

# Soil Vegetation Atmosphere Carbon Flux Monitoring and Modelling

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## Introduction

- The effectiveness of terrestrial sink and quantitative estimates of their sink strengths have relied mainly on the measurements of changes in carbon stocks.
- Flux tower based measurement techniques provides tools for quantifying Net Ecosystem Exchange (NEE) through the eddy covariance technique and also useful in calibrating RS based models and up-scaling at larger scales.

## Objective

- Measurement carbon flux between soil, vegetation and atmosphere to assess the net sink-source nature of the terrestrial ecosystem.
- Integration of observations and RS-

## Results

- The mixed forest acts as a sink throughout the year except in the month of January.
- The average daily carbon sink rate ranges from 0.30 to 5.74 gC m<sup>-1</sup> day<sup>-1</sup>, maximum rate occurred during September.

## Haldwani Flux Tower



## Instrumentation of Eddy Covariance System

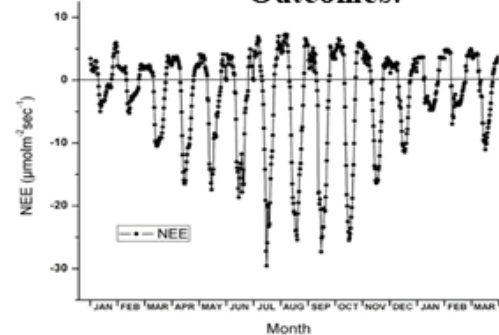
1.	CO <sub>2</sub> /H <sub>2</sub> O Analyzre (LI-7500) & 3-D Sonic Anemometer (WindMaster Gill)
2.	Net radiometer (CNR-1, Campbell)
3.	Quantum sensor (LI-190S, LI-COR)
4.	Temperature and Relative Humidity Probe (Vaisala HMP50, Finland)

## Sensors

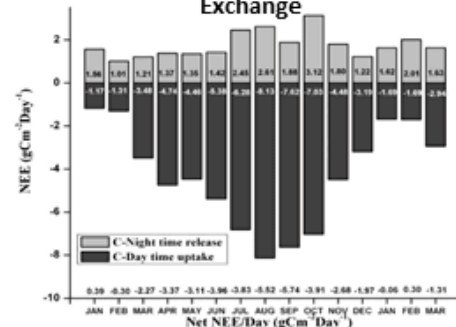


System	Open Path System
Wind Speed	3-D Sonic Anemometer (WindMaster Gill)
Air temperature	3-D Sonic Anemometer (WindMaster Gill)
Water Vapor	Open Path CO <sub>2</sub> /H <sub>2</sub> O Analyzre (LI-7500, LI-COR, USA)
CO <sub>2</sub>	Open Path CO <sub>2</sub> /H <sub>2</sub> O Analyzre (LI-7500, LI-COR, USA)
Measurement height	19 m
Sampling frequency	10 Hz

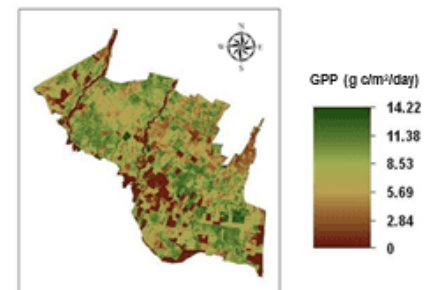
## Outcomes:



## Overall Mean Monthly Net Ecosystem Exchange



## Avg. Daily Net Ecosystem Exchange Budget



Spatial Distribution of GPP over forest division