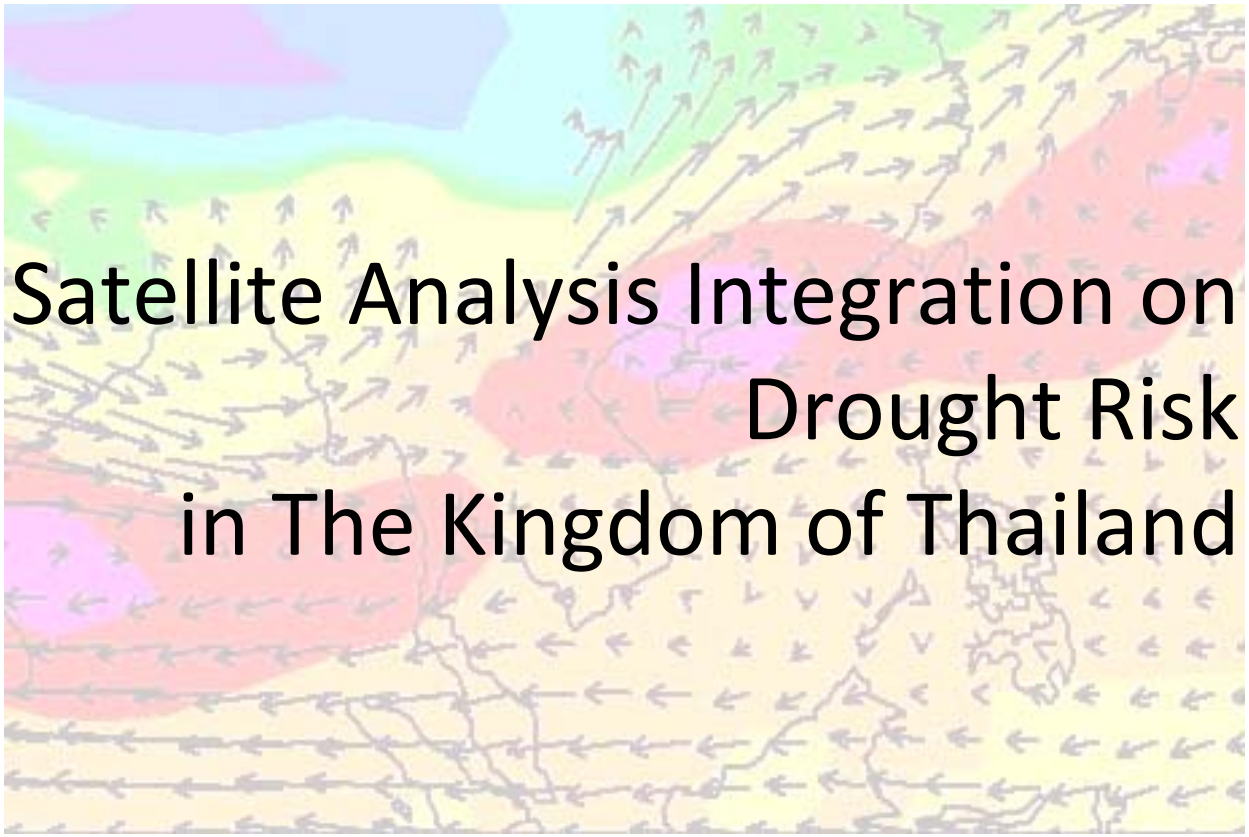
Drought and Climate Change:
The 7th International Coordinattion Group(ICP) Meeting and GEOSS Asian Water Cycle Initiative (AWCI)
Tokyo, Japan, 5-6 October 2010



Satellite Analysis Integration on Drought Risk in The Kingdom of Thailand

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- As agricultural country of Thailand, one of the most rhizomic effects to the local impact, such as way of living and economy, is insecure situation of natural hydro-meteorological influence.

- Previous research implementation on standard hydroinformatic system, illustrated moderate change to most areas of Thailand except slightly change in mountainous region.

  (not include
  telemetering system,
  Forecasting models,
  capacity development)

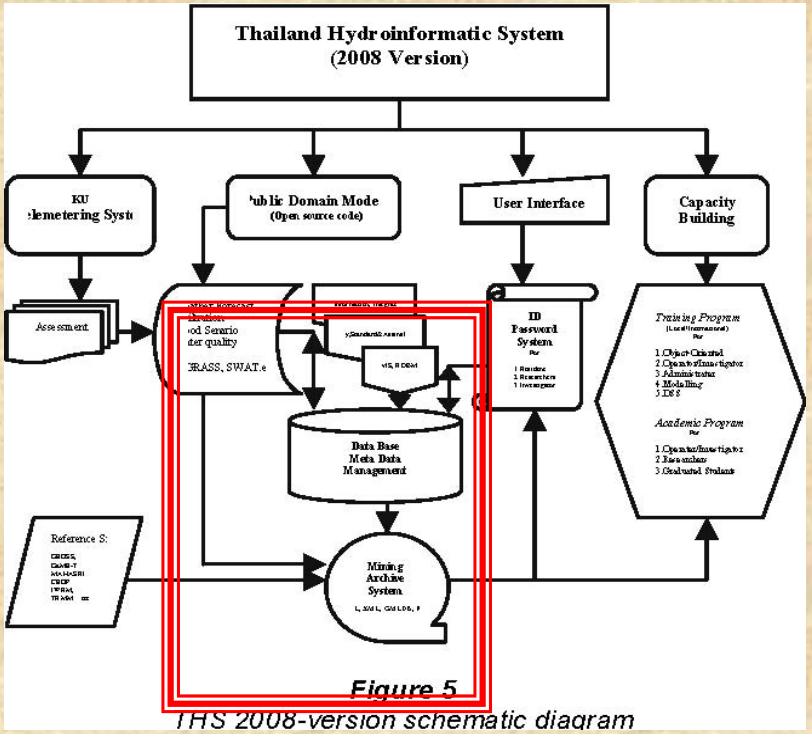
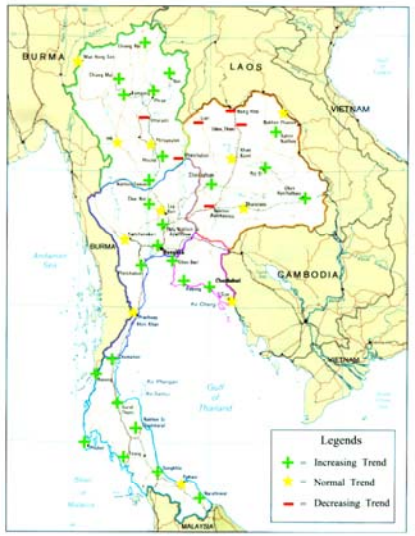


Figure 5
THS 2008-version schematic diagram

Vathananukij.H and Malaikrisanachalee, 2007 and 2008

Climate Change Effect Trace



Annual Temperature Change

Annual Precipitation Change

- Vathananukij. H, 2009 and Buthakunjaroen. S, 2009

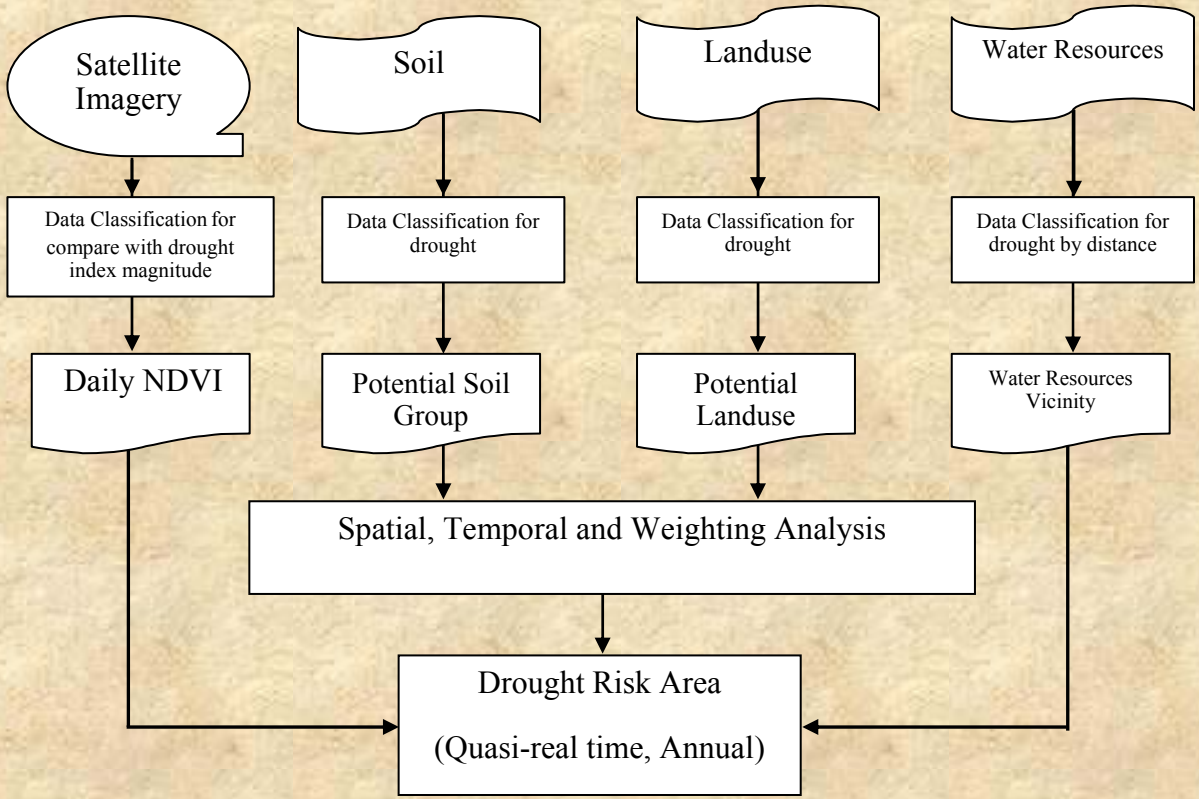
As agricultural country, nowadays, drought has become one of the most profound effects to the way of living and regional economy.

- 2009 drought serious evidence all over the country (2006 flood)
- Effected area for policy planning (DWR)
- RM-GIS Center funding prototype research for RS application promotion
- Change Tracing (not including possible cause of occurrence)

- Geoinformatic system including with earth observation imageries and observation database were introduced to evaluate and validate for risk analysis.
- Normalized Difference Vegetation Index (NDVI) from MODIS Terra were considered through spatial and temporal analysis (layering and weighting method with hydro-meteorological factors) on monitoring area.
- Integrated Research results, illustrate moderate drought risk to most areas of Thailand except macro scale on northern region.

Keywords: Drought, Risk, Geoinformatic system, MODIS, NDVI

Vathananukij.H and Suwansert.K., 2010



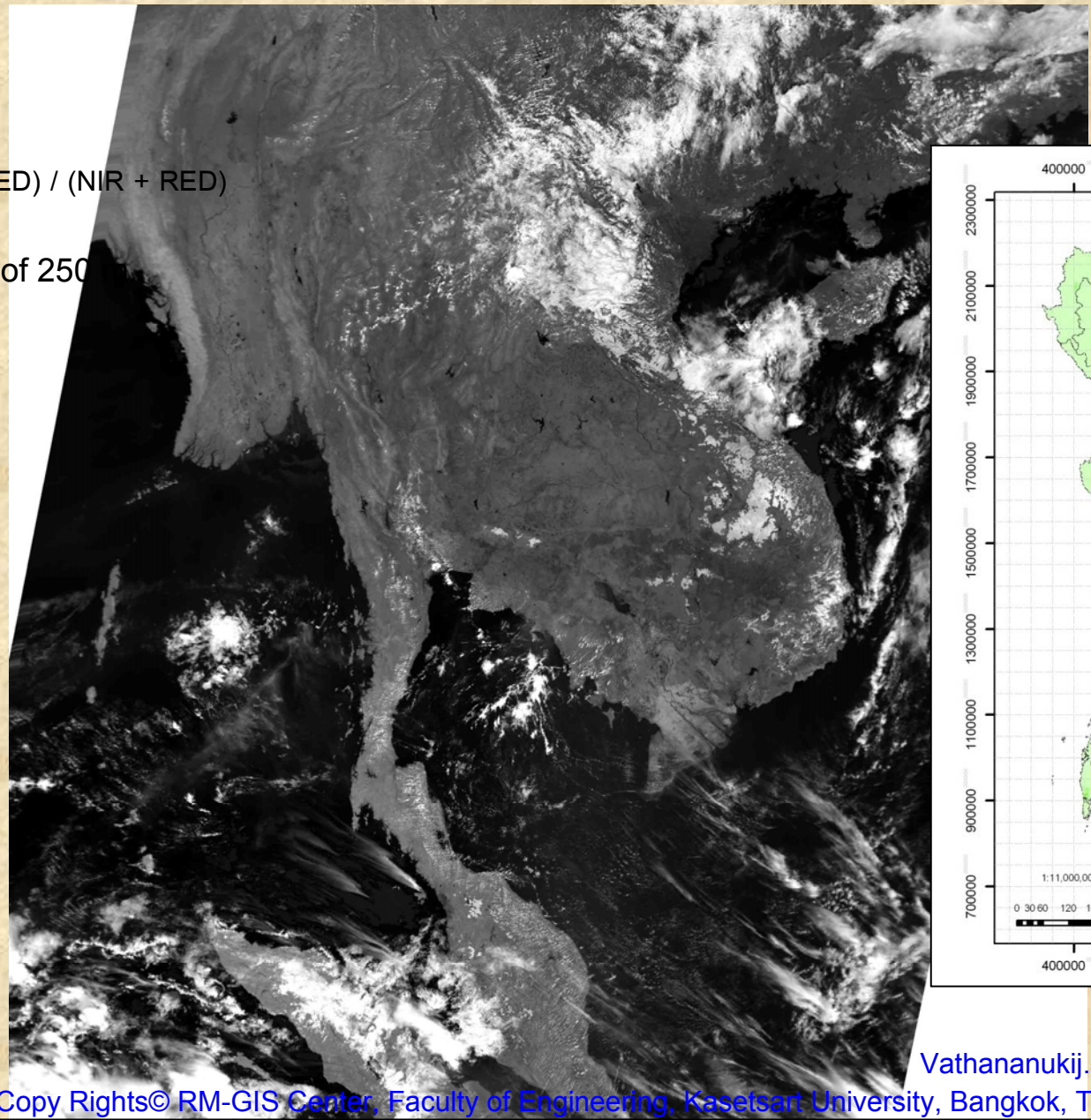
Schematic Diagram of Drought Risk Analysis

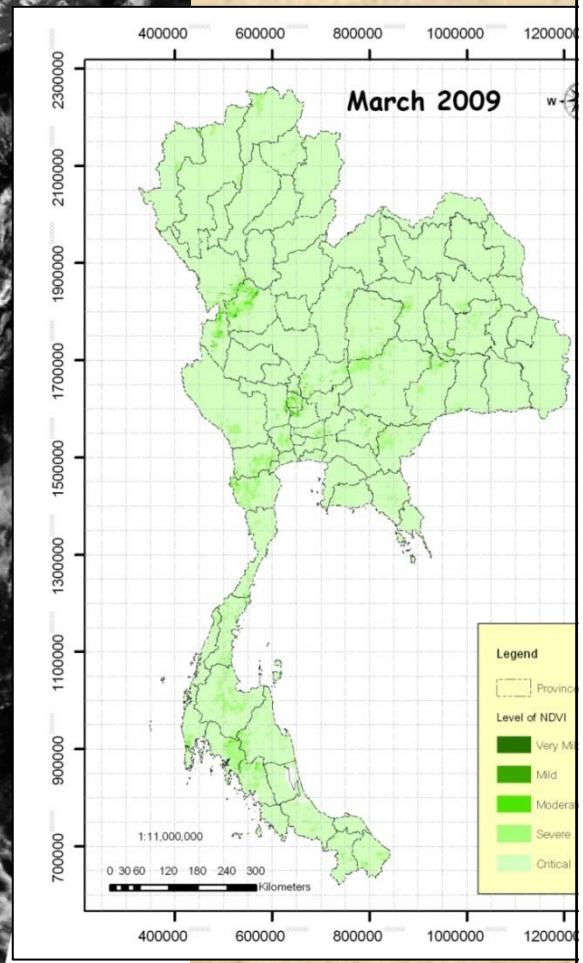
Vathananukij.H and Suwansert.K., 2010

Dry Season NDVI (March 2009)

NDVI = (NIR - RED) / (NIR + RED)

150 imageries of 250
MODIS Terra

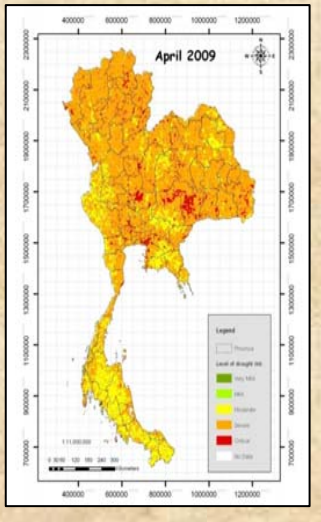


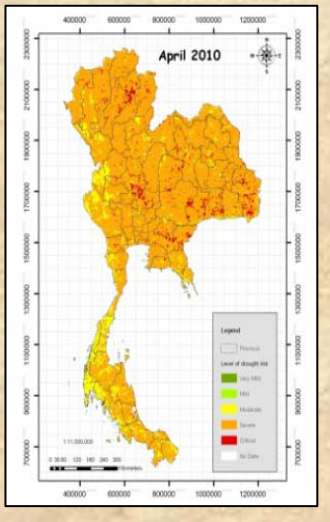


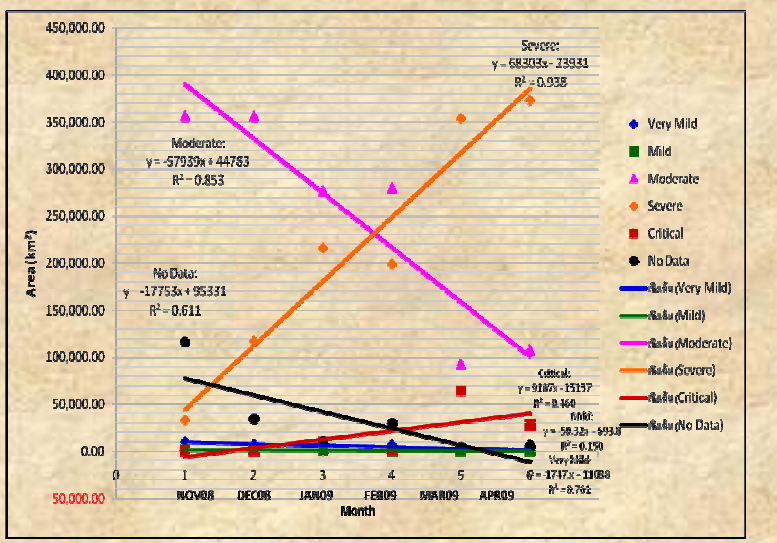
Vathananukij.H and Suwansert.K., 2010

Discussion & Conclusion

- This spatial and temporal analysis of drought risk in Thailand has demonstrated the potential of geospatial technology to analyze drought risk areas in macro scale at near-real time and important part of planning for crisis management and drought. The integration between Geoinformatic system and earth observation imageries make more realistic output. Moreover, it is shows that vegetation Index from MODIS on NASA's Terra can be used in monitoring drought in an overview of Thailand, especially in the Northeast region that result is consistent with the real drought villages.
- Using vegetation indices in the study of drought illustrated good result in the Northeastern and Northern part of Thailand except the southern because the South has vegetation cover throughout the years, so the drought may be caused by insufficiency of water supply systems, such as the lack of village small water resources development etc. Moreover, drought is depend on definition that researcher interest or focus on. The result in this study is preliminary of drought analysis in Thailand.







Vathananukij.H and Suwansert.K., 2010