



Thailand 2011

Experiences on Flood Monitoring

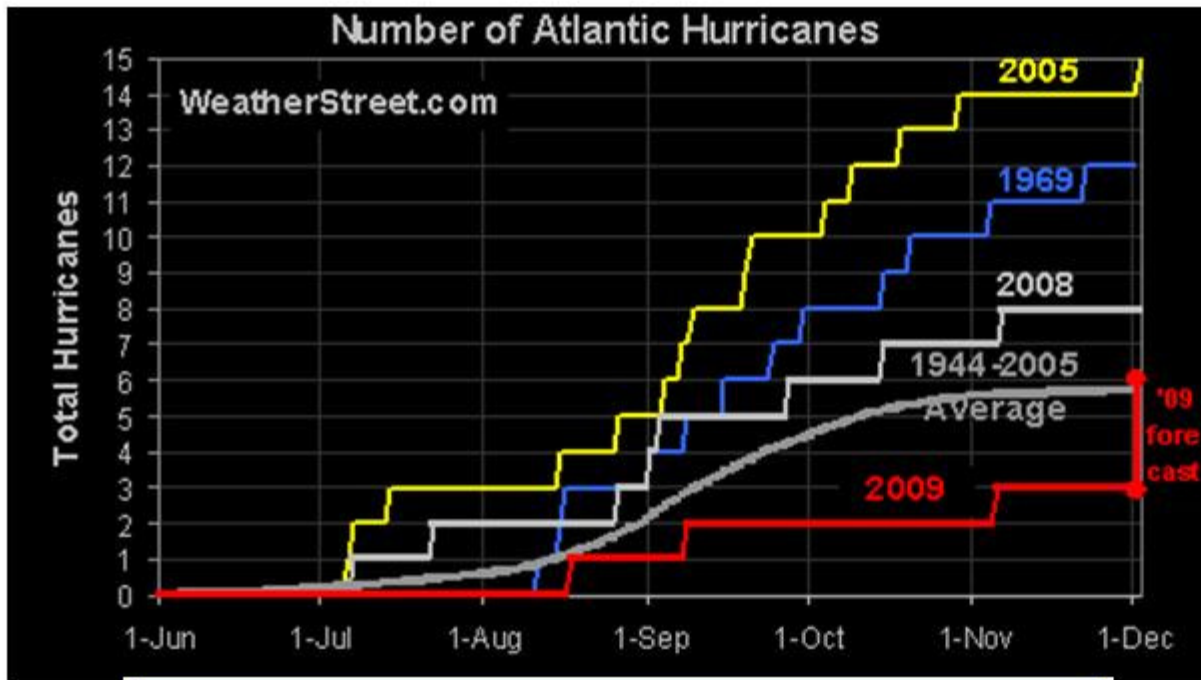
Hansa Vathananukij (D.Eng.)

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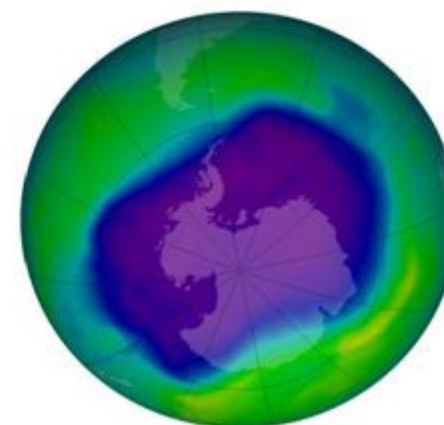
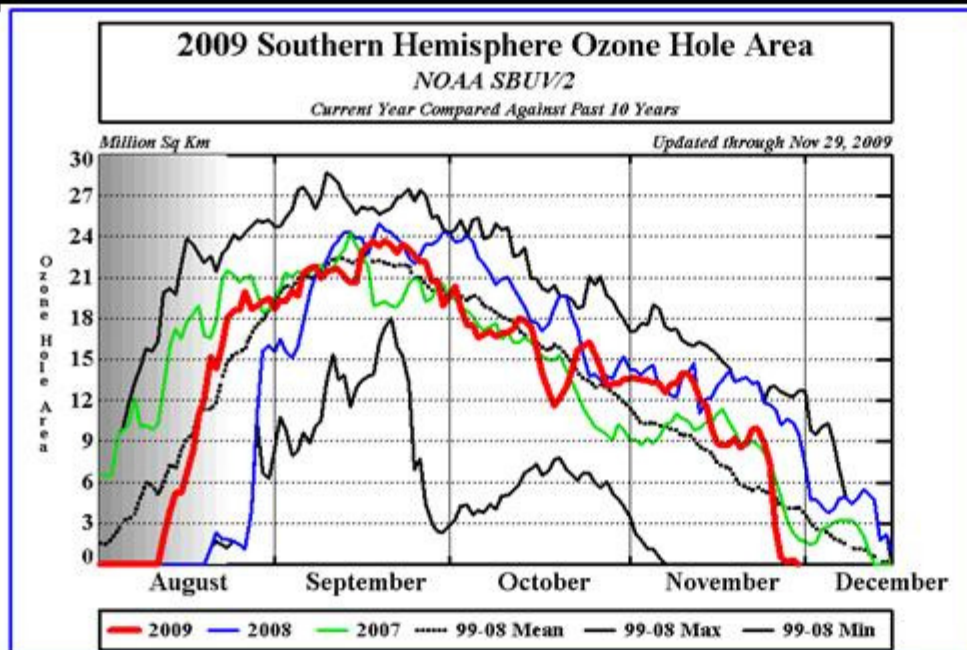
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HURRICANES

| | |
|------|----|
| 2010 | 12 |
| 2009 | 3 |
| 2008 | 8 |
| 2007 | 6 |
| 2006 | 5 |
| 2005 | 15 |



MODIS 250

Vathananukij, H. and N. Theprod. 2004

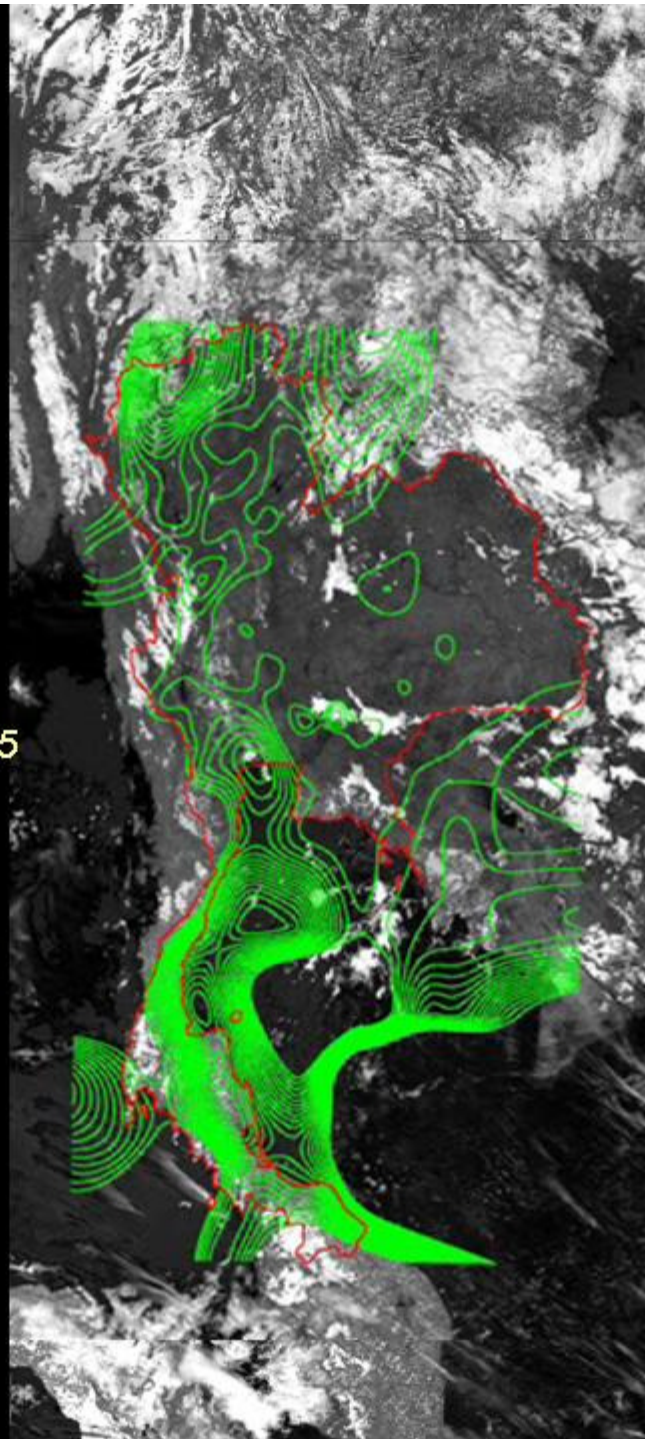
MODIS 500

Vathananukij H. 2005

Vathananukij, H. and P. Tantaobharse. 2005

MODIS 1000

Musikapan J. & Vathananukij H., 2007



EO
Potentiality
in
Thailand

Precipitation Analysis

MODIS 1000

2002

Dry Season NDVI (March 2009)

$$\text{NDVI} = (\text{NIR} - \text{RED}) / (\text{NIR} + \text{RED})$$

(MODIS on NASA's Terra)

$$\text{NDVI} = (\text{Band 2} - \text{Band 1}) / (\text{Band 2} + \text{Band 1})$$

150 Imageries
MODIS 250

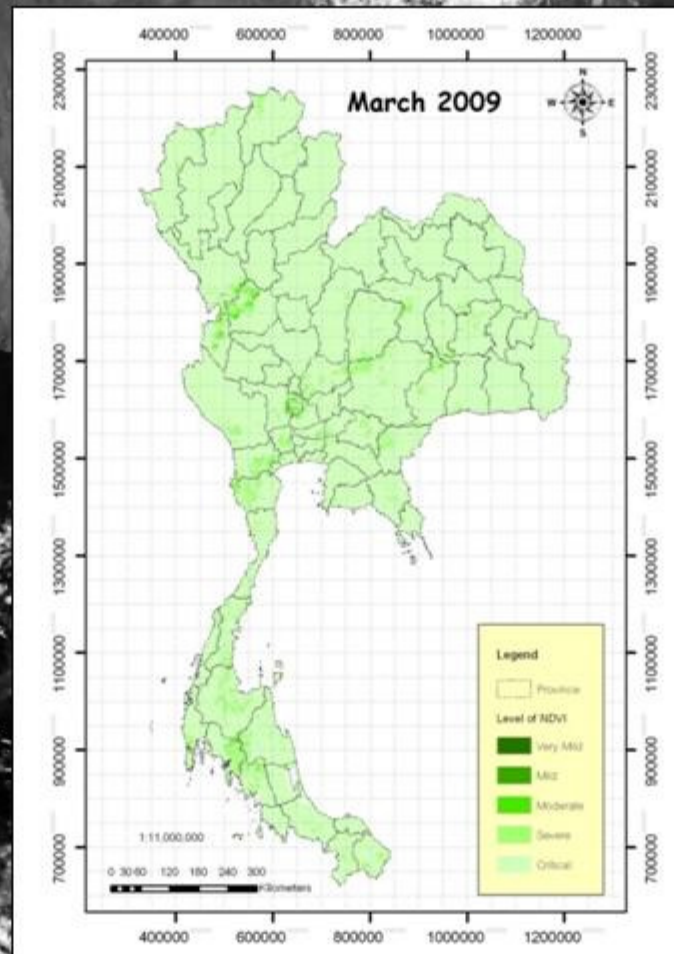
Departments Index:

Agriculture

Water Resource

Forestry

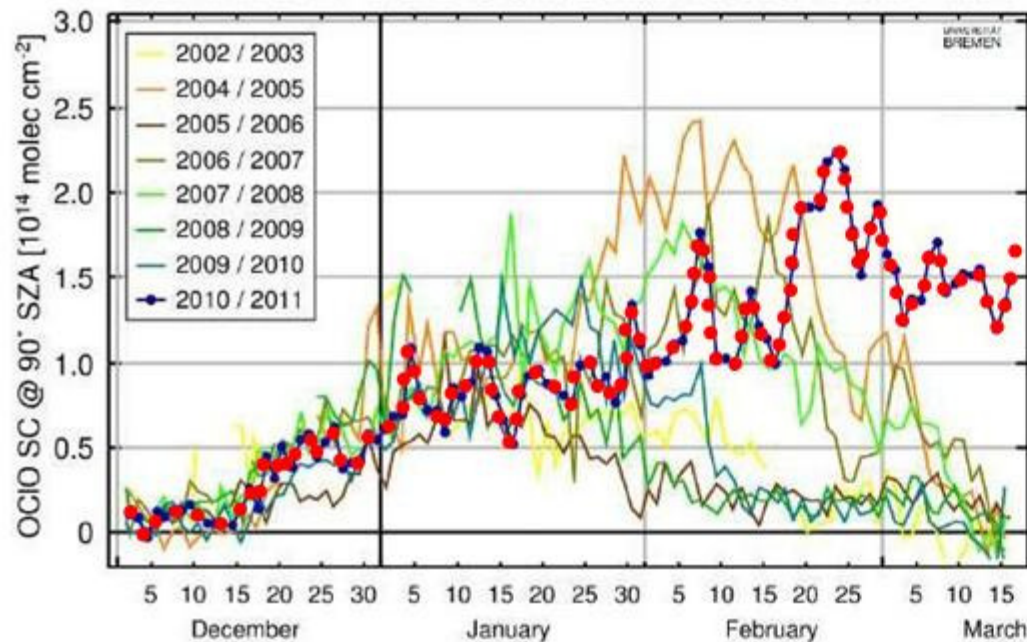
Irrigation



Suwansert.K and Vathananukij.H. 2010

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SCIAMACHY OCIO Slant Columns above the Arctic

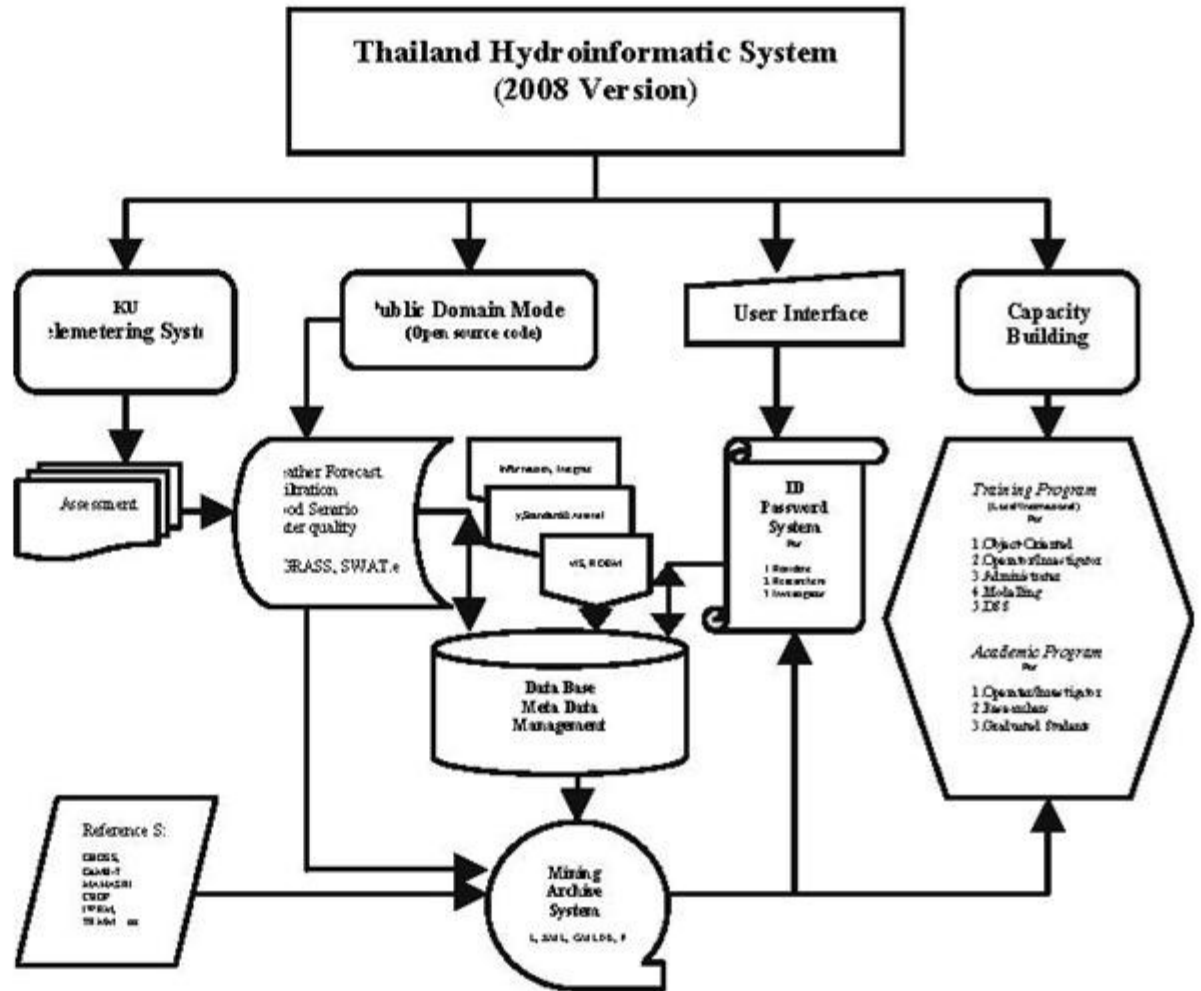


- 2011
Climate Change
Arctic/Ozone/Magnetic wave
The APCC MME Forecast

- **Thailand**
1995 Typhoon **Gay**
1996 -
1997 Typhoon **linda**
1998 -
1999 Typhoon **Changsan**
2000 – 2011 : No Typhoon
2005 – Flood
2010 – Flood
2011 – Flood
Haima, Noten, Nalgae
(Tropical Storm / Depression)



ภาพการเกิดน้ำท่วมโดย NASA (24 ชั่วโมง)

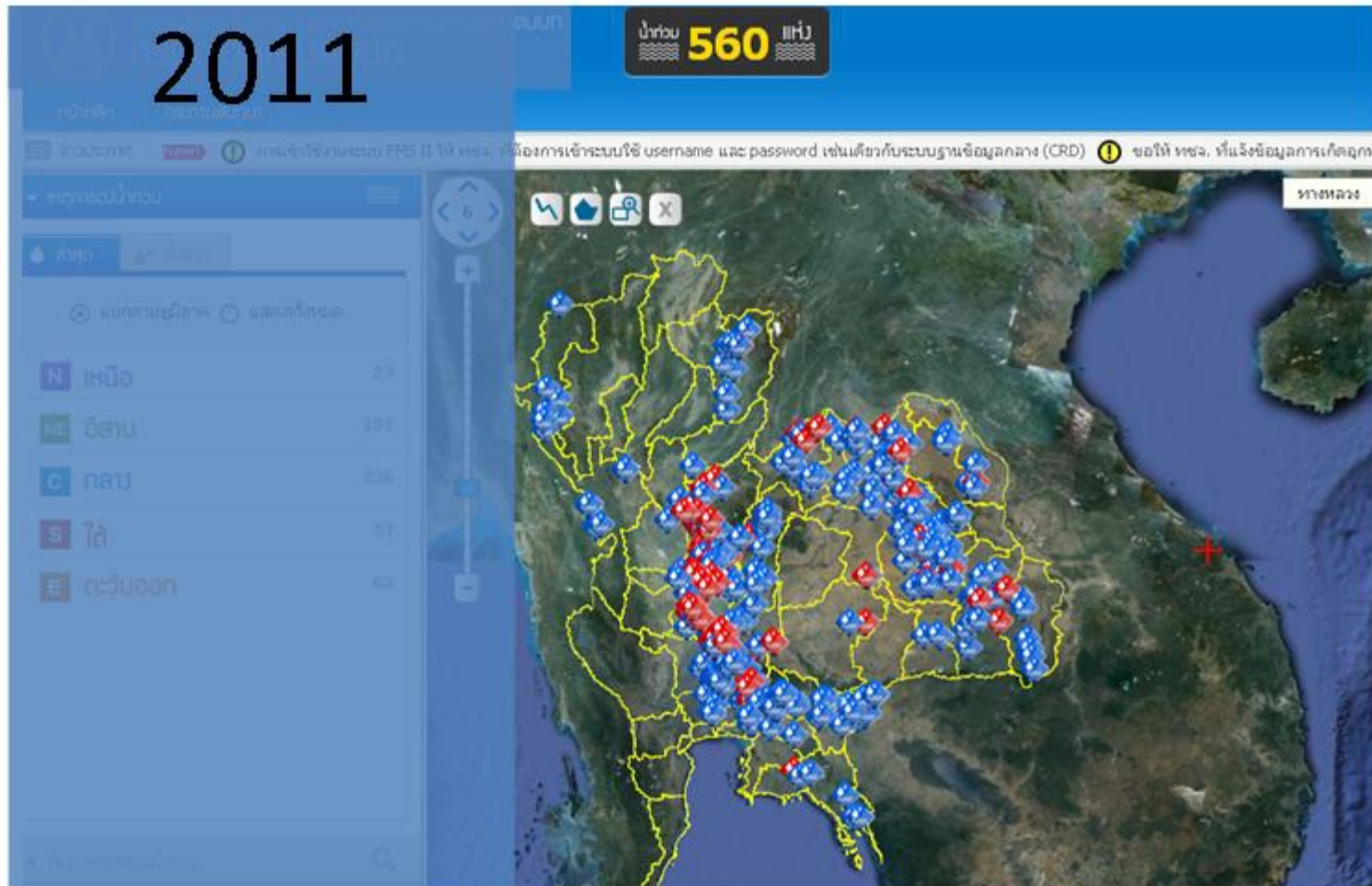


Stations: Telemetering system



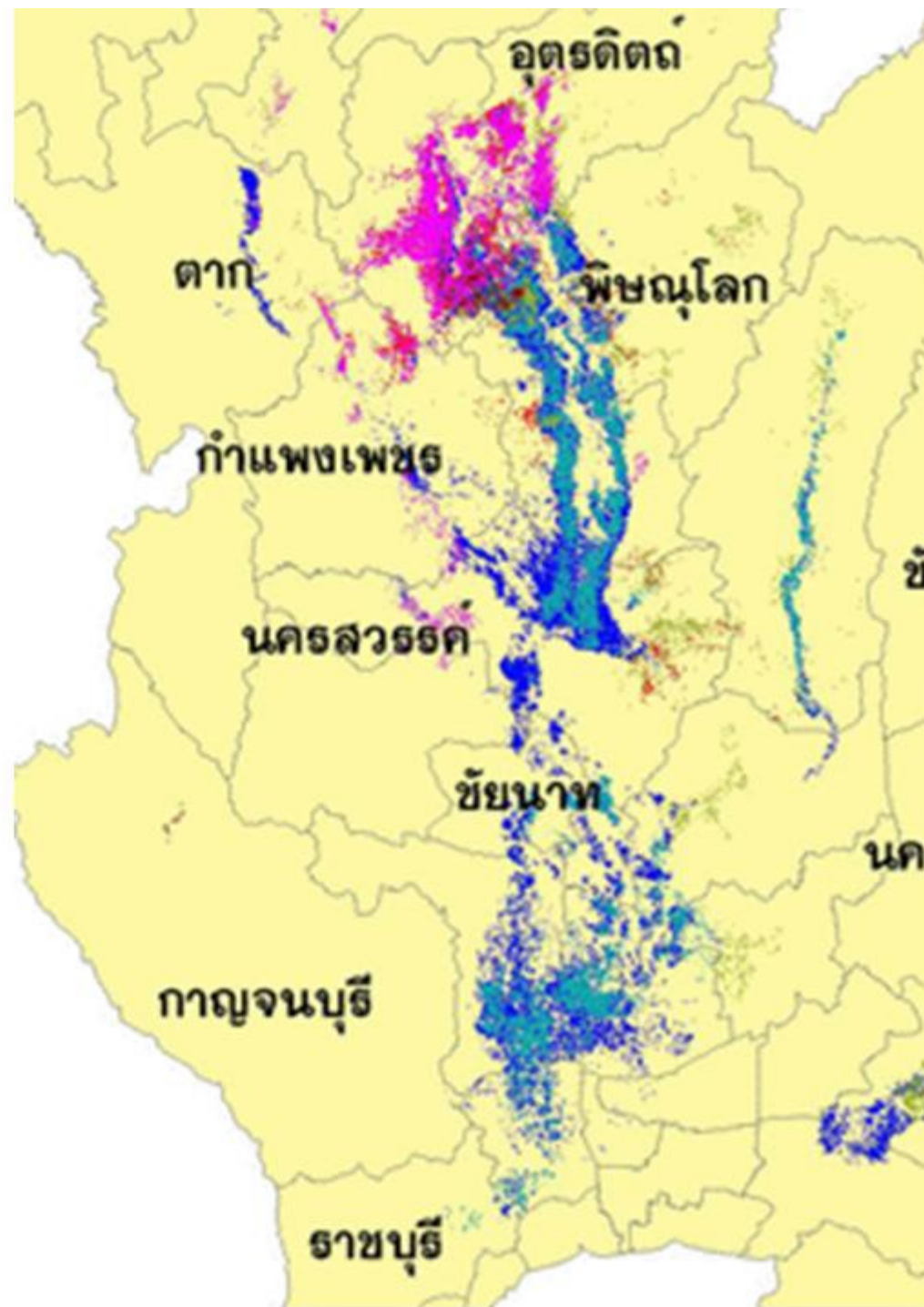
2011

น้ำท่วม 560 หมู่



2011
Until October 3, 2011

Flood 23 provinces 560 streets
10 จังหวัด Highway 23 lines
20 จังหวัด. Rural road 74 lines



- Vathananukij,H. and Malaikrisanachalee.S. 2008. Hydroinformatic system (Implementation in Thailand), Water South Africa Journal, Volume 34 Number6, ISSN0378-4738, ISSN1816-7950 Water SA on-line, pp 725-730
http://scielo.org.za/scielo.php?pid=S1816-7950200800060009&script=sci_arttext
<http://www.scieio.org.za/pdf/wsa/v34n6/a09v34n6.pdf>
- Vathananukij.H. and Suwanprasert.K 2010, Spatial Analysis and Drought Risk Determination in Thailand, Journal of Research in Engineering Technology, Volume 7 Number3, September 2010, ISSN 1686-5190, pp41-47
- Jotisankasa.A, Vathananukij,H. and M.R. Coop. 2010. Soil-water retention curves of some silty soils and their relations to fabrics, *In* Proceedings of The 4th Asia Pacific Conference on Unsaturated Soils, 23th-25th November 2009, Newcastle, Australia, imprint of the ©2010 Taylor&Francis Group, London, ISBN 978-0-415-80480-6, pp 263-268
- Vathananukij,H. 2006. Geoinformatic Public Domain System Model 'SWAT' in Thailand, The Kasetsart Journal: Natural Sciences, Volume 40 Number1, January-March 2006, ISSN 0075-5192, pp 264-272

2009-2011 Capacity Development

- - 2008 Develop Thailand Hydroinformatic System / Prototype
- - 2009 Introduction training courses in Thailand for Thai government participants to recognize standard system for hydro-meteorological database
(RM-GIS Center, Faculty of Engineering, Kasetsart University and NRCT: National Research Council of Thailand)
- - 2010-2012 Research in Hydroinformatic system as SSWM project

(Research and Development Project on Integrated Data System in Dynamic Topo-Hydrological Interaction for Sufficient and Sustainable Water Resource Management (SSWM) upon the Chaophraya River Basin ,NRCT: National Research Council of Thailand)

Result was submitted to Planet under Pressure 2012 conference.



ABSTRACT SUBMISSION

Title: Water Governance through Integrated Hydroinformatics System for Real-time Monitoring and 5D Flood Simulation

This is a summary of your submission. If you want to make any changes please press the "Back" button at the bottom of this screen. You can return later to make further changes.

Print

Abstract No. 0939

Title Water Governance through Integrated Hydroinformatics System for Real-time Monitoring and 5D Flood Simulation

Abstract

Thailand has faced several serious flood disasters in recent memory, especially the lower Chao-phraya river basin which encompasses the most economically sensitive area. There are continued efforts by multiple government agencies to prevent flood disasters in this area. The integrated hydroinformatics system for real-time monitoring and 5D flood simulation is one of the efforts to improve decision makings on mitigation and preparation for flood hazards in this river basin. The system consists of real-time hydro-meteorological observations, spatio-temporal hydrological database, precipitation forecasting module, flood simulation module and online data monitoring system. The real-time hydro-meteorological observations including automatic rain gauge, flow meter as well as soil moisture sensor are operated continuously while observation data are wirelessly transferred through the general packet radio service network and then submitted into the spatio-temporal hydrological database for real-time data monitoring and dynamic map display. The precipitation forecast module, which down-scales the global weather forecast to local precipitation forecast and subsequently calibrates the forecast data with real-time observation, provides another input data for the spatio-temporal hydrological database. The flood simulation module, which incorporates the network dynamic flow model with the hydrodynamic model, use real-time and forecast data from the spatio-temporal hydrological database for predicting changes in water surface profiles and potential flood simulation inundation. The simulation results including the forecasted time-varied river stages at different observation sites as well as simulated flood impact scenario that are presented through Google Earth for multi-dimensional display. This system is primarily designed for short range forecast while medium range forecast is also possible with lower forecast reliability.

Approval Confirm

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Keyword1 Water Governance

Keyword2 Hydroinformatics



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