

The Subtropical High Pressure Systems influence the Rainfall Distribution in Suriname

Sukarni Sallons-Mitro

Meteorological Service Suriname sukarnimitro@yahoo.com

Introduction

The subtropical highs are areas of relatively high surface pressure at the earth's surface. The position of the highs varies between 40°N – 40° S. The focus of this research is on the North and South Atlantic Subtropical Highs.

The climate of Suriname has two wet and two dry seasons and it has been observed that sometimes the start of the rainy seasons is delayed and that it rains considerably more in some years than others might.

It is for these reasons that it was decided to examine whether the position and strength of the subtropical high pressure systems might cause a late start to the wet season and influence rainfall patterns during the wet and dry seasons.

Objective

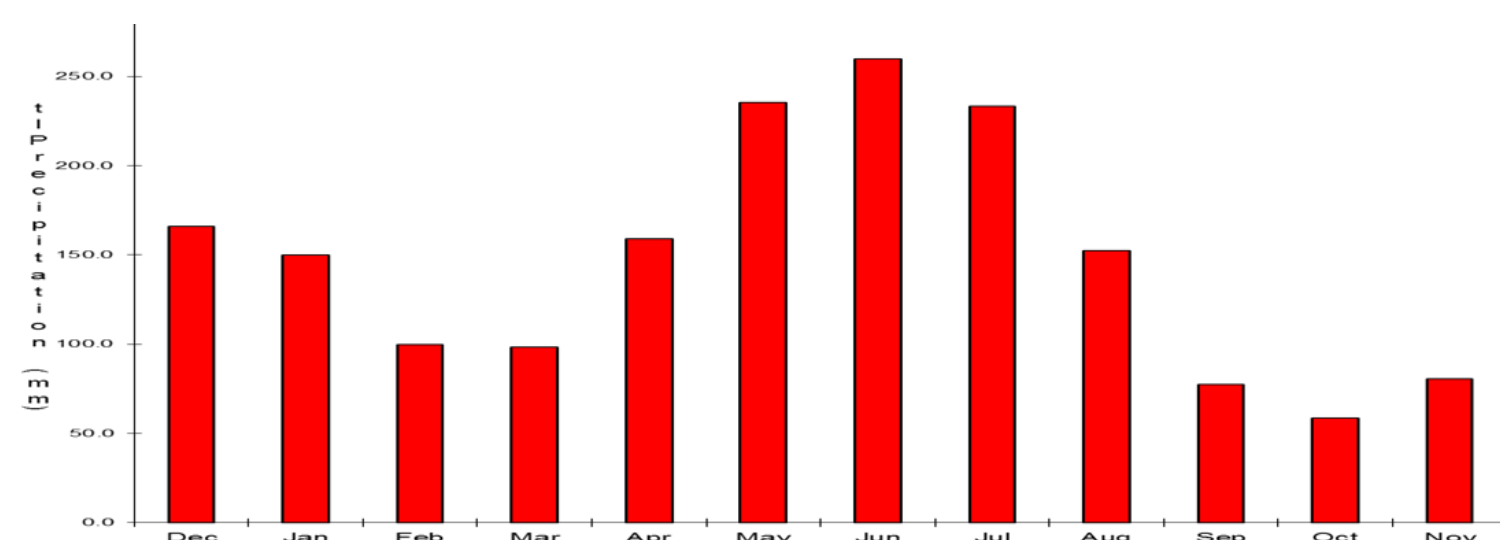
The study was conducted to investigate whether the subtropical high pressure systems, the North Atlantic high and the South Atlantic high has any influence on the rainfall distribution in Suriname

Method

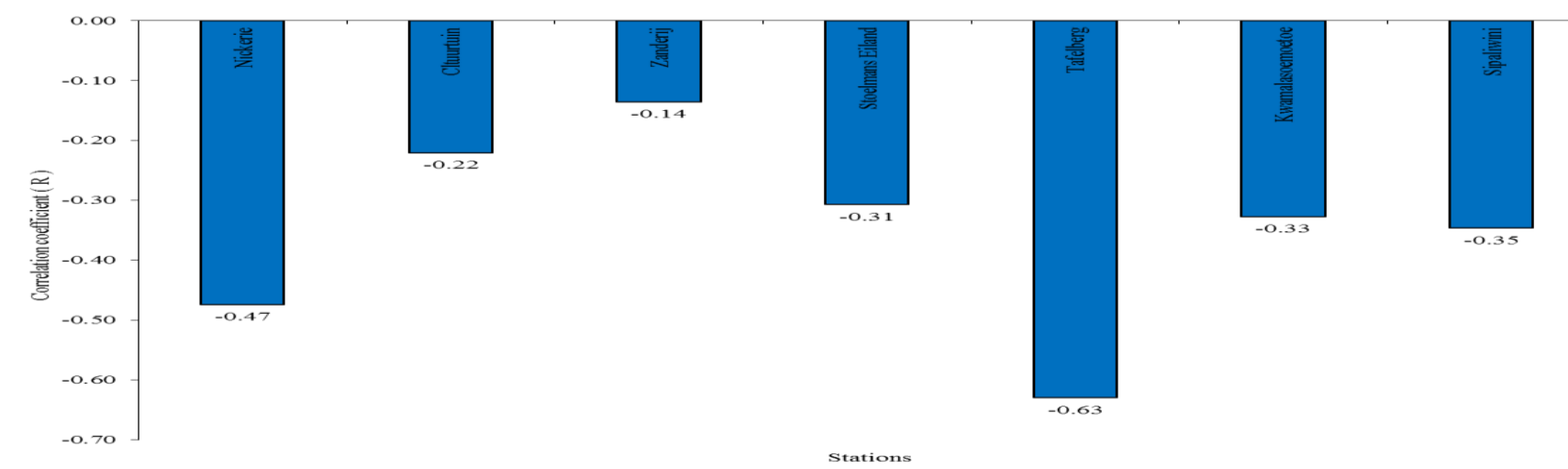
- literature review
- To examine the annual and monthly rainfall data from 1971-2008 for seven selected stations
- To investigate Reanalyzed sea level pressure data (1971-2008), as the characteristics for the subtropical high pressure systems from NCEP
- To examine the relation between the rainfall and the Subtropical highs with the regression and correlation analyses.
- Excel were utilized to analyze the data

The subtropical highs central pressure started to increase since 1991 and is still increasing up to the present. Simple correlation and regression analyses showed that there is a positive and negative relationship between the subtropical high pressure systems and the rainfall

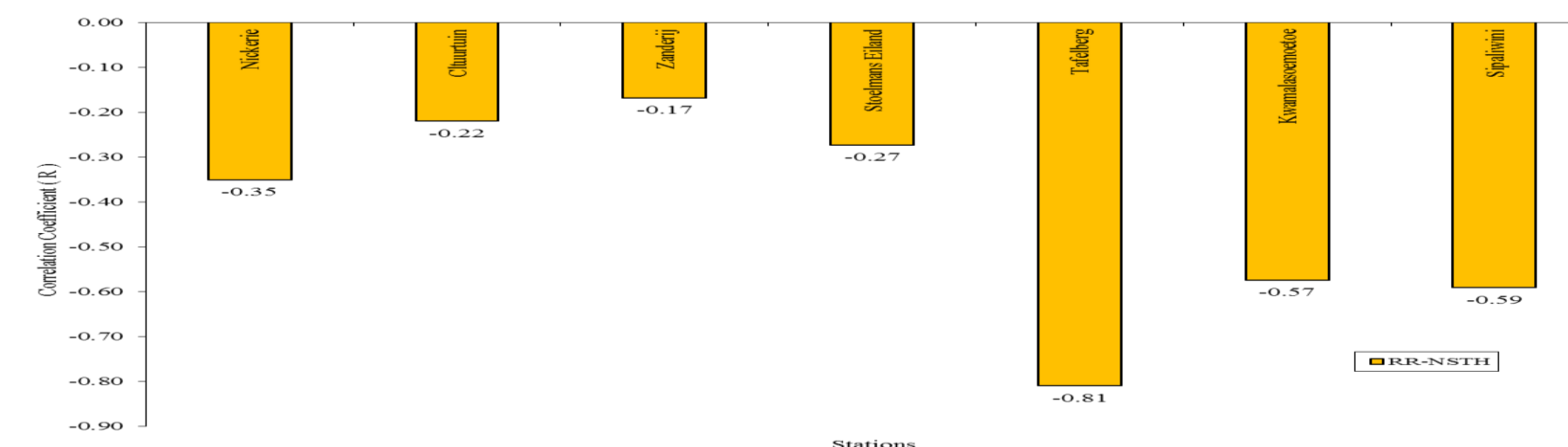
Seasonal Rainfall



Relationship Subtropical Highs and annual Rainfall

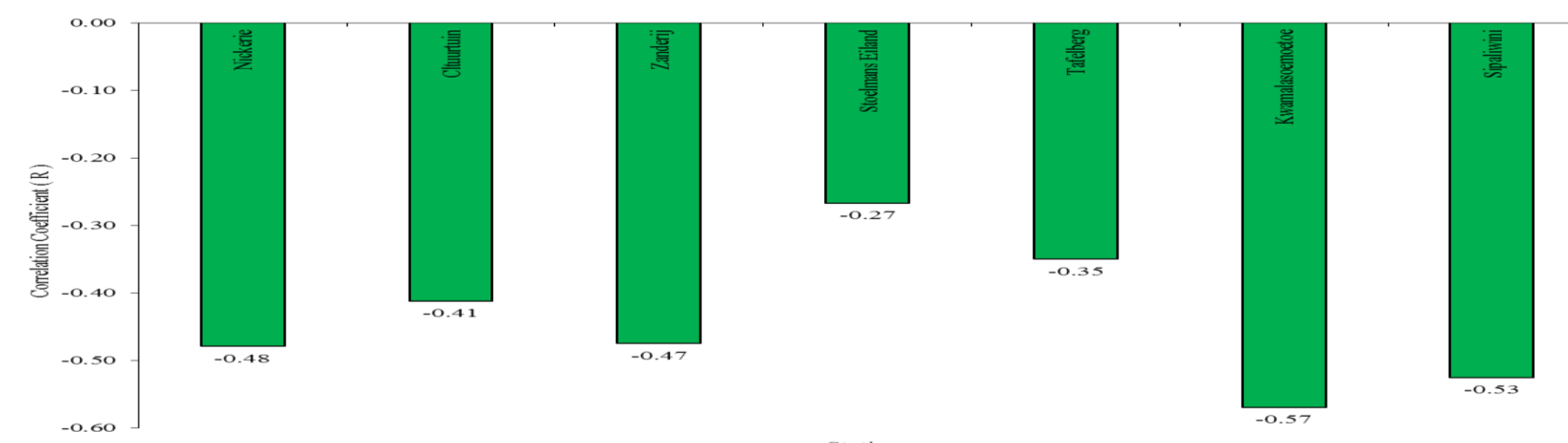


SSTH and RR

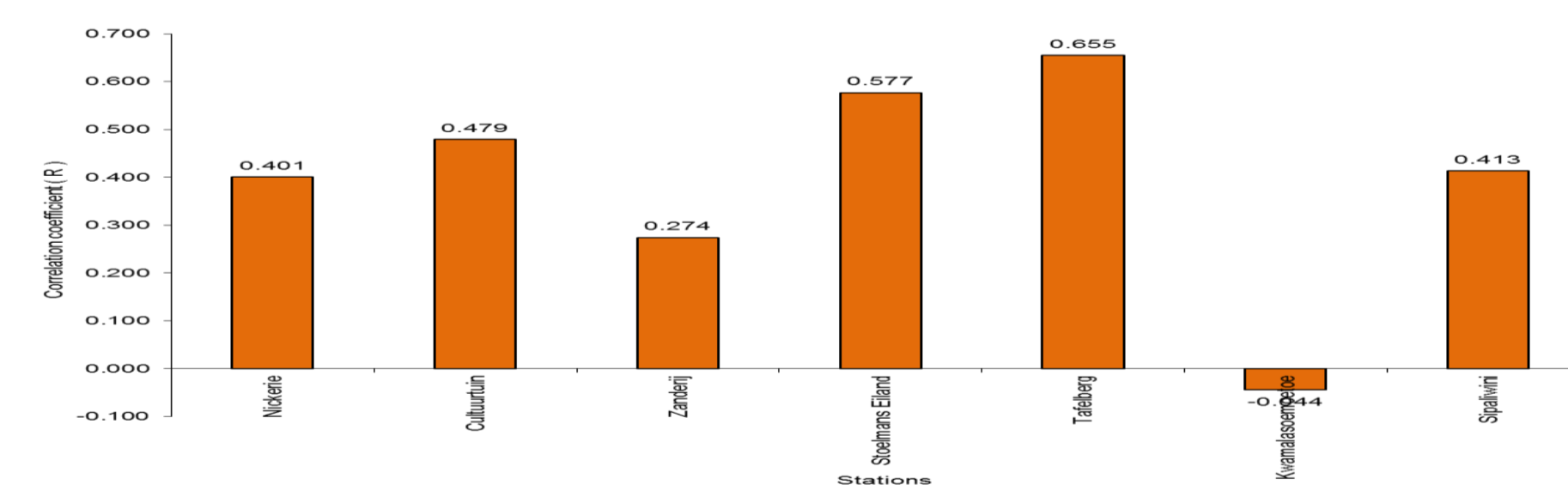


NSTH and Rainfall

Relationship Subtropical Highs and Monthly Rainfall

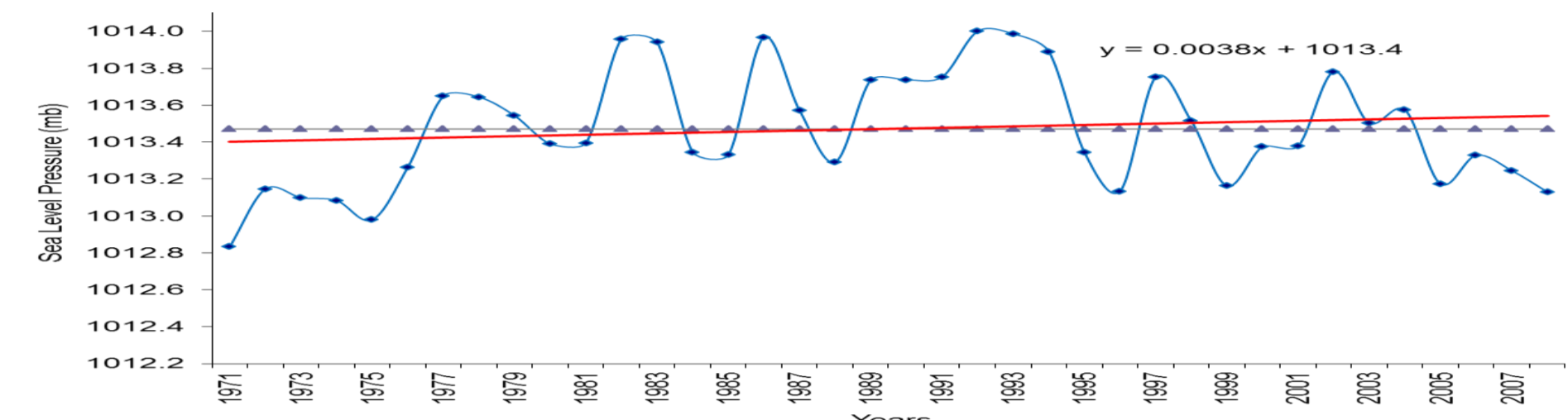


NSTH and Monthly Rainfall

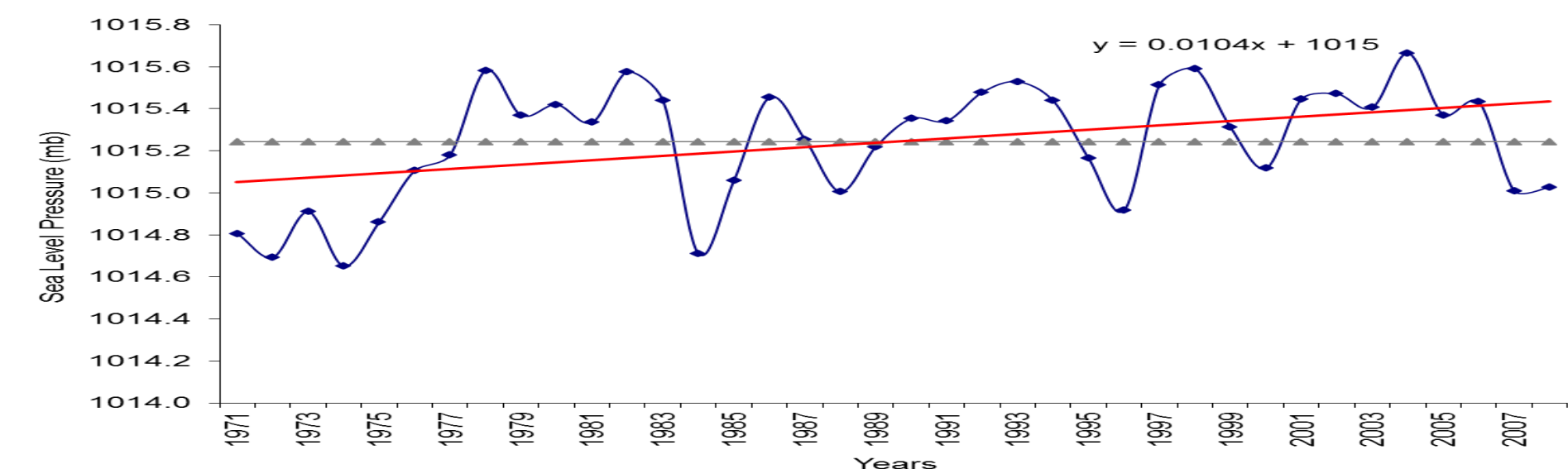


SSTH and Monthly Rainfall

Trend Subtropical Highs



NSTH



SSTH

Results

- The relationship between the South Atlantic Subtropical High and the annual average rainfall is negative
- The relationship between the North Atlantic Subtropical High and the annual average rainfall is negative
- There is a positive and negative relationship between the average monthly rainfall and the South Atlantic Subtropical High pressure system
- The North Atlantic Subtropical High has a negative relationship with the monthly average rainfall.

Conclusion

- The trends for the Subtropical Highs indicate that the Subtropical High pressure systems are increasing in time
- An increase of the Subtropical Highs will result in a decrease of the annual rainfall. Strong Subtropical highs will result in less annual rainfall.
- An increase of the North Atlantic Subtropical High results in a decrease of monthly rainfall
- The increase of the South Atlantic Subtropical High results in a decrease and increase of the rainfall.