**NASA DEVELOP National Program**

****NASA Langley Research Center

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**Short Title: Texas Water Resources**

**Updated Abstract**

The 2011 wildfire season was one of the most destructive wildfire seasons in Texas history. The combination of a wet 2010 growing season, which allowed vegetation to prosper, followed by an extremely dry year in 2011 provided the worst case scenario for wildfires. The purpose of this project was to expand upon a drought severity index (DSI) created during the summer 2013 Great Plains Agriculture project. A risk map of potential wildfire areas that contain dry fuels was also created; specifically, how dry the fuels are. To accomplish this, data that measure specific factors contributing to drought conditions and dry vegetation were acquired, including land surface temperature and the normalized difference vegetation index (NDVI) from the Moderate Resolution Imaging Spectrometer (MODIS) instrument onboard the Aqua and Terra satellites, precipitation from the Multi-Sensor Precipitation Estimate (MPE), and soil moisture from the North American Land Data Assimilation System (NLDAS). Data for these four factors were compiled through ArcGIS in order to assemble a risk map. The methods and results produced were compared and contrasted against other drought severity indices as a valid form of methodology for determining drought conditions and were presented to the Texas Forest Service (TFS) for future use throughout the state; the benefit of which was a high resolution drought index that can be easily constructed with little cost to the end user.