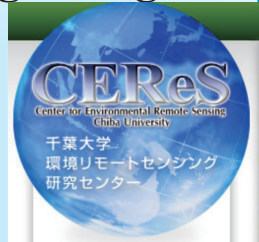


Monitoring and Analysis of Land use/cover change in Kashigar Region Based on Landsat and Spot Vegetation Data



Ayisulitan Maimaitiali¹, Xiaokaiti aji², Akihiko Kondoh²
 Graduate School of Science Chiba University¹
 Center for Environmental Remote Sensing, Chiba University²



1. Research Objectives

- 1) Quantifying Drivers of Land use/cover change (LUCC)
- 2) Identifying the key drivers of these change
- 3) Calculating Normalized Difference Snow Index (NSDI) for analyze spatio-temporal variability of snow covered
- 4) Mapping for snowmelt season
- 5) Driving forces analyze according to climate change and socioeconomic development.

2. Study area

Kashigar region (Fig. 1) located in the middle of central Asia between at 71° 39' ~ 79° 52' E and 35° 28' ~ 40° 16' N.

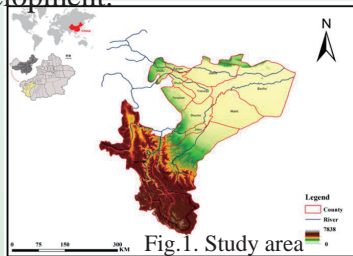


Fig.1. Study area

3. Date sets

1. Landsat MSS, TM, ETM+, OLI
2. Spot vegetation data 1km (1999-2014)
3. DEM (30m)
4. Climatic data
CRU TS3.21 precipitation and temperature
5. Socioeconomic data (1984-2014)

Year	Sensor	Path/Row	Resolution (m)
1972	Landsat-1 MSS	P 147-149 R 32-35	79
1990	Landsat-5 TM	P 147-149 R 32-35	30
2000	Landsat-5 ETM+	P 147-149 R 32-35	30
2014	Landsat-8 OLI	P 147-149 R 32-35	30

4. Methodologies

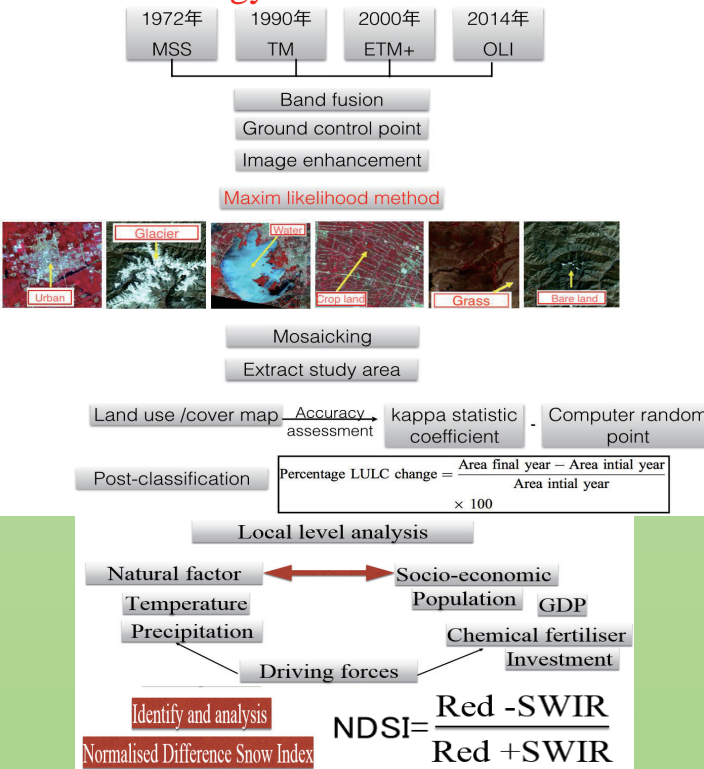


Fig.2 Flow chart of Methodology

5. Results and Discussion

1) Land use/cover change

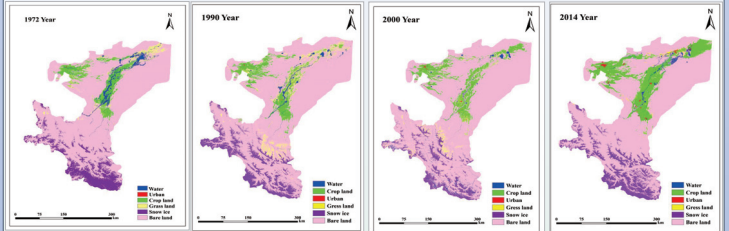


Fig.3. Land use /cover map of study area

2) Normalized Difference Snow Index NSDI ≥ 0.2

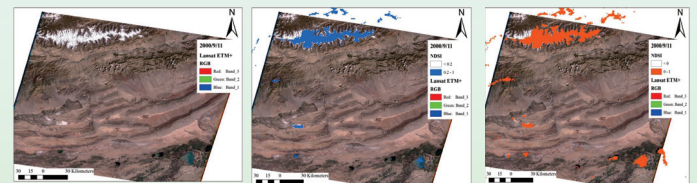


Fig 4. Compare results of threshold values

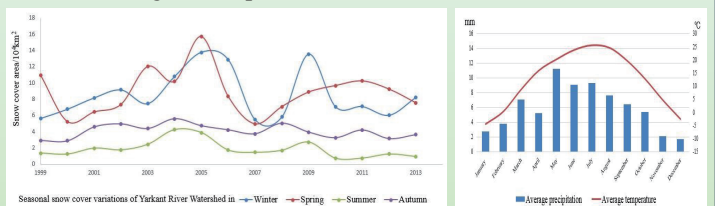


Fig.5 Seasonal snow cover variation of study area

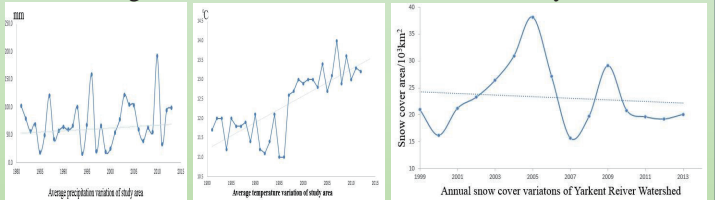


Fig.6 Precipitation and temperature of study area

Fig.7 Annual variations snow cover variation of study area

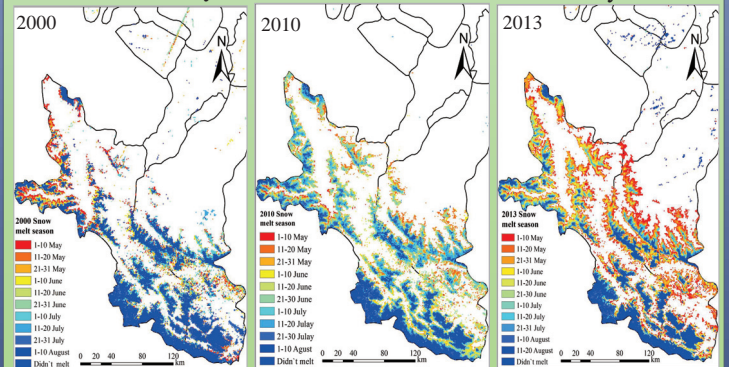


Fig.8 Snow melt map of study area in 2000,2010,2013

6. Conclusion

Land use changes major characterized by expansions of the crop land and urban/built up land with high economic benefits and reduced glacier and grass land with low environmental values. This Study indicates that socioeconomic development was the main driving forces of land use change.