**NASA DEVELOP National Program**

****NASA Marshall Space Flight Center

Wise County Clerk of Court’s Office

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**Short Title: Thailand Agriculture**

**Updated Abstract**

Monitoring climate change is crucial for the Thailand agricultural industry. Climate change results in shifting rainfall patterns which in turn affect the management of crop production. Northeastern Thailand grows the majority of the country’s rice, but the rice yield per hectare is relatively low. One primary factor is uncertainty surrounding the ability to monitor and assess climate change. This project aimed to assess changing climate patterns to improve the understanding of environmental variables, such as precipitation and temperature, to understand risks and impacts of floods, storms, and drought, and to determine relationships between seasonal rainfall patterns and production areas of rice crop. This study used satellite imagery from Landsat 5 Thematic Mapper (TM), Landsat 7 Enhanced Thematic Mapper Plus (ETM+), and Landsat 8 Operational Land Imager (OLI) and Thermal Infrared Sensor (TIRS), as well as precipitation data from the Tropical Rainfall Measuring Mission (TRMM) and Global Precipitation Measurement (GPM), land surface temperature data from Moderate Resolution Imaging Spectroradiometer (MODIS), land surface temperature data from Visible Infrared Imaging Radiometer Suite (VIIRS), and a digital elevation model from the Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER). The images were analyzed using land cover classifications, Normalized Difference Vegetation Index (NDVI), Normalized Difference Water Index (NDWI), and/or Normalized Multi-band Drought Index (NMDI). Understanding the changing climate patterns assisted the end-users in initiating the best policies to tackle the challenges of climate change. In addition, the results of this research contributed to the scientific body of knowledge, in particular earth and agricultural sciences.