A hybrid approach to mapping spatial patterns of urbanization in Kathmandu Valley, Nepal using satellite remote sensing imageries

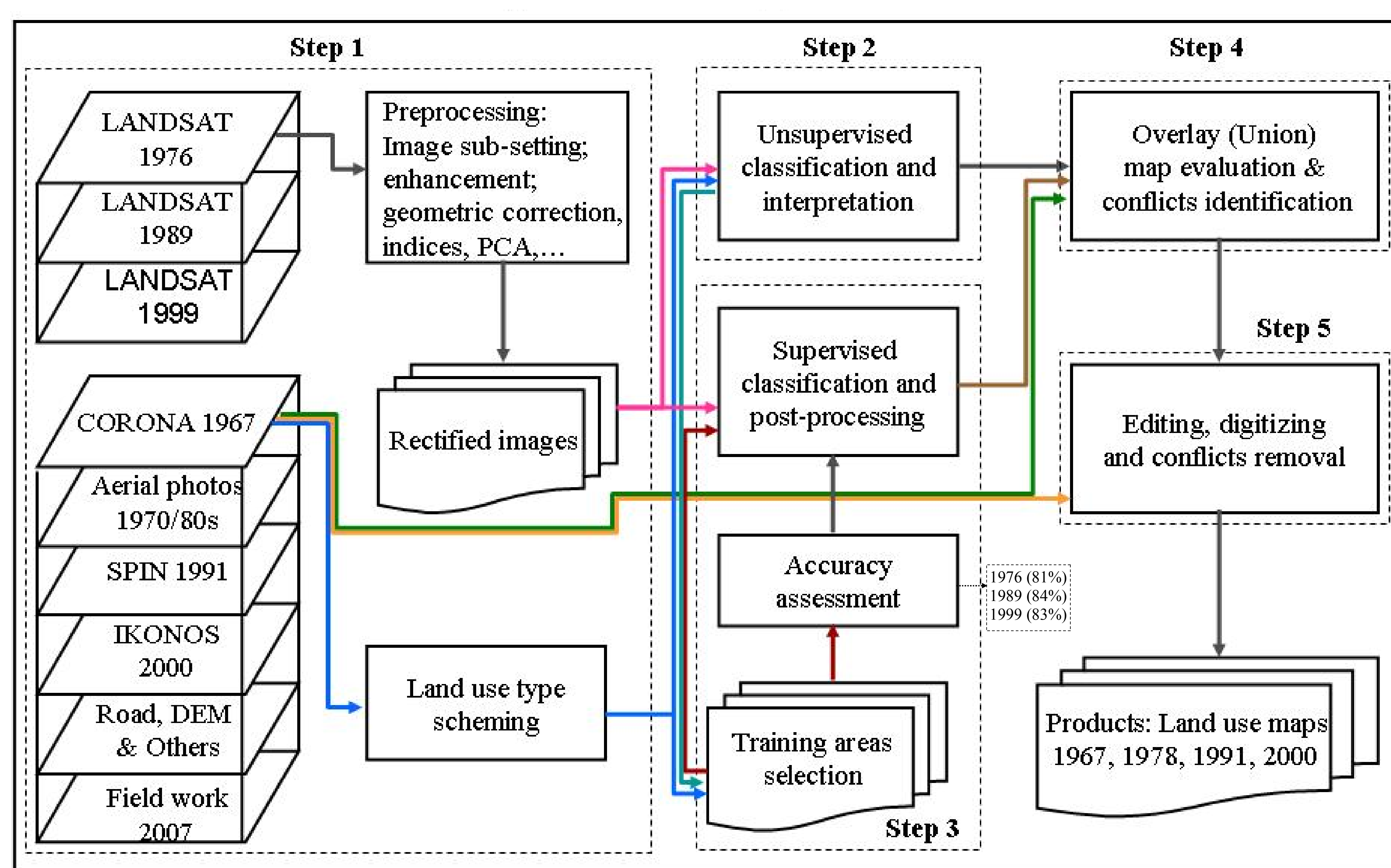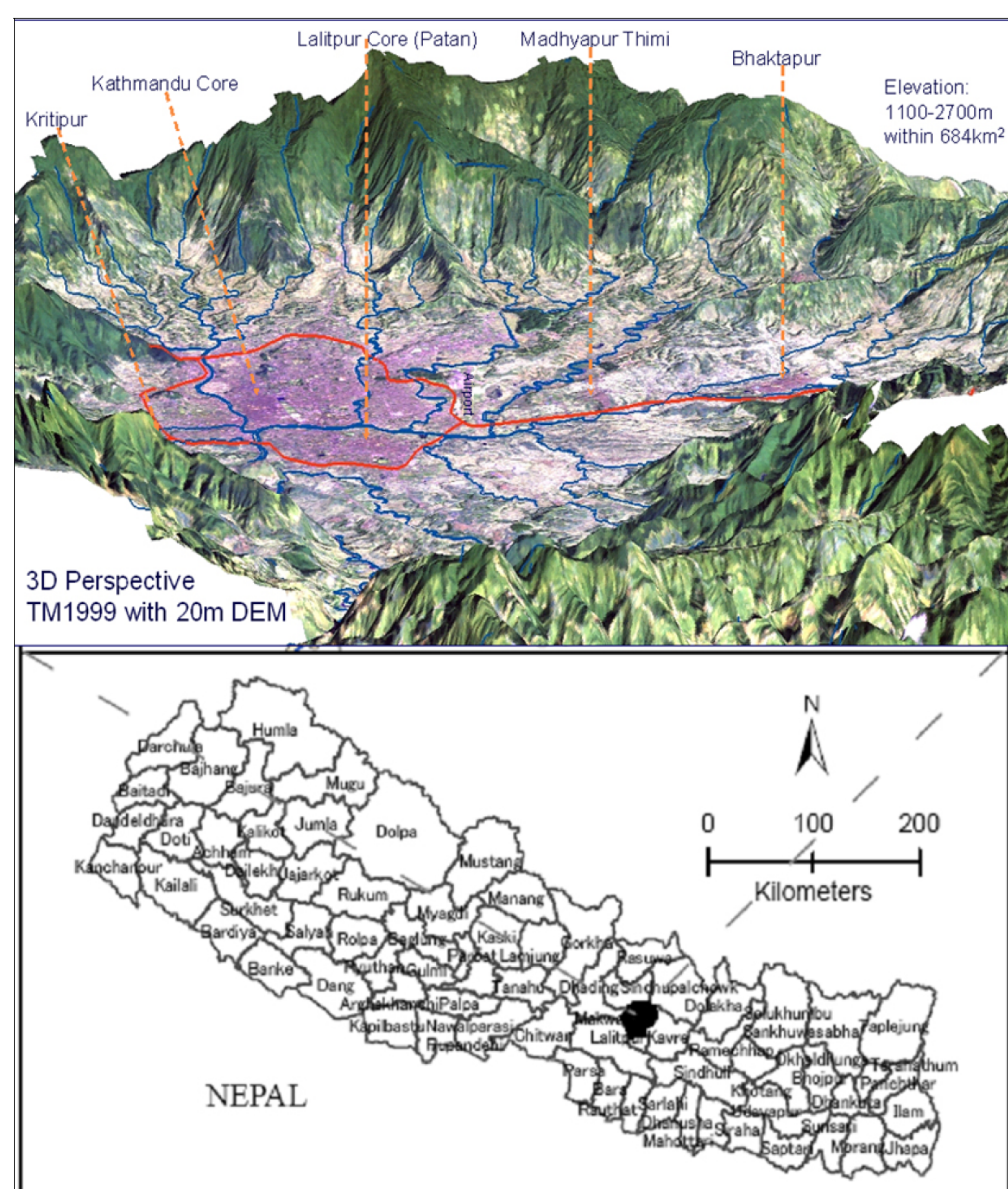**Dr. Rajesh Bahadur Thapa (JSPS Fellow)[1] and Prof. Yuji Murayama**

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Motivation: Satellite data are in image form and contain many details, but not in an objective thematic setting. The heterogeneity and complexity of the landscape in urban regions, for example, suburban residential areas forming a complex mosaic of trees, lawns, roofs, concrete, and asphalt roadways, require land use and land cover classification techniques that combine more than one approach to improve remote sensing-based mapping accuracies. This paper presents a hybrid approach and it's successful application for mapping of spatial patterns of urbanization in Kathmandu Valley using satellite remote sensing imageries.
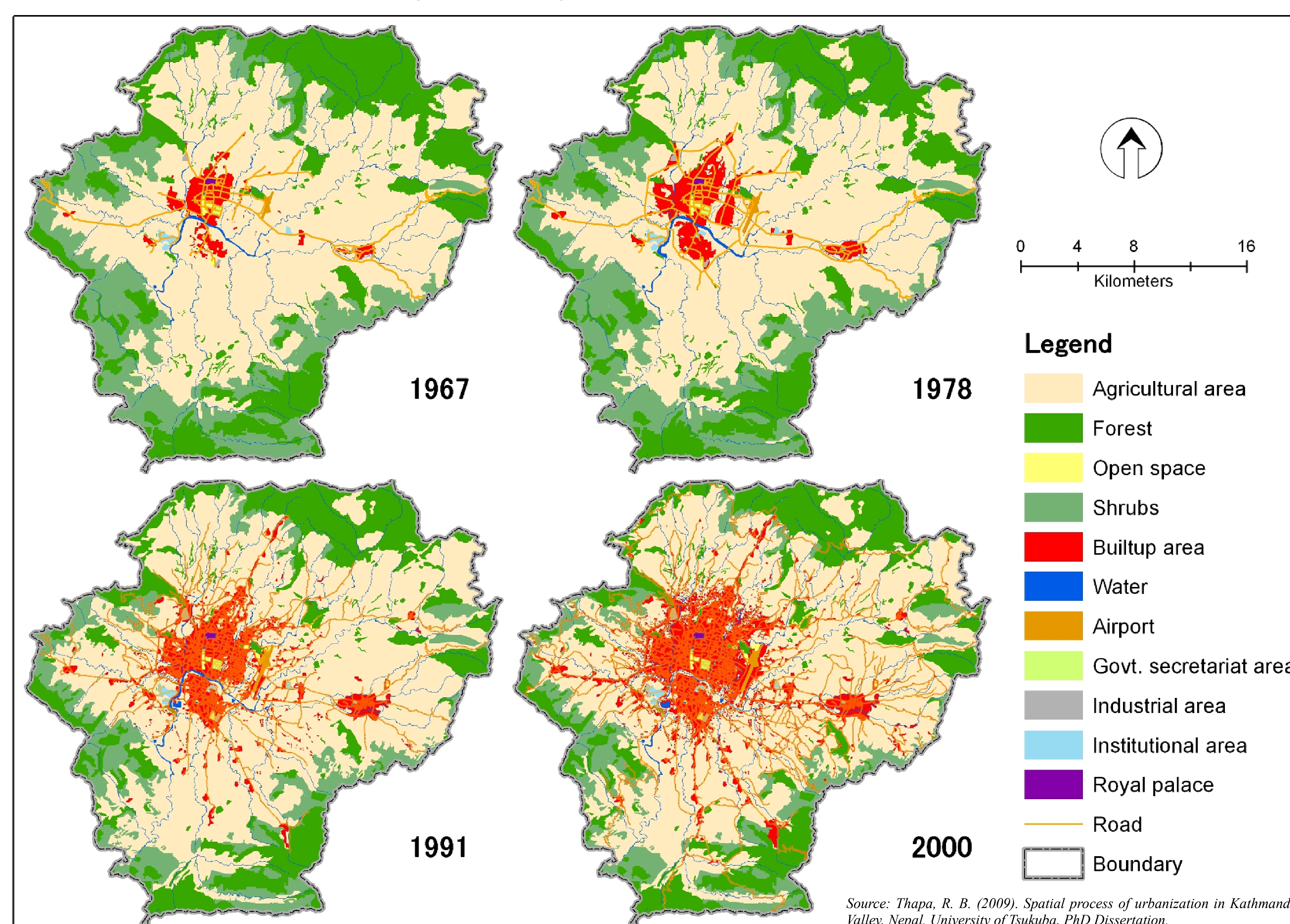
Study Area: Kathmandu Valley, Nepal

Method: Hybrid approach

Results:

1. Spatial patterns of land uses (1967-2000)

Legend

- Agricultural area
- Forest
- Open space
- Shrubs
- Builtup area
- Water
- Airport
- Govt. secretariat area
- Industrial area
- Institutional area
- Royal palace
- Road
- Boundary

Source: Thapa, R. B. (2009). Spatial process of urbanization in Kathmandu Valley, Nepal. University of Tsukuba, PhD Dissertation.

2. Land uses statistics (1967-2000)

Land use types	Year/Area in ha.			
	1967	1978	1991	2000
Shrubs	13,563	12,124	8,129	7,150
Forest	15,800	16,311	13,887	13,301
Water	1,337	1,380	1,341	1,266
Urban/builtup area*	2,010	3,362	6,313	9,717
Open Space	100	95	135	171
Agricultural area	35,649	35,186	38,652	36,854
Total	68,458	68,458	68,458	68,458

*Builtup area, airport, govt. secretariat area, industrial area, intuitional area, royal palace, and road

3. Spatial patterns of urbanization (1967-2000)
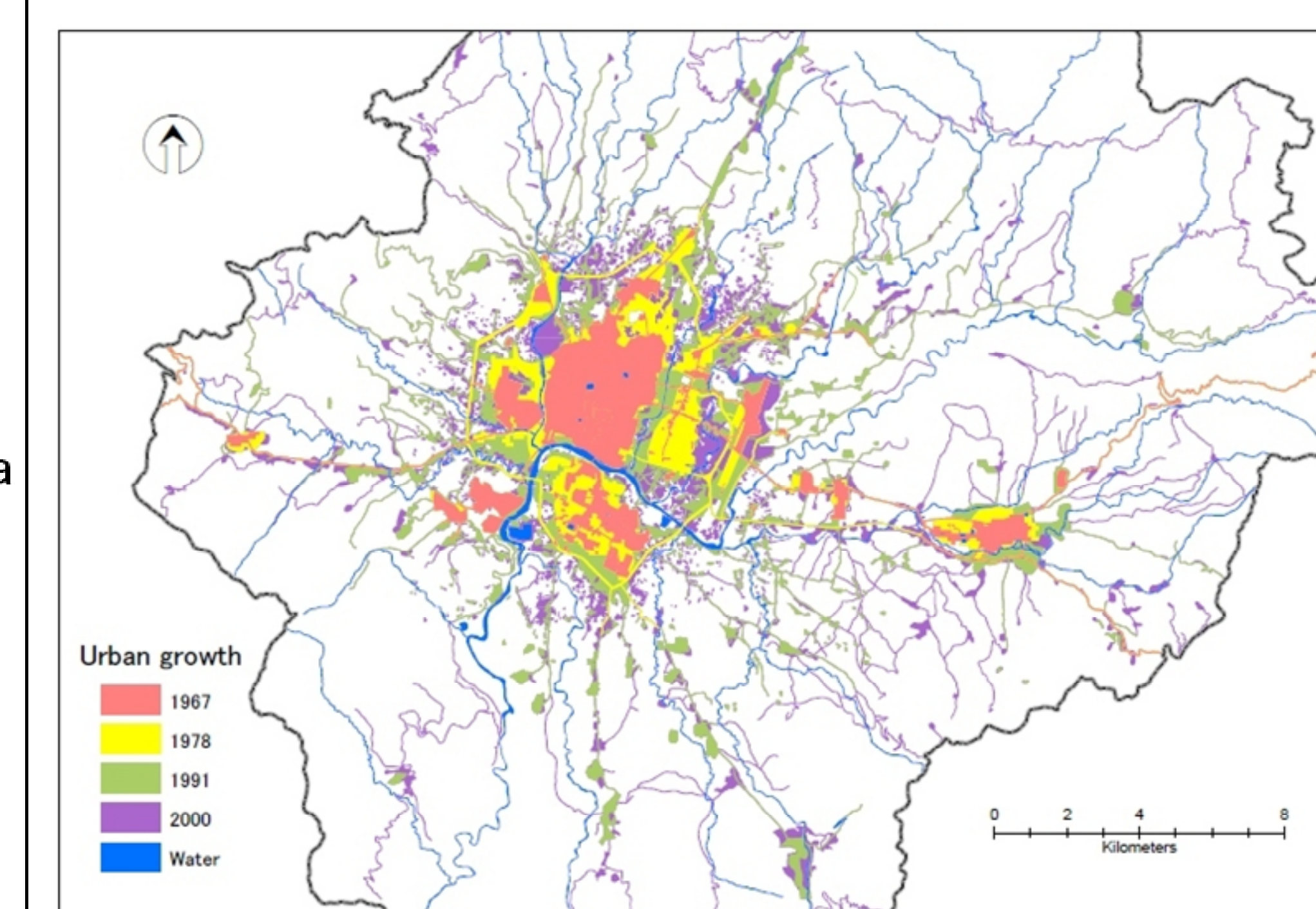
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