Dr. Nathaniel A. Frissell Ph.D.

Hi Nathaniel,

I am attaching the binary file (*.grads, only as link for download, see below) and data description file (*.ctl) that I used in my plots with GrADS. The corresponding figure scripts (*.gs) that you would need to reproduce the plots are also attached (just in case somebody in your group wants to do this - note that GrADS is freely available for multiple platforms).

The attached reader.f may be useful to read and further process the data with your routines/graphics. You may use gfortran to compile reader.f (ifort works as well and requires only to remove the factor 4 in the open statement for the *.grads file).

I can imagine that this may need further information and adjustment. If so, please let me know and let us get together on zoom.

Best,
Erich
07DEC2018-16MAR2019.mzgw.grads

From: Dr. Nathaniel A. Frissell Ph.D. <nathaniel.frissell@scranton.edu>
Sent: Sunday, July 9, 2023 9:24 AM
To: Erich Becker <erich.becker@nwra.com>
Cc: Lynn Harvey <Lynn.Harvey@lasp.colorado.edu>
Subject: Re: HIAMCM for 2018-2019

Hi Erich,

It was very good to see you at CEDAR!

Now that CEDAR is over, I am ready to make a concerted effort on moving the MSTID paper forward. Would you happen to have the HIAMCM run for 2018-2019 winter season ready?

Next week I will going to an ISSI meeting on MSTIDs, and, if possible, I would love to be able to show the HIAMCM outputs in conjunction with the observations I already have.

Thank you very much,
Nathaniel

On Apr 24, 2023, at 6:52 AM, Dr. Nathaniel A. Frissell Ph.D. <nathaniel.frissell@scranton.edu> wrote:

Thank you very much, Erich. This is great!

Would you possibly be able to give me the outputs in some sort of numerical format, like NetCDF or HDF5? I can them integrate them into plotting code.

I've attached as stackplot I've just made including MERRA-2, CIPS, AIRS, GNSS aTEC, Amateur Radio LSTIDs, and SuperDARN MSTIDs.

Best,
Nathaniel

From: Erich Becker <erich.becker@nwra.com>
Sent: Sunday, April 23, 2023 3:31 PM
To: Dr. Nathaniel A. Frissell Ph.D. <nathaniel.frissell@scranton.edu>; Lynn Harvey <Lynn.Harvey@lasp.colorado.edu>
Subject: Re: HIAMCM for 2018-2019

Hi Nathaniel and Lynn,

Here is an update of my figures. These are now based on a better postprocessing, and the time series reach from Dec 7 to Feb 9.

The w (and T) perturbations are probably more relevant for causing TIDs than the horizontal wind perturbations.

The 2018-2019 winter season exhibits the longest SSW period I have ever seen (> 1 month). For example, the ES sets in only around January 21.

I can extend the simulation further if necessary.

Best,
Erich

From: Dr. Nathaniel A. Frissell Ph.D. <nathaniel.frissell@scranton.edu>
Sent: Tuesday, April 4, 2023 10:31 AM
To: Lynn Harvey <Lynn.Harvey@lasp.colorado.edu>; Erich Becker <erich.becker@nwra.com>
Subject: RE: HIAMCM for 2018-2019

Hi Erich and Lynn,

I think the agreement is great! I think this would be perfect to include in the stackplot, especially if you are able to give me outputs for the rest of the season.

I think we will have to kick around ideas beyond just stack plots… but that is on my mind right now, at least as a first step.

Nathaniel

From: Lynn Harvey <Lynn.Harvey@lasp.colorado.edu>
Sent: Monday, April 3, 2023 12:48 PM
To: Erich Becker <erich.becker@nwra.com>; Dr. Nathaniel A. Frissell Ph.D.
<nathaniel.frissell@scranton.edu>
Subject: Re: HIAMCM for 2018-2019

These are great, Erich! I think a figure similar to this is just what the paper needs to tie all the observations together.
Nathaniel, do you have ideas for what you have in mind for a final figure to include in the paper?

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V. Lynn Harvey
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CU Boulder acknowledges that it is located on the traditional territories and ancestral homelands of the Cheyenne, Arapaho, Ute and many other Native American nations.

From: Erich Becker <erich.becker@nwra.com>
Sent: Sunday, April 2, 2023 8:53 PM
To: Lynn Harvey <Lynn.Harvey@lasp.colorado.edu>; Dr. Nathaniel A. Frissell Ph.D.
<nathaniel.frissell@scranton.edu>
Subject: Re: HIAMCM for 2018-2019

Hi Lynn and Nathaniel,

Here are two preliminary plots with the zonal mean postprocessing for the whole January 2019. There are more model days available for Dec and Feb, but the IAP file server (where these are stored) was not available over the weekend.

As expected, there is increased GW activity over the polar cap in second half of January when the middle atmosphere recovers from the SSW. We can discuss further details during the zoom.

Best,
Erich

Awesome! I think HIAMCM will be perfect to tie all of our observational platforms together. Further, Erich will be an excellent person to have as a co-author to make sure were saying all the right things about MSVC and interactions between GWs and thermospheric winds en route to generating MSTIDs.

Erich, A list of figures thus far (there will be more) can be found here. We will want to replace your plot for 2016-2017 on slide 6 with your new results for 2018-2019.

Best,
Lynn
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V. Lynn Harvey
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CU Boulder acknowledges that it is located on the traditional territories and ancestral homelands of the Cheyenne, Arapaho, Ute and many other Native American nations.

From: Dr. Nathaniel A. Frissell Ph.D. <nathaniel.frissell@scranton.edu>
Sent: Tuesday, March 28, 2023 7:18 PM
To: Erich Becker <erich.becker@nwra.com>
Cc: Lynn Harvey <Lynn.Harvey@lasp.colorado.edu>
Subject: RE: HIAMCM for 2018-2019

Hi Erich,

That sounds amazing. Thank you.

Nathaniel

Hi Nathaniel,

I am currently running the NH winter 2018/2019 after talking to Lynn a couple of weeks ago. I will have a continuous time series from Dec 2 (2018) to Feb 15 (2019) in about 15 days. Right now, model data aver available from Dec 15 (2018) to Feb 4 (2019).   I can make a time series with the zonal-mean diagnostics from this and send you a plot by the weekend. Let's see how this works. We can complete this with the remaining days later.

Best,
Erich

Hi Erich,

I hope you are well!

I'm working on a paper with Lynn Harvey and our LWS team on MSTIDs and their connection to the lower and middle atmosphere. This is a follow-on to the talk you saw me give this past AGU. As you can see in the attached slide, there is excellent agreement between my SuperDARN MSTID observations and your EPW Flux as published in your Becker et al. (2022) paper for the 2016-2017 winter.

In the paper we are working on with the Lynn Harvey LWS team, we are focusing on the 2018-2019 winter. Is there any possibility that you have these same results run for the 2018-2019 winter? Or, could you run them? If so, we would like to invite you to be a co-author on our paper and include these results.

Please let us know.

Thank you,
Nathaniel

Nathaniel A. Frissell, Ph.D., W2NAF
Assistant Professor
Department of Physics and Electrical Engineering
University of Scranton

[HamSCI Lead](#)

<20181101_20190501_stack_figure_3.png>