

# RESEARCH CATALOGUE

ENVIRONMENTAL  
AND CLIMATE  
SCIENCE



## SPATIO-TEMPORAL VARIATIONS OF FOREST DYNAMICS AND THEIR RELATIONSHIPS WITH CLIMATE EXTREME (DROUGHT) IN MYANMAR



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A project entitled "Analysis of Historic Forest Carbon Changes in Myanmar and Thailand and the Contribution of Climate Variability and Extreme Weather Events".

The research work was performed during 2015-2018 and the overall goal was to investigate the response of forest to extreme climate (drought) in dry zone of Myanmar, through the use of long-term time-series of climate data and forest vegetation derived from MODIS.

**1** The variations of long-term annual climate trends and changes of daily precipitation and temperature extreme indices of 35 stations spread over three different agro-ecological zones (hilly zone, dry zone, coastal zone) of Myanmar for the period 1981 to 2015 were investigated

### Results



Among the three regions, all temperature indices in the dry zone were found to have significantly increased and precipitation to have reduced

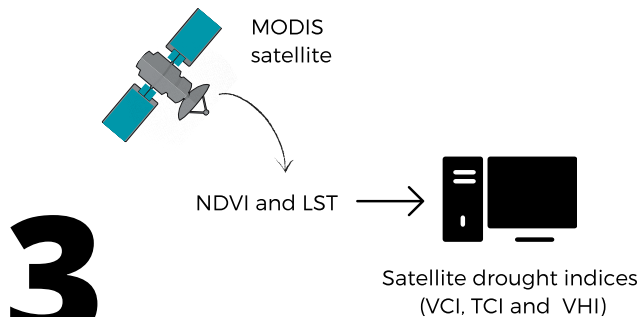


Both temperature and precipitation indices in the coastal zone were detected to have increased significantly

**2** spatio-temporal variations of forest vegetation greenness in Myanmar during 2003-2014 were investigated based on a combination of climate factors and satellite based Normalized Difference Vegetation Index (NDVI)

## Results

An overall decreasing trend in NDVI was observed, and an insignificant positive correlation was observed with precipitation and a negative strong correlation with temperature for most of the test sites



The impact of drought on dry forest in the dry zone of Myanmar was investigated based on a series of satellite drought indices from MODIS

## Results

The results indicated that forest vegetation declined due to severe extreme drought in 2010 and that 2011, which was the wettest year, provided the optimal condition for forest health. The positive correlation of precipitation and forest vegetation dynamics show that the spatial and temporal variations of forest vegetation are closely related to climate and could give future indicators to monitor the occurrence and severity of drought-affected areas.

## Research outcome of the project

The outputs of this research are anticipated to contribute improving our understanding of the drought characteristics and the response of forest ecosystem, and in the long-term this may lead to mitigate the effects of drought and achieve sustainable forest management and drought early warning system in Myanmar.

