

## Pelletier, Greg (ECY)

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**From:** Robert Ambrose [bobambrosejr@gmail.com]  
**Sent:** Wednesday, June 08, 2011 9:17 AM  
**To:** Pelletier, Greg (ECY)  
**Cc:** Sackmann, Brandon (ECY); Ahmed, Anise (ECY)  
**Subject:** Re: base 16 time series charts are online  
**Attachments:** base17.xls

Greg, I've finished up my analysis of base16, though I can certainly do more with these if you want. I'm attaching my base17 spreadsheet with recommendations on the two base runs and the sensitivity runs. For efficiency, why don't you look over the recommendations, along with the RMSE stats and then tell me if you want further analysis of base16. And, of course, these are only recommendations, and you should feel free to modify them based on your analysis of the results.

I'm recommending two base runs here, one with anc=0.10, the other with anc=0.12. Otherwise, the base parameter values and sensitivity variations are the same. See the table summary below. Base17a is derived from base16a, with tweaks as discussed in earlier emails. Base17b is a combination of base16b and base17a.

I'm hoping that with these two base17 recommendations, we can get close to our chosen calibration in the next series, or at most in the one after that.

FYI, for base16, I've used 6.25 hours, bringing the total cumulative to 45.75, leaving 30.25.

Bob

Parameters	Simulation Series			
	17a		15b	
	shallow	deep	shallow	deep
General				
anc	0.10		0.12	
Ke_b	0.045		0.045	
Ke_c	0.070		0.070	
GAM1				
gmax	2.4	2.2	2.4	2.2
Isat	40	30	40	30
Topt	11	10	11	10
ktg1	0.024	0.024	0.024	0.024
ktg2	0.024	0.024	0.024	0.024
cchl	60	60	60	60
k_n	24	24	24	24
k_R	0.08	0.07	0.08	0.07
k_D	0.03	0.03	0.03	0.03
w_s	0.5	0.5	0.5	0.5
GAM2				
gmax	2.4	2.5	2.6	2.6
Isat	70	70	70	70
Topt	17	17	17	17
ktg1	0.020	0.020	0.015	0.015
ktg2	0.020	0.020	0.015	0.015
cchl	50	50	50	50

k_n	28	28	28	28
k_R	0.07	0.07	0.08	0.08
k_D	0.03	0.03	0.03	0.03
w_s	0.2	0.2	0.2	0.2

On Tue, Jun 7, 2011 at 9:44 PM, Robert Ambrose <[bobambrosejr@gmail.com](mailto:bobambrosejr@gmail.com)> wrote:  
Working on spreadsheet for base17 plus sensitivity. At present i plan to follow my outline from the previous email, but also adjusting self-shading parameters in order to allow higher productivity in surface layer along with lower productivity at the bottom. Right now the self-shading is:

$$\begin{aligned} \text{LEC} &= \text{Ke}_a + \text{Ke}_b * \text{Tchl} ** \text{Ke}_c \\ &= 0.336 + 0.0365 * \text{Tchl} ** 0.64 \end{aligned}$$

The WASP default is:

$$\text{LEC} = \text{Ke}_b + 0.2 * \text{DOC} + 0.2 * \text{S} + 0.0587 * \text{Tchl} ** 0.778$$

I'm recommending that Ke\_b and Ke\_c be increased in base17 to 0.045 and 0.070, respectively, with sensitivity runs at the current GEMS default for the low end and at the WASP default for the high end. I'm also recommending sensitivity combinations that pair the higher self-shading with slightly higher sets of gmax values.

I will finish up the recommendations in spreadsheet form tomorrow, but I wanted to give you heads up on this in case there is some issue this brings up that we should discuss.

Bob

On Tue, Jun 7, 2011 at 3:52 PM, Robert Ambrose <[bobambrosejr@gmail.com](mailto:bobambrosejr@gmail.com)> wrote:  
Greg, just to let you know, I did make it back and have been looking at results. Having gone through all of the 16a sensitivity runs, as well as select ones from 16c and 16b, I need to think through things a bit. It seems like some version of 16a will be best, perhaps with GAM1 cchl lowered from 70 to 60 and GAM2 cchl lowered from 60 to 50.

Lowering k\_R or k\_D for deep reaches seems to help GAM1 and GAM2 slightly. But probably one or the other (resp or death) and not both. And how will that interact with lowered cchl? That's part of what I'll think through next.

I'd like to find a way to get GAM2 productivity decline more rapidly with depth, but not more rapidly with season.

Bob

On Thu, Jun 2, 2011 at 6:16 PM, Robert Ambrose <[bobambrosejr@gmail.com](mailto:bobambrosejr@gmail.com)> wrote:  
OK, I've gone through the four base 16 runs (a,b,c,d). Results are mixed, but here is my present judgment.

For shallow areas (i.e., SS08), it seems to me that 16a is best, with 16c close, 16b ok, and 16d the worst.

for deep areas, it seems to me that 16a and 16c balance out the best, considering both chl and DO.

For chl, 16a and 16c are best at SS52 and NSEX01, while 16b and 16d are best at SS66, SS71, and KSPB01. But at those stations, 16a and 16c are usually acceptable.

For DO, 16a and 16c are best for SS66, SS71, and NSEX01, while 16b and 16d are best at KSPB01. They seem equal at SS52.

I believe we have reasonable results to work with.

I have to pack and run so I don't drive in too late. I'll get back to this on Monday.

Bob

On Thu, Jun 2, 2011 at 2:47 PM, Robert Ambrose <[bobambrosejr@gmail.com](mailto:bobambrosejr@gmail.com)> wrote:

Hi, Greg. I'll be leaving on my weekend reunion trip in 2-3 hours, back Sunday. I've compared plots between base16a and base15a. It looks like spring and early summer chl, DO, DIN are not much changed, and so maybe our GAM1 properties will be fine. The biggest difference is in GAM2 between early August and early September to mid-October depending on station. It looks like we'll need a little more GAM2 production then to better fit most stations. The temperature and salinity are not very different (at least for those stations I specifically looked at). Maybe we'll see something promising within the sensitivity variations.

I'm going to run some errands and pack, then get back to this for another hour before I leave.

Bob

On Thu, Jun 2, 2011 at 12:54 PM, Pelletier, Greg (ECY) <[gpel461@ecy.wa.gov](mailto:gpel461@ecy.wa.gov)> wrote:

The time series charts for base 16 are now online:

<https://fortress.wa.gov/ecy/spsdos/index.html>

The RMSE summary will be added later today or possibly as late as Monday

Greg

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