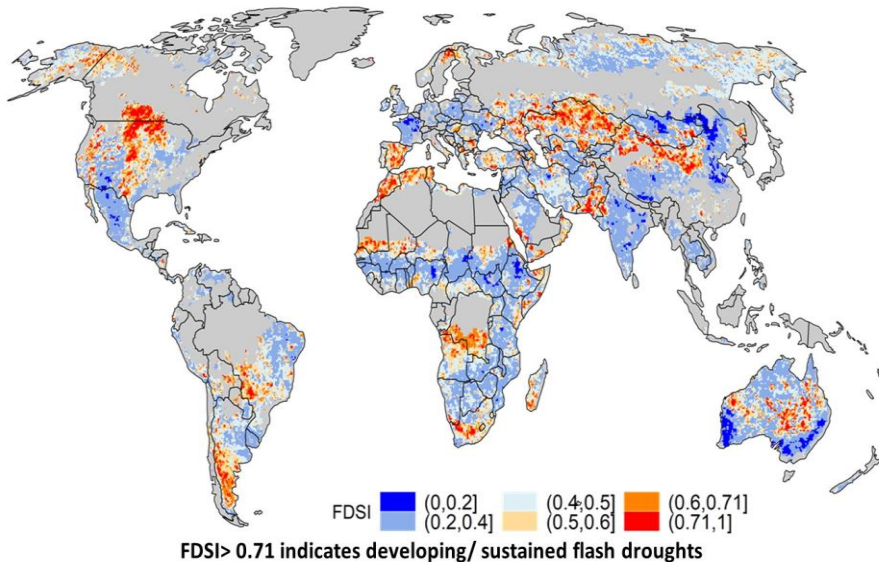


Global Flash Drought Monitoring Using SMAP Soil Moisture



Problem: A robust flash drought monitoring using satellite soil moisture must account for the *i)* short observation records, *ii)* non-linear geophysical controls over soil moisture dynamics, and *iii)* emergent meteorological drivers of flash droughts. Currently no approach is available for effectively capturing global flash droughts using stand-alone satellite soil moisture.

Global FDSI outlook for 2021-08-11



Finding:

Flash droughts can be monitored effectively using the soil moisture state (stress) and rate of soil moisture drydown (intensification) based on the threshold of the effective soil hydrologic regimes and land-atmospheric coupling. The approach offers high skill in real-time drought monitoring and predicting vegetation health with 2-weeks lead.

Impact: A new method is developed for near-real-time global flash drought monitoring with SMAP soil moisture and footprint-scale drydown parameters. An open-source tool, called FLASH- Flash drought Assessment using SMAP Hydrology is developed for operational global drought monitoring with a latency of 2 days.