal time series
<b>yseasmul</b>	Multiply multi-year seasonal time series
<b>yseasdiv</b>	Divide multi-year seasonal time series
<b>&lt; operator &gt; infile1 infile2 outfile</b>	

<b>muldpm</b>	Multiply with days per month
<b>divdpm</b>	Divide by days per month
<b>muldpy</b>	Multiply with days per year
<b>divdpy</b>	Divide by days per year
<b>&lt; operator &gt; infile outfile</b>	

### Statistical values

<b>Available statistical functions</b>	<b>&lt; stat &gt;</b>
minimum	<b>min</b>
maximum	<b>max</b>
range	<b>range</b>
sum	<b>sum</b>
mean	<b>mean</b>
average	<b>avg</b>
variance	<b>var, var1</b>
standard deviation	<b>std, std1</b>

<b>timcumsum</b>	Cumulative sum over all timesteps
<b>timcumsum infile outfile</b>	

<b>consects</b>	Consecutive Timesteps
<b>&lt; operator &gt; infile outfile</b>	

<b>vars&lt; stat &gt;</b>	Statistical values over all variables
<b>varsrange</b>	Variables range
<b>&lt; operator &gt; infile outfile</b>	

<b>ens&lt; stat &gt;</b>	Statistical values over an ensemble
<b>ensrange</b>	Ensemble range
<b>&lt; operator &gt; infiles outfile</b>	
<b>enspctl</b>	Ensemble percentiles
<b>enspctl,p infiles outfile</b>	

<b>ensrkhistspace</b>	Ranked Histogram averaged over time
<b>ensrkhisttime</b>	Ranked Histogram averaged over space
<b>ensroc</b>	Ensemble Receiver Operating characteristics
<b>&lt; operator &gt; obsfile ensfiles outfile</b>	

<b>enscrps</b>	Ensemble CRPS and decomposition
<b>enscrps rfile infiles outfilebase</b>	
<b>ensbrs</b>	Ensemble Brier score
<b>ensbrs,x rfile infiles outfilebase</b>	

<b>fld&lt; stat &gt;</b>	Statistical values over a field
<b>fldrange</b>	Field range
<b>&lt; operator &gt; ,<i>weights</i> infile outfile</b>	
<b>fldpctl</b>	Field percentiles
<b>fldpctl,p infile outfile</b>	

<b>zon&lt; stat &gt;</b>	Zonal statistical values
<b>zonrange</b>	Zonal range
<b>&lt; operator &gt; infile outfile</b>	
<b>zonpctl</b>	Zonal percentiles
<b>zonpctl,p infile outfile</b>	

<b>mer&lt; stat &gt;</b>	Meridional statistical values
<b>merrange</b>	Meridional range
<b>&lt; operator &gt; infile outfile</b>	
<b>merpctl</b>	Meridional percentiles
<b>merpctl,p infile outfile</b>	

<b>gridbox&lt; stat &gt;</b>	Statistical values over grid boxes
<b>gridboxrange</b>	Gridbox range
<b>&lt; operator &gt; ,<i>nx</i>,<i>ny</i> infile outfile</b>	

<b>vert&lt; stat &gt;</b>	Vertical statistical values
<b>vertrange</b>	Vertical range
<b>&lt; operator &gt; ,<i>weights</i> infile outfile</b>	

<b>timsel&lt; stat &gt;</b>	Time range statistical values
<b>timselrange</b>	Time selection range
<b>&lt; operator &gt; ,<i>nsets</i>[,<i>noffset</i>[,<i>nskip</i>]] infile outfile</b>	

<b>timselfpctl</b>	Time range percentiles
<b>timselfpctl,p,nsets[,noffset[,nskip]] infile1 infile2 infile3 outfile</b>	

<b>run&lt; stat &gt;</b>	Running statistical values
<b>runrange</b>	Running range
<b>&lt; operator &gt; ,<i>nts</i> infile outfile</b>	

<b>runpctl</b>	Running percentiles
<b>runpctl,p,nts infile outfile</b>	

<b>tim&lt; stat &gt;</b>	Statistical values over all timesteps
<b>timrange</b>	Time range
<b>&lt; operator &gt; infile outfile</b>	

<b>timpctl</b>	Time percentiles
<b>timpctl,p infile1 infile2 infile3 outfile</b>	

<b>hour&lt; stat &gt;</b>	Hourly statistical values
<b>hourrange</b>	Hourly range
<b>&lt; operator &gt; infile outfile</b>	

<b>hourpctl</b>	Hourly percentiles
<b>hourpctl,p infile1 infile2 infile3 outfile</b>	

<b>day&lt; stat &gt;</b>	Daily statistical values
<b>dayrange</b>	Daily range
<b>&lt; operator &gt; infile outfile</b>	

<b>daypctl</b>	Daily percentiles
<b>daypctl,p infile1 infile2 infile3 outfile</b>	

<b>mon&lt; stat &gt;</b>	Monthly statistical values
<b>monrange</b>	Monthly range
<b>&lt; operator &gt; infile outfile</b>	

<b>monpctl</b>	Monthly percentiles
<b>monpctl,p infile1 infile2 infile3 outfile</b>	

<b>yearmonmean</b>	Yearly mean from monthly data
<b>yearmonmean infile outfile</b>	

<b>year&lt; stat &gt;</b>	Yearly statistical values
<b>yearrange</b>	Yearly range
<b>&lt; operator &gt; infile outfile</b>	

<b>yearpctl</b>	Yearly percentiles
<b>yearpctl,p infile1 infile2 infile3 outfile</b>	

<b>seas&lt; stat &gt;</b>	Seasonal statistical values
<b>seasrange</b>	Seasonal range
<b>&lt; operator &gt; infile outfile</b>	

<b>seaspctl</b>	Seasonal percentiles
<b>seaspctl,p infile1 infile2 infile3 outfile</b>	

<b>yhour&lt; stat &gt;</b>	Multi-year hourly statistical values
<b>yhourrange</b>	Multi-year hourly range
<b>&lt; operator &gt; infile outfile</b>	

<b>yday&lt; stat &gt;</b>	Multi-year daily statistical values
<b>ydayrange</b>	Multi-year daily range
<b>&lt; operator &gt; infile outfile</b>	

<b>ydaypctl</b>	Multi-year daily percentiles
<b>ydaypctl,p infile1 infile2 infile3 outfile</b>	

<b>ymon&lt; stat &gt;</b>	Multi-year monthly statistical values
<b>ymonrange</b>	Multi-year monthly range
<b>&lt; operator &gt; infile outfile</b>	

<b>ymonpctl</b>	Multi-year monthly percentiles
<b>ymonpctl,p infile1 infile2 infile3 outfile</b>	

<b>yseas&lt; stat &gt;</b>	Multi-year seasonal statistical values
<b>yseasrange</b>	Multi-year seasonal range
<b>&lt; operator &gt; infile outfile</b>	

<b>yseaspctl</b>	Multi-year seasonal percentiles
<b>yseaspctl,p infile1 infile2 infile3 outfile</b>	

<b>ydrun&lt; stat &gt;</b>	Multi-year daily running statistical values
<b>&lt; operator &gt; ,<i>nts</i> infile outfile</b>	

<b>ydrunpctl</b>	Multi-year daily running percentiles
<b>ydrunpctl,p,nts infile1 infile2 infile3 outfile</b>	

### Correlation and co.

<b>fldcor</b>	Correlation in grid space
<b>fldcor infile1 infile2 outfile</b>	

<b>timcor</b>	Correlation over time
<b>timcor infile1 infile2 outfile</b>	

<b>fldcovar</b>	Covariance in grid space
<b>fldcovar infile1 infile2 outfile</b>	

<b>timcovar</b>	Covariance over time
<b>timcovar infile1 infile2 outfile</b>	

## Regression

<b>regres</b>	Regression
<b>regres infile outfile</b>	
<b>detrend</b>	Detrend
<b>detrend infile outfile</b>	
<b>trend</b>	Trend
<b>trend infile outfile1 outfile2</b>	
<b>subtrend</b>	Subtract trend
<b>subtrend infile1 infile2 infile3 outfile</b>	

## EOFs

<b>eof</b>	Calculate EOFs in spatial or time space
<b>eoftime</b>	Calculate EOFs in time space
<b>eofspatial</b>	Calculate EOFs in spatial space
<b>eof3d</b>	Calculate 3-Dimensional EOFs in time space
<b>&lt; operator &gt;,neof infile outfile1 outfile2</b>	
<b>eofcoeff</b>	Calculate principal coefficients of EOFs
<b>eofcoeff infile1 infile2 obase</b>	

## Interpolation

<b>remapbil</b>	Bilinear interpolation
<b>genbil</b>	Generate bilinear interpolation weights
<b>&lt; operator &gt;,grid infile outfile</b>	
<b>remapbic</b>	Bicubic interpolation
<b>genbic</b>	Generate bicubic interpolation weights
<b>&lt; operator &gt;,grid infile outfile</b>	
<b>remapnnc</b>	Nearest neighbor remapping
<b>gennc</b>	Generate nearest neighbor remap weights
<b>&lt; operator &gt;,grid infile outfile</b>	
<b>remapdis</b>	Distance-weighted average remapping
<b>remapdis,grid[,neighbors] infile outfile</b>	
<b>gendis</b>	Generate distance-weighted average remap weights
<b>gendis,grid infile outfile</b>	
<b>remapcon</b>	First order conservative remapping
<b>gencon</b>	Generate 1st order conservative remap weights
<b>&lt; operator &gt;,grid infile outfile</b>	
<b>remapcon2</b>	Second order conservative remapping
<b>gencon2</b>	Generate 2nd order conservative remap weights
<b>&lt; operator &gt;,grid infile outfile</b>	
<b>remaplaf</b>	Largest area fraction remapping
<b>genlaf</b>	Generate largest area fraction remap weights
<b>&lt; operator &gt;,grid infile outfile</b>	
<b>remap</b>	Grid remapping
<b>remap,grid,weights infile outfile</b>	
<b>remapeta</b>	Remap vertical hybrid level
<b>remapeta,vct[,oro] infile outfile</b>	
<b>m2pl</b>	Model to pressure level interpolation
<b>m2pl,plevels infile outfile</b>	
<b>m2hl</b>	Model to height level interpolation
<b>m2hl,hlevels infile outfile</b>	
<b>ap2pl</b>	Air pressure to pressure level interpolation
<b>ap2pl,plevels infile outfile</b>	
<b>ap2hl</b>	Air pressure to height level interpolation
<b>ap2hl,hlevels infile outfile</b>	
<b>intlevel</b>	Linear level interpolation
<b>intlevel,levels infile outfile</b>	
<b>intlevel3d</b>	Linear level interpolation onto a 3d vertical coordinate
<b>intlevelx3d</b>	like intlevel3d but with extrapolation
<b>&lt; operator &gt;,icoordinate infile1 infile2 outfile</b>	
<b>inttime</b>	Interpolation between timesteps
<b>inttime,date,time[,inc] infile outfile</b>	
<b>intntime</b>	Interpolation between timesteps
<b>intntime,n infile outfile</b>	

<b>intyear</b>	Interpolation between two years
<b>intyear,years infile1 infile2 obase</b>	

## Transformation

<b>sp2gp</b>	Spectral to gridpoint
<b>gp2sp</b>	Gridpoint to spectral
<b>&lt; operator &gt;[,gridtype] infile outfile</b>	
<b>sp2sp</b>	Spectral to spectral
<b>sp2sp,trunc infile outfile</b>	
<b>dv2ps</b>	D and V to velocity potential and stream function
<b>dv2ps infile outfile</b>	
<b>dv2uv</b>	Divergence and vorticity to U and V wind
<b>uv2dv</b>	U and V wind to divergence and vorticity
<b>&lt; operator &gt;[,gridtype] infile outfile</b>	
<b>fourier</b>	Fourier transformation
<b>fourier,epsilon infile outfile</b>	

## Import/Export

<b>import_binary</b>	Import binary data sets
<b>import_binary infile outfile</b>	
<b>import_cmsaf</b>	Import CM-SAF HDF5 files
<b>import_cmsaf infile outfile</b>	
<b>import_amsr</b>	Import AMSR binary files
<b>import_amsr infile outfile</b>	
<b>input</b>	ASCII input
<b>input,grid[,zaxis] outfile</b>	
<b>inputsrv</b>	SERVICE ASCII input
<b>inputext</b>	EXTRA ASCII input
<b>&lt; operator &gt; outfile</b>	
<b>output</b>	ASCII output
<b>output infile</b>	
<b>outputf</b>	Formatted output
<b>outputf,format[,nelem] infile</b>	
<b>outputint</b>	Integer output
<b>outputsrv</b>	SERVICE ASCII output
<b>outputext</b>	EXTRA ASCII output
<b>&lt; operator &gt; infile</b>	
<b>outputtab</b>	Table output
<b>outputtab,params infile</b>	
<b>gmtxyz</b>	GMT xyz format
<b>gmtcells</b>	GMT multiple segment format
<b>&lt; operator &gt; infile</b>	

## Miscellaneous

<b>gradsdes</b>	GrADS data descriptor file
<b>gradsdes[,mapversion] infile</b>	
<b>after</b>	ECHAM standard post processor
<b>after[,vct] infile</b>	
<b>bandpass</b>	Bandpass filtering
<b>bandpass,fmin,fmax infile outfile</b>	
<b>lowpass</b>	Lowpass filtering
<b>lowpass,fmax infile outfile</b>	
<b>highpass</b>	Highpass filtering
<b>highpass,fmin infile outfile</b>	
<b>gridarea</b>	Grid cell area
<b>gridweights</b>	Grid cell weights
<b>&lt; operator &gt; infile outfile</b>	
<b>smooth</b>	Smooth grid points
<b>smooth[,options] infile outfile</b>	
<b>smooth9</b>	9 point smoothing
<b>smooth9 infile outfile</b>	

<b>setvals</b>	Set list of old values to new values
<b>setvals,oldval,newval[,...] infile outfile</b>	
<b>setrtoc</b>	Set range to constant
<b>setrtoc,rmin,rmax,c infile outfile</b>	
<b>setrtoc2</b>	Set range to constant others to constant2
<b>setrtoc2,rmin,rmax,c,c2 infile outfile</b>	

<b>timsort</b>	Sort over the time
<b>timsort infile outfile</b>	

<b>const</b>	Create a constant field
<b>const,const,grid outfile</b>	
<b>random</b>	Create a field with random numbers
<b>random,grid[,seed] outfile</b>	
<b>topo</b>	Create a field with topography
<b>topo[,grid] outfile</b>	
<b>for</b>	Create a time series
<b>for,start,end[,inc] outfile</b>	
<b>stdatm</b>	Create values for pressure and temperature for hydrostatic atmosphere
<b>stdatm,levels outfile</b>	

<b>uvDestag</b>	Destaggering of u/v wind components
<b>uvDestag,u,v[,,-/+0.5[,/+0.5]] infile outfile</b>	
<b>rotuvNorth</b>	Rotate u/v wind to North pole.
<b>projuvLatLon</b>	Cylindrical Equidistant projection
<b>&lt; operator &gt;,u,v infile outfile</b>	

<b>rotuvb</b>	Backward rotation
<b>rotuvb,u,v,... infile outfile</b>	

<b>mastrfu</b>	Mass stream function
<b>mastrfu infile outfile</b>	

<b>sealevelpressur</b>	Sea level pressure
<b>sealevelpressure infile outfile</b>	

<b>adisit</b>	Potential temperature to in-situ temperature
<b>adisit[,pressure] infile outfile</b>	
<b>adipot</b>	In-situ temperature to potential temperature
<b>adipot infile outfile</b>	

<b>rhopot</b>	Calculates potential density
<b>rhopot[,pressure] infile outfile</b>	

<b>histcount</b>	Histogram count
<b>histsum</b>	Histogram sum
<b>histmean</b>	Histogram mean
<b>histfreq</b>	Histogram frequency
<b>&lt; operator &gt;,bounds infile outfile</b>	

<b>sethalo</b>	Set the left and right bounds of a field
<b>sethalo,lhalo,rhalo infile outfile</b>	

<b>wct</b>	Windchill temperature
<b>wct infile1 infile2 outfile</b>	

<b>fdns</b>	Frost days where no snow index per time period
<b>fdns infile1 infile2 outfile</b>	

<b>strwin</b>	Strong wind days index per time period
<b>strwin[,v] infile outfile</b>	

<b>strbre</b>	Strong breeze days index per time period
<b>strbre infile outfile</b>	

<b>strgal</b>	Strong gale days index per time period
<b>strgal infile outfile</b>	

<b>hurr</b>	Hurricane days index per time period
<b>hurr infile outfile</b>	

<b>cmorlite</b>	CMOR lite
<b>cmorlite,table[,convert] infile outfile</b>	

## NCL

<b>uv2vr_cfd</b>	U and V wind to relative vorticity
<b>uv2dv_cfd</b>	U and V wind to divergence
<b>&lt; operator &gt;[,u,v,boundOpt,outMode] infile outfile</b>	