

**Advancing hydrological seasonal prediction by downscaling CFSv2**Xing Yuan<sup>†</sup>; Eric Wood<sup>†</sup> Princeton University, USALeading author: [xingy@princeton.edu](mailto:xingy@princeton.edu)

NOAA's National Centers for Environmental Prediction (NCEP) is moving to use the Climate Forecast System version 2 (CFSv2) as their second generation operational seasonal forecast model. Our recent study based on 28-year (1982-2009) reforecasts indicates that the CFSv2 increases the predictive skills for month-1 land surface air temperature and precipitation significantly. The CFSv2 has comparable performance to the best European seasonal forecast model, and provides useful information in identifying several major drought events. Therefore, we incorporate the CFSv2 into the Princeton Hydrological Seasonal Forecast system. Two major features of the updated system are as follows: 1) Increased resolution We downscale the seasonal forecast at T126 (2.8125°) provided by CFSv2 to 0.5° based on the observed climatology merged from CPC, CRU and CFSR, and the VIC model will run at 0.5° globally to provide the hydrological seasonal prediction. 2) Improved methodology We adopt a re-sampling strategy into the Bayesian merging system, and weight the different ensemble members due to different forecast lead times. The new system will be validated over global large river basins for flood and drought predictions.