BISON CONNECT

Hill, Troy <troy_hill@nps.gov>

Re: [EXTERNAL] Depth difference map between NSRSM and RSMGL

Reynolds, Gregg <gregg_reynolds@nps.gov>   Thu, Dec 12, 2019 at 10:30 AM
To: Rajendra Paudel <rpaudel@evergladesfoundation.org>, "Hill, Troy" <troy_hill@nps.gov>

Rajendra,

Here is the RSM/NSRSM mapping R code for you to try. FYI - I will be retiring at the end of January. After that time please contact Troy Hill from my office for help with my R code. I've cc'd him on this email. I'll try to remember to send you any updates to the code.

It is probably best if you start out using a similar directory structure to what we use (minimum structure to make maps):

Example RSM/NSRSM model output:

/opt/physical/models/rsm/COP/ECB19RR/output/globalmonitors.nc
/opt/physical/models/nsrsm/v352/nsrsm/output/globalmonitors.nc

GIS shape files (please let me know if you need the shapefiles):

/opt/physical/gis/models/nsrsm/v352/nsrsm_mesh_landuse.shp
/opt/physical/gis/models/rsm/COP/mesh.shp   (mesh.shp is a copy of Latest_MeshWTopo.shp, which is the mesh for WERP and COP produced by the SFWMD)
/opt/physical/gis/ever/CSSS_habitat.shp
/opt/physical/gis/ever/SubpopAExt.shp
/opt/physical/gis/ever/ParkCoastlines.shp
/opt/physical/gis/ever/MajorCanals.shp
/opt/physical/gis/ever/MajorRoadsSouthFlorida.shp

Paths to code, control files and post-processing output:

/opt/physical/ML/graphics_new/fork/src/R_utils/rsm_nsrsm_map-diff_fork_11Dec2019_fixedRamp.r
/opt/physical/ML/graphics_new/fork/temp/
/opt/physical/ML/graphics_new/fork/src/Extract/NetCDF4_nodeDistance.R
/opt/physical/ML/graphics_new/fork/src/Extract/unitConversion.R
/opt/physical/ML/graphics_new/fork/src/Extract/DataExtract.R
/opt/physical/ML/graphics_new/fork/src/maps/pdf/
/opt/physical/ML/graphics_new/fork/src/maps/png/
/opt/physical/ML/graphics_new/fork/src/R_utils/CTRLfiles/mapdiff_nsrsm_ECB19RR_stage_0-ftOffset_annual.csv

(Note: mapdiff_nsrsm_ECB19RR_cont-hp_0-ftOffset_annual.csv & mapdiff_nsrsm_ECB19RR_depth_0-ftOffset_annual.csv should also be placed in the CTRLfiles directory.)

Example of how to run the code in a terminal window:

Rscript rsm_nsrsm_map-diff_fork_11Dec2019_fixedRamp.r ./CTRLfiles/mapdiff_nsrsm_ECB19RR_stage_0-ftOffset_annual.csv /opt/physical null

The code can also be run from an IDE (e.g. RStudio), but the arguments need to be defined differently than shown above. There are notes and examples within the code, but I've only provided control files for three of the examples.

As I mentioned before, you may need to install additional R libraries to run this code, and your computer will need adequate memory. It takes about 5 minutes to make a map on my laptop. Please let me know if you have any questions. Good luck.

Gregg

========================
Gregg Reynolds

Hydrologist
Everglades National Park
South Florida Ecosystem Office
305-224-4236
========================

On Mon, Dec 9, 2019 at 2:42 PM Rajendra Paudel <rpaudel@evergladesfoundation.org> wrote:

> Hi Gregg,
>
> Please take your time. There is no rush though. Thanks!
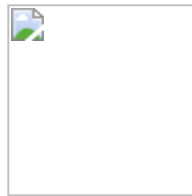>
> Rajendra
>
> ------------------------------
> **Rajendra Paudel, Ph.D.**
> **Senior Hydrologist**
> 18001 Old Cutler Road, Suite 625
> Palmetto Bay, FL 33157
> Office: 305.251.0001
> Direct: 786.249.4458
> evergladesfoundation.org
>
> Facebook | Twitter | LinkedIn | Instagram

> ***America's Everglades, the water supply for nearly 8 million Floridians***
> **Please consider the environment before printing this email**
> Please note that the information and attachments in this email are intended for the exclusive use
> of the addressee and may contain confidential or privileged information.
>
>
> On Mon, Dec 9, 2019 at 2:29 PM Reynolds, Gregg <gregg_reynolds@nps.gov> wrote:
>
>> Rajendra,
>>
>> Please give me a little time to write some brief instructions. Otherwise I think you'll have trouble getting the code to run. The directory structure is not the same as the old code. I should have time to put something together later this week.
>>
>> You will likely need to install some additional R libraries. Your computer will need a good amount of memory. If you get the directory structure right, and the code doesn't work, the most likely issue would be memory.
>>
>> Gregg
>>
>> ========================
>> Gregg Reynolds
>> Hydrologist
>> Everglades National Park
>> South Florida Ecosystem Office
>> 305-224-4236
>> ========================
>>
>>
>> On Mon, Dec 9, 2019 at 1:31 PM Rajendra Paudel <rpaudel@evergladesfoundation.org> wrote:
>>> Hi Gregg,

I had a great Thanksgiving holiday and I hope you had the same.
Thank you so much for these plots! Topography seems quite critical in the depth difference maps. I think CellID overlay is a reasonable approach. Could you please send me the R code so that I could modify few things and plot. I have output files therefore the code is just fine.

Best,
Rajendra

Rajendra Paudel, Ph.D.
Senior Hydrologist
18001 Old Cutler Road, Suite 625
Palmetto Bay, FL 33157
Office: 305.251.0001
Direct: 786.249.4458
evergladesfoundation.org

Facebook | Twitter | LinkedIn | Instagram
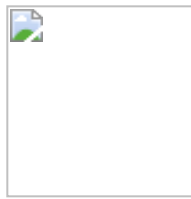
America's Everglades, the water supply for nearly 8 million Floridians
Please consider the environment before printing this email
Please note that the information and attachments in this email are intended for the exclusive use
of the addressee and may contain confidential or privileged information.

On Mon, Dec 9, 2019 at 11:33 AM Reynolds, Gregg <gregg_reynolds@nps.gov> wrote:

Hi Raj,

Hope you had a good Thanksgiving.

Here are draft maps of the depth, stage and hydroperiod differences between the nsrsm and ECB19RR. Interpretation is complicated by the differing topo and meshes, especially along the coast. The maps use the topo directly from the model output, not the 400m EDEN grid topo I mentioned in another email.

Note that depths may be below ground; they are not ponding depths. This results in differences between the hydroperiod and depth maps that potentially could be confusing.

I used the simplest method possible to produce the maps. I did not do an area weighting of topo or depths, as could be done with GIS-type of polygon overlay. Instead I did a simple cellID to cellID overlay, based on the location of cell centroids (rsm cell IDs were mapped to nsrsm cell IDs).

Please let me know if you have any questions, or see problems with the maps.

Gregg

=========================
Gregg Reynolds
Hydrologist
Everglades National Park
South Florida Ecosystem Office
305-224-4236
=========================

On Thu, Nov 21, 2019 at 2:35 PM Rajendra Paudel <rpaudel@evergladesfoundation.org> wrote:

Hi Gregg,

There is no rush. Please take your time. Happy Thanksgiving!

Best,
Raj

Rajendra Paudel, Ph.D.
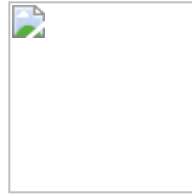**Senior Hydrologist**
18001 Old Cutler Road, Suite 625
Palmetto Bay, FL 33157
Office: 305.251.0001
Direct: 786.249.4458
evergladesfoundation.org

Facebook | Twitter | LinkedIn | Instagram

America's Everglades, the water supply for nearly 8 million Floridians
Please consider the environment before printing this email
Please note that the information and attachments in this email are intended for the exclusive use
of the addressee and may contain confidential or privileged information.

On Thu, Nov 21, 2019 at 2:23 PM Reynolds, Gregg <gregg_reynolds@nps.gov> wrote:

Raj,

Sorry that I haven't been able to produce a map yet. I've made some progress, but I have unexpectedly been called into several meetings that have resulted in work products expected from me with short timelines. I won't be able to send you a map until after Thanksgiving unless I am able to finish the code and produce a map today.

Gregg
=========================
Gregg Reynolds
Hydrologist
Everglades National Park
South Florida Ecosystem Office
305-224-4236
=========================

On Mon, Nov 18, 2019 at 11:27 AM Rajendra Paudel <rpaudel@evergladesfoundation.org> wrote:
Thank you Gregg! Please let me know if you can produce the depth difference map out of it.

Raj

Rajendra Paudel, Ph.D.
Senior Hydrologist
18001 Old Cutler Road, Suite 625
Palmetto Bay, FL 33157
Office: 305.251.0001

Direct: 786.249.4458
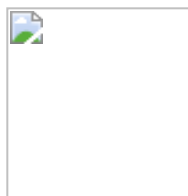evergladesfoundation.org

Facebook | Twitter | LinkedIn | Instagram
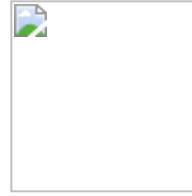
America's Everglades, the water supply for nearly 8 million Floridians
Please consider the environment before printing this email
Please note that the information and attachments in this email are intended for the exclusive use
of the addressee and may contain confidential or privileged information.

On Mon, Nov 18, 2019 at 11:24 AM Reynolds, Gregg <gregg_reynolds@nps.gov> wrote:

Raj,

I was mapping performance measure score differences, not depth differences. But that is the code I can hopefully modify to map depth differences. I'll see if I can produce a depth-difference map.

Gregg
========================
Gregg Reynolds
Hydrologist
Everglades National Park
South Florida Ecosystem Office
305-224-4236
========================

On Mon, Nov 18, 2019 at 11:18 AM Rajendra Paudel <rpaudel@evergladesfoundation.org> wrote:

Hi Gregg,

Thank you so much! At some point in the future, I will work around it. But now, I need this information just to look at the big picture so it doesn't need to be precise. By the way, do you have already plotted map in your computer? If you have it that perfectly works for me.

Best,
Raj

Rajendra Paudel, Ph.D.
Senior Hydrologist
18001 Old Cutler Road, Suite 625
Palmetto Bay, FL 33157
Office: 305.251.0001
Direct: 786.249.4458
evergladesfoundation.org

Facebook | Twitter | LinkedIn | Instagram

America's Everglades, the water supply for nearly 8 million Floridians
Please consider the environment before printing this email
Please note that the information and attachments in this email are intended for the exclusive use
of the addressee and may contain confidential or privileged information.

On Mon, Nov 18, 2019 at 11:08 AM Reynolds, Gregg <gregg_reynolds@nps.gov> wrote:

Raj,

I have done something similar in the past, but it would take some work to have working code to
send you. I'll take a look. It was not as rigorous as what could be done in GIS, because of the way
that I overlaid the differing nsrsm mesh on the rsm mesh.

We do have netCDF output of the nsrsm depth and stage in the EDEN grid, in addition to netCDF
output of the depth and stage in the EDEN grid from quite a few rsm runs. That would be another
way to do differences. Each of those files is 5GB in size, and I'm not sure of the best way to get
them to you. If you use our nsrsm netCDF depth and stage, you should be aware that we modified
the topo of the nsrsm in Big Cypress NP before we computed the depth and stage. The nsrsm topo
in Big Cypress NP was found to have issues.

Gregg
==========================
Gregg Reynolds
Hydrologist
Everglades National Park
South Florida Ecosystem Office
305-224-4236
==========================

On Mon, Nov 18, 2019 at 9:11 AM Rajendra Paudel <rpaudel@evergladesfoundation.org> wrote:

Hi Gregg,

I hope you had a great weekend.

I was wondering if you had R codes to plot average annual depth difference map between
NSRSM and RSM-GL.

Thank you!

Best,
Raj

Rajendra Paudel, Ph.D.
Senior Hydrologist
18001 Old Cutler Road, Suite 625
Palmetto Bay, FL 33157
Office: 305.251.0001
Direct: 786.249.4458
evergladesfoundation.org

Facebook | Twitter | LinkedIn | Instagram
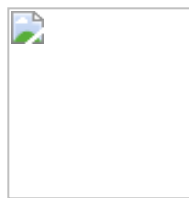
America's Everglades, the water supply for nearly 8 million Floridians

Please consider the environment before printing this email

Please note that the information and attachments in this email are intended for the exclusive use of the addressee and may contain confidential or privileged information.

7 attachments

📄 **DataExtract.R**
16K

📄 **NetCDF4_nodeDistance.R**
30K

📄 **unitConversion.R**
4K

📄 **rsm_nsrsm_map-diff_fork_11Dec2019_fixedRamp.r**
33K

📄 **mapdiff_nsrsm_ECB19RR_depth_0-ftOffset_annual.csv**
1K

📄 **mapdiff_nsrsm_ECB19RR_stage_0-ftOffset_annual.csv**
1K

📄 **mapdiff_nsrsm_ECB19RR_cont-hp_0-ftOffset_annual.csv**
1K