

ITTO Project: PP-A/60-369

Strengthening Surveillance
and Monitoring to Tackle the
Surge in Forest Loss and
Land Degradation, Induced
by Intensifying Conflict in
Thailand's Border Areas

Image Interpretation

Introduction

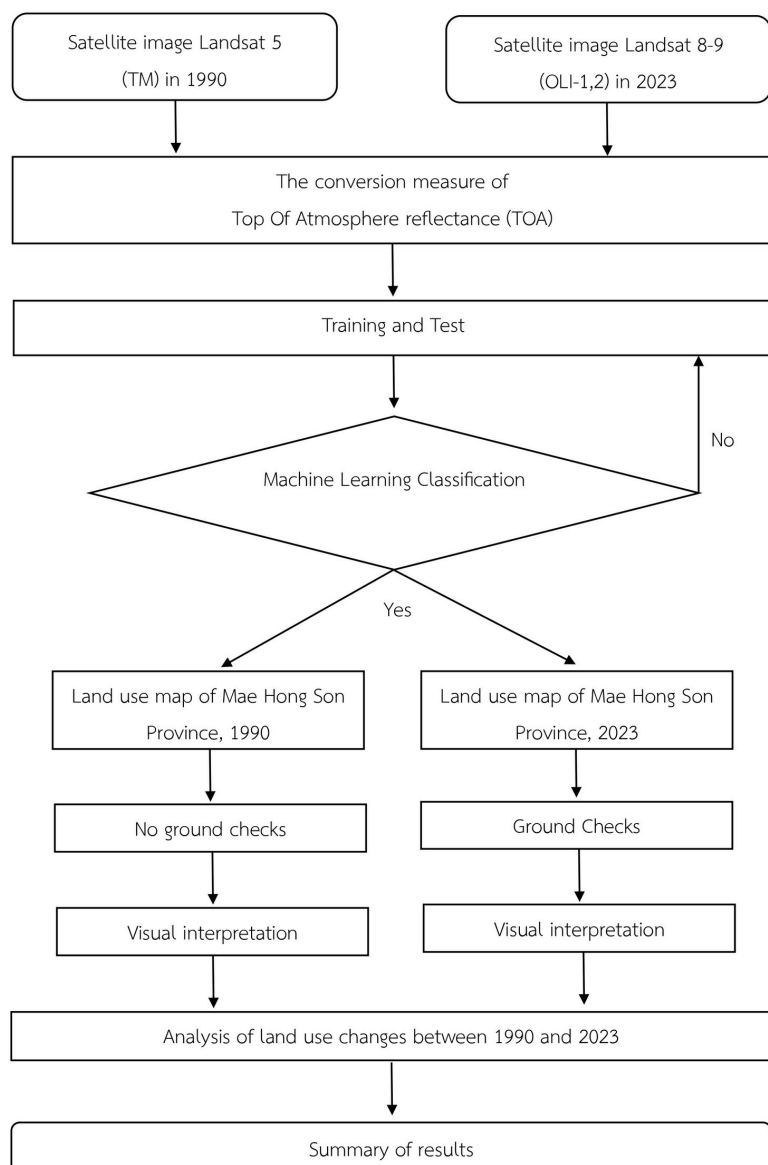
This study is part of the project "Strengthening surveillance and monitoring to tackle the surge in forest loss and land degradation, induced by intensifying conflict in Thailand's border areas."

The primary objective of this study is to analyze land use changes in Mae Hong Son province and the 20 km buffer zone extending into Myanmar. Satellite images from two specific years, 1990 and 2023, have been used to examine the transformation of land use over this 33-year period. Using Landsat satellite data recorded at these times, the study focuses on identifying and interpreting the land use types and the changes in land use patterns in the region. The results of this study provide valuable insights into the land use status for both years and reveal significant shifts in how the land has been utilized, particularly in relation to forest loss, agricultural expansion, and urbanization. The analysis aims to support efforts in monitoring and addressing land degradation, especially in regions affected by ongoing conflicts.

Objectives

- 1.To interpret and analyze the land use status in Mae Hong Son province and the 20 km buffer area extending into Myanmar for the years 1990 and 2023 using satellite imagery
- 2.To assess and analyze the land use changes over the 33-year period.

Methodology



Study area

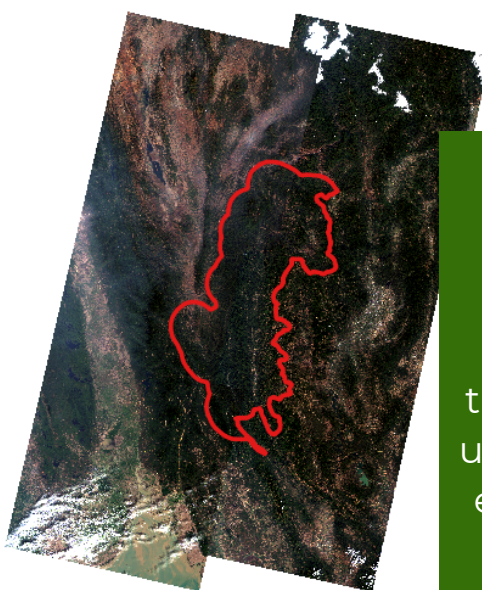


Mae Hong Son province

Mae Hong Son is a border province in northern Thailand, covering approximately 12,780.49 square kilometers (7,987,808.27 rai), making it the third-largest province in the region. It shares borders with Myanmar's Shan, Kayah, and Karen states to the north and west, with natural boundaries including the Thungchai West Mountain Range, Salween River, and Moei River. To the south, it borders Tha Song Yang District in Tak Province, and to the east, it borders several districts of Chiang Mai Province. The study area extends 20 kilometers beyond the Thai border into Myanmar, totaling around 214,057.747 square kilometers (13,378,609.190 rai).



Landsat 5 (TM) for 1990



Landsat 8-9 for 2023

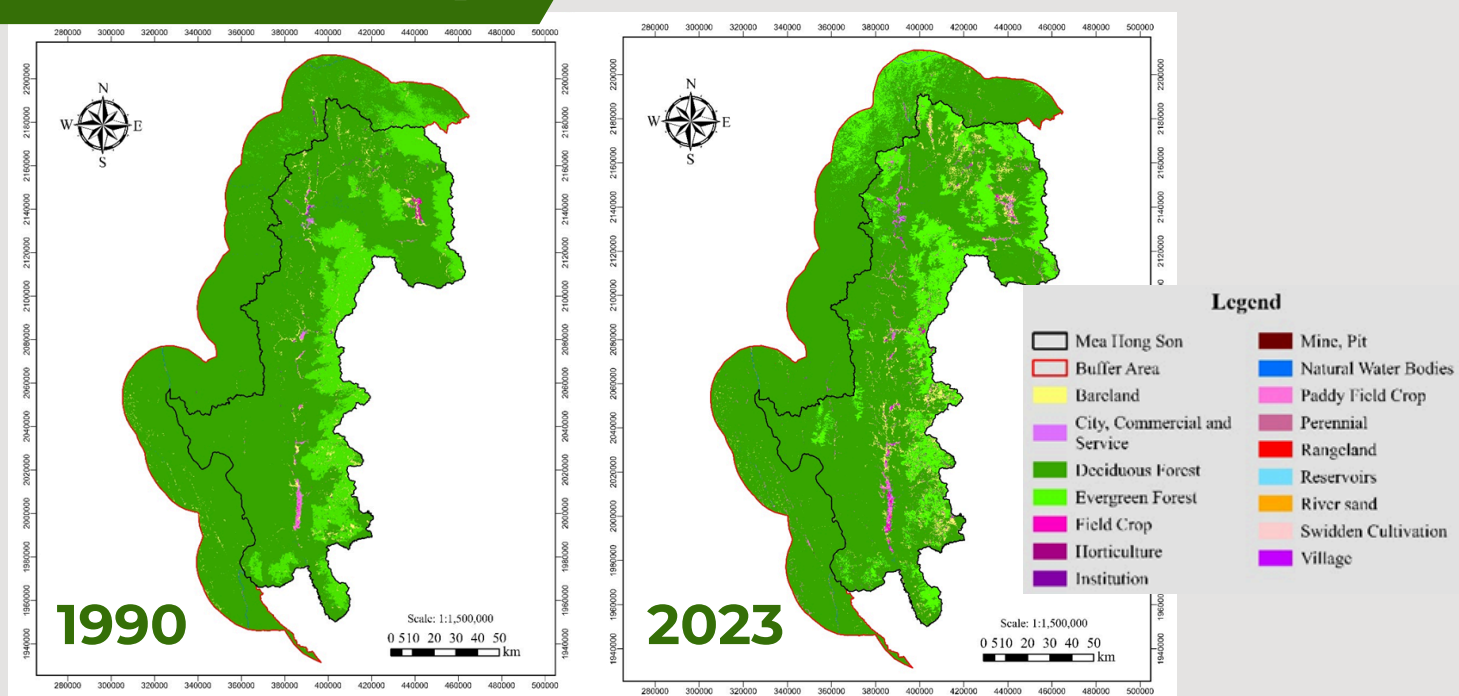
Machine learning

Representative training areas for land use classification were established using the Support Vector Machine (SVM) technique. Sample areas for each land use type, including forests, water bodies, agriculture, and urban areas, were designated at level 2, with at least 30 samples selected for each type.

Sample of training data



Land use map





Total Forest Cover Change Between 1990 and 2023

The study presents land use classifications for 1990 and 2023, focusing on total forest cover. In 1990, forests covered 97.612% of the area, with a total of 13,059,118.16 rai. By 2023, forests covered 95.722% of the area, totaling 12,806,336.55 rai. This shows a slight decrease in forest cover over the 33-year period.

Sustainability

The key insights into land use and forest cover changes in the border areas of Thailand and Myanmar, highlighting forest loss and the expansion of agriculture and urban areas over the past three decades. It supports sustainable land management by identifying patterns of land degradation and guiding strategies for mitigating forest loss, promoting land restoration, and ensuring sustainable land use. The findings are valuable for policymakers and conservationists in addressing environmental challenges and maintaining ecosystem services in areas affected by rapid development and conflict.

