

# CDO Reference Card

Climate Data Operators

Version 1.7.1

February 2016

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<https://code.zmaw.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 (I8/I16/I32/F32/F64 for nc,nc2,nc4,nc4c; F32/F64 for grb2,srv,ext,ieg; 1-24 for grb,grb2) Add L or B for Little or Big endian byteorder
-f <format>	Outputformat: grb,grb2,nc,nc2,nc4,nc4c,srv,ext,ieg
-g <grid>	Grid or file name
	Grid names: r<NX>x<NY>, n<N>, gme<NI>
-h	Help information for the operators
-M	Indicate that the I/O streams have missing values
-m <missval>	Set the default missing value (default: -9e+33)
-O	Overwrite existing output file, if checked
-R	Convert GRIB1 data from reduced to regular grid
-r	Generate a relative time axis
-s	Silent mode
-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
-z szip	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> ifiles	

sinfo	Short information listed by parameter identifier
sinfo	Short information listed by parameter name
<operator> ifiles	

diff	Compare two datasets listed by parameter id
diffn	Compare two datasets listed by parameter name
<operator> ifile1 ifile2	

npar	Number of parameters
nlevel	Number of levels
nyear	Number of years
nmon	Number of months
ndate	Number of dates
ntime	Number of timesteps
<operator> ifile	

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	Show timestamp
<operator> ifile	

pardes	Parameter description
griddes	Grid description
zaxisdes	Z-axis description
vct	Vertical coordinate table
<operator> ifile	

## File operations

copy	Copy datasets
cat	Concatenate datasets
<operator> ifiles ofile	

replace	Replace variables
replace ifile1 ifile2 ofile	

duplicate	Duplicates a dataset
duplicate[,ndup] ifile ofile	

mergegrid	Merge grid
mergegrid ifile1 ifile2 ofile	

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

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] ifile obase	

splthour	Split hours
spltday	Split days
spllseas	Split seasons
spltyear	Split years
spltyearmon	Split in years and months
<operator> ifile obase	
splitmon	Split months
splitmon[,format/ ifile obase	

splitsel	Split time selection
splitsel,nsets[,noffset[,nskip]] ifile obase	

distgrid	Distribute horizontal grid
distgrid,nx[,ny] ifile obase	

collgrid	Collect horizontal grid
collgrid[,nx[,names]] ifiles ofile	

## Selection

select	Select fields
delete	Delete fields
<operator> ,params ifiles ofile	

selparam	Select parameters by identifier
delparam	Delete parameters by identifier
<operator> ,params ifile ofile	
selcode	Select parameters by code number
delcode	Delete parameters by code number
<operator> ,codes ifile ofile	

selname	Select parameters by name
dename	Delete parameters by name
<operator> ,names ifile ofile	

selstdname	Select parameters by standard name
selstdname,stdnames ifile ofile	
sellevel	Select levels
sellevel,levels ifile ofile	

sellevidx	Select levels by index
sellevidx,levidx ifile ofile	
selgrid	Select grids
selgrid,grids ifile ofile	
selzaxis	Select z-axes
selzaxis,zaxes ifile ofile	
selzaxisname	Select z-axes by name
selzaxisname,zaxisnames ifile ofile	
selltype	Select GRIB level types
selltype,ltypes ifile ofile	
seltabnum	Select parameter table numbers
seltabnum,tabnums ifile ofile	

sel timestep	Select timesteps
sel timestep,timesteps ifile ofile	
seltime	Select times
seltime,times ifile ofile	
selhour	Select hours
selhour,hours ifile ofile	
selday	Select days
selday,days ifile ofile	
selmon	Select months
selmon,months ifile ofile	
selyear	Select years
selyear,years ifile ofile	
selseas	Select seasons
selseas,seasons ifile ofile	
seldate	Select dates
seldate,date1[,date2] ifile ofile	
selmon	Select single month
selmon,month[,nts1[,nts2]] ifile ofile	

selonlatbox	Select a longitude/latitude box
selonlatbox,lon1,lon2,lat1,lat2 ifile ofile	
selindexbox	Select an index box
selindexbox,idx1,idx2,idy1,idy2 ifile ofile	

## Conditional selection

ifthen	If then
ifnotthen	If not then
<operator> ifile1 ifile2 ofile	

ifthenelse	If then else
ifthenelse ifile1 ifile2 ifile3 ofile	

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

## Comparison

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

eqc	Equal constant
nec	Not equal constant
lec	Less equal constant
ltc	Less than constant
gec	Greater equal constant
gtc	Greater than constant
<operator> ,c ifile ofile	

## Modification

setpartabp	Set parameter table
setpartabn	Set parameter table
<operator> ,table[,convert/ ifile ofile	

setpartab	Set parameter table
setpartab,table ifile ofile	
setcode	Set code number
setcode,code ifile ofile	

setparam	Set parameter identifier
setparam,param ifile ofile	
setname	Set variable name
setname,name ifile ofile	
setunit	Set variable unit
setunit,unit ifile ofile	
setlevel	Set level
setlevel,level ifile ofile	
setltype	Set GRIB level type
setltype,ltype ifile ofile	

setdate	Set date
setdate,date ifile ofile	
settime	Set time of the day
settime,time ifile ofile	
setday	Set day
setday,day ifile ofile	
setmon	Set month
setmon,month ifile ofile	

setyear	Set year
setyear,year ifile ofile	
setunits	Set time units
setunits,units ifile ofile	
settaxis	Set time axis
settaxis,date,time[,inc] ifile ofile	
setreftime	Set reference time
setreftime,date,time[,units] ifile ofile	
setcalendar	Set calendar
setcalendar,calendar ifile ofile	

shifttime	Shift timesteps
shifttime,sval ifile ofile	

chcode	Change code number
chcode,oldcode,newcode[,...] ifile ofile	
chparam	Change parameter identifier
chparam,oldparam,newparam,... ifile ofile	
chname	Change variable name
chname,oldname,newname,... ifile ofile	

chunit	Change variable unit
chunit,oldunit,newunit,... ifile ofile	
chlevel	Change level
chlevel,oldlev,newlev,... ifile ofile	
chlevelc	Change level of one code
chlevelc,code,oldlev,newlev ifile ofile	
chlevelv	Change level of one variable
chlevelv,name,oldlev,newlev ifile ofile	

setgrid	Set grid
setgrid,grid ifile ofile	
setgridtype	Set grid type
setgridtype,gridtype ifile ofile	
setgridarea	Set grid cell area
setgridarea,gridarea ifile ofile	

setzaxis	Set z-axis
setzaxis,zaxis ifile ofile	
genlevelbound	Generate level bounds
genlevelbounds[,zbot[,ztop]] ifile ofile	

<b>setgatt</b>	Set global attribute
<b>setgatt,attname,attstring ifile ofile</b>	
<b>setgatts</b>	Set global attributes
<b>setgatts,attfile ifile ofile</b>	
<b>invertlat</b>	Invert latitudes
<b>invertlat ifile ofile</b>	
<b>invertlev</b>	Invert levels
<b>invertlev ifile ofile</b>	
<b>maskregion</b>	Mask regions
<b>maskregion,regions ifile ofile</b>	
<b>masklonlatbox</b>	Mask a longitude/latitude box
<b>masklonlatbox,lon1,lon2,lat1,lat2 ifile ofile</b>	
<b>maskindexbox</b>	Mask an index box
<b>maskindexbox,idx1,idx2,idy1,idy2 ifile ofile</b>	
<b>setclonlatbox</b>	Set a longitude/latitude box to constant
<b>setclonlatbox,c,lon1,lon2,lat1,lat2 ifile ofile</b>	
<b>setcindexbox</b>	Set an index box to constant
<b>setcindexbox,c,idx1,idx2,idy1,idy2 ifile ofile</b>	
<b>enlarge</b>	Enlarge fields
<b>enlarge,grid ifile ofile</b>	
<b>setmissval</b>	Set a new missing value
<b>setmissval,newmiss ifile ofile</b>	
<b>setctomiss</b>	Set constant to missing value
<b>setmisstoc</b>	Set missing value to constant
<b>&lt;operator&gt;,c ifile ofile</b>	
<b>setrtomiss</b>	Set range to missing value
<b>setvrange</b>	Set valid range
<b>&lt;operator&gt;,,rmin,rmax ifile ofile</b>	
<b>setmisstonn</b>	Set missing value to nearest neighbor
<b>setmisstonn ifile ofile</b>	
<b>setmisstodis</b>	Set missing value to distance-weighted average
<b>setmisstodis,[neighbors] ifile ofile</b>	

### Arithmetic

<b>expr</b>	Evaluate expressions
<b>expr,instr ifile ofile</b>	
<b>exprf</b>	Evaluate expressions script
<b>exprf,filename ifile ofile</b>	
<b>aexpr</b>	Evaluate expressions and append results
<b>aexpr,instr ifile ofile</b>	
<b>aexprf</b>	Evaluate expression script and append results
<b>aexprf,filename ifile ofile</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>reci</b>	Reciprocal value
<b>&lt;operator&gt; ifile ofile</b>	
<b>addc</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>&lt;operator&gt;,&lt; ifile ofile</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; ifile1 ifile2 ofile</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; ifile1 ifile2 ofile</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; ifile1 ifile2 ofile</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; ifile1 ifile2 ofile</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; ifile1 ifile2 ofile</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; ifile1 ifile2 ofile</b>	
<b>muldpm</b>	Multiply with days per month
<b>divdpm</b>	Divide by days per month
<b>mulpy</b>	Multiply with days per year
<b>divdpy</b>	Divide by days per year
<b>&lt;operator&gt; ifile ofile</b>	

### Statistical values

	Available statistical functions	<b>&lt; stat &gt;</b>
	minimum	<b>min</b>
	maximum	<b>max</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>consects</b>	Consecutive Timesteps	
<b>&lt;operator&gt; ifile ofile</b>		
<b>ens&lt; stat &gt;</b>	Statistical values over an ensemble	
<b>&lt;operator&gt; ifiles ofile</b>		
<b>enspctl</b>	Ensemble percentiles	
<b>enspctl,p ifiles ofile</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 ofile</b>		
<b>enscrps</b>	Ensemble CRPS and decomposition	
<b>enscrps rfile ifiles ofilebase</b>		
<b>ensbrs</b>	Ensemble Brier score	
<b>ensbrs,x rfile ifiles ofilebase</b>		
<b>fld&lt; stat &gt;</b>	Statistical values over a field	
<b>&lt;operator&gt; ifile ofile</b>		
<b>fldpctl</b>	Field percentiles	
<b>fldpctl,p ifile ofile</b>		

<b>zon&lt; stat &gt;</b>	Zonal statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>zonpctl</b>	Zonal percentiles
<b>zonpctl,p ifile ofile</b>	
<b>mer&lt; stat &gt;</b>	Meridional statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>merpctl</b>	Meridional percentiles
<b>merpctl,p ifile ofile</b>	
<b>gridbox&lt; stat &gt;</b>	Statistical values over grid boxes
<b>&lt;operator&gt;,&lt;nx,ny ifile ofile</b>	
<b>vert&lt; stat &gt;</b>	Vertical statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>timsel&lt; stat &gt;</b>	Time range statistical values
<b>&lt;operator&gt;,&lt;nsets,[noffset,[nskip]] ifile ofile</b>	
<b>timselfctl</b>	Time range percentiles
<b>timselfctl,p,nsets,[noffset,[nskip]] ifile1 ifile2 ifile3 ofile</b>	
<b>run&lt; stat &gt;</b>	Running statistical values
<b>&lt;operator&gt;,&lt;nts ifile ofile</b>	
<b>runpctl</b>	Running percentiles
<b>runpctl,p,nts ifile ofile</b>	
<b>tim&lt; stat &gt;</b>	Statistical values over all timesteps
<b>&lt;operator&gt; ifile ofile</b>	
<b>timpctl</b>	Time percentiles
<b>timpctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>hour&lt; stat &gt;</b>	Hourly statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>hourpctl</b>	Hourly percentiles
<b>hourpctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>day&lt; stat &gt;</b>	Daily statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>daypctl</b>	Daily percentiles
<b>daypctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>mon&lt; stat &gt;</b>	Monthly statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>monpctl</b>	Monthly percentiles
<b>monpctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>yearmonmean</b>	Yearly mean from monthly data
<b>yearmonmean ifile ofile</b>	
<b>year&lt; stat &gt;</b>	Yearly statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>yearpctl</b>	Yearly percentiles
<b>yearpctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>seas&lt; stat &gt;</b>	Seasonal statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>seaspctl</b>	Seasonal percentiles
<b>seaspctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>yhour&lt; stat &gt;</b>	Multi-year hourly statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>yday&lt; stat &gt;</b>	Multi-year daily statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>ydaypctl</b>	Multi-year daily percentiles
<b>ydaypctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>ymon&lt; stat &gt;</b>	Multi-year monthly statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>ymonpctl</b>	Multi-year monthly percentiles
<b>ymonpctl,p ifile1 ifile2 ifile3 ofile</b>	
<b>yseas&lt; stat &gt;</b>	Multi-year seasonal statistical values
<b>&lt;operator&gt; ifile ofile</b>	
<b>yseaspctl</b>	Multi-year seasonal percentiles
<b>yseaspctl,p ifile1 ifile2 ifile3 ofile</b>	

<b>ydrun&lt; stat &gt;</b>	Multi-year daily running statistical values
<b>&lt;operator&gt;,&lt;nts ifile ofile</b>	
<b>ydrunpctl</b>	Multi-year daily running percentiles
<b>ydrunpctl,p,nts ifile1 ifile2 ifile3 ofile</b>	

### Correlation and co.

<b>fldcor</b>	Correlation in grid space
<b>fldcor ifile1 ifile2 ofile</b>	
<b>timcor</b>	Correlation over time
<b>timcor ifile1 ifile2 ofile</b>	
<b>fldcovar</b>	Covariance in grid space
<b>fldcovar ifile1 ifile2 ofile</b>	
<b>timcovar</b>	Covariance over time
<b>timcovar ifile1 ifile2 ofile</b>	

### Regression

<b>regres</b>	Regression
<b>regres ifile ofile</b>	
<b>detrend</b>	Detrend
<b>detrend ifile ofile</b>	
<b>trend</b>	Trend
<b>trend ifile ofile1 ofile2</b>	
<b>subtrend</b>	Subtract trend
<b>subtrend ifile1 ifile2 ifile3 ofile</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;,&lt;neof ifile ofile1 ofile2</b>	
<b>eofcoeff</b>	Calculate principal coefficients of EOFs
<b>eofcoeff ifile1 ifile2 obase</b>	

### Interpolation

<b>remapbil</b>	Bilinear interpolation
<b>genbil</b>	Generate bilinear interpolation weights
<b>&lt;operator&gt;,&lt;grid ifile ofile</b>	
<b>remapbic</b>	Bicubic interpolation
<b>genbic</b>	Generate bicubic interpolation weights
<b>&lt;operator&gt;,&lt;grid ifile ofile</b>	
<b>remapnnp</b>	Nearest neighbor remapping
<b>gennnp</b>	Generate nearest neighbor remap weights
<b>&lt;operator&gt;,&lt;grid ifile ofile</b>	
<b>remapdis</b>	Distance-weighted average remapping
<b>remapdis.grid,[neighbors] ifile ofile</b>	
<b>gendis</b>	Generate distance-weighted average remap weights
<b>gendis.grid ifile ofile</b>	
<b>remapycon</b>	First order conservative remapping
<b>genycon</b>	Generate 1st order conservative remap weights
<b>&lt;operator&gt;,&lt;grid ifile ofile</b>	
<b>remapcon</b>	First order conservative remapping
<b>gencon</b>	Generate 1st order conservative remap weights
<b>&lt;operator&gt;,&lt;grid ifile ofile</b>	
<b>remapcon2</b>	Second order conservative remapping
<b>gencon2</b>	Generate 2nd order conservative remap weights
<b>&lt;operator&gt;,&lt;grid ifile ofile</b>	
<b>remaplaf</b>	Largest area fraction remapping
<b>genlaf</b>	Generate largest area fraction remap weights
<b>&lt;operator&gt;,&lt;grid ifile ofile</b>	

<b>remap</b>	Grid remapping
<b>remap,grid,weights</b>	<b>ifile ofile</b>
<b>remapeta</b>	Remap vertical hybrid level
<b>remapeta,vct[,oro]</b>	<b>ifile ofile</b>
<b>ml2pl</b>	Model to pressure level interpolation
<b>ml2pl,plevels</b>	<b>ifile ofile</b>
<b>ml2hl</b>	Model to height level interpolation
<b>ml2hl,hlevels</b>	<b>ifile ofile</b>
<b>ap2pl</b>	Model to pressure level interpolation
<b>ap2pl,plevels</b>	<b>ifile ofile</b>
<b>intlevel</b>	Linear level interpolation
<b>intlevel,levels</b>	<b>ifile ofile</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</b>	<b>ifile1 ifile2 ofile</b>
<b>inttime</b>	Interpolation between timesteps
<b>inttime,date,time[,inc]</b>	<b>ifile ofile</b>
<b>intntime</b>	Interpolation between timesteps
<b>intntime,n</b>	<b>ifile ofile</b>
<b>intyear</b>	Interpolation between two years
<b>intyear,years</b>	<b>ifile1 ifile2 obase</b>

### Transformation

<b>sp2gp</b>	Spectral to gridpoint
<b>sp2gpl</b>	Spectral to gridpoint (linear)
<b>gp2sp</b>	Gridpoint to spectral
<b>gp2spl</b>	Gridpoint to spectral (linear)
<b>&lt;operator&gt;</b>	<b>ifile ofile</b>
<b>sp2sp</b>	Spectral to spectral
<b>sp2sp,trunc</b>	<b>ifile ofile</b>
<b>dv2uv</b>	Divergence and vorticity to U and V wind
<b>dv2u vl</b>	Divergence and vorticity to U and V wind (linear)
<b>uv2dv</b>	U and V wind to divergence and vorticity
<b>uv2d vl</b>	U and V wind to divergence and vorticity (linear)
<b>dv2ps</b>	D and V to velocity potential and stream function
<b>&lt;operator&gt;</b>	<b>ifile ofile</b>

### Import/Export

<b>import.binary</b>	Import binary data sets
<b>import.binary</b>	<b>ifile ofile</b>
<b>import.cmsaf</b>	Import CM-SAF HDF5 files
<b>import.cmsaf</b>	<b>ifile ofile</b>
<b>import.amsr</b>	Import AMSR binary files
<b>import.amsr</b>	<b>ifile ofile</b>
<b>input</b>	ASCII input
<b>input,grid</b>	<b>ofile</b>
<b>inputsrv</b>	SERVICE ASCII input
<b>inputext</b>	EXTRA ASCII input
<b>&lt;operator&gt;</b>	<b>ofile</b>
<b>output</b>	ASCII output
<b>output</b>	<b>ifiles</b>
<b>outputf</b>	Formatted output
<b>outputf,format[,nelem]</b>	<b>ifiles</b>
<b>outputint</b>	Integer output
<b>outputsrv</b>	SERVICE ASCII output
<b>outputtext</b>	EXTRA ASCII output
<b>&lt;operator&gt;</b>	<b>ifiles</b>
<b>outputtab</b>	Table output
<b>outputtab,params</b>	<b>ifiles ofile</b>

### Miscellaneous

<b>gradsdes</b>	GrADS data descriptor file
<b>gradsdes[,mapversion]</b>	<b>ifile</b>

<b>after</b>	ECHAM standard post processor
<b>after</b>	<b>ifiles ofile</b>
<b>bandpass</b>	Bandpass filtering
<b>bandpass,fmin,fmax</b>	<b>ifile ofile</b>
<b>lowpass</b>	Lowpass filtering
<b>lowpass,fmax</b>	<b>ifile ofile</b>
<b>highpass</b>	Highpass filtering
<b>highpass,fmin</b>	<b>ifile ofile</b>
<b>gridarea</b>	Grid cell area
<b>gridweights</b>	Grid cell weights
<b>&lt;operator&gt;</b>	<b>ifile ofile</b>
<b>smooth9</b>	9 point smoothing
<b>smooth9</b>	<b>ifile ofile</b>
<b>setvals</b>	Set list of old values to new values
<b>setvals,oldval,newval[,...]</b>	<b>ifile ofile</b>
<b>setrtoc</b>	Set range to constant
<b>setrtoc,rmin,rmax,c</b>	<b>ifile ofile</b>
<b>setrtoc2</b>	Set range to constant others to constant2
<b>setrtoc2,rmin,rmax,c,c2</b>	<b>ifile ofile</b>
<b>timsort</b>	Sort over the time
<b>timsort</b>	<b>ifile ofile</b>
<b>const</b>	Create a constant field
<b>const,const,grid</b>	<b>ofile</b>
<b>random</b>	Create a field with random numbers
<b>random,grid[,seed]</b>	<b>ofile</b>
<b>topo</b>	Create a field with topography
<b>topo[,grid]</b>	<b>ofile</b>
<b>for</b>	Create a time series
<b>for,start,end[,inc]</b>	<b>ofile</b>
<b>stdatm</b>	Create values for pressure and temperature for hydrostatic
<b>stdatm,levels</b>	<b>ofile</b>
<b>rotuvb</b>	Backward rotation
<b>rotuvb,u,v,...</b>	<b>ifile ofile</b>
<b>mastrfu</b>	Mass stream function
<b>mastrfu</b>	<b>ifile ofile</b>
<b>sealevelpressure</b>	Sea level pressure
<b>sealevelpressure</b>	<b>ifile ofile</b>
<b>adisit</b>	Potential temperature to in-situ temperature
<b>adisit[,pressure]</b>	<b>ifile ofile</b>
<b>adipot</b>	In-situ temperature to potential temperature
<b>adipot</b>	<b>ifile ofile</b>
<b>rhopot</b>	Calculates potential density
<b>rhopot[,pressure]</b>	<b>ifile ofile</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</b>	<b>ifile ofile</b>
<b>sethalo</b>	Set the left and right bounds of a field
<b>sethalo,lhalo,rhalo</b>	<b>ifile ofile</b>
<b>wct</b>	Windchill temperature
<b>wct</b>	<b>ifile1 ifile2 ofile</b>
<b>fdns</b>	Frost days where no snow index per time period
<b>fdns</b>	<b>ifile1 ifile2 ofile</b>
<b>strwin</b>	Strong wind days index per time period
<b>strwin[,v]</b>	<b>ifile ofile</b>
<b>strbre</b>	Strong breeze days index per time period
<b>strbre</b>	<b>ifile ofile</b>
<b>strgal</b>	Strong gale days index per time period
<b>strgal</b>	<b>ifile ofile</b>
<b>hurr</b>	Hurricane days index per time period
<b>hurr</b>	<b>ifile ofile</b>