Metabolism work flow

2/2/2024

* Merged DO observed, water temp, air pressure, and PAR into one data file
* Converted pressure to bars
* Made every NA in pressure column = 972.065 as calculated using calc\_airpressure function through streamMetabolizer

2/22/2014

* Filling in data gaps: In 2014/2015/2016/2017/2018 taking the average of hourly data to interpolate depth data at 15-min increments, not filling in any data gaps larger than a week

###taking hourly depth data to fill in 15 min gaps (NAs) by averaging the above and below values

#interpolate, where maxgap sets a week as the maximum gap to fill

DO\_18$depth\_interp <- na.approx(DO\_18$depth, maxgap = 2520 )

* Alicia bayes specs: K600 at QP is correlated with discharge, so using streamMetabolizer specs--

# hyperparameters for hierarchical K600 - normal

K600\_daily\_meanlog\_meanlog = log(12),

K600\_daily\_meanlog\_sdlog = 1.32,

# hyperparameters for hierarchical K600 - linear. defaults should be

# reasonably constrained, not too wide

lnK600\_lnQ\_intercept\_mu = 2,

lnK600\_lnQ\_intercept\_sigma = 2.4,

lnK600\_lnQ\_slope\_mu = 0,

lnK600\_lnQ\_slope\_sigma = 0.5,

K600\_daily\_sdlog\_sigma = switch(mm\_parse\_name(model\_name)$pool\_K600, normal=0.05, NA),

VERBOSE=FALSE as listed in default settings

* Final product for specs:

# ALICIA sM model specs

bayes\_name <- mm\_name(type='bayes', pool\_K600='normal',

err\_obs\_iid=TRUE, err\_proc\_iid=TRUE)

bayes\_specs <- specs(bayes\_name,

burnin\_steps = 1000,

saved\_steps = 1000,

K600\_daily\_meanlog\_meanlog = 1.07918124605,

K600\_daily\_meanlog\_sdlog = 1.32,

K600\_daily\_sdlog\_sigma = 0.5,

n\_cores=4, verbose=FALSE)

2/23/24

* Switching bayes specs back to actual default but with burnin steps at 1000
* Default:
* > bayes\_specs <- specs(bayes\_name)
* > bayes\_specs
* Model specifications:
* model\_name b\_Kn\_oipi\_tr\_plrckm.stan
* engine stan
* split\_dates FALSE
* keep\_mcmcs TRUE
* keep\_mcmc\_data TRUE
* day\_start 4
* day\_end 28
* day\_tests full\_day, even\_timesteps, complete\_data, pos\_discharge, pos\_depth
* required\_timestep NA
* GPP\_daily\_mu 3.1
* GPP\_daily\_lower -Inf
* GPP\_daily\_sigma 6
* ER\_daily\_mu -7.1
* ER\_daily\_upper Inf
* ER\_daily\_sigma 7.1
* K600\_daily\_meanlog\_meanlog 2.484906649788
* K600\_daily\_meanlog\_sdlog 1.32
* K600\_daily\_sdlog\_sigma 0.05
* err\_obs\_iid\_sigma\_scale 0.03
* err\_proc\_iid\_sigma\_scale 5
* params\_in GPP\_daily\_mu, GPP\_daily\_lower, GPP\_daily\_sigma, ER\_daily\_mu, ER\_dai...
* params\_out GPP, ER, DO\_R2, GPP\_daily, ER\_daily, K600\_daily, K600\_daily\_predlog...
* n\_chains 4
* n\_cores 4
* burnin\_steps 500
* saved\_steps 500
* thin\_steps 1
* verbose FALSE
* My specs:

#Alicia specs modified with more burnin steps and with default values

bayes\_specs <- specs(bayes\_name,

burnin\_steps = 1000,

saved\_steps = 1000,

K600\_daily\_meanlog\_meanlog = 2.484906649788,

K600\_daily\_meanlog\_sdlog = 1.32,

K600\_daily\_sdlog\_sigma = 0.5,

n\_cores=4, verbose=FALSE)