

Xoregobs.txt

The file is used for introducing time series of output region variables into the model. The time series are observations used for evaluation of the model, e.g. rgrswe snow water equivalent.

The file is located in the `modeldir` folder. File should include a continuous time period of values for each time step, which doesn't need to cover the whole simulation time period. Missing values should be given as -9999.

The first row is a comment row which is skipped when reading the file. The second row gives the variable names. For the first column, the date column, the name "date" can be used (no name may not be omitted). The third row gives which output region (outregid in [Outregions.txt](#)) the column's data is given for. The date column may in this case belong to subbasin 0 (may not be omitted). The first column is date in format yyyy-mm-dd [HH:MM]. If set in [info.txt](#) that matlab-format should be read (readformat 1) the date format is yyyyymmdd[HHMM]. Second to last columns are data columns.

Observation variables that can be given in *Xobs.txt* are tabled below. They are a selection of the HYPE variables. The outregion version of the variables can be given in *Xoregobs.txt* by extending the name of the variable with 'rg' in the beginning (e.g. rswe correspond to outregion variable rgrswe). Some regional variables may give result that is (e.g. rgwstr).

Column # refers to the column in HYPE variable table for the corresponding subbasin variabel.

Column **Value** indicates the type of value of the variables. The type determines how the variable is treated when asked for as an output variable or in a criterion calculation. The meanperiod of the output/criterion determines the period over which the variables values will be accumulated. They will be averaged, weight-averaged or summed according to the type of value. Similarly variable values in *Xobs.txt* represent either averages, weighted averages, or sums over the timestep.

#	Variable ID	Unit	Description	Value	Reference area
5	rswe	mm	observed snow water equivalent, provided in Xobs.txt	Avg.	subbasin land area
6	rsnw	cm	observed snow depth, provided in Xobs.txt	Avg.	subbasin land area
27	resf	cm	observed frost depth, provided in Xobs.txt	Avg.	subbasin land area
28	regw	m	observed groundwater level, provided in Xobs.txt	Avg.	subbasin land area
39	rfsc	-	recorded fractional snow cover area, provided in Xobs.txt	Avg.	subbasin land area
41	rfse	-	recorded fractional snow cover area error, provided in Xobs.txt	Avg.	subbasin land area
42	rfsm	-	recorded fractional snow cover multi, provided in Xobs.txt ?	Avg.	subbasin land area
43	rfme	-	recorded fractional snow cover multi error, provided in Xobs.txt	Avg.	subbasin land area
45	wstr	m	observed water level olake, provided in Xobs.txt	Avg.	outlet lake area

#	Variable ID	Unit	Description	Value	Reference area
56	rinf	m^3/s	observed (derived) flow (including P-E) to olake, provided in Xobs.txt	Avg.	subbasin upstream area
69	roli	cm	recorded olake ice depth, provided in Xobs.txt	Avg.	outlet lake area
70	rili	cm	recorded ilake ice depth, provided in Xobs.txt	Avg.	internal lake area
71	rolb	cm	recorded olake blackice depth, provided in Xobs.txt	Avg.	outlet lake area
72	rilb	cm	recorded ilake blackice depth, provided in Xobs.txt	Avg.	internal lake area
73	rols	cm	recorded olake snow depth, provided in Xobs.txt	Avg.	outlet lake area
74	rils	cm	recorded ilake snow depth, provided in Xobs.txt	Avg.	internal lake area
81	rmri	cm	recorded main river ice depth, provided in Xobs.txt	Avg.	main river area
82	rlri	cm	recorded local river ice depth, provided in Xobs.txt	Avg.	local river area
83	rmrb	cm	recorded main river blackice depth, provided in Xobs.txt	Avg.	main river area
84	rlrb	cm	recorded local river blackice depth, provided in Xobs.txt	Avg.	local river area
85	rmrs	cm	recorded main river snow depth, provided in Xobs.txt	Avg.	main river area
86	rlrs	cm	recorded local river snow depth, provided in Xobs.txt	Avg.	local river area
97	rolt	°C	recorded olake surface temperature, provided in Xobs.txt	Avg.	outlet lake area
98	rilt	°C	recorded ilake surface temperature, provided in Xobs.txt	Avg.	internal lake area
99	rmrt	°C	recorded main river surface temperature, provided in Xobs.txt	Avg.	main river area
112	xom0..9	<i>depends on variable type</i>	optional, not predefined variable (averaged over output time interval) provided in Xobs.txt or XobsXOMn.txt	Avg.	depends on variable type
115	rgmb	mm	recorded glacier mass balance, provided in Xobs.txt	Avg.	specific glacier area
117	rgma	km^2	area used in recorded mass balance, provided in Xobs.txt	Avg.	specific glacier area
118	rgmp	days	recorded mass balance period, provided in Xobs.txt	Avg.	none
119	S105	-	recorded (FSUHSS) snow cover surrounding terrain open (fraction from 0 to 10), provided in Xobs.txt	Avg.	area of non-forest land cover
120	S106	-	recorded (FSUHSS) snow cover course open (fraction from 0 to 10), provided in Xobs.txt	Avg.	area of non-forest land cover
121	S108	cm	recorded (FSUHSS) mean depth open, provided in Xobs.txt	Avg.	area of non-forest land cover

#	Variable ID	Unit	Description	Value	Reference area
122	S111	g/cm^3	recorded (FSUHSS) mean density open, provided in Xobs.txt	Avg.	area of non-forest land cover
123	S114	mm	recorded (FSUHSS) snow water equivalent open, provided in Xobs.txt	Avg.	area of forest land cover
124	S205	-	recorded (FSUHSS) snow cover surrounding terrain forest (fraction from 0 to 10), provided in Xobs.txt	Avg.	area of forest land cover
125	S206	-	recorded (FSUHSS) snow cover course forest (fraction from 0 to 10), provided in Xobs.txt	Avg.	area of forest land cover
126	S208	cm	recorded (FSUHSS) mean depth forest, provided in Xobs.txt	Avg.	area of forest land cover
127	S211	g/cm^3	recorded (FSUHSS) mean density forest, provided in Xobs.txt	Avg.	area of forest land cover
128	S214	mm	recorded (FSUHSS) snow water equivalent forest, provided in Xobs.txt	Avg.	area of forest land cover
143	reT1	undefined	observed concentration of stable water isotope tracer in outflow from olake/subbasin, unit dependent on unit in user-provided precipitation concentration of cpT1, typically ‰ deviation from V-SMOW, provided in Xobs.txt	W. Avg.	subbasin upstream area
144	reT2	°C	observed water temperature in outflow from olake/subbasin, provided in Xobs.txt	W. Avg.	subbasin upstream area
146	reIN, reON, reSP, rePP, reTN, reTP	$\mu g/L$	observed concentration of N and P species in outflow from olake/subbasin, provided in Xobs.txt	W. Avg.	subbasin upstream area
147	cpT1	undefined	observed concentration of stable water isotopes in precipitation, unit user-provided, typically ‰ deviation from V-SMOW, provided in Xobs.txt	W. Avg.	subbasin area
160	reOC	mg/L	observed OC concentration in outflow from olake/subbasin, provided in Xobs.txt	W. Avg.	subbasin upstream area
169	repo	mm/[timestep]	observed potential evapotranspiration, provided in Xobs.txt	Sum	subbasin area
170	eobs	mm/[timestep]	observed evapotranspiration, provided in Xobs.txt	Sum	subbasin area
175	rrun	mm/[timestep]	observed local runoff from soil, provided in Xobs.txt	Sum	subbasin land area
193	xos0..9	depends on variable	optional, not predefined variable (summed over output time interval) provided in Xobs.txt or XobsXOSn.txt	Sum	depends on variable

#	Variable ID	Unit	Description	Value	Reference area
202	cpIN	$\mu\text{g/L}$	observed concentration of inorganic nitrogen in precipitation, provided in Xobs.txt	W. Avg.	subbasin area
203	cpSP	$\mu\text{g/L}$	observed concentration of soluble phosphorus in precipitation, provided in Xobs.txt	W. Avg.	subbasin area
263	roum	m^3/s	observed outflow from olake outlet 1	Avg.	subbasin upstream area
264	roub	m^3/s	observed outflow from olake outlet 2	Avg.	subbasin upstream area