Development note (Aug 22 version)

Variables, listed in pythonic order

1. idx, local (local index)
2. idx, global (global index)
3. x, geo (longitude)
4. y, geo (latitude)
5. x, cpp (easting)
6. y, cpp (northing)
7. z (elevation)
8. n (manning)
9. ed (everdried)
10. it (inundation time)
11. mi (maximum inundation depth)
12. mlw (mean low water)
13. msl (mean sea level)
14. mhw (mean high water)
15. mlw, interp (mean low water, interpolated)
16. mhw, interp (mean high water, interpolated)
17. nwi (integer-valued National Wetlands Inventory)
18. B (biomass)
19. A (accretion)
20. z-adj (elevation, adjusted)
21. n-adj (Manning, adjusted)

Modules, listed in no particular order

* numpy, math, sys, tqdm, time

Scripts, listed in order of execution with respective runtime (mm:ss) for TCBa

1. preprocessing.pyb (ADCIRC or another model) 04:26
2. hydrodynamics.py (agnostic—points) 09:56
3. interpdatums.py (agnostic—points) 35:42
4. ecology.pyc,d (agnostic—points) 00:19
5. postprocessing.py (ADCIRC or another model) XX:XX

* Total runtime: 50 minutes, 23 seconds + XX:XX (postprocessing)

a TCB: 3,527,549 mesh nodes; 8 attributes; 23 tidal constituents; 3 static global outputs

b Bounding box set externally via lower-left corner (lon/lat) and upper-right corner (lon/lat)

c Three wetland types: salt marsh (regularly flooded); mangrove; irregularly flooded marsh

d Accounts for multi-type calculation of biomass and accretion with updating of elevation and Manning’s n

Files, listed according to type

* Input (6, derived from present simulation)
  + fort.14
  + fort.NWI.14
  + fort.13
  + fort.53
  + everdried.63
  + inundationtime.63
  + maxinundepth.63 ->
* Input (1, assigns bounding box for ROI—region of interest)
  + ROI.pts
* Intermediate (6)
  + filteredData.pts (clipped to bounding box)
  + filteredHarmAmp.pts (clipped to bounding box)
  + filteredHarmPha.pts (clipped to bounding box)
  + filteredTidalDatums.pts (clipped to bounding box)
  + filteredTidalDatumsIDW.pts (clipped to bounding box, intertidal points only)
  + filteredBiomassAccretion.pts (clipped to bounding box, intertidal points only)
* Output (2, configured for subsequent simulation)
  + fort.dt.14
  + fort.dt.13

Development, in no particular order

* Adjustment of Manning’s n for open-water conversion – TBD
* NWI classification is supportive for model initialization; however, how to evolve into the future with multi-type distribution?

(Jin will start considering)

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To-do-list

Development (mandatory)

src/mem.py

* Read current wetland marsh/mangrove distributions (Jin).
* Examine and calculate each ecological response (Pete).

Development (desirable)

* Replace private module: pyadcircmodules
* Read maxele.63 and create max inundation map (Pete create a python file), Jin modify hydromem.py (ongoing)
* ~~MEM 5 classifications in src/mem.py (Jin done on Aug 22)~~
* Pete modify src/tidaldatums.py (avoid double for loops) -> Jin and Chris work on cython with parallelization.

Modifications (desirable)

* ~~src/hyconn.py (currently used for loops and time-consuming + not sure about pond classification, Jin slightly modified the code Aug 19)~~

Modifications (optional)

* src/tidaldatumsidw.py: GDAL IDW may not perform well (Jin and Linoj used another approach in CRMS2MAP, need to be consider, pending Jin Aug 22)

NOTE

NWI classification

8 = salt marsh (regularly flooded)  
9 = mangrove  
20 = irregularly flooded marsh

WATTE classfication

Input\_Water\_Class = "40" #Don't use 0 (no data)

Input\_Other\_Class= "55" land

#Classification(s), Marsh, String

Input\_Marsh\_Class = "16,23,32"

Jin’s priority list

1. Read current wetland marsh/mangrove distributions
2. Inundation level part (hydromem.py)
3. Cython and parallelization
4. WATTE modification + Evaluate productivity and Inundation level map
5. Check fort.13