CDO Reference Card

Climate Data Operators Version 1.6.1 June 2013

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http://code.zmaw.de/projects/cdo

Syntax

cdo	[Options]	Operator1	-Operator2	OperatorN	1	
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Options

Options		
-a	Generate an absolute time axis	
$-\mathbf{b} < nbits >$	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	
$-\mathbf{f} < format >$	Outputformat: grb,grb2,nc,nc2,nc4,nc4c,srv,ext,ieg	
<pre>-g < grid ></pre>	Grid or file name	
	Grid names: r <nx>x<ny>, n<n>, gme<ni></ni></n></ny></nx>	
-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	
$-\mathbf{t} $	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

showmon showdate

showtime

<operator> ifile

info	Dataset information listed by parameter identifier		
infon	Dataset information listed by parameter name		
map	Dataset information and simple map		
< operator > ifi	les		
sinfo	Short information listed by parameter identifier		
sinfon	Short information listed by parameter name		
< operator > ifi	les		
diff	Compare two datasets listed by parameter id		
diffn	Compare two datasets listed by parameter name		
< operator > ifi	le1 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 > ifi	<pre><operator> ifile</operator></pre>		
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		

Show months

showtimestamp Show timestamp

Show date information

Show time information

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

File operations

F			
copy	Copy datasets		
cat	Concatenate datasets		
<pre>< operator > ifi</pre>	<pre><operator> ifiles ofile</operator></pre>		
replace	Replace variables		
replace ifile1	ifile2 ofile		
duplicate	Duplicates a dataset		
duplicate[,ndup] ifile ofile		
mergegrid	Merge grid		
mergegrid ifil	e1 ifile2 ofile		
merge	Merge datasets with different fields		
mergetime	Merge datasets sorted by date and time		
<pre><operator> ifiles ofile</operator></pre>			
< ope, aco, > 111	100 01110		
splitcode	Split code numbers		
splitcode	Split code numbers		
splitcode splitparam	Split code numbers Split parammeter identifiers		
splitcode splitparam splitname	Split code numbers Split parammeter identifiers Split variable names		
splitcode splitparam splitname splitlevel splitgrid splitzaxis	Split code numbers Split parammeter identifiers Split variable names Split levels Split grids Split z-axes		
splitcode splitparam splitname splitlevel splitgrid splitzaxis splittabnum	Split code numbers Split parammeter identifiers Split variable names Split levels Split grids Split graxes Split parameter table numbers		
splitcode splitparam splitname splitlevel splitgrid splitzaxis	Split code numbers Split parammeter identifiers Split variable names Split levels Split grids Split graxes Split parameter table numbers		
splitcode splitparam splitname splitlevel splitgrid splitzaxis splittabnum	Split code numbers Split parammeter identifiers Split variable names Split levels Split grids Split graxes Split parameter table numbers		
splitcode splitparam splitname splitlevel splitgrid splitzaxis splittabnum <operator>[,sw</operator>	Split code numbers Split parammeter identifiers Split variable names Split levels Split grids Split z-axes Split parameter table numbers ap ifile obase		
splitcode splitparam splitname splitlevel splitgrid splitzaxis splittabnum <operator>[,sw splithour</operator>	Split code numbers Split parammeter identifiers Split variable names Split levels Split grids Split z-axes Split parameter table numbers ap ifile obase Split hours		
splitcode splitparam splitname splitlevel splitgrid splitzaxis splittabnum <operator>[,sw splithour splitday</operator>	Split code numbers Split parammeter identifiers Split variable names Split levels Split grids Split z-axes Split parameter table numbers ap ifile obase Split hours Split days		
splitcode splitparam splitname splitlevel splitgrid splitzaxis splittabnum <operator>[.sw splithour splitday splitday splitmon</operator>	Split code numbers Split parammeter identifiers Split variable names Split levels Split grids Split z-axes Split parameter table numbers ap ifile obase Split hours Split days Split months		

Split time selection

splitsel,nsets[,noffset[,nskip]] ifile obase

Select fields

Selection select

	Defect fields		
delete	Delete fields		
<pre><operator>,params ifiles ofile</operator></pre>			
selparam	Select parameters by identifier		
delparam	Delete parameters by identifier		
<pre>< operator > , par</pre>	rams ifile ofile		
selcode	Select parameters by code number		
delcode	Delete parameters by code number		
< operator >, coo	les ifile ofile		
selname	Select parameters by name		
delname	Delete parameters by name		
	mes ifile ofile		
selstdname	Select parameters by standard name		
selstdname,std	names ifile ofile		
sellevel	Select levels		
sellevel, levels it			
sellevidx	Select levels by index		
sellevidx, levidx	ifile ofile		
selgrid			
selgrid, grids ifile ofile			
selzaxis	Select z-axes		
selzaxis,zaxes ifile ofile			
selltype	Select GRIB level types		
selltype, ltypes ifile ofile			
seltabnum	Select parameter table numbers		
seltabnum,tabnums ifile ofile			

seltimestep	Select timesteps		
seltimestep,timesteps ifile ofile			
seltime	Select times		
seltime, times i:	file ofile		
selhour	Select hours		
selhour, hours i	file ofile		
selday	Select days		
selday,days ifi	le ofile		
selmon	Select months		
${f selmon}, months$	ifile ofile		
selyear	Select years		
selyear, years if	ile ofile		
selseas	Select seasons		
selseas, seasons	ifile ofile		
seldate	Select dates		
seldate,date1[,d	ate2] ifile ofile		
selsmon	Select single month		
selsmon,month[,nts1[,nts2]] ifile ofile			
sellonlatbox	Select a longitude/latitude box		
sellonlatbox,lon1,lon2,lat1,lat2 ifile ofile			
selindexbox	Select an index box		
selindexbox,id:	x1,idx2,idy1,idy2 ifile ofile		
	·		

Conditional selection

< operator >, c ifile ofile

ifthen	If then	
ifnotthen	If not then	
<pre><operator> ifile1 ifile2 ofile</operator></pre>		
ifthenelse	If then else	
ifthenelse ifile1 ifile2 ifile3 ofile		
ifthenc	If then constant	
110110110		
ifnotthenc	If not then constant	

${\bf Comparison}$

eq	Equal	
ne	Not equal	
le	Less equal	
lt	Less than	
ge	Greater equal	
gt	Greater than	
<pre><operator> ifile1 ifile2 ofile</operator></pre>		
eqc	Equal constant	
-		
eqc	Equal constant	
eqc nec	Equal constant Not equal constant	
eqc nec lec	Equal constant Not equal constant Less equal constant	
eqc nec lec ltc	Equal constant Not equal constant Less equal constant Less than constant	

Modification

setpartab	Set parameter table	
setpartab, table ifile ofile		
setcode	Set code number	
setcode, code ifile ofile		
setparam	Set parameter identifier	
setparam,paran	n 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			
$\mathbf{settime}$, $time$ if	ile ofile			
setday	Set day			
setday,day ifil	e ofile			
setmon	Set month			
setmon, month i				
setyear	Set year			
setyear, year ifi	le ofile			
settunits	Set time units			
settunits, units:				
settaxis	Set time axis			
settaxis,date,tir	ne[,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			
${\bf chcode}, old code,$	newcode[,] ifile ofile			
chparam	Change parameter identifier			
	am,newparam, ifile ofile			
1	CI : 11			

chparam	0.1		
chparam,oldparam,newparam, ifile ofile			
chname	Change variable name		
chname,oldnam	e,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,gri	dtype ifile ofile
setgridarea	Set grid cell area
setgridarea,gridarea ifile ofile	
	a
setzaxis	Set z-axis

Setzaxis,zaxis illie ollie		
setgatt	Set global attribute	
setgatt, attname	e,attstring ifile ofile	
setgatts	Set global attributes	
setgatts.attfile	ifile ofile	

invertlat	Invert latitudes
invertlat ifile	ofile
invertlev	Invert levels

invertiev iiiie	Ollie
maskregion	Mask regions
maskregion,reg	ions ifile ofile

masklonlatbox	Mask a longitude/latitude box
masklonlatbox	lon1,lon2,lat1,lat2 ifile ofile
maskindexbox	Mask an index box
maskindexbox.	idx1.idx2.idv1.idv2 ifile ofile

setclonlatbox	Set a longitude/latitude box to constant
setclonlatbox, a	:,lon1,lon2,lat1,lat2 ifile ofile
setcindexbox	Set an index box to constant
setcindexbox, c	idx1,idx2,idy1,idy2 ifile ofile

enlarge	Enlarge fields
enlarge, grid if:	ile ofile

setmissval	Set a new missing value	
setmissval, newmiss ifile ofile		
setctomiss	Set constant to missing value	
setmisstoc	Set missing value to constant	
<pre><operator>,c ifile ofile</operator></pre>		
setrtomiss	Set range to missing value	
setvrange	Set valid range	
<pre><operator>.rmin.rmax ifile ofile</operator></pre>		

Arithmetic

Arithmetic				
expr	Evaluate expressions			
expr,instr ifile	ofile			
exprf	Evaluate expressions from script file			
exprf,filename i	exprf, filename ifile ofile			
abs	Absolute value			
int	Integer value			
nint	Nearest integer value			
pow	Power			
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			
reci	Reciprocal value			
<pre>< operator > ifi</pre>	lle ofile			
addc	Add a constant			
subc	Subtract a constant			
mulc	Multiply with a constant			
divc	Divide by a constant			
<operator>,c i</operator>				
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			
<pre><operator> ifi</operator></pre>	ile1 ifile2 ofile			
monadd	Add monthly time series			
monsub	Subtract monthly time series			
monmul	Multiply monthly time series			
mondiv	Divide monthly time series			
<pre><operator> ifi</operator></pre>	le1 ifile2 ofile			
ymonadd	Add multi-year monthly time series			
ymonsub	Subtract multi-year monthly time series			
ymonmul	Multiply multi-year monthly time series			
ymondiv	Divide multi-year monthly time series			
<pre>< operator > ifile1 ifile2 ofile</pre>				
ydayadd	Add multi-year daily time series			
ydaysub	Subtract multi-year daily time series			
ydaymul	Multiply multi-year daily time series			
ydaydiv	Divide multi-year daily time series			
<pre></pre> <pre><operator> ifile1 ifile2 ofile</operator></pre>				
yhouradd	Add multi-year hourly time series			
yhoursub	Subtract multi-year hourly time series			
yhourmul	Multiply multi-year hourly time series			
yhourdiv	Divide multi-year hourly time series			
	ile1 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			
divupy				

< operator > ifile ofile

Statistical values

day < stat >

daypctl

monpctl

<operator> ifile ofile

<operator> ifile ofile

Available statistical functions	< stat >
minimum	min
maximum	max
sum	sum
mean	mean
average	avg
variance	var, var1
standard deviation	std, std1

sum		sum	
mean		mean	
average		avg	
varianc	e deviation	var, var1 std, std1	
		sia, siai	
consects	Consecutive Timesteps		
< operator > ifi	le ofile		
ens < stat >	Statistical values over an	ensemble	
<pre><operator> ifi</operator></pre>	les ofile		
enspctl	Ensemble percentiles		
${f enspctl}, p \ {f ifile}$	s ofile		
ensrkhistspace	Ranked Histogram average	red over time	
	Ranked Histogram average		
ensroc	Ensemble Receiver Opera	ting characteri	stics
< operator > obs	file ensfiles ofile		
enscrps	Ensemble CRPS and deco	omposition	
enscrps rfile	ifiles ofilebase		
ensbrs	Ensemble Brier score		
${\it ensbrs}, {\it x} \; {\it rfile}$	ifiles ofilebase		
fld < stat >	Statistical values over a f	ield	
< operator > ifi	le ofile		
fldpctl	Field percentiles		
${f fldpctl}, p \ {f ifile}$	ofile		
$\mathbf{zon} < stat >$	Zonal statistical values		
< operator > ifi	le ofile		
zonpctl	Zonal percentiles		
$\mathbf{zonpctl}, p \; \mathtt{ifile}$	ofile		
mer < stat >	Meridional statistical value	1es	
<pre><operator> ifile ofile</operator></pre>			
merpctl Meridional percentiles			
merpctl,p ifile	e ofile		
	Statistical values over gri	d boxes	
< operator >, nx,	ny ifile ofile		
$\mathbf{vert} < stat >$	Vertical statistical values		
< operator > ifi	le ofile		
timsel< stat>	Time range statistical val	nes	
	ts[,noffset[,nskip]] ifile of		
	Time range percentiles ets[,noffset[,nskip]] ifile1	ifile? ifile?	R ofile
			, 01116
	Running statistical values	3	
< operator >, nts	ifile ofile		
runpctl	Running percentiles		
runpctl,p,nts if			
	ile1 ofile		
tim < stat >	ile1 ofile Statistical values over all	timesteps	
tim < stat > $< operator > ifi$	Statistical values over all	timesteps	
< operator > ifi	Statistical values over all le ofile	timesteps	
<pre><operator> ifi timpctl</operator></pre>	Statistical values over all le ofile Time percentiles	timesteps	
< operator > ifi timpctl timpctl, p ifile	Statistical values over all le ofile Time percentiles 1 ifile2 ifile3 ofile	timesteps	
<pre><operator> ifi timpctl timpctl,p ifile hour<stat></stat></operator></pre>	Statistical values over all le ofile Time percentiles 1 ifile2 ifile3 ofile Hourly statistical values	timesteps	
< operator > ifi timpctl timpctl,p ifile hour $< stat >$ < operator > ifi	Statistical values over all le ofile Time percentiles 1 ifile2 ifile3 ofile Hourly statistical values le ofile	timesteps	
<pre><operator> ifit timpctl timpctl,p ifile hour<stat> <operator> ifit hourpctl</operator></stat></operator></pre>	Statistical values over all le ofile Time percentiles 1 ifile2 ifile3 ofile Hourly statistical values	timesteps	

Daily statistical values

Monthly statistical values

Monthly percentiles

monpctl,p ifile1 ifile2 ifile3 ofile

Daily percentiles daypctl,p ifile1 ifile2 ifile3 ofile

yearmonmean ifile ofile year<stat> <operator> yearpctl yearpctl,p seas < stat >< operator >seaspctl seaspctl,p i yhour< stat < operator >yday< stat : < operator >ydaypctl ydaypctl,pymon< stat < operator >ymonpctl ymonpctl,p yseas< stat < operator >yseaspctl yseaspctl,pydrun<stat < operator >ydrunpctl Multi-year daily running percentiles ydrunpctl,p,nts ifile1 ifile2 ifile3 ofile Correlation and co. fldcor Correlation in grid space fldcor ifile1 ifile2 ofile timcor Correlation over time timcor ifile1 ifile2 ofile fldcovar Covariance in grid space fldcovar ifile1 ifile2 ofile timcovar Covariance over time timcovar ifile1 ifile2 ofile Regression

regres	Regression	
regres ifile of	ile	
detrend	Detrend	
detrend ifile ofile		
trend	Trend	
trend ifile ofile1 ofile2		
subtrend	Subtract trend	
subtrend ifile1 ifile2 ifile3 ofile		

EOFs

Calculate EOFs in spatial or time space	
Calculate EOFs in time space	
Calculate EOFs in spatial space	
Calculate 3-Dimensional EOFs in time space	
<pre><operator>,neof ifile ofile1 ofile2</operator></pre>	
Calculate principal coefficients of EOFs	
ifile2 obase	

Interpolation

> Yearly statistical values	remapbil	Bilinear interpolation
> ifile ofile	remapbic	Bicubic interpolation
	remapdis	Distance-weighted average remapping
Yearly percentiles	remapnn	Nearest neighbor remapping
ifile1 ifile2 ifile3 ofile	remapcon	First order conservative remapping
Seasonal statistical values	remapcon2	Second order conservative remapping
> ifile ofile	remaplaf	Largest area fraction remapping
	<pre>< operator > ,gric</pre>	d ifile ofile
Seasonal percentiles	genbil	Generate bilinear interpolation weights
ifile1 ifile2 ifile3 ofile	genbic	Generate bicubic interpolation weights
t> Multi-year hourly statistical values	gendis	Generate distance-weighted average remap weights
> ifile ofile	gennn	Generate nearest neighbor remap weights
	gencon	Generate 1st order conservative remap weights
> Multi-year daily statistical values	gencon2	Generate 2nd order conservative remap weights
> ifile ofile	genlaf	Generate largest area fraction remap weights
Multi-year daily percentiles	<pre>< operator > ,gric</pre>	
offile1 ifile2 ifile3 ofile		
	remap	SCRIP grid remapping
t > Multi-year monthly statistical values	remap,grid,weig	ghts ifile ofile
> ifile ofile	remapeta	Remap vertical hybrid level
Multi-year monthly percentiles		oro ifile ofile
p ifile1 ifile2 ifile3 ofile		
Multi annu annual atatistical anlua	ml2pl	Model to pressure level interpolation
Multi-year seasonal statistical values	ml2pl,plevels if	
> ifile ofile	ml2hl	Model to height level interpolation
Multi-year seasonal percentiles	ml2hl,hlevels if	ile ofile
pifile1 ifile2 ifile3 ofile	intlevel	Linear level interpolation
ut> Multi-year daily running statistical values	intlevel, levels in	file ofile
>,nts ifile ofile	intlevel3d	Linear level interpolation onto a 3d vertical coordin
,	intlevelsd	like intlevel3d but with extrapolation
Multi-year daily running percentiles		ordinate ifile1 ifile2 ofile
p,nts ifile1 ifile2 ifile3 ofile	<pre><pre><pre>operator >,1coo</pre></pre></pre>	ordinate fiffer fiffez office

Interpolation between timesteps inttime,date,time[,inc] ifile ofile Interpolation between timesteps intntime

,	
intyear	Interpolation between two years
introor ware it	file1 ifile2 obace

Spectral to gridpoint

Gridpoint to spectral

Transformation

sp2gp

sp2gpl

gp2sp

intntime.n ifile ofile

gp2spl	Gridpoint to spectral (linear)	
<pre><operator> ifile ofile</operator></pre>		
sp2sp	Spectral to spectral	
sp2sp,trunc ifile ofile		
dv2uv	Divergence and vorticity to U and V wind	
dv2uvl	Divergence and vorticity to U and V wind (linear)	
uv2dv	U and V wind to divergence and vorticity	
uv2dvl	II and V wind to divergence and vorticity (linear)	

Spectral to gridpoint (linear)

dv2uv	Divergence and vorticity to U and V wind
dv2uvl	Divergence and vorticity to U and V wind (linear)
uv2dv	U and V wind to divergence and vorticity
uv2dvl	U and V wind to divergence and vorticity (linear)
dv2ps	D and V to velocity potential and stream function
<pre><operator> ifi</operator></pre>	le ofile

Import/Export

import_binary	Import binary data sets	
import_binary ifile ofile		
$import_cmsaf$	Import CM-SAF HDF5 files	
import_cmsaf ifile ofile		
	T AMED 1: 01	
$import_amsr$	Import AMSR binary files	
import_amsr ifile ofile		
input	ASCII input	
•		
input,grid ofile		
inputsrv	SERVICE ASCII input	
inputext	EXTRA ASCII input	
<pre><operator> ofile</operator></pre>		

con.wgs.final, file of ite			
outputf outputed outputed outputed outputed outputed outputed outputed SERVICE ASCII output SECALOR Consecutive dry days index per time period sea.catl Consecutive summer days index per time period sea.catl Consecutive wer days index per time period sea.catl Consecutive wer days index per time period sea.catl I it offile SECALOR (Sites offile offile SECALO	_	ASCII output	
outputsty outputsty SERVICE ASCII output SERVICE ASCII output SERVICE ASCII output Consecutive dry days index per time period exacted			hurr ifile ofile
outputs outputs EXTRA ASCII output outputs EXTRA ASCII output Ascillaneous Miscellaneous Mis	•		
outputexy SERVICE ASCII output			
## Consecutive dry days index per time period ecacdd. Consecutive frost days index per time period ecacdd. Consecutive summer days index per time period ecacdd. Cold wave with save than summer days index per time period ecacdd. Cold wave with save than summer days index per time period ecacdd. Cold wave with save than summer days index per time period ecacdd. Cold wave with save than summer days index pe		U 1	
Canada Consecutive dry days index per time period ecanded Consecutive dry days index per time period ecanded Consecutive fort days index per time pe			Climate indices
cadd Consecutive wet days index per time period caed fill of ills caed ca	-	•	eca_cdd Consecutive dry days index per time period
gradedeal GrADS data descriptor file (version I GRB man) coperator > file (version 2 GRB man) coperator > file of ile version coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man) coperator > file of ile version 2 GRB man)	<pre><pre><pre>coperator > 111</pre></pre></pre>	1100	
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Miscellaneous GrADS data descriptor file (version 2 GRIB map) gradeded 2 GrADS data descriptor file (version 2 GRIB map) gradeded 2 GrADS data descriptor file (version 2 GRIB map) Graded version 2 Graded versio			The state of the s
gradades GrADS data descriptor file (version I GRIB map)	Miscellaneous	8	
canced Consecutive wet days index per time period			
Consecutive wet days makes per time period eca.cwd Recard Re			eca_csu[,T] ifile ofile
Dandpass Bandpass filtering Dandpass, min, max first of the bandpass, min, max first of the bandpass, min, max first of the bandpass, min, max first of the lowpass Lowpass filtering Dowpass Lowpass filtring Lowpass filtring Lowpass filtring	~	- \	eca_cwd Consecutive wet days index per time period
bandpass, finin, finax if ile of ile lowpass Loopass filtering lowpass Loopass filtering lowpass Loopass filtering lowpass Loopass filtering lowpass, finin, filte of ile lighpass filtering lighpass filte			eca_cwd[,R] ifile ofile
concept Cold-spass International periods	-		eca_cwdi Cold wave duration index wrt mean of reference pe
lowpass_fmax fifle of fife			
highpass, finitile offile gridarea Grid cell area gridweights Grid cell weights coperators 'ifile offile smooth9 grib in smoothing smooth) if it offile setvals Set list of old values to new values setvals. Odval.newval	•		coa cwfi Cold enall days index wrt 10th percentile of referen
Second S			
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eca_tr	Tropical nights index per time period	
$eca_{tr}[,T]$ ifile	ofile	
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