

***Output parameter list for REMO-UBA Datastream3
performed as data base additionally provided
by Service Group Adaptation (SGA).
BMBF funding priority:
“Research for Climate Protection and Protection from Climate Impacts”***

General information:

The regional model variables are calculated as **two-dimensional near surface fields** and **three dimensional soil and atmospheric fields**, respectively. The soil fields are simulated on 5 different levels with a maximum depth of about 10 meters. See CERA data base for more details. The atmospheric fields are given on 3 pressure levels (200, 500 and 850 hPa). The time interval of the output fields ranges from 1 to 6 hours and includes daily output fields, depending on the respective variables.

The REMO-UBA model output is provided as timeseries via the CERA data base in **two different data streams**:

Data stream 2 (DS2) is given on the rotated grid with 0.088° spatial resolution, the original model output format of REMO is IEG.

Data stream 3 (DS3) is projected onto a regular geographical grid with a spacing of 0.1°.

The output data format of the data stream 3 of REMO-UBA regional model data is netCDF.

The transformation from DS2 to DS3 has been performed with either **bilinear interpolation or via the nearest neighbour method** where necessary. The respective method is indicated in the CERA data base.

Note:
None of the DS3-parameters has been corrected for topographical differences between the two grids which are due to interpolation.

Important for data stream 3 only:

In addition to the model output parameters at the given time interval, some post processed values are provided via the CERA data base:

These additional values are some statistics on daily, monthly or yearly basis for a subset of model parameters.

On top of that, a set of useful climate parameters has been deduced during post processing.

Access to the **data, marked in yellow**, is only possible after sending an email to remo-daten@dkrz.de with a short explanation of the intended use. Please choose the subject '**DS3, blocked variables**' for your email.

output-filenr. cf- long name	parameter name in REMO	code number for CERA	MKS Units	output interval DS3	daily values, DS3	monthly values, DS3	yearly values, DS3	
m = mean over output interval x = mean * = sum A = number + = absolute maximum - = absolute minimum yellow: access on request								
Near surface fields DS3								
c	U-component of 10m wind	U10	m/s	1hm	x	x		
c	V-component of 10m wind	V10	m/s	1hm	x	x		
d	maximum of the expected gust velocity near the surface	VBM10M	m/s	1h	x+	x+	x+	
b	snowfall (mm --> kg/m**2)	APRS	kg/m ²	1hc	*	*	*	(mm/h=kg/m**2 , for water)
	surface runoff (calculated as a difference from code 160 and code 53, 160-53)	RUNOFF_S	kg/m ²	1hc	*	*	*	(mm/h=kg/m**2 , for water)
b	surface temperature	TS	K	1h	x	x	x	
c	2m temperature	TEMP2	K	1hm	x	x	x	
c	2m dew point temperature	DEW2	K	1hm	x	x	x	
c	mean sea level pressure	PSRED	Pa	1h	x	x		
c	total cloud cover	ACLCV	1	1h	x	x		
c	surface net shortwave radiation	SRADS	W/m ²	1hm	x	x	x	
c	surface net longwave radiation	TRADS	W/m ²	1hm	x	x	x	
d	surface solar radiation upward	SRADSU	W/m ²	1h	x	x		
d	surface thermal radiation upward	TRADSU	W/m ²	1h	x	x		
c	net shortwave radiation (at model top)	SRAD0	W/m ²	1hm	x	x	x	
c	outgoing longwave radiation (at model top)	TRAD0	W/m ²	1hm	x	x	x	
d	surface latent heat flux	BFLQDS	W/m ²	1hm	x	x	x	
d	surface sensible heat flux	BFLHS	W/m ²	1hm	x	x	x	
c	evaporation (mm --> kg/m**2)	EVAP	kg/m ²	1hc	*	*	*	
c	surface albedo	ALBEDO	1	1h	x	x	x	
c	surface albedo	ALBEDO_N	1	1h	x	x	x	data transformation via nearest neighbour method
b	snow depth	SN	m	1h	x	x		data transformation via nearest neighbour method
d	snow depth change (mm --> kg/m**2)	DSNAC	kg/m ²	1hc	x	x		data transformation via nearest neighbour method
	2m maximum temperature	T2MAX	K	1h	+	x+		
	2m minimum temperature	T2MIN	K	1h	-	x-		
d	surface maximum temperature	TSMAX	K	1h	+	x+		
d	surface minimum temperature	TSMIN	K	1h	-	x-		
a	subsurface runoff amount (drainage)	DRAIN	kg/m ²	1hc	*	*	*	(mm/h=kg/m**2 , for water)

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Soil fields DS3									
a	snow temperature	TSN	206	K	1h	x	x	x	mean only over snow events(SN GE 0.01); number of days with snow depth will be counted (snow_cov), data transformation
a	soil temperature (1.layer)	TD3	207	K	1h	x	x	x	
a	soil temperature (1.layer)	TD3_N	207	K	1h	x	x	x	data transformation via nearest neighbour method
a	soil temperature (2.layer)	TD4	208	K	1h	x	x	x	
a	soil temperature (2.layer)	TD4_N	208	K	1h	x	x	x	data transformation via nearest neighbour method
d	soil Temperature(3.layer)	TD5	209	K	1h	x	x	x	
d	soil Temperature(3.layer)	TD5_N	209	K	1h	x	x	x	data transformation via nearest neighbour method
d	soil temperature (4.layer)	TD	170	K	1h	x	x	x	
d	soil temperature (4.layer)	TD_N	170	K	1h	x	x	x	data transformation via nearest neighbour method
d	soil Temperature (5.layer)	TDCL	183	K	1h	x	x	x	
d	soil Temperature (5.layer)	TDCL_N	183	K	1h	x	x	x	data transformation via nearest neighbour method
d	skin reservoir content	WL	194	m	1h	x	x	x	
c	soil water content	WS	140	m	1h	x	x	x	
Fields on selected pressure levels DS3 200, 500, 850 hpa									
p	geopotential (gpm--> m**2/s**2)	FI	156	m ² /s ²	6h	x	x		
p	temperature	T	130	K	6h	x	x		
p	U-component of wind	U	131	m/s	6h	x	x		
p	V-component of wind	V	132	m/s	6h	x	x		
p	relative humidity	REL_HUM	157	%	6h	x	x		
p	specific humidity	QD	133	kg/kg	6h	x	x		
Constant or slowly varying fields DS3									
	vegetation area fraction	VGRAT	198	1	d		x		daily: interpolated cycle of the year based on monthly mean values
	vegetation area fraction	VGRAT_N	198	1	d		x		data transformation via nearest neighbour method
	forest area fraction	FOREST	212	1	f				
	forest area fraction	FOREST_N	212	1	f				data transformation via nearest neighbour method
	leaf area index	VLT	200	1	d		x		daily: interpolated cycle of the year based on monthly mean values
	leaf area index	VLT_N	200	1	d		x		data transformation via nearest neighbour method

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Constant or slowly varying fields DS3									
surface height	FIB	129	m	f					
surface height	FIB_N	129	m	f					data transformation via nearest neighbour method
surface background albedo	ALB	174	Pa	d		x			daily: interpolated cycle of the year based on monthly mean values
surface background albedo	ALB_N	174	Pa	d		x			data transformation via nearest neighbour method
surface roughness length (m--> m**2/s**2)	AZ0	173	m ² /s ²	f					
surface roughness length (m--> m**2/s**2)	AZ0_N	173	m ² /s ²	f					data transformation via nearest neighbour method
land-sea fraction	BLA	172	1	f					
land-sea fraction	BLA_N	172	1	f					data transformation via nearest neighbour method
soil type (FAO)	FAO_N	226	1	f					data transformation via nearest neighbour method
field capacity of soil	WSMX	229	1	f					
field capacity of soil	WSMX_N	229	1	f					data transformation via nearest neighbour method
area of gridbox	BOX_AREA	999017	m ²	f					
latitude	PHI	614	deg	f					
longitude	RLA	615	deg	f					
only DS3 (additional post processed values)									
total precipitation	PRECIP_TOT	999005	kg/m ²	1h	*	*	*		precip_tot=(rain_con + rain_gsp)
wind speed	WIND_SPEED	171	m/s	1h	x	x	x		
wind direction	WIND_DIR	999007	Grad	1h					mean wind direction
relative humidity	REL_HUM	999008	1	1h	x	x	x		
number of days with snowfall	SNOW_DAYS	999010	no.				A	A	precipitation is only snow,
number of days with total precipitation at least 1kg/m ²	RR1MM	999011	no.				A	A	(precip_tot .ge. 1mm/Tag)
number of days with tmin_2m below 0 °C	FD	999012	no.				A	A	(tmin_2m < 0°)
number of days with tmax_2m above 25 °C	SU	999013	no.				A	A	(tmax_2m > 25°C)
number of days with tmin_2m above 20 °C	TR	999014	no.				A	A	(tmin_2m > 20°C)
number of days with total precipitation at least 10 kg/m ²	R10MM	999015	no.				A	A	(sum of precip_tot > 10mm/day for 24h)
number of days with total precipitation at least 20 kg/m ²	R20MM	999016	no.				A	A	(sum of precip_tot > 20mm/day for 24h)
number of days with snowcover	SNOW_COV	999021	no.				A	A	SN GE 0.01, counter for the mean of surface_temperature_where_snow
number of days with tmax_2m below 0 °C	ID	999022	no.				A	A	(tmax_2m < 0°)