Continental Scale hydro model inter-comparison for SWOT
Teleconference summary 2016 11 07

by Konstantinos M. Andreadis and Cédric H. David

In attendance
Ed Beighley,
Rodrigo Paiva,
Augusto Getirana,
George Allen,
Christine Lion,
Etienne Gaborit,
Colby Fisher,
Guy Schumann,
Dai Yamazaki,
Aaron Boone,
Patrick Lemoigne,
Kostas Andreadis,
Cedric David

Meeting minutes
Dai: presented the preliminary CaMa-FLOOD simulations over the Mississippi. CaMa-flood has no treatment for lakes nor reservoirs. The framework is similar to that of MGB-IPH. HydroSHEDS DEM data were used after hydrologic adjustment presented in Dai's paper (2012, JoH). The 15-sec conditioned HydroSHEDS is actually not conditioned (many negative slopes), this is why it needed to be smoothed (it is shared with the team on the website). Quasi-2D river network (with channel bifurcation) is possible although not used here. CaMa-FLOOD uses OpenMP for parallelization, 8 cores were used for these simulations. The same USGS gauges as Ed were used for comparison of results and observations. VIC model outputs from NLDAS2 were used as input. Two types of simulations were run: one at 0.25 degrees, one at 0.1 degrees.

Cedric: I haven't yet heard back from Bernhard Lehner about the 15-sec DEM in HydroSHEDS.

Augusto: How is the river depth obtained?

Dai: The river depth is extracted from conditioned DEM

Cedric: Are you simulating all rivers within a given grid box or just the largest one?

Dai: Only the largest river is simulated (so this is resolution-dependent).

Cedric: Could it be that your higher resolution shows slower flow wave propagation because it seems that hydrographs are delayed at high resolution?

Dai: My understanding is that there's more flooding at higher spatial resolution due to better resolving of floodplain.

Dai: what is the format for sharing model outputs with the team?

Cedric: Let's use a CSV file to share simulation results. One row per daily value, one columb per station, header with USGS gauge number and HydroSHEDS ARCID. I will make a template.

Dai: Shall we all use the same modified DEM?

Rodrigo: That's probably a good idea, but let's wait for everybody to have performed their simulations just in case we need to make further modifications to the DEM before running new simulations.

Dai: There is possible uncertainty in different routines for hillslope routing. Perhaps need to assess these?

Cedric: the operational version of NLDAS uses Lohman routing model. Probably ok to lump all water from the surface and subsurface directly in the rivers without accounting for horizontal surface/subsurface routing outside of the river network. Ed might be able to switch this option on and off on HRR, but not all of us can.

Ed: That's correct, HRR can do that.

Dai: Other news from the Univ. of Tokyo: we have developed a global data assimilation scheme for CaMa-flood (see poster at AGU), and we have developed a new global DEM (talk at AGU). New DEM data will become available in the near future.

Cedric: You showed a lot of flooding downstream, which is not apparent in observations probably due to existing man-made structures. This is similar to what Rodrigo presented. Did you look at the discharge hydrographs to see if they are similarly dampened compared to observations?

Dai: I haven't looked into that yet.

Augusto: NLDAS land surface models are quite old, runoff results will change considerably with new LSMs.

Cedric: We'll be happy to leverage new NLDAS data when they become available.

Augusto: How are USGS stations selected? There are many others that could be used.

Cedric: The stations selected mirror that used in my 2015 WRR paper (choice was based on full daily data availability, and gauges selected upstream and downstream of major confluences).

Cedric: Hyungjun proposes to host our Working Group meeting in Tokyo, parallel to another ongoing meeting (HESSS-4: Hydrology delivers Earth System Science to Society, 4th meeting) on 15-19 May 2017, which will happen the week before the joint AGU Spring Meeting/JPGU meeting.

Aaron: This is likely being co-organized with GLASS/GEWEX and ISI-MIP. I'll be there but I'm not sure I'll be available because of my other commitments to that meeting.

Cedric: Actually, that meeting is scheduled for the mornings, and we would have side sessions the three afternoons.

Cedric: We look forward to seeing everybody at AGU. I will use some of your graphs for the poster, thank you in advance for your contribution! Let's have a Happy Hour meeting at AGU: Wed Dec 14 at 6pm.

Cedric: Volunteers for next time? How about Augusto and Kostas?

Kostas/Augusto: I should be able to show some very preliminary results.

Action items
Cedric: reach out to Bernhard Lehner again.

Cedric: provide a template of how model outputs should be shared by all people running models.

Cedric: next phone call ~ Monday December 05.

Cedric: plan happy: hour: Wed Dec 14, 6pm, Owl Tree - 601 Post St San Francisco, CA 94109.

Augusto: will present preliminary HyMAP results.

Kostas: will present preliminary LISFLOOD results.