Gmail **Katja Fennel <katja.fennel@gmail.com>**

What happened?: Public Presentation for Dec. 6 Hypoxia Task Force

Rob Magnien - NOAA Federal <rob.magnien@noaa.gov> Wed, Dec 7, 2016 at 6:23 PM
To: Dubravko Justic <djusti1@lsu.edu>, "katja.fennel@gmail.com" <katja.fennel@gmail.com>, Arnaud Laurent <arnaud.laurent@dal.ca>, Nancy Rabalais <nrabalais@lumcon.edu>, Alan Lewitus <alan.lewitus@noaa.gov>, David Scheurer <david.scheurer@noaa.gov>, Trevor Meckley - NOAA Affiliate <trevor.meckley@noaa.gov>
Cc: Rob Hetland <hetland@tamu.edu>, Becky Baltes <becky.baltes@noaa.gov>, Derrick Snowden - NOAA Federal <derrick.snowden@noaa.gov>

Folks,

First, another thanks to Katja, Dubravko and Nancy for contributing to a great presentation. I received a lot of positive feedback from Task Force members and I think all were impressed with the progress we have made.

Unbeknownst to me, the longstanding Times-Picayune reporter on this issue, Mark Schleifstein, was in the audience recording my remarks and downloading the webinar in addition to asking EPA for the presentation. Unfortunately, no one told me about this and I had to find out late this morning when I got my Google news alert on "dead zones".

Anyway, he did a pretty good article, including several of our slides and the animation. He had three errors in the article which I had corrected by about noon today.
http://www.nola.com/environment/index.ssf/2016/12/hypoxia_task_force_cites_impro.html

Several states asked for the animation to help in their outreach efforts on the dead zone and nutrient reduction efforts. I have asked Trevor to put together a package that would include an animation with talking points for context so he may be in contact soon about some of that. I hope to send that out to the whole Task Force and Coordinating Committee in a week or two.

Let me know if you have any questions or things we should follow up on,
Rob

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On Fri, Dec 2, 2016 at 4:48 PM, Rob Magnien - NOAA Federal <rob.magnien@noaa.gov> wrote:

> Folks,
>
> Here's the final PP I submitted to EPA.
>
> It was a great team effort to put this together on short notice and I was very impressed with what the modeling teams were able to bring to the table. Very high quality work that we can continue to build on to meet the HTF's science needs.
>
> I probably didn't make everyone happy with a lot of the material that ended up on the cutting room floor but I am confident that we have all that we need to make our important points. For an audience like this,a minimalist approach is best. This will also allow us to leave room for questions, get the PIs involved in discussion and, if time allows, maybe even show a couple of the extra slides.
>
> Cheers and have a great weekend,
> Rob

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On Fri, Dec 2, 2016 at 12:18 PM, Rob Magnien - NOAA Federal <rob.magnien@noaa.gov> wrote:

> Folks,
>
> Here is the Friday noontime edition for you final comments/edits by 2PM Eastern
>
> I still have some cleaning up to do but plan to finish that around 3.
>
> Cheers,
> Rob
>
> Robert Magnien, Ph.D., Director, Center for Sponsored Coastal Ocean Research
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>
> On Thu, Dec 1, 2016 at 8:20 PM, Rob Magnien - NOAA Federal <rob.magnien@noaa.gov> wrote:
>
> > Folks,
> >
> > Here is as far as I was able to get tonight on the presentation.
> >
> > It's still rough in spots and needs the following:
> > - many of the slides need a few bullets of explanation (give me your thoughts for high level messages to put in the summary)
> > - many of the slides need to be put in the chosen template
> > - many of the figures need attribution (need help with this!)
> >
> > That said, this is pretty much the way things are going to look in the end after adding the final window dressing and polishing. There is still the possibility of adding, re-arranging or deleting something but I don't want to increase by much. I'd rather take it slow, go through the animation several times, etc., and have time for questions.
> >
> > Please send input ASAP. I will work on this in the morning with the goal of getting a more polished version out by around noon for final comment.
> >
> > Thanks again for all your help!
> >
> > -Rob
> >
> > Robert Magnien, Ph.D., Director, Center for Sponsored Coastal Ocean Research
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On Wed, Nov 30, 2016 at 5:19 PM, Rob Magnien - NOAA Federal <rob.magnien@noaa.gov> wrote:

Folks,

As promised, here is a relatively rough update of the outline I circulated a couple of weeks ago with significant changes and markers for various figures, graphs and movies I propose to use. The slides for which I still need input are in red so if you have something to contribute on those, please let me know ASAP. And, everything else is up for comment as well.

Tomorrow I will hopefully have some more time to actually put this all into a Powerpoint format so look for a draft of that to comment on late tomorrow.

Again, thanks to all for your help with this,
Rob

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On Wed, Nov 30, 2016 at 10:13 AM, Dubravko Justic <djusti1@lsu.edu> wrote:

All,

I think Katja summarized very well why we are not surprised to see a lot of noise in 1:1 plots. This was exactly the point of my email sent yesterday. I believe it was not circulated to the entire group, so I am repeating my comments again.

The attached plot shows a comparison of FVCOM bottom DO with a time series that Nancy collected at station C6C during 2016. While the model seems to accurately predict larger disturbances, it does poorly in case of low amplitude variations. In addition to the mesoscale variability problem that Katja mentioned, there are also differences regarding how far from the sediment surface the bottom DO measurements were taken on different stations/cruises. For example, DO values will be very different at 0.5 m above the bottom (which is the way Nancy collected bottom DO values), as opposed to 1 or 1.5 m above the bottom. Educating the public regarding what 3D models can and cannot do remains a challenge, so we need to use every opportunity to do so.

Cheers,

Dubravko

From: Katja Fennel [mailto:katja.fennel@gmail.com]
Sent: Wednesday, November 30, 2016 3:12 AM
To: Rob Magnien - NOAA Federal
Cc: Arnaud Laurent; Dubravko Justic; Rob Hetland; Alan Lewitus; David Scheurer; Becky Baltes; Derrick Snowden - NOAA Federal; Trevor Meckley - NOAA Affiliate
Subject: Re: Gulf Model Analysis for Dec. 6 Hypoxia Task Force

Arnaud, Rob and Dubravko,

Please see my comments interspersed below.

On Tue, Nov 29, 2016 at 8:04 PM, Rob Magnien - NOAA Federal <rob.magnien@noaa.gov> wrote:

Katja, Arnaud and Dubravko,

Thanks for continuing to be so responsive and forthcoming with answers and new information. I hope to start putting the presentation together tomorrow but I expect that it will still be rough by the end of the day given my schedule and competing priorities.

Here are today's questions and suggestions for finalizing some of the key graphics, again referenced to the original slide #s where applicable.

#1: For the right side pane (2016) please use the following values for the prediction which is from the official NOAA press release on the forecast from the ensemble of 4 models:

Upper Bound = 22,300

Mid-Point = 15,299

Lower Bound = 8,316

Arnaud, can you make this modification please and send to all on this distribution list? Thank you.

> #2 and other calculations: Are the domains you describe in the answers below the same for ROMS and FVCOM?

I believe so, but again would prefer if Arnaud could confirm this as well.

> #12: Thanks for the aragonite saturation map. I will substitute that for pH maps and check for biologically significant thresholds.

I would probably add the aragonite plot and show both (aragonite and pH), but perhaps that's just personal preference. Feel free, of course, to show what you prefer.

> Do you have any model to data comparisons from several years ago when we supported many cruises per

year? I believe those were the years you used for calibration?

We don't have those ready to go, unfortunately. More generally though, any type of 1:1 plot for bottom DO will be noisy. See, for example, figure 4 in our paper that just came out this summer: http://memg.ocean.dal.ca/memg/pubs/Fennel_et_al-2016-Journal_of_Geophysical_Research__Oceans.pdf (note that the models in that plot used a different oxygen parameterization).

This is not surprising given the inherent noise (mesoscale and submesoscale variability) in the system. We can not reasonably expect these models to get the stochastic details of a distribution right. Instead we have to look at statistics and ask whether those are accurately produced by the models.

Also note that the R2 tends to get better if there is more dynamic range in the data set. For example, if complete oxygen profiles are used instead of just bottom water concentrations, the R2 will get better.

I don't think these are concepts easily conveyed to an audience that isn't very sophisticated in their thinking about 3D model evaluation. The model-data comparisons we sent initially were meant as an easily accessible way of illustrating how the models compare to the observations. I still feel these are probably more useful for this purpose than some selected 1:1 plot and R2 values.

Cheers, Katja

I think we have plenty to choose from now but if you have any last minute thoughts on things you might want to add or modify, let me know.

-Rob

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On Mon, Nov 28, 2016 at 10:25 PM, Arnaud Laurent <arnaud.laurent@dal.ca> wrote:

Hi Rob,

Here are the answers by slide numbers.

#1: 2015 dot: 16,760 km^2, 2016 dot: 17,673 km^2. Both dots use the same uncertainty range; lower range: 3,367 km^2, upper range: 4,133 km^2.
The 2015 dot is the observed mid summer hypoxic area from the LUMCON cruise, taken from the press

release (link). The 2016 dot is the prediction from Turner & Rabalais (link). The uncertainty range is an average of uncertainties for years with similar hypoxic area (2004, 2006, 2010), as reported in Obenour et al. (2013). FYI, the lower/upper uncertainty range reported by Turner & Rabalais for the 2016 mid summer prediction is 5,064/4,340 km^2. Let me know if you prefer this uncertainty range for the 2016 dot.

#2: Just to add on Katja's answer, the western limit to calculate the hypoxic area is -94.35°W. Only the shelf area is included (i.e. excludes inshore areas such as Atchafalaya and Terrebonne Bays in FVCOM).

#11: The aragonite saturation figure is attached.

#12: For the future scenario we use a 10% increase in FW discharge (due to climate change, changes in land use). We keep the same nutrient load as in the present scenario (indeed this is equivalent to assuming a 10% decrease in river nutrient concentration) because we do not have projections on future nutrient concentration in the Mississippi River.
The present/future aragonite saturation figures are attached.

Cheers,

Arnaud

Le 16-11-28 à 19:48, Katja Fennel a écrit :

> Rob, Arnaud and Dubravko,
>
> Please see my responses and requests interspersed below.
>
> On Mon, Nov 28, 2016 at 7:08 PM, Rob Magnien - NOAA Federal <rob.magnien@noaa.gov> wrote:
>
> Katja,
>
> Thanks for the additional information and explanations.
>
> We looked over and discussed further the information that you forwarded. Again, I'll key off the slides for most of the comments.
>
> #1: We will probably use this slide or a modification. Is the FVCOM 2015 data available to plot on the left panel? I also want to revisit the prediction dot and uncertainty bars plotted. Are these from the NOAA ensemble press releases from 2015 and 2016 or a different estimate? We'll want to use the estimates from the NOAA forecasts.
>
> Dubravko, do you have an FVCOM simulation for 2015 that we can include in the left panel? If yes, please make it available to Arnaud as soon as possible.
>
> Arnaud, can you provide the exact numbers for the dots as well errorbars for 2015 and 2016 and where these were take from?
>
> Rob, if you want modifications to the dots and errorbars after Arnaud provides this information, please let him know.

> #2 and similar maps: Is the "hypoxic area" shown for these plots based on the entire domain of these maps or just the domain that Nancy typically samples? For example, do they include east of the Delta or any areas west of her typical transects?

Areas east of the delta are excluded in our numbers for hypoxic area, but everything west of the delta and within the 50-m isobath is included. Limiting the model-based area estimates to just Nancy's transects would be a biased measure in our opinion, so we haven't done that.

> #12: I'd like to include this but need to dig in a little further on assumptions and impacts. In the materials you sent it says that freshwater flow was assumed to increase by 10% but nutrient loadings remained the same. This would require nutrient concentrations to decrease by roughly 10%. Is that what you were assuming?
>
> Also, I would like to assign biological meaning to the scale. Is there a pH level that can be associated with a biologically meaningful aragonite saturation or can you, alternatively, output aragonite saturation from the model in some way?

Arnaud, can you answer Rob's question about 10% increase in FW? (I believe you did apply a 10% decrease in nutrient concentrations, but thought it's best to double-check.)

Rob, yes, Arnaud has made the aragonite plots and I didn't include them when I put the slides together. My apologies. (And now I don't have access to those plots.)

Arnaud, could you send the aragonite plots corresponding to slides 11 and 12? Thank you.

Thank you all.

Cheers, Katja

> Around mid-week I'll plan to have a draft presentation to circulate for further polishindg.
>
> Cheers,
>
> Rob
>
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On Sun, Nov 27, 2016 at 6:14 PM, Katja Fennel <katja.fennel@gmail.com> wrote:

Please see my responses interspersed below.

On Sun, Nov 27, 2016 at 4:38 PM, Rob Magnien - NOAA Federal <rob.magnien@noaa.gov> wrote:

Katja et al,

These are great slides! These alone will be sufficient to pick and choose from for our presentation but if there are some more to consider, feel free to pass along. I'll be taking a closer look tomorrow and will have additional feedback.

Here are a few questions to start, referenced by slide #:

1. How was the Seamap area calculated and over what time frame was the data collected?

Presuming you are referring to the dots with error bars for 2015 and 2016, the 2015 is the number that Nancy calculated from her monitoring cruise (taken from GulfHypoxia.net). The 2016 number is Nancy and Gene's 2016 forecast (also take from GulfHypoxia.net). None of these considers Seamap data.

We also have the figure for 2016 without the forecast (i.e. without the dot), if you prefer (see folder with the figures).

> 2. I think these maps are fine to show as representative of summer conditions on a particular date but perhaps the numerical area we calculate as comparable to the summer cruises should be an average of July through mid-August rather than a single day.

Sure, no problem. Arnaud, can you provide these numbers please?

> 3. Interesting that the summer max simulated by both models was within a day of eachother!

Yes, that both models simulate the maximum extent around the same time can also be seen in the right panel on slide 1.

> 4. This simulation played nicely on my windows computer.

Great. This is the mp4 format embedded into PowerPoint.

> 7. Probably should simplify by showing on DIN plot which, alone, tells the story well.

Sure, feel free to just use one of the plots (this goes for all the slides of course). If you would like any modifications to the DIN plot, please let us know.

> 8, 9. I commented on this comparison previously - weren't the Seamap observations collected over a time period while the model map is for a single day? Looking forward to seen the 1:1 plots.

Yes, here the mid-day of the cruise is shown. The 1:1 plots are being prepared.

> 10. This is a great new dimension that only the models can provide!
>
> 12. We'll need some more background on the assumptions for this one but this or a variant would be a good slide to include.

Please see the attached two pdf files, which provide background on the inorganic carbon model and on the future projection. We'll be happy to elaborate more, if there are questions about further details.

Cheers, Katja

> Cheers,
>
> Rob

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On Fri, Nov 25, 2016 at 4:21 PM, Katja Fennel <katja.fennel@gmail.com> wrote:

Hi Rob and All,

Our figures with some explanation are organized in this PowerPoint file (big file: 16 MB):
http://memg.ocean.dal.ca/fennelk/wip/COMT_2016_hindcast/Input_2016-11-25.pptx

All images in high resolution are available for individual download here (organized by slide number to make them easy to locate):
http://memg.ocean.dal.ca/fennelk/wip/COMT_2016_hindcast/figures/

Movies in avi and mp4 formats are here:
http://memg.ocean.dal.ca/fennelk/wip/COMT_2016_hindcast/movies/

Note that mp4-format produced much smaller files. The avi-files are huge. Should you encounter problems with the movies, I would suggest Trevor and Arnaud (copied here) try to work this out offline between the two of them.

We haven't been able to complete some of the items you suggested just yet, but should be able to send those early next week (e.g. 1:1 model-data comparison plot for SEAMAP data).

Please let us know if you have questions and requests for modifications. I'm traveling to Japan tomorrow, so may be a bit slow in responding. Please make sure Arnaud is copied on all of those e-mails.

Thank you.

Cheers, Katja

On Wed, Nov 23, 2016 at 4:07 PM, Rob Magnien - NOAA Federal <rob.magnien@noaa.gov> wrote:

Hi Katja and all,

Great first flush of simulations, graphics and analyses! We just met internally and wanted to give you some initial feedback so you have some time to address these issues.

1. We could not get the Quicktime (.mov) format to run on our Windows 10 platform so we can't give you any feedback on that but we certainly want to include animations in the presentation so if you can convert to other formats that will work in PowerPoint on a windows machine, as you suggested, that would be excellent. I've asked Trevor (added to the e-mail distribution) to work with you on this issue and also with the EPA contractor supporting the HTF to insure that this works in the end.

2. We anxiously await the ROMS run with the NARR wind field. The result of that will help us to figure out which model(s) to highlight for 2016 and how best to show that output. For a public audience we really can't get into a lot of "interesting to us" model comparison issues.

3. I noticed that in many of the graphics that low oxygen was blue and high oxygen was red. I thought we fixed that problem years ago. We will need that color scheme flipped, at least for the movies and maps we show at the HTF so that low oxygen is red.

4. It was nice to see the cumulative exposure map (last slide in PP). We'll see if that changes in ROMS with the new wind fields. Is there a way to convert that area to a graphic based on area? It would be interesting, for example, to compare to our normal snapshot measure from the mid-summer cruise (or rough equivalent from the model runs: a mid-summer slice in time). Maybe the snapshot area <2 mg/l vs the cumulative area that experienced <2mg/l for a day or more at some point during the summer.

5. We'll need to settle on a straightforward way to demonstrate that the model matches the available data fairly well, if we have room to include one or two slides on that issue. With the Seamap data this might be done by taking a couple snapshots in time and then overlaying the corresponding Seamap data that was collected at a similar point in time. Alternatively, Seamap data could be plotted on a 1:1 graph with model data matched for the same day/location. Glider or transect data might also be useful if available. Timeseries O2 data would be useful but I don't think there is any available for this year. We're open to suggestions on what to use and how to present given the limited amount of time ahead of the meeting but this is not worth a big effort at this time.

Alan will be looking at this some more on Fri and may have some more suggestions or questions at that time. Otherwise, look for another communication from me late on Monday.

Have a great Thanksgiving!

Rob

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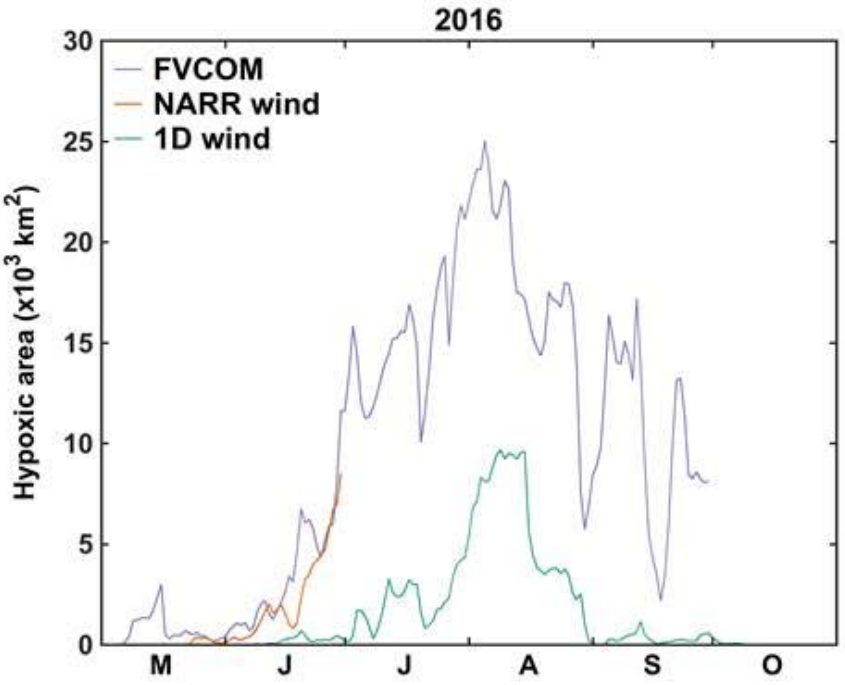
On Wed, Nov 23, 2016 at 10:19 AM, Katja Fennel <katja.fennel@gmail.com> wrote:

Another update: This plot has hypoxia area from FVCOM (purple), ROMS with NARR wind (orange) and ROMS with 1D NCEP wind (green).

For the period where FVCOM and ROMS with NARR wind overlap, both area estimates are remarkably close.

Dubravko, we're keenly awaiting your wind forcing to repeat the simulation with that.

Cheers, Katja



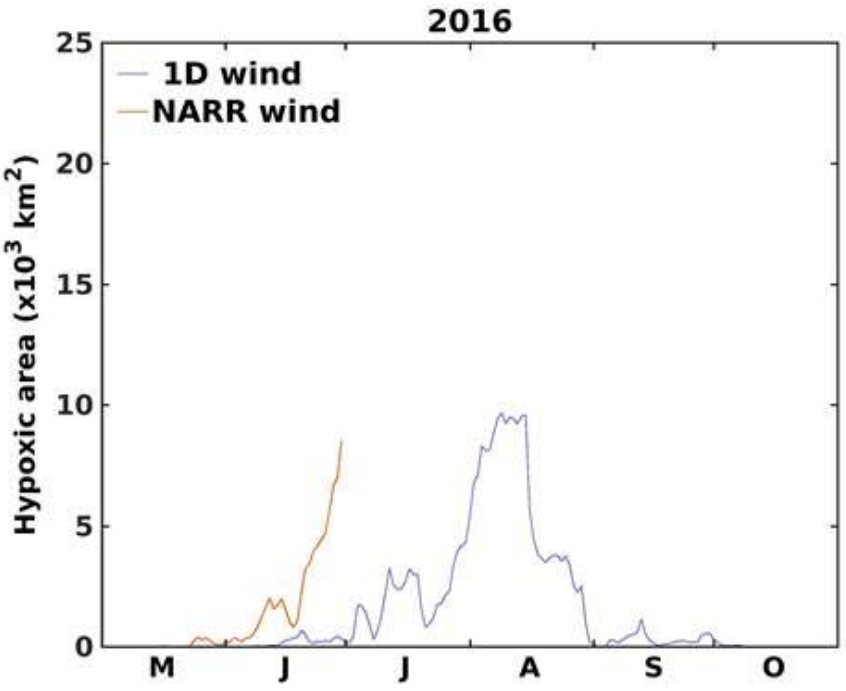
On Wed, Nov 23, 2016 at 10:34 AM, Katja Fennel <katja.fennel@gmail.com> wrote:

Hi Dubravko and All,

Dubravko, could you make your atmopsheric forcing available so we can run with the same forcing?

Attached is a plot Arnaud made this morning using NARR forcing up to June 2016 (it's not available yet beyond that date). It shows that we get much a larger hypoxic area in 2016 with NARR than with the NECP wind and that the NARR simulation agrees well with the SEAMAP observations. Looks like we can't put any stock in the simulation with the 1D NCEP wind.

Cheers, Katja



Inline image 3

On Tue, Nov 22, 2016 at 9:06 PM, Dubravko Justic <djusti1@lsu.edu> wrote:

Hi Katja et al,

Great analysis! We have just plotted our results and it appears that the 2016 hypoxic area is considerably larger in the FVCOM-LATEX simulations, especially on the western side of the model

domain. It should be pointed out that FVCOM-LATEX is forced by different wind (NOGAPS/NAVGEM) and heat flux (COAMPS) products.

Dubravko

_____
Dr. Dubravko Justic
Texaco Distinguished Professor

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_____

From: Katja Fennel [mailto:katja.fennel@gmail.com]
Sent: Tuesday, November 22, 2016 3:50 PM
To: Rob Magnien - NOAA Federal
Cc: Rob Hetland; Dubravko Justic; Alan Lewitus; David Scheurer; Becky Baltes; Derrick Snowden - NOAA Federal
Subject: Re: Gulf Model Analysis for Dec. 6 Hypoxia Task Force

Hi Rob,

Here is a heads up about our results so far and a preview of what we will be providing.

Two important bits of information before you look at the material below:

1) In the ROMS simulations the 2016 hypoxic area is significantly smaller then the 2015 area. I know this is not what you are expecting. We think this is primarily due to differences in salinity stratification between 2015 and 2016. There was much less freshwater discharge in the summer of 2016 compared to 2015.

2) For ROMS we used an inferior wind product because our preferred product is not available yet for all of 2016. Our best estimate of hypoxic extent for 2016 will change a bit when we can obtain the better wind product (not in time for this presentation).

Please find a slide deck with some figures and explanations here:
http://memg.ocean.dal.ca/fennelk/wip/COMT_2016_hindcast/Input_2016-11-22.pptx

Please also look at these two animations (we hope they are intuitive and useful in illustrating the dynamics of the system):
http://memg.ocean.dal.ca/fennelk/wip/COMT_2016_hindcast/CrossSec_3d_COMT_2015.mov
http://memg.ocean.dal.ca/fennelk/wip/COMT_2016_hindcast/CrossSec_3d_COMT_2016.mov

If this Quicktime movie format doesn't work, we could provide other formats. Just let us know.

All of this is just from ROMS so far, but we have received the FVCOM output from Dubravko and will be plotting this tomorrow.

We are also still polishing images for model-data comparisons with the SEAMAP data (we will not have time to do the same with Nancy's data for this, unfortunately) and we will provide results for a climate change scenario and bottom water acidification. We are planning to send all of this to you tomorrow or Friday.

Please let me know if you would like anything else and have questions or would like to discuss.

More soon.

Cheers, Katja

On Tue, Nov 22, 2016 at 12:03 PM, Rob Magnien - NOAA Federal <rob.magnien@noaa.gov> wrote:

Katja et al,

Attached is a first draft outline along the lines of what we've been discussing. I kept it open to most of the information we have been discussing, realizing that probably not all will materialize in time and, even if it did, I/we probably wouldn't be able to present it all.

So, now would be the time to start sending me the "meat" of the presentation which are sections 6, 7 and 8 of the outline. I assume that you probably don't have all the things now that you might have by the middle of next week but it would be good to see preliminary graphics, maps, simulations, etc. ASAP. These could be draft or final products or even placeholders, say, with a run from a prior year.

I would like to have a good start on the presentation early next week and I need to submit it on Friday, 12/2. The organizers were unsure about the ability to run movies in the presentation so having a couple examples in the format that we expect to use (can we use just one format, please?) for them to test on Wed would be very helpful.

Of course, any questions, suggestions for modifying the outline, or anything else are more than welcome at this time as well.

-Rob

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On Sun, Nov 6, 2016 at 4:58 PM, Katja Fennel <katja.fennel@gmail.com> wrote:

> Dear Rob, Dear All,
>
> Below is a list of items I hope we can deliver, based on some quick e-mail discussions over the weekend. This is the best case scenario (since analyses are ongoing it's difficult to definitively promise), but in any event we will have interesting things you can show.
>
> Related to your items 1 to 3:
>
> - snapshot of 2016 hypoxic area at time of monitoring cruise
>
> - spatially explicit estimate of all the area that was affected by hypoxia
>
> - temporal evolution of 2016 hypoxic area with some analyses of major forcing factors
>
> - comparison against previous years
>
> - assessment of and/or model comparison against 2016 observations (we have in hand only SEAMAP data at this point; Alan is working on getting us access to the other data that were collected)
>
> - slides illustrating insights gained through previous work (could include response to nutrient reductions, bottom water acidification, future projections)
>
> We should be able to deliver well on your items 1 to 3.
>
> Related to your item 4:
>
> We can summarize our thoughts on this -- no problem!
>
> Related to your item 5:
>
> Rob H. has focused on this (in collaboration with Steve DiMarco and others) and will have insights to share.
>
> Everything we deliver for 2016 will come with the disclaimer that analyses are not final.
>
> We got your message regarding the target audience and will try to provide easy-to-understand visuals and animations.

Regarding help with the presentation, I'd love to come (the HTF has been a fascinating entity for me for a number of years now), but whether I can will depend on timing. I have travel until Dec 4 and again Dec 11 to 17. When is your presentation slot?

Cheers, Katja

On Fri, Nov 4, 2016 at 1:06 PM, Rob Magnien - NOAA Federal <rob.magnien@noaa.gov> wrote:

Dear Katja, Dubravko and Rob,

As you know, we are hoping that the 3D time variable models for the Gulf that you operate will help us to gain insights on the hypoxic zone in 2016 even though we weren't able to conduct our regular mid-summer cruise this year. These insights could include, but are not limited to:

1. An estimate of the 2016 mid-summer areal extent "snapshot" of hypoxia that is comparable to the annual monitoring of the zone over time.

2. An estimate of all the area that was affected by hypoxia, which is not comparable to #1 but may be very important to know. For example, it could help to better understand the magnitude of impacts on benthic communities that may not be able to recover during the summer even if hypoxia is only transient in a particular area.

3. Increased understanding of the dynamics of hypoxia under conditions that existed in 2016. My understanding is that there was more fresh water at the surface, increasing stratification, and that temperatures were higher. This may be particularly important to know since this is the likely trajectory under climate change scenarios.

4. Insights on some of the most critical needs for monitoring/observations in order to continue to calibrate and verify these models.

5. An understanding of oceanographic conditions that preceded that die-off at Flower Garden Banks that could help to determine the cause of that event.

As Alan and Dave discussed with Katja at the end of Sept, and I previewed with Dubravko and Rob on our site visits earlier in Sept, I will have a half hour slot on the upcoming Hypoxia Task Force (HTF) Public Meeting in New Orleans at the beginning of December to showcase the modeling work. Whereas a complete analysis may not be doable by that time, Katja (along with Dubravko and Rob) thought that you could generate at least a preliminary picture of 2016 hypoxia ("Teaser Hindcast").

In preparing for the meeting, I wanted to check in with all of you to see what you could contribute at this time, along the lines of the 5 items above and perhaps something beyond these that would also be of interest to the HTF (e.g. maybe the response of the zone to extra loading of freshwater and nutrients off of Texas). This is a public audience so we will need to keep the scientific details to a minimum and use a lot of eye candy; the latter should certainly not be a problem with all of the great model output I have seen to date. We also need to have some bottom line messages that speak to the management interests of the HTF and the public.

At this time I need your early input on what you think you can contribute in final form by Nov. 28 since they want the PowerPoint at the end of that week and I'll need to consolidate everyone's input and pass it around among us to finalize. **If you can get to me by COB this Mon, Nov 7 just a preliminary list of the 5 or 10 visuals and information pieces that you have now or think you will have by the 28th, that would be great.** If you need a little more time, let me know. From this information I can generate a consolidated first draft outline and get that back out to all. This will just be the first flush and we can continue to iterate on the presentation for the rest of the month.

I would also like one or more of you to help make the actual presentation. I guess this would be easiest for Dubravko since he is close by but I wanted to put that out there to all of you. I'm not sure I would be able to come up with travel funds. And, even if I could, I'm not sure it makes sense to travel a long distance for a 20 min presentation. Since they are doing a webinar of the meeting it may even be possible to do something remotely and I can check on that.

Looking forward to your input and further discussion on all of this,

Rob

Robert Magnien, Ph.D., Director, Center for Sponsored Coastal Ocean Research

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