
From: Sarah Gallagher - NOAA Federal <sarah.gallagher@noaa.gov>
Sent: Wednesday, December 19, 2018 12:51 PM
To: Cathy Marcinkevage - NOAA Federal
Subject: Re: Shasta temp modeling effort

Per our conversation in the hall, yes please coordinate a meeting! Let me know if I can help in any way. Sarah

On Wed, Dec 19, 2018 at 12:00 PM Cathy Marcinkevage - NOAA Federal <cathy.marcinkevage@noaa.gov> wrote:

Yes, let's coordinate on this! You are in a list on my queue b/c it came up in conversation with Eric but I just hadn't gotten down to it yet.....

So we definitely need the SC to do some work for us for ROC, but it also seems like Maria and Garwin (and me too, frankly) are in need of a bit of a "refresher" of the temperature modeling. I can work with Eric to set something up for early Jan to do this -- that may tie in well with the timing of any revised PA data that we may get, and us really honing in on/nailing down what we'd like the SC to do for us in terms of analyses.

Does that seem ok? Do you think that there was more urgency than that? There aren't many more days before the end of the year, so I hope Jan is ok with Maria!

Let me know -
Thanks!
Cathy

On Wed, Dec 19, 2018 at 11:54 AM Sarah Gallagher - NOAA Federal <sarah.gallagher@noaa.gov> wrote:
Hi Cathy,

I was looking at our 'CCVO SWFSC Science Support Needs for Reinitiation of Consultation' google doc and wanted to share with you the communication that I've had with SWFSC regarding Shasta modeling.

See email and attached document below with our proposed meeting. I am still waiting on a date from Anita but looks like the meeting won't happen til after the holidays.

After looking at the google doc, I wondered if this meeting should be incorporated, or if we are getting the information we need by other means and don't need the meeting?

Sarah Gallagher | Fish Biologist
NOAA Fisheries | West Coast Region
U.S. Department of Commerce
650 Capitol Mall, Suite 5-100, Sacramento, CA 95814
916-930-3712 | Sarah.Gallagher@noaa.gov

----- Forwarded message -----

From: **Sarah Gallagher - NOAA Federal** <sarah.gallagher@noaa.gov>

Date: Fri, Dec 7, 2018 at 4:03 PM

Subject: Re: Shasta temp modeling effort

To: Miles Daniels - NOAA Affiliate <miles.daniels@noaa.gov>

Thanks Miles, sounds great. Here is a list of topics. Let me know if you have any questions.

Sarah Gallagher | Fish Biologist

NOAA Fisheries | West Coast Region

U.S. Department of Commerce

650 Capitol Mall, Suite 5-100, Sacramento, CA 95814

916-930-3712 | Sarah.Gallagher@noaa.gov

On Fri, Dec 7, 2018 at 11:45 AM Miles Daniels - NOAA Affiliate <miles.daniels@noaa.gov> wrote:

Hi Sarah,

Yes, Eric and I would be happy to do this. I'll talk to him more about this and get back to you, but time needed to prepare would probably depend on the questions you have. If possible, sending us a list of question/discussion points would be helpful so that we can be sure to be prepared.

Thanks,
Miles

On Fri, Dec 7, 2018 at 9:47 AM Sarah Gallagher - NOAA Federal <sarah.gallagher@noaa.gov> wrote:
Miles, Thank you for the thoughtful reply. This is very helpful for my understanding of the model.

I didn't give you much time to respond before I needed to give my update earlier this week, but I knew that I had enough information to give at least a brief overview. My update was part of a larger discussion with Maria and Garwin in preparation for ROC LTO.

After our discussion, we thought it would be best to have a call/webex meeting with you and Eric to get an overview on efforts for the CVTemp models, and the Dea's model. You both have a great way of explaining and simplifying your technical work, and I think it would be most effective to hear directly from you. The audience would be Maria, Garwin, and me, and possibly another person or two involved in Shasta ops.

Would this be something you could do? And if so, about how long would you need so I can work on getting something scheduled?

Thanks so much, Sarah

On Thu, Dec 6, 2018 at 4:28 PM Miles Daniels - NOAA Affiliate <miles.daniels@noaa.gov> wrote:
Hi Sarah,

Sorry for the slow reply. Yes, happy to provide some initial feedback. As you mentioned, the model is still being developed and so I'll have to wait to have a more detailed look at the model before giving any final opinions. Thus far, I have really only seen slides. I'm hoping there will be more details in any report put out.

Overall, I think the modeling efforts are making good steps to better understanding how the temperature dynamics of Shasta and Keswick Reservoir operate. A few main points from the work are outlined below.

- 1) Having a physical model of Keswick Reservoir is an improvement. The error statistics shown for this portion of the model indicate it operates well (often < 1 Deg F for Keswick discharge temperature). However, thermal dynamics of Keswick Reservoir are much simpler compared to Shasta Reservoir.
- 2) The improved geometric representation of Shasta Reservoir (i.e. finer spatial resolution) built from USGS topographic maps is an improvement. However, to date, it seems that there has not been any error analysis to evaluate how much the finer resolution geometry improves the modeling. As with most models, there is a trade-off between resolution and computational efficiency.
- 3) The representation of the TCD on Shasta using three point/line sinks compared to one for each gate elevation seems like a logical step to better represent flow and temperature dynamics through the TCD gates. However, as mentioned in the calls, assuming equal flow through each point sink for a given elevation, might not be the most valid assumption. Assessing this choice of this component of model structure will also need to be evaluated more in my opinion.
- 5) Using the adapted blending algorithm (original from USGS) to portion flow through the TCD when more than one elevation is being accessed needs more clarification. For example, if flow between two TCD elevations are independent of the number of shutters open at each gate (I'm not saying this is the case, but this is unclear at this point), this may cause some problems for how the model used to assess historic and forecasted TCD operation.

Let me know if you would like further clarification on any of these items.

Good luck with the update,
Miles

On Mon, Dec 3, 2018 at 2:39 PM Sarah Gallagher - NOAA Federal <sarah.gallagher@noaa.gov> wrote:
Hi Miles,

I work with Garwin Yip in the Water Ops Division at the CVO, and have been participating in the Upper Sac Technical Modeling Group calls over the last year. I have been asked to give an update on the status of the Shasta temperature model and was hoping to get some feedback from you.

I have a decent understanding of the model's purpose (information going into it, some of its limitations, and the current status) but I don't have enough technical expertise to know what limitations it may have or how well it will perform when finished.

Are you supportive of the model or have any thoughts what works or doesn't that you could share me? Maybe the answer to this until the model is actually complete.

Thanks for any insights you can provide. I am available by phone too if that works better for you.

Sarah Gallagher | Fish Biologist
NOAA Fisheries | West Coast Region
U.S. Department of Commerce
650 Capitol Mall, Suite 5-100, Sacramento, CA 95814
916-930-3712 | Sarah.Gallagher@noaa.gov

--

Miles Daniels, Ph.D.
Associate Specialist
University of California, Santa Cruz
Phone: 831-420-3946

--

Miles Daniels, Ph.D.
Associate Specialist
University of California, Santa Cruz
Phone: 831-420-3946