

## FLASH DROUGHT PROJECT MEETING #8

### 16 OCTOBER 2025 AUS / 15 OCTOBER 2025 COL

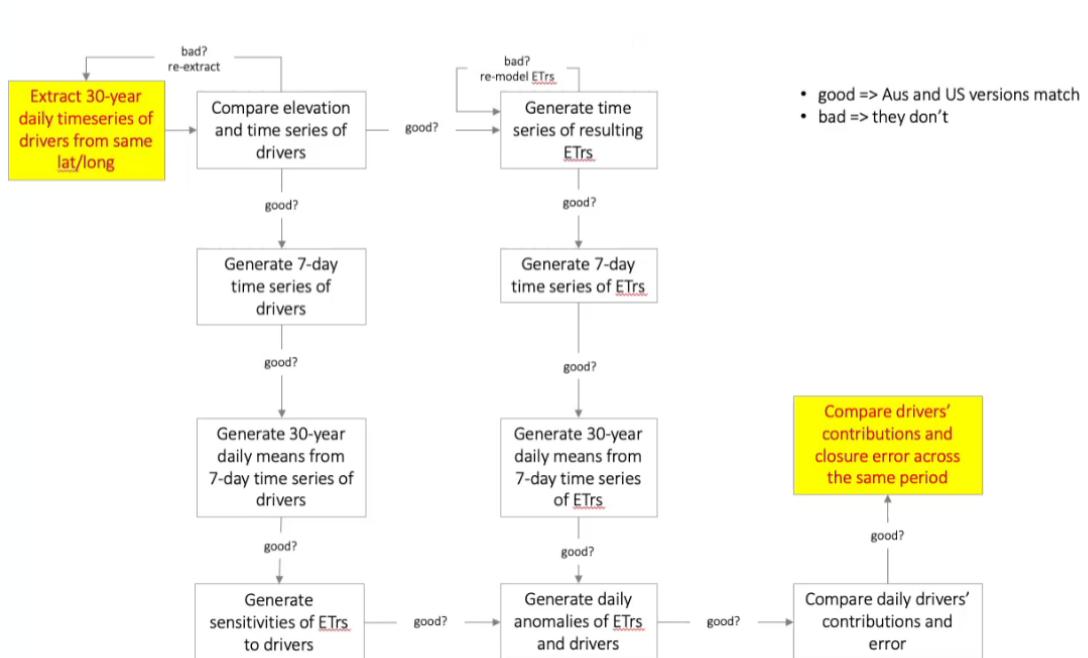
*Jess Bhardwaj*

*Mike Hobbins*

*David Hoffmann*

*Tess Parker*

- Jess and Mike have continued to test and compare code, inputs and outputs using a MERRA2 test case.
- The spreadsheet shows that Jess has identified and solved all differences related to input variables: most of these arise from slight differences in the Fortran code on GitHub - e.g. derived or output windspeed or surface pressure.
- Mike confirms that some changes were made due to reviewer requests to more closely adhere to FAO56 method – e.g. in some instances for pressure there may be direction to calculate from surface elevation, in others not.
- We should carefully account for these inputs in our code comments, documentation and papers: e.g. if-then choices in code for derived or dataset output, defensible choices with citeable support, etc.
- Jess has also on the spreadsheet documented the data used in and produced by the sensitivity calculations – e.g. input variables, 7-day running means, etc. – and compared these to Mike’s values. There are some dates with missing data, otherwise the data values are extremely close.
- However, the closure error remains extremely large.
- Mike has a flowchart of the testing and comparison process: given the same daily input data do we get the same outputs?



- Mike notes that there are two ways to look at sensitivity: analytically from the equations, or brute force via the code: but the results should be similar.
- Mike has a spreadsheet set up to do this: with 30 years of daily means of the reference ET and drivers, do a linear regression for each day to get the sensitivity. This requires varying one driver while holding all others to the climatological mean for that date. The slope should be the same as the analytical sensitivity.
- **Mike will repeat Jess's calculations for the same data point.**
- David notes that solar radiation in BARRA and ERA5 may have some issues. E.g. correction for solar azimuth angle may not have been applied, or applied incorrectly.
- Regarding the enquiry around EDDI code from the fire lab at UniMelb, **David and Tess will check the code they have already adapted for BARRA** and see how complete that is. David notes that BARRA goes back to 1980 and the latency is several months – which makes it unsuitable for monitoring. CPC are replacing NCEP/NCAR reanalysis with CORE2 which is finer resolution and has 1-2 day latency, extends back to 1980. They are moving to generating the EDDI from this.
- Mike also notes that he was supposed to give a webinar on EDDI for wildfire with a focus on ENSO phase vs area burned, using evaporative demand during two destructive fire events as examples, showcasing EDDI and the decomposition method. This webinar was cancelled, but **Mike will share the recording** when it does take place.
- **Mike will send the latest draft of his methodological paper** for our review and comments.
- We should remember to **update our formulae and variables info documents** on an ongoing basis.