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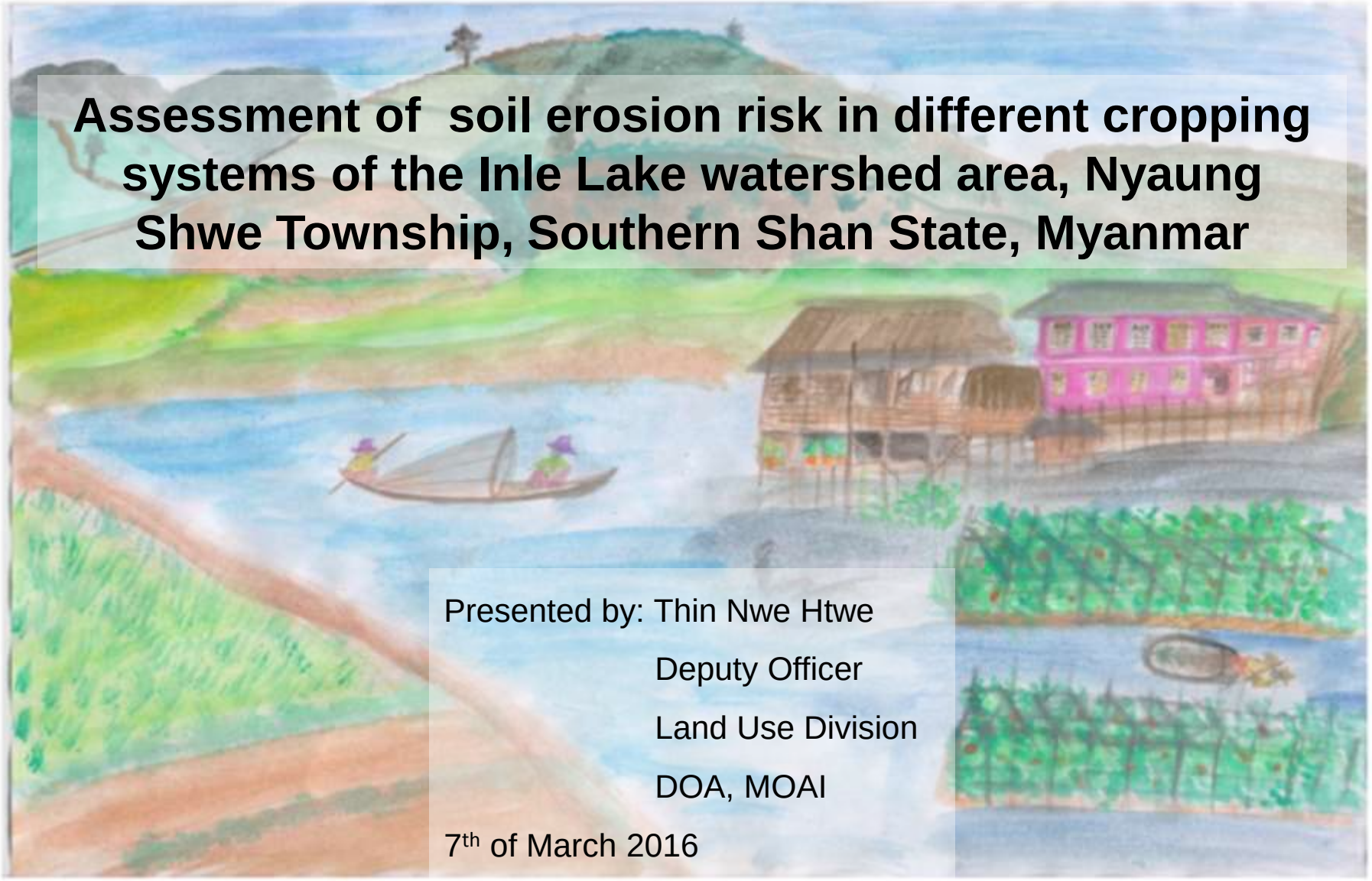
Assessment of soil erosion risk in different cropping systems of the Inle Lake watershed area, Nyaung Shwe Township, Southern Shan State, Myanmar



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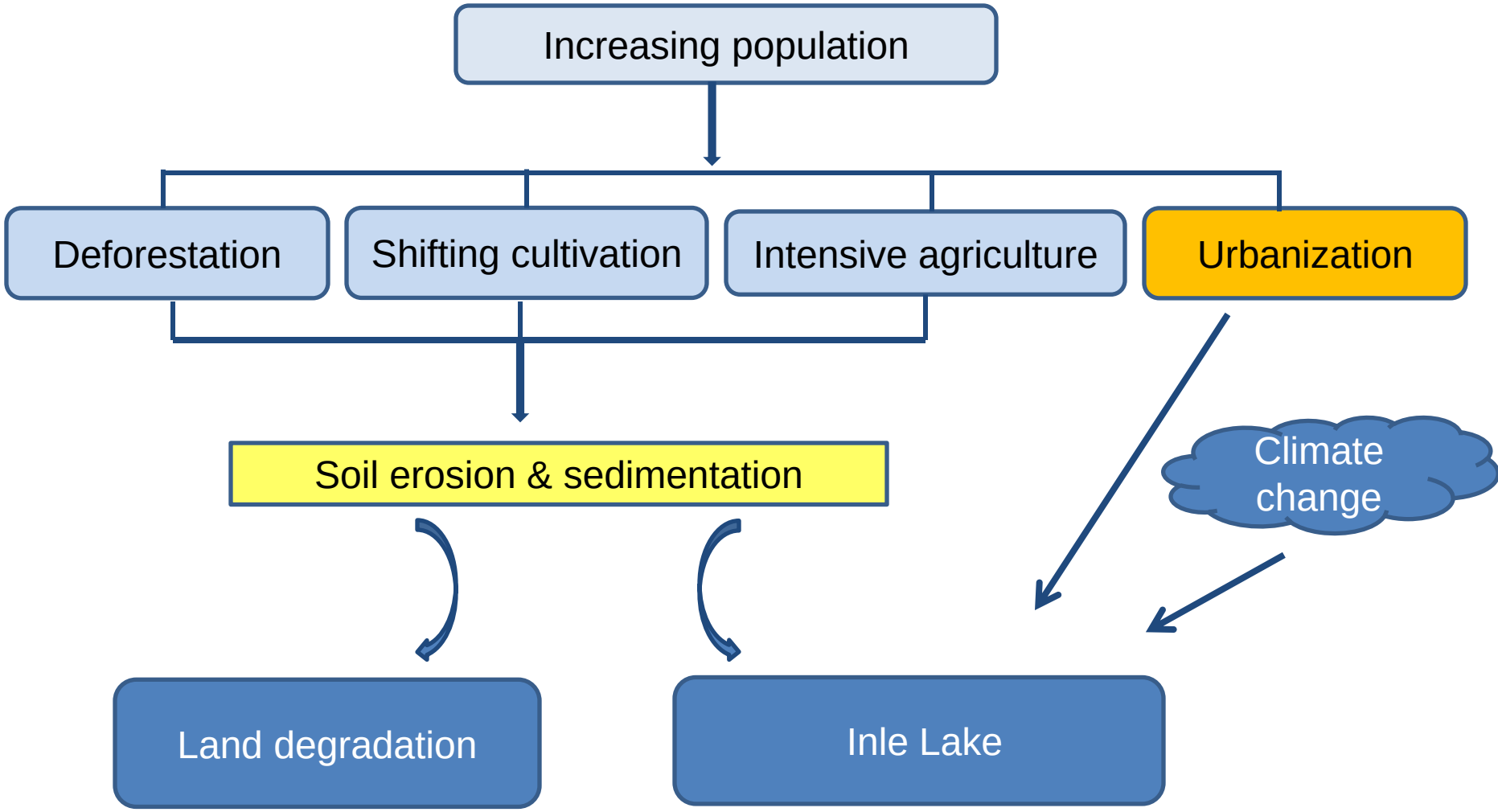
Land Use Division

DOA, MOAI

7th of March 2016

Upland cultivation

» Problems / Challenges



» Objective

To investigate the effects of different cropping systems on soil erosion risk in space and time

» Methodology

- **GPS data :** Geographic information and the total area of farmers' cultivated land **(n = 301)**
- **Rainfall data** (4 stations)
- **Soil data** (128 soil samples)
- **Risk of soil erosion**: A GIS-based soil erosion model using the Revised Universal Soil Loss Equation (RUSLE) (Renard et al., 1997)

A = R x K x LS x C x P

A - average annual soil loss (t ha^{-1} yr^{-1})

R - rainfall-runoff erosivity (MJ mm $ha^{-1}h^{-1}yr^{-1}$)

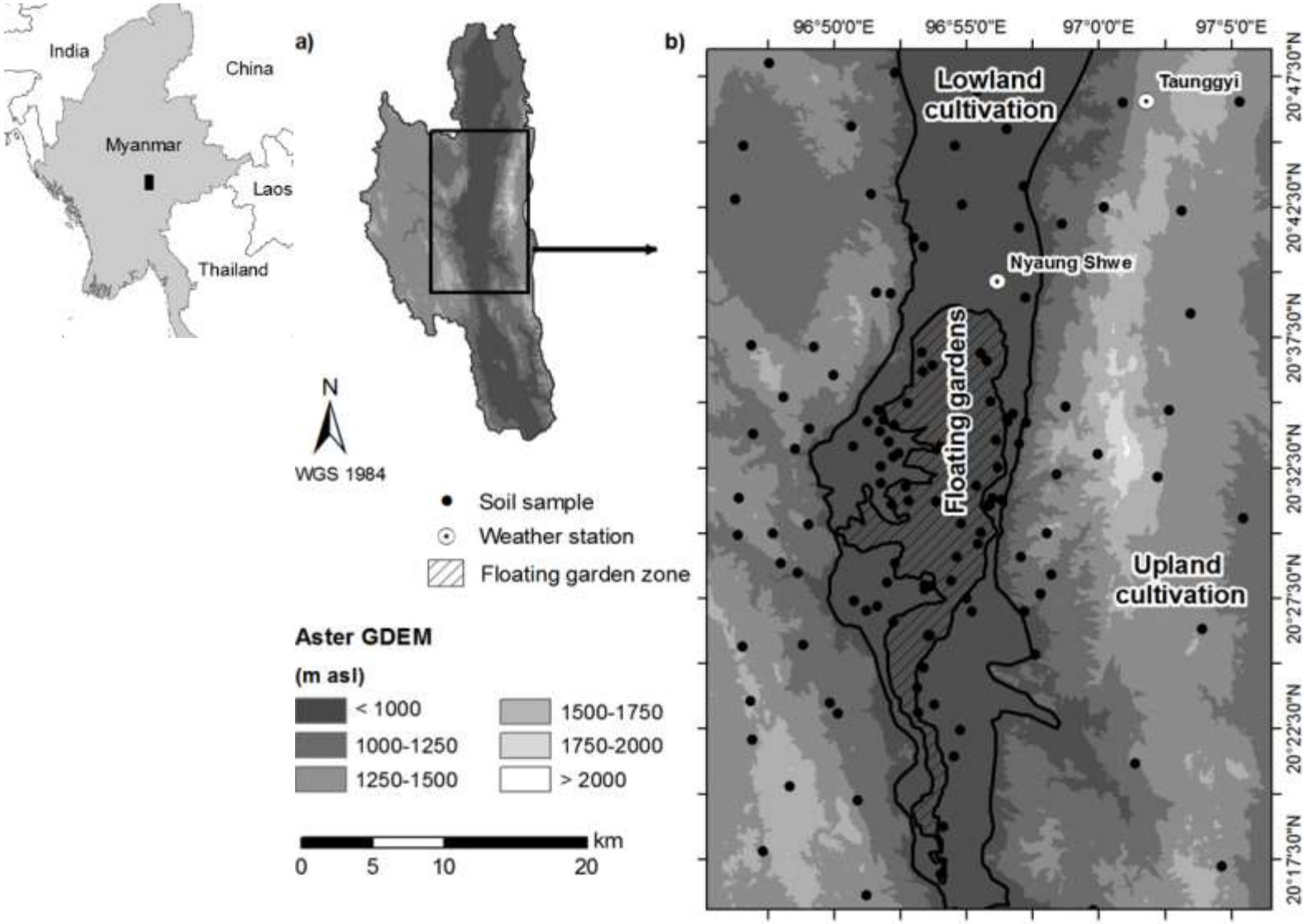
K - soil erodibility (t ha h $ha^{-1}MJ^{-1}mm^{-1}$)

LS - slope length and steepness

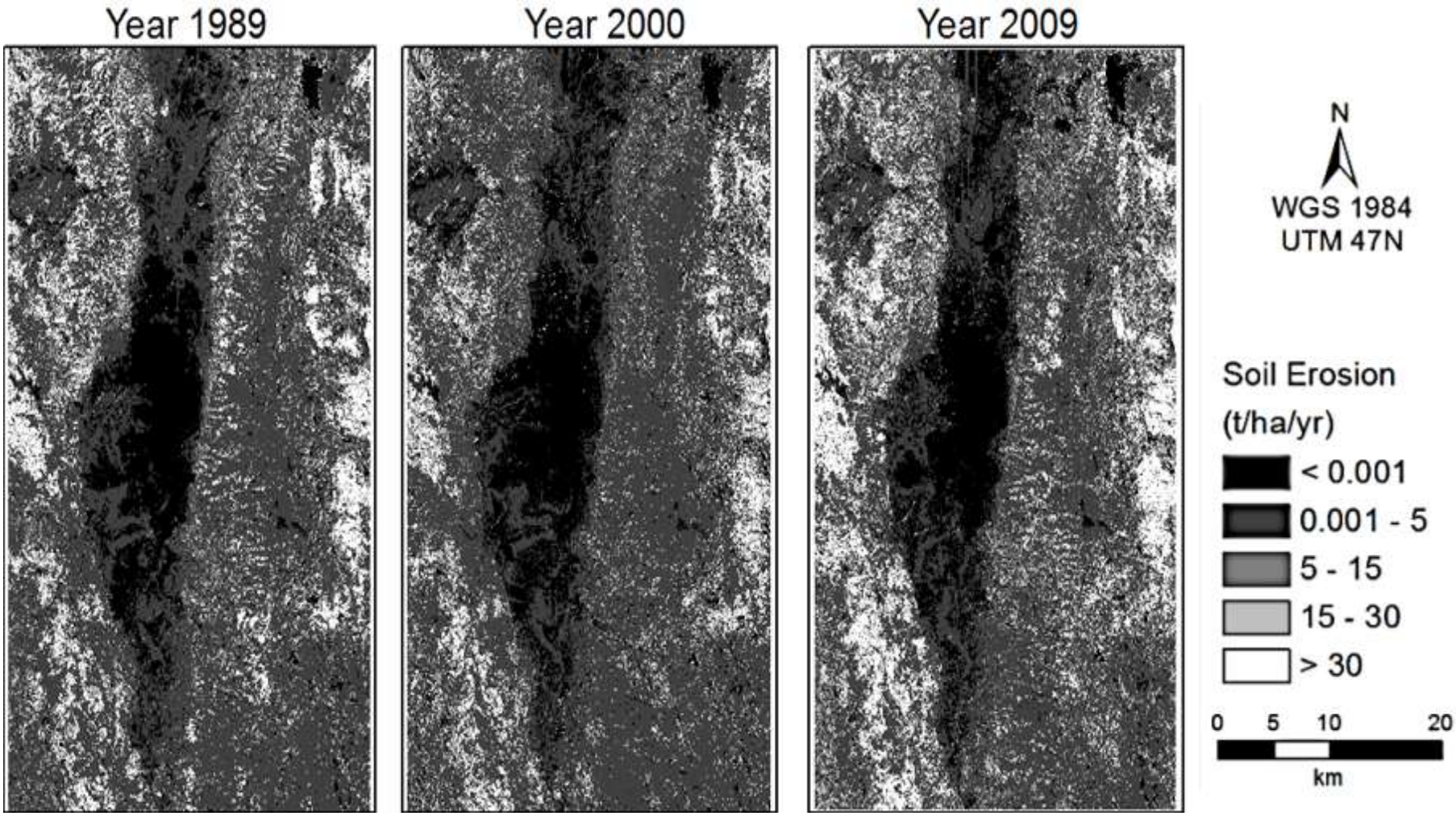
C - cover management

P - support practice

Location of weather stations and soil samples



Predicted soil erosion risk



Land cover changes from 1989 to 2009 and estimated soil losses for each land cover class

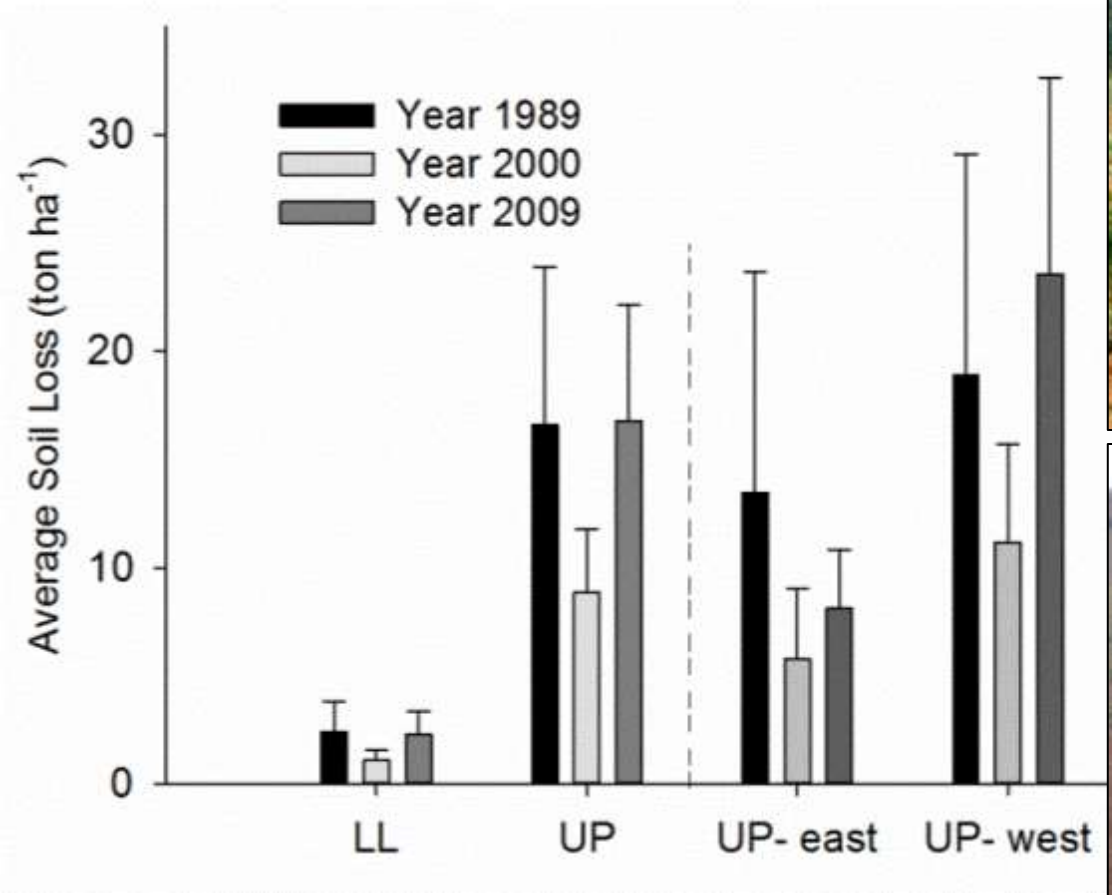
Land cover class	Average soil losses	
	Mean (t ha^{-1})	Soil loss (%)
Agroforest	7.2	6.8
Barren land	**112.0**	85.4
Cropland	**25.9**	4.5
Fallow land	0.7	0.3
Forest	0.3	0.3
Paddy fields	0.6	0.1
Shrubland	1.8	2.5
Urban	0.0	0.0

Soil losses in the three agricultural zones

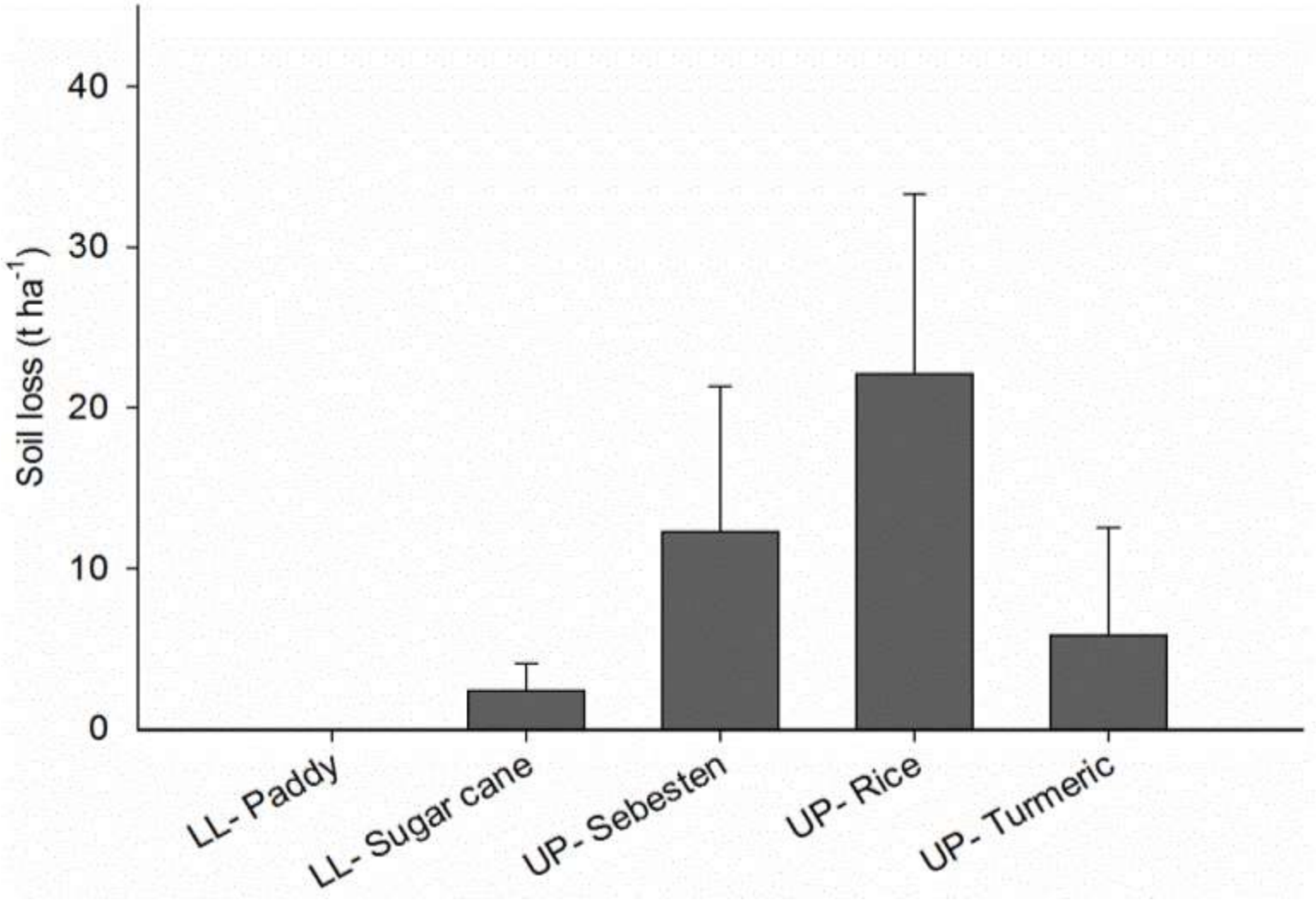
Agricultural zone	Mean (t ha^{-1})			Soil loss (%)		
	1989	2000	2009	1989	2000	2009
FG	0.02	0.02	0.03	0.01	0.02	0.01
LL	3.59	1.54	3.19	3.55	2.99	2.40
UP	26.25	13.43	35.04	**96.44**	**96.99**	**97.60**



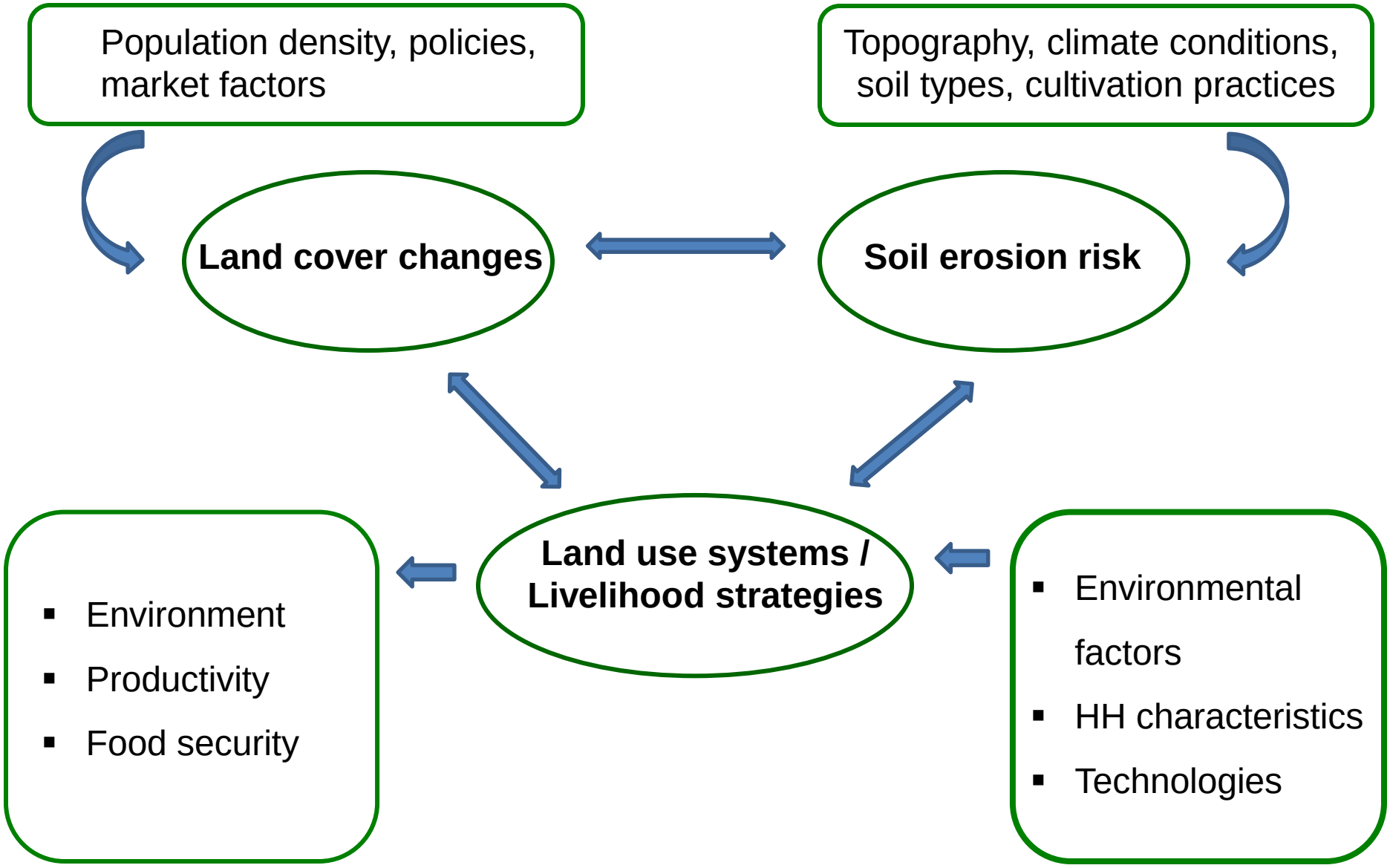
Soil losses in different zones, Eastern and Western parts of Inle Lake region



Soil losses in different cropping systems for 2009



» General discussion & conclusions



Government, INGOs & LNGOs

- Appropriate land use management strategies should be supported to prevent further environmental degradation

- Suitable extension staff need to be employed through the public private partnership

- Eco tourism, skilled jobs and small enterprises as additional income sources should be promoted to sustain wetland ecosystem

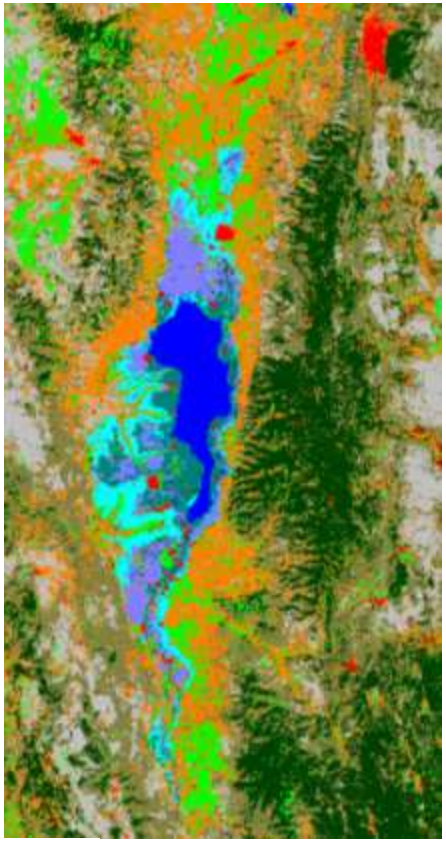
» Stakeholders involved/ existing partnership

- Interviewed farmers (301 households, 30 villages) in the Inle Lake region
- Prof. Dr. Myo Kywe, Rector of Yezin Agricultural University
- Dr. Katja Brinkmann and Prof. Dr. Andreas Buerkert**,** Organic Plant Production and Agroecosystems Research in the Tropics and Subtropics, University of Kassel, Witzenhausen, Germany
- Department of Agriculture and Department of Irrigation, Ministry of Agriculture and Irrigation, Nyaung Shwe Township
- Meteorology and Hydrology Department, Taunggyi
- Land Use Division, Department of Agriculture, Ministry of Agriculture and Irrigation, Nay Pyi Taw
- Local NGO “Inle watershed development”, Nyaung Shwe Township
- German Academic Exchange Service (DAAD)

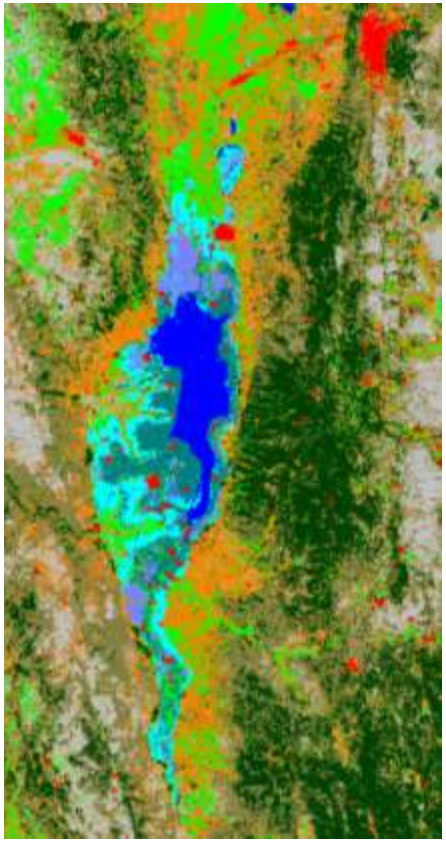

Thank you for your attention

Land cover and land use changes

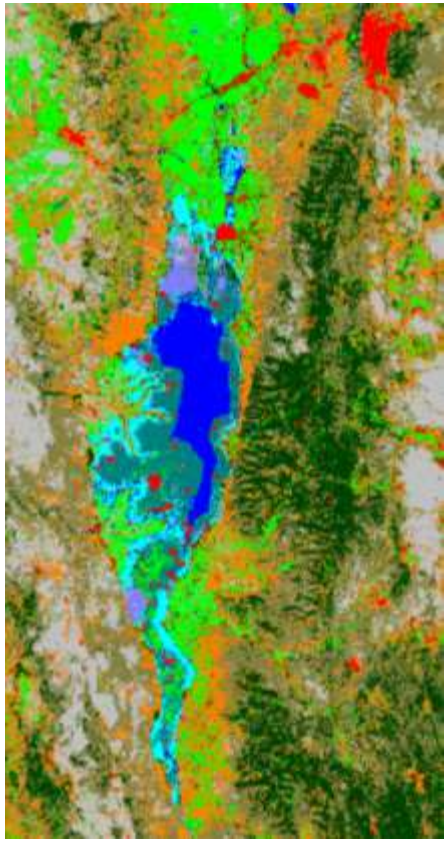
Feb 1989



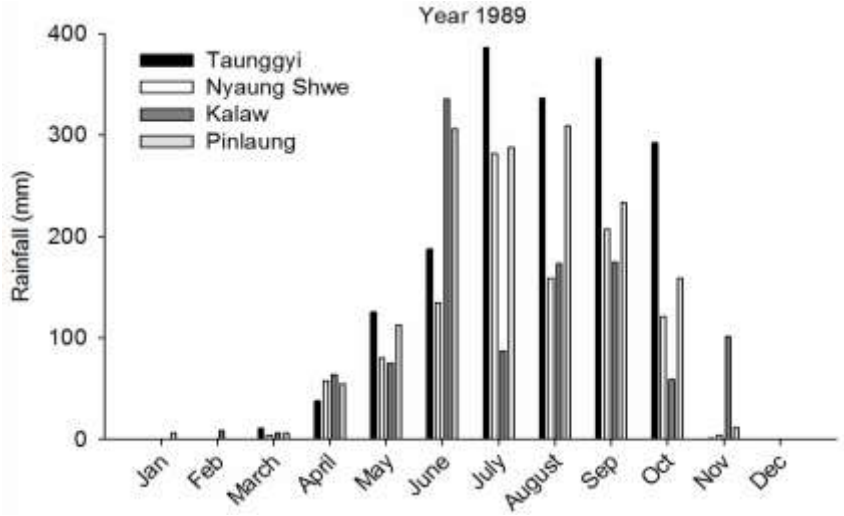
Feb 2000

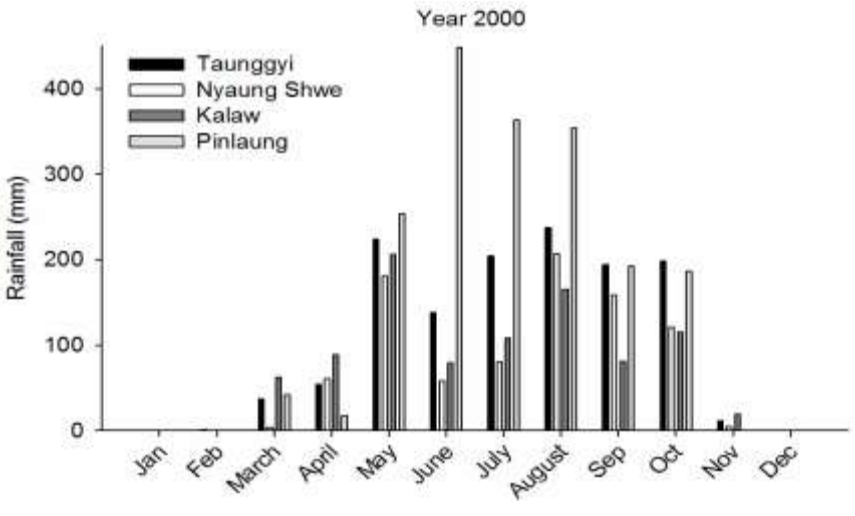


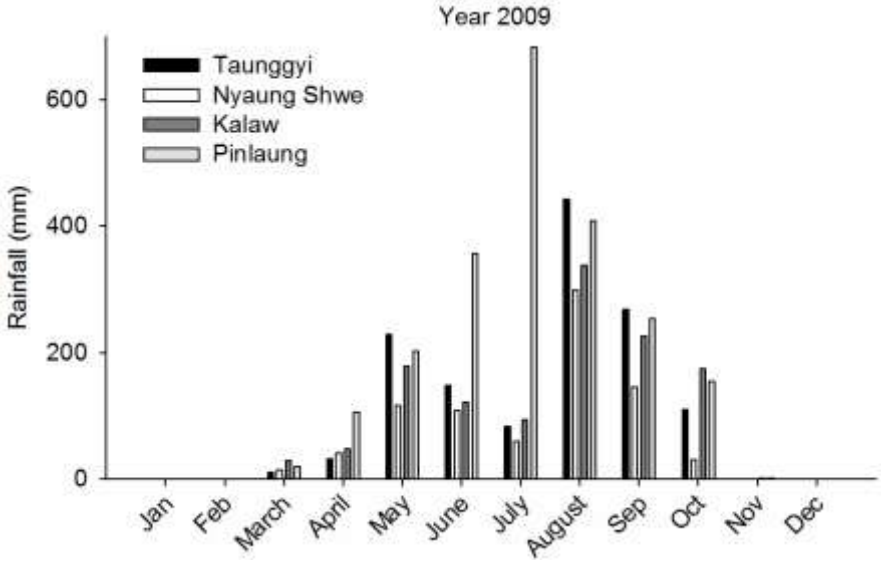
Feb 2009



» Results & discussion







Urbanization, deforestation and crop expansion from 1968-2009