MWS Capstone Project - Monthly Update

Project:	Representation of spatial heterogeneity in the land-surface hydrologic model MESH
Reporting Period:	May 2019
Date:	June 3, 2019
Student:	Haley Brauner

1. Work completed in the last reporting period

- Collected and analyzed data for model forcing and validation from various sources; included meteorological data, streamflow, soil temperature, and soil moisture
- Worked on literature review: research papers, textbook sections, Herbert's report, site familiarization, MESH/CLASS documentation, Ostrich documentation
- Modeling skill development:
    - Using the bash command line to access Andrew's server and Plato, navigate the folder hierarchy, and run CLASS and MESH
    - Programming using R - completed a number of tutorials related to data wrangling and visualization and basic R syntax and have practiced a number of skills on data for the project
    - MESH model training - 2x ½ day plus familiarization with Herbert's setup and the structure and parameters of the input files
- Software installation and familiarization: RStudio, Ubuntu, Green Kenue, QGIS
- Ran Scenario 1 of Herbert's model
    - Obtained the same results
    - To do this, created a script to find-replace calibration parameters in the template file with the best values obtained by calibration
- Sketched out and honed modeling methodology (ongoing)
- Set up and started working on the report

2. Team meetings held in the last reporting period (dates, times, attendance)

May 6 @ 10 am - Initial project meeting with Bruce and Andrew
May 7 @ 1 pm - Meeting with Bruce, Andrew, Chris, and Sadiq to discuss the watershed, the methodologies of the two projects, and potential for collaboration
May 13 @ 10 am - Update meeting with Bruce and Andrew

May 17 @ 1 pm - Met with Sadiq to discuss our collaboration on the compiling the driving dataset
May 27 @ 9:30 am - Meeting with Bruce to discuss model configurations, calibration/validation period, driving data, GRU vs HRU

3. Planned work for the next reporting period

- Model parameter selection and calibration plan
- Finish stitching together the forcing dataset (once receive GEM/CaPA data from Dan)
- Set up, run, then calibrate the simplest scenario on Baker Creek
- Prepare, run, and calibrate the more complex scenarios on Baker Creek
- Additional MESH training: scripting and results visualization, setting up and using Ostrich
- Continue writing the report as I go
- Continue with literature review

4. Information requested from advisors or partners

- GEM/CaPA dataset (forcing data)

5. Summary of any challenges

- Had some computer issues at the start of the project and had to spend some time (a few days) resolving

6. Summary of progress against the project plan

- So far, I think the project is progressing quite nicely. This month will be a busy one as I am aiming to have the replication phase of the modeling completed by the end of June so I can move on to taking the model further in July.
- According to the project plan, I am a little behind on the literature review. However, I feel I have a solid base of skills to progress to the next stage of modeling and have also done some work on the report, which was scheduled later in the project.