

## Global parameters used in ELM

Modifications to the numeric values in column C may be made in this Worksheet:

those values and (minimal) supporting documentation are mirrored in the GlobalParms Worksheet, with the GlobalParms worksheet exported as tab-delimited text for ELM, and/or Publish/Subscribe for Stella GEM

	Parameter name	ChosenValue	Units	DefaultValue	Def&Chosen	Brief documentation	Extended documentation
1	SOLOMEGA=	0.03259	dimless	0.03259		***empirical constant used in solar radiation, don't change from 0.03259	
2	ALTIT=	1.0	m	1.0		***regional altitude	
3	LATDEG=	26.00	deg.min	26.00		***regional latitude (degrees.minutes, don't convert min to decimal deg)	
4	DATUM_DISTANCE=	6.0	m	6.0		***distance (m below NGVD'29) to base datum	
5	HYD_IC_SFWAT=	0.0	m	0.0		***surf water depth added to ICwater depth map (+-m)	
6	HYD_IC_UNSATZ=	0.0	m	0.0		***depth of unsat zone added to ICunsat depth map (+-m)	
7	DetentZ=	0.01	m	0.01		***detention depth	
8	MinCheck=	0.0001	m	0.0001		***small threshold number, usually to check that depths do not exceed it	
9	HYD_ICUNSATMOIST=	1.0	dimless	1		***initial condition of the moisture proportion in the unsaturated zone.	
10	HYD_RCRechG=	0.0	m/d	0		***Rate of recharging of the aquifer below the base datum (loss from model system).	
11	HYD_PAN_K=	1.0	dimless	1		***Pan evaporation coefficient.	Used here only as calibration parameter for surface water evap, and a component of the plant transpiration.
1	ALG_IC_MULT=	1.0	dimless	1.0		***algal init-cond multiplier	
2	ALG_REF_MULT=	0.01	dimless	0.01		***algal refuge level multiplier	
3	ALG_SHADE_FACTOR=	1.0	dimless	1.0		***calibration parm to modify LAI in shading fcn	
4	alg_light_ext_coef=	0.005	dimless	0.005		***light extinction parameter, currently used to fully define (statically) extinction	
5	ALG_LIGHT_SAT=	550	cal/cm <sup>2</sup> /d	550		***Saturating light intensity for algal photosyn (langley/d = cal/cm <sup>2</sup> per day)	
6	algMortDepth=	0.05	m	0.05		***depth of unsat zone, below which the "dry" alg mort occurs	
7	ALG_RC_MORT_DRY=	0.005	1/d	0.005		***Mortality rate of benthic algae when surface water has evaporated.	Shift from normal mortality to dessication related mortality when water disappears.
8	ALG_RC_MORT=	0.001	1/d	0.001		***Specific rate of algal mortality. Note that this is in the presence of water.	
9	ALG_RC_PROD=	0.5	1/d	0.5		***Maximum specific rate of algal gross primary production.	
10	ALG_RC_RESP=	0.0005	1/d	0.0005		***Max specific rate of algal respiration.	
11	alg_R_accel=	1.0	dimless	1.0		***acceleration of rate of respiration	
12	AlgComp=	2.0	dimless	2.0		***algal density-dep competition	
13	NC_ALG_KS_P=	0.10	mg/L	0.10		***half-saturation conc of avail P, non-calc periph	This KsP for periphyton was developed from L. Scinto's dissertation
14	C_ALG_KS_P=	0.05	mg/L	0.05		***half-saturation conc of avail P, calcareous periph	
15	C_ALG_threshTP=	0.02	mg/L	0.02		***TP conc above which calcareous periph have elevated respiration	
16	alg_uptake_coef=	3	dimless	3		***parameter for exp function	
17	alg_alkP_min=	0.1	dimless	0.1		***proportion	
18	ALG_TEMP_OPT=	33	deg C	33		***Optimal temperature for algal primary production (degrees C). Also used in respiration control.	
19	ALG_C_TO_OM=	0.48	dimless	0.48		***Mass ratio of organic carbon to total organic material in algae (ash free dry weight).	
20	ALG_NC=	0.15	dimless	0.15		***Initial nitrogen:carbon ratio in all algae/periphyton (not implemented)	
21	ALG_PC=	0.003	dimless	0.003		***Initial phosphorus:carbon ratio in all algae/periphyton	
1	DOM_RCDECOMP=	0.001	1/d	0.001		***Maximum specific rate of organic matter decomposition.	C:N:P substrate. Used in Floc and DepOM decomp processes.
2	DOM_DECOMPRED=	0.3	dimless	0.3		*** anaerobic conditions, reduce the max rate of aerobic decomposition by this proportion.	NOT a rate constant, but a <1.0 proportion
3	DOM_DECOMP_POPT=	0.35	mg/L	0.35		***Optimal phosphorus water concentration for maximum rate of decomposition.	Used in function for both suspended and deposited organic matter.
4	DOM_C_OM_OPT=	0.15	dimless	0.15		***	
5	DOM_DECOMP_TOPT=	33	deg C	33		***Optimal temperature for maximum rate of decomposition of organic material.	Used in function for both floc and deposited organic matter.
6	DOM_decomp_coef=	3	dimless	3		***parameter for exp function	
7	sorbToTP=	0.01	dimless	0.01		***init cond. only, the ratio of sorbed P to TP in soil	
1	MAC_IC_MULT=	0.5	dimless	0.5		***macrophyte init-cond multiplier	
2	MAC_LITTERSEAS=	1.0	NI	1.0		***not implemented	
3	MAC_REFUG_MULT=	0.01	dimless	0.01		***macrophyte refuge level multiplier	
4	mann_height_coef=	0.15	dimless	0.15		***	
5	mac_uptake_coef=	3	dimless	3		***parameter for exp function	
1	Floc_BD=	20	mg/cm <sup>3</sup>	20		***bulk density of floc layer (mg/cm <sup>3</sup> == kg/m <sup>3</sup> )	
2	FlocMax=	0.1	m	0.1		***max floc depth	
3	TP_P_OM=	0.012	gP/gOM	0.012		***P:OM of particulate phosphorus	1:40 P:C * 0.48 C:OM
4	Floc_rcSoil=	0.01	1/d	0.01		***rate of incorporation of floc layer into flooded soil	
1	STDET_IC_MULT=	0.05	dimless	0.05		***standing detritus init-cond multiplier	
2	STDET_REF_MULT=	0.01	dimless	0.01		***standing detritus refuge level multiplier	
3	StDetLos=	0.05	1/d	0.05		***standing detritus base loss rate	
1	TP_DIFFCOEF=	0.0000088	cm <sup>2</sup> /sec	0.0000088		***Phosphorus molecular (surface-soil) diffusion coefficient.	Provide the data in cm <sup>2</sup> /sec, but will later be converted as below (cm <sup>2</sup> /sec * 86,400 sec/d * 1.0E-4 m <sup>2</sup> /cm <sup>2</sup> = m <sup>2</sup> /d)
2	TP_DIFFDEPTH=	0.1	m	0.1		***depth of surface-soil water diffusion zone	
3	TP_IN_RAIN=	0.02	mg/L	0.02		***TP concentration in rainfall (switching to 0.10 for ELMv2.2)	
4	TP_ICSFWAT=	0.01	mg/L	0.01		***initial TP concentration, surface water	
5	TP_ICSEDWAT=	0.001	mg/L	0.001		***initial TP concentration, soil pore water	
6	TP_K_INTER=	40	mg/L	40		***intercept for Freundlich sorption eqn	
7	TP_K_SLOPE=	-300	dimless	-300		***slope for Freundlich sorption eqn	
8	PO4toTP=	0.54	dimless	0.54		***slope of regression of predicting PO4 from TP (from observed data, north glades)	
9	PO4toTPint=	-0.003	mg/l	-0.003		***intercept of regression of predicting PO4 from TP (from observed data, north glades)	
10	TPpart_thresh=	0.1	mg/L	0.1		***TP conc used for predicting particulate P for settling	
11	settlVel=	0.4	m/d	0.4		***ELM (NOT EWQM/ESP) mean settling velocity of particulate P	
12	WQMthresh=	0.01	m	0.15	diff	***EWQM implement: water depth threshold below which settling stops (EWQM used 0.15m)	

1	DIN_DIFFCOEF=	0.0000198	NI	diff	***not implemented
2	DIN_DIFFDEPTH=	0.01	NI	diff	***not implemented
3	DIN_IN_RAIN=	0.45	NI	diff	***not implemented
4	DIN_ICSWAT=	0.1	NI	diff	***not implemented
5	DIN_ICSEDWAT=	0.1	NI	diff	***not implemented
6	DIN_K_OF_NH4=	0.75	NI	diff	***not implemented
7	DIN_RCDENIT=	0.03	NI	diff	***not implemented
1	FIRE_HEAT_FOR_IGNIT=	2	NI	diff	***not implemented
2	FIRE_PROP_THRESH=	1	NI	diff	***not implemented
1	CONS_IC_MULT=	0	NI		***not implemented
2	CONS_ASSIM=	0.25	NI	diff	***not implemented
3	CONS_C_TO_OM=	0.35	NI	diff	***not implemented
4	CONS_MAX=	2	NI	diff	***not implemented
5	CONS_NC=	0.01	NI	diff	***not implemented
6	CONS_PC=	0.005	NI	diff	***not implemented
7	CONS_RC_INGEST=	0	NI		***not implemented
8	CONS_RC_MORT=	0	NI		***not implemented
9	CONS_RC_RESP=	0	NI		***not implemented
10	CONS_T_OPT=	33	NI	diff	***not implemented
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