**Slide Deck Generation for Louisiana CPRA – User Guide**

Matthew Bilskie1 and Peter Bacopoulos2

1 University of Georgia | School of Environmental, Civil, Agriculture and Mechanical Engineering

2 Louisiana State University | Center for Coastal Resiliency

**Summary:** This document provides a user guide for generating a slide deck for a tropical cyclone advisory, in support of Louisiana CPRA.

**Credits**

The slide deck generation software was developed by Matthew Bilskie in coordination with Jason Fleming.

**Computing requirements**

**(1)** Matlab 2017; **(2)** Python 2.7, including python-pptx; **(3)** Bourne Again Shell (bash), including parse22; **(4)** FigureGen; **(5)** PowerPoint

**Main programs**

**(1)** get\_files\_fortytwo\_gahm.m; **(2)** cpra\_hydrograph\_plotter.m; **(3)** parse22; **(4)** buildPPT.py

**Preamble**

The following instruction set is for a user implementing the software entirely within a Linux environment. The only Windows interaction in the entire process is with display and final (minor) update of the PowerPoint slide deck.

It is best practice to make a full copy of the directory from the previous cycle, delete the simulation files associated with the previous cycle (except for the consensus files of \*.fort.61.nc and \*.run.properties), and update and execute the scripts for the current cycle.

**1. Identify the ensembles, ASGS instance and HPC for the current cycle**

User will check email for ADCIRC POSTED results corresponding to the current cycle. At minimum, user will require consensus ensembles for current and previous cycle. In addition, more ensembles may be required, including: veerLeft (e.g., 50, 100, etc.); and veerRight (e.g., 50, 100, etc.).

**2. Set the environmental variables on the local machine**

Assuming that Anaconda has been built on the local machine[[1]](#footnote-1) (with the name py2 for python=2.7), activate Python 2.7, i.e., at the command line: conda activate py2.

Load the module for Matlab 2017, i.e., at the command line: module load matlab/r2017a.

**3. Update and execute *get\_files\_fortytwo\_gahm.m***

Pre-step: Locate the mesh in the present working directory, naming the mesh according to the mesh variable within the script. As well, generate an active link of the mesh file (\*.grd), i.e., at the command line: ln -fs [mesh file] fort.14.

Update script internals for adv (cycle), asgs\_instance, hpc and en (ensembles by name). Execute the script by typing at the command line:

matlab -nosplash -nodisplay -nodesktop -r “run ./*get\_files\_fortytwo\_gahm.m*”

Upon completion, the present working directory will fill up with simulation files for the ensembles associated with the current cycle, as specified within the script.

**4. Update and execute *cpra\_hydrograph\_plotter.m***

Update script internals for numEns (number of ensembles), ensFileNames[[2]](#footnote-2) (file names of the \*.fort.61.nc files) and propFile[[3]](#footnote-3) (file names of the \*.run.properties files). Note: In the general range of lines 600–650 of the script, the user can modify the lower and upper limits of the *y*-axis of the plots, viz. refer to minWL and maxWL, respectively.

Execute the script by typing at the command line:

matlab -nosplash -nodisplay -nodesktop -r “run ./*cpra\_hydrograph\_plotter.m*”

Upon completion, the present working directory will fill up with graphic [PNG] files for the stations associated with the storm surge analysis.

**5. Generate global images of maxele’s with FigureGen**

Work each ensemble in sequence, ultimately carrying out the following sub-steps for all ensembles[[4]](#footnote-4).

**5.1. Generate storm track file from input meteorological forcing**

Make an active link of the meteorological forcing file (\*.fort.22), i.e., at the command line: ln -fs [meteorological forcing file] fort.22. Execute the script by typing at the command line: parse22[[5]](#footnote-5). The output is a storm track file (fort.22.trk) that is used as input to FigureGen.

**5.2. Update and execute FigureGen**

Update the FigureGen input files for the given ensemble:

* Line 7: Alphanumeric label for these plots
* Line 19: Name(s) of file(s) to use for contours

Execute FigureGen for the given input file. The output is a graphic [JPG] file of the maxele associated with the given ensemble.

**6. Generate slide deck in PowerPoint format**

Update the \*.run.properties file associated with the consensus ensemble for the current cycle by adding a line to the end of the file:

time.forecast.valid.cdt : 20200913220000[[6]](#footnote-6)

Update the *buildPPT.py* script to open [read] the \*.run.properties file associated with the current advisory.

Execute the script by typing at the command line:

python *buildPPT.py* [FigureGenFilename] [nhcConsensusRunPropertiesFilename]

The output is a PowerPoint [PPTX] file of the slide deck.

**7. Update the slide deck to include maxele graphics of other ensembles**

By default, the slide deck contains one slide for the maxele of the consensus ensemble for the current advisory. It is necessary to manually add slides for the other ensembles, e.g., veerLeft (e.g., 50, 100, etc.); and veerRight (e.g., 50, 100, etc.). Copy and paste the slide for consensus ensemble, rename the title to associate with the other ensemble (e.g., veerLeft100) and change the picture with the JPG maxele of the other ensemble (e.g., veerLeft100). Repeat as necessary until all ensemble maxele’s are displayed in the slide deck. Save the PowerPoint file, overwriting with the same filename.

**Running notes**

https://repo.anaconda.com/archive/Anaconda3-2020.07-Linux-x86\_64.sh

https://problemsolvingwithpython.com/01-Orientation/01.05-Installing-Anaconda-on-Linux/

easy\_install-a.b pip

qsub -I walltime=02:00: nodes=1:ppn=20

alias idev=""

conda create --name py2 python=2.7

conda activate py2

conda config --set auto\_activate\_base false

conda install -c conda-forge python-pptx

https://anaconda.org/conda-forge/python-pptx

conda install -c anaconda pytz

/project/mbilskie

matlab -nosplash -nodisplay -nodesktop -r "run ./MyScript.m"

1. Pre-establish pathways and conda initialization in the user’s bashrc file. [↑](#footnote-ref-1)
2. Listing must begin with consensus from previous cycle and end with consensus for current cycle. [↑](#footnote-ref-2)
3. Listing must begin with consensus from previous cycle and end with consensus for current cycle. [↑](#footnote-ref-3)
4. Alternative approach employs automate.sh [AdvisoryNumber] to automate the sequential procedure [↑](#footnote-ref-4)
5. Pre-establish pathways and script execution in the user’s bashrc file. [↑](#footnote-ref-5)
6. Adjust the date and time to correspond with the current advisory in GMT: YYYYMMDDHHmmss [↑](#footnote-ref-6)