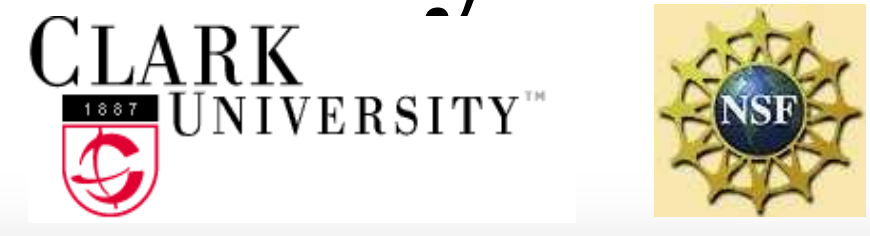


Analysis of Trends in Land Category Transitions for More Than Three Points in Time



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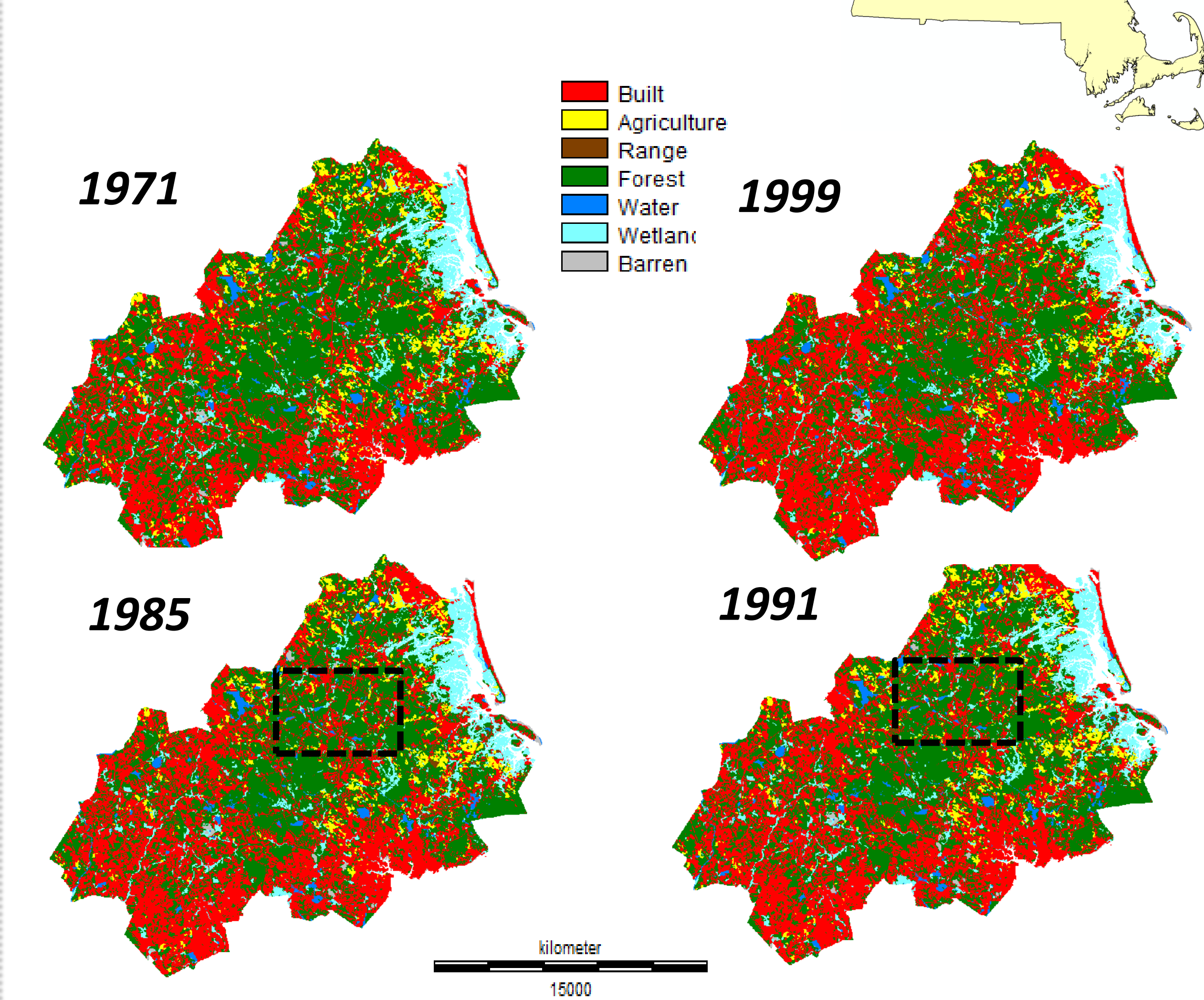
INTRODUCTION

The purpose of this study is to uncover the trend of land category transitions over more than three points in time. I illustrate the procedure with data from Plum Island Ecosystems (PIE) site in northeastern Massachusetts. The PIE data have seven land categories: built, agriculture, range, forest, water, wetland and barren. The four time points are 1975, 1981, 1991 and 1999.

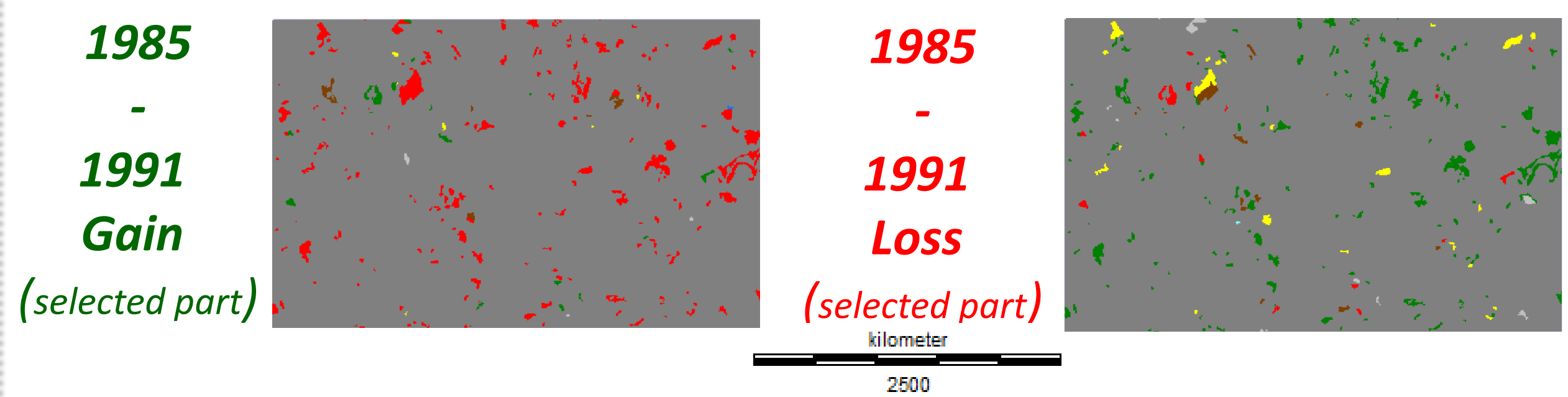
Cross-tabulation methods are used to first create the land use transition matrices of each time interval. Based on the matrices, the analysis is separated in three levels. A uniform line is developed for each level of analysis as the baseline of comparison. Level 1 analysis compares the intensity of total change over time. Level 2 analysis explores the intensity of gain and loss for each category. Level 3 focuses on the intensity of transition between any two categories.

*The bar label: In level 2, it shows the amount of gain OR loss for each category. In level 3, it is the amount of transition between any two categories. The amount of changes are unit in square kilometers.

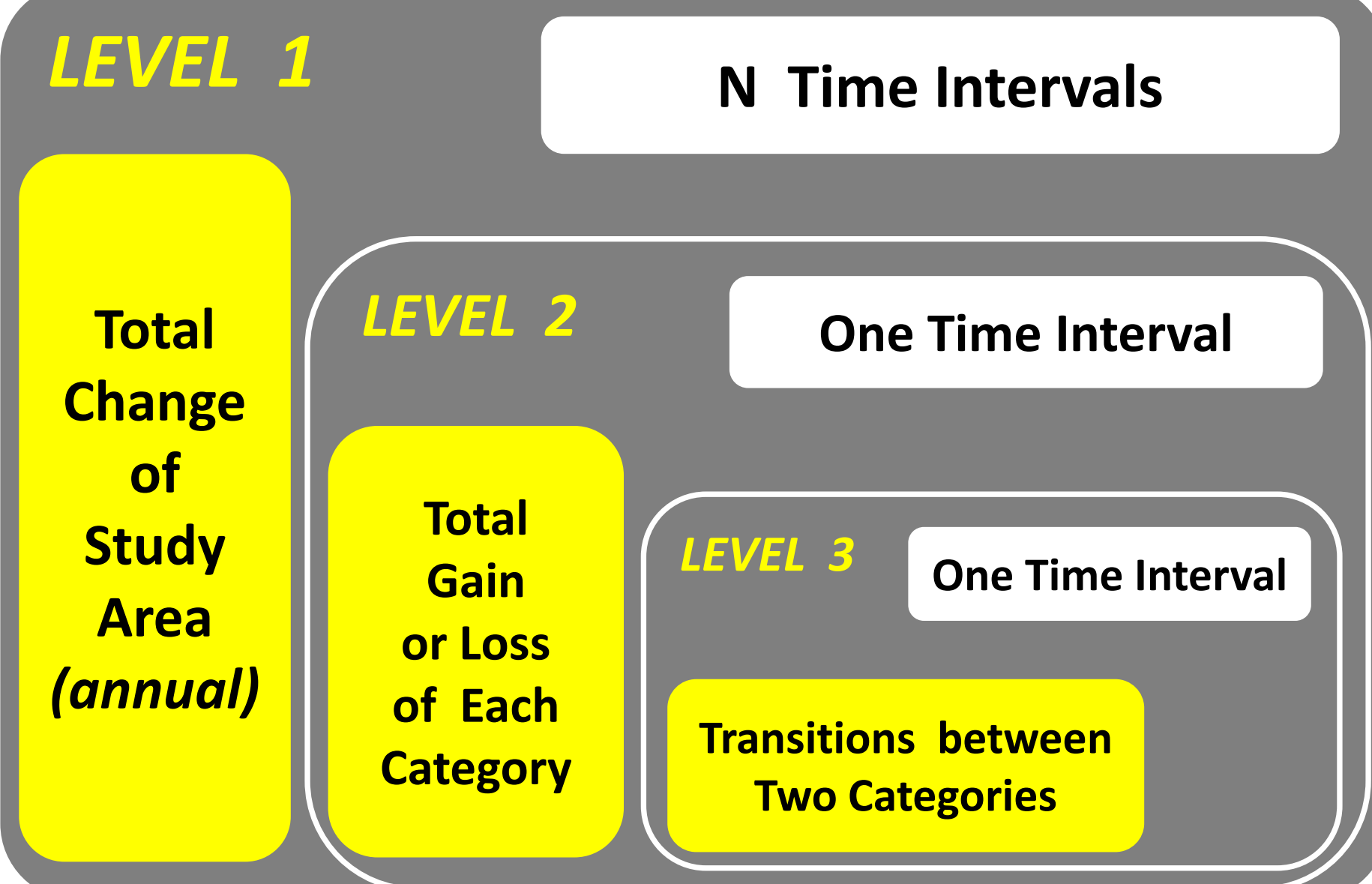
Plum Island Ecosystems (PIE)



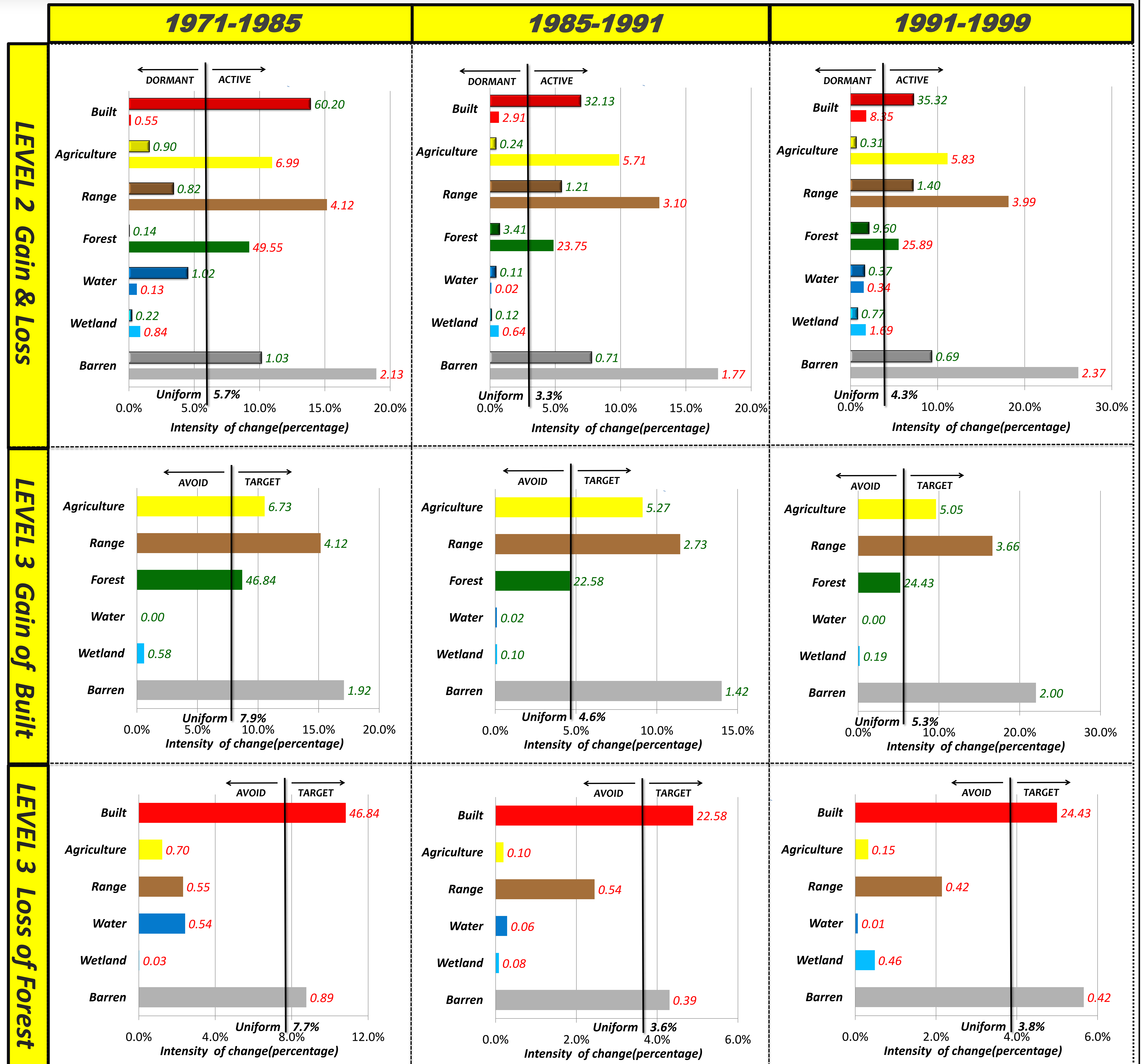
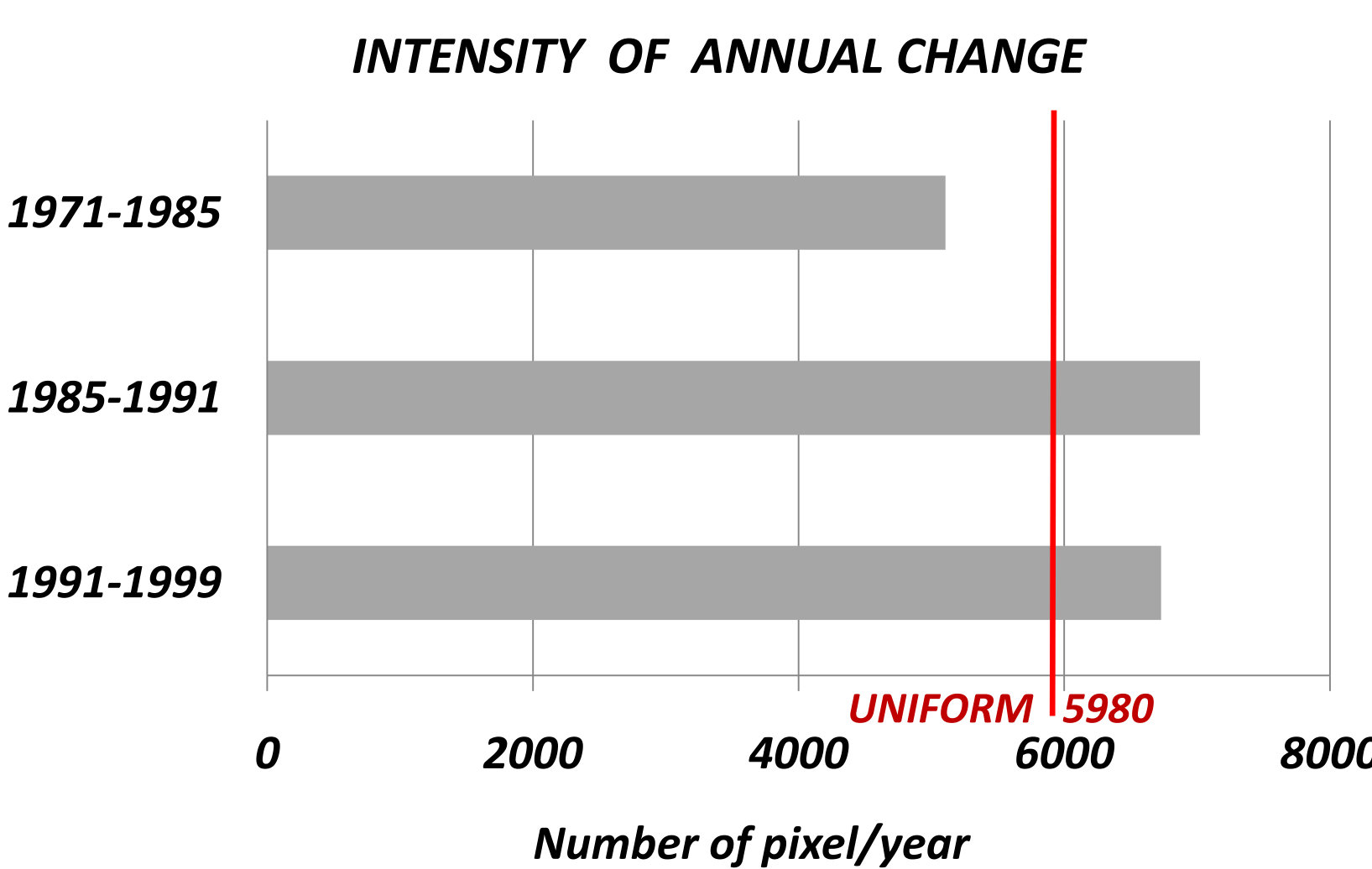
The following two maps illustrate the land use change this study focuses on.



METHOD



LEVEL 1



CONCLUSION

In level 1 analysis, the trend of change is non-stationary. Compare to the uniform line, only in the first time interval, the intensity of change is slower.

In level 2 analysis, expect Range, all the other six categories are stationary in changing. Built is active in gain and Forest is active in loss.

In level 3 analysis, for the two largest transitions, the targeting trend of Built gain from Forest is non-stationary. However, the targeting trend of Forest loss to Built is stationary.

Acknowledgements

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