Temporal Analysis of Flux Tower Data

Fang He

February 3, 2016

Abstract.

1 Introduction

The concentration of CO2 is important to production.

The ultimate goal of this analysis is trying to predict flux tower data based on the information we have already known, e.g.: previous years of flux tower data, MODIS data.

2 Data Editing

2.1 Flux Tower Data

Data was collected from `http://daac.ornl.gov/MODIS/`. Four spots has been selected.

Long	Lat	Site Name	Time Range	Data Link	Data
-106.1978	53.6289	SK Old Aspen	2003 - 2008		CO2Flux_AbvCnpy_39m
-104.6920	53.9163	SK Old Jack Pine	2003 - 2008		CO2Flux_AbvCnpy_28m
-105.1178	53.9872	Sk Southern Old Black Spruce	2003 - 2008		CO2Flux_AbvCnpy_25m
-104.6453	53.8758	Sk 1975 (Young) Jack Pine	2004 - 2006		CO2Flux_AbvCnpy_16m

2.2 MODIS Data

MODIS data were collected every 16 days starting at the first day of each year.

MODI data were downloaded from the following link: `http://daac.ornl.gov/MODIS/`

- The number of kilometers encompassing the center location, both above/below and left/right, are being set 0.
- The time ranges of MODIS data are consistent with corresponding flux tower data for each location.

3 Method

3.1 Generalized Linear Model

3.2 Functional Data Analysis

3.2.1 Registration

3.2.2 Direchilet Regression