Multi-Satellite Observations of Temporal and Spatial Distributions on Island Wakes Southeast of Taiwan

Zheng-Wei Lai(NTNUES)
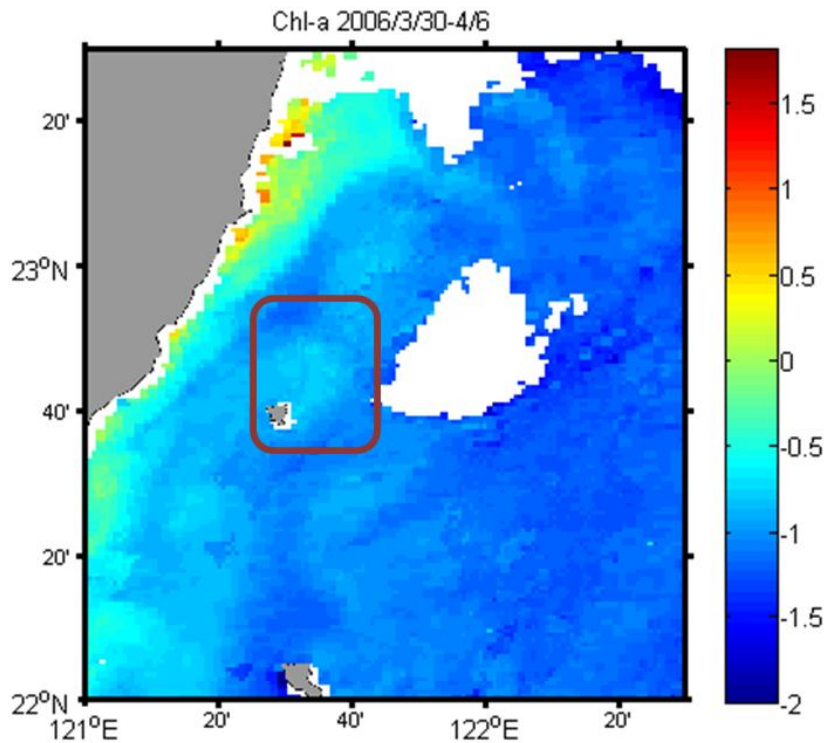
Supervised by : Prof. ZW Zheng

Presentation Outline

- Introduction
  - A brief description of the research theme
- Source & Methods (Tool)
  - The source about current velocity, SST, CHLA
- Results & Discussion
  - ➢Part1 – The Strength of Kuroshio
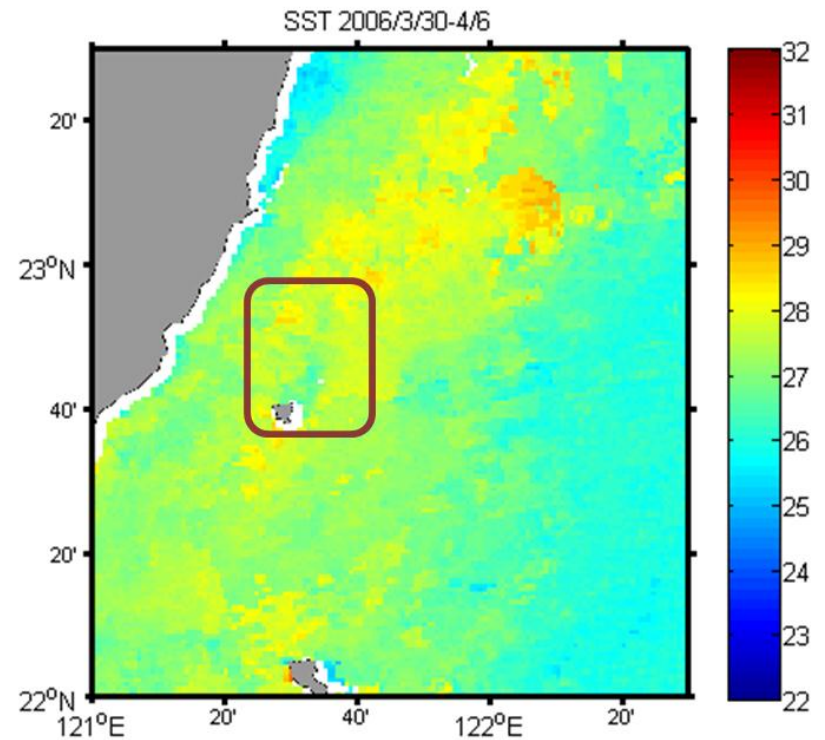 - ➢Part2 – The Location of Kuroshio
- Summary & Future Prospects

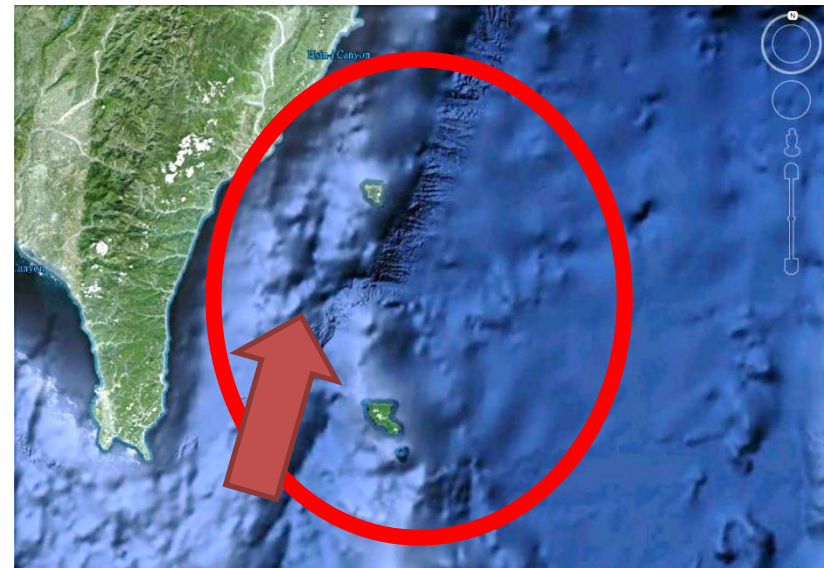# INTRODUCTION

What is **Island Wakes** ?

Chla

SST
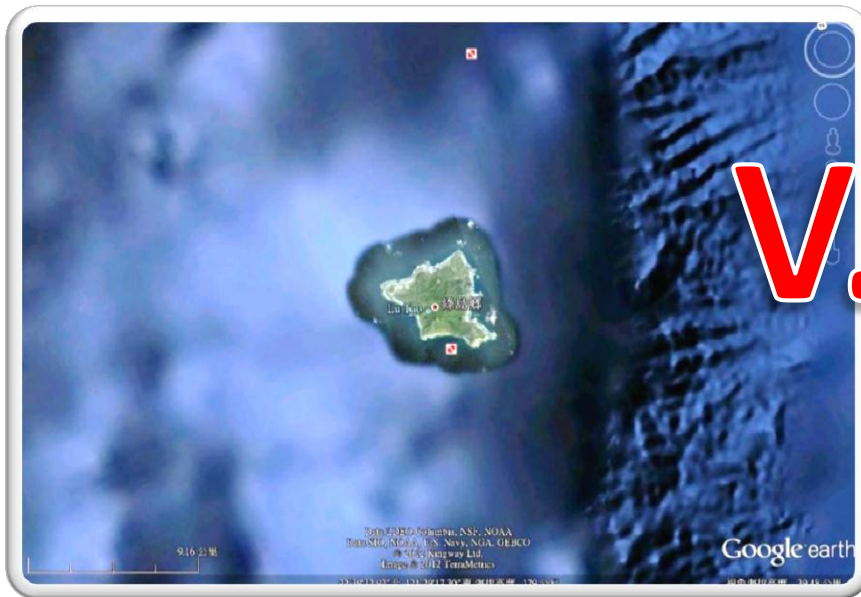
What's the Goal of This Work?

- Find the relationship between

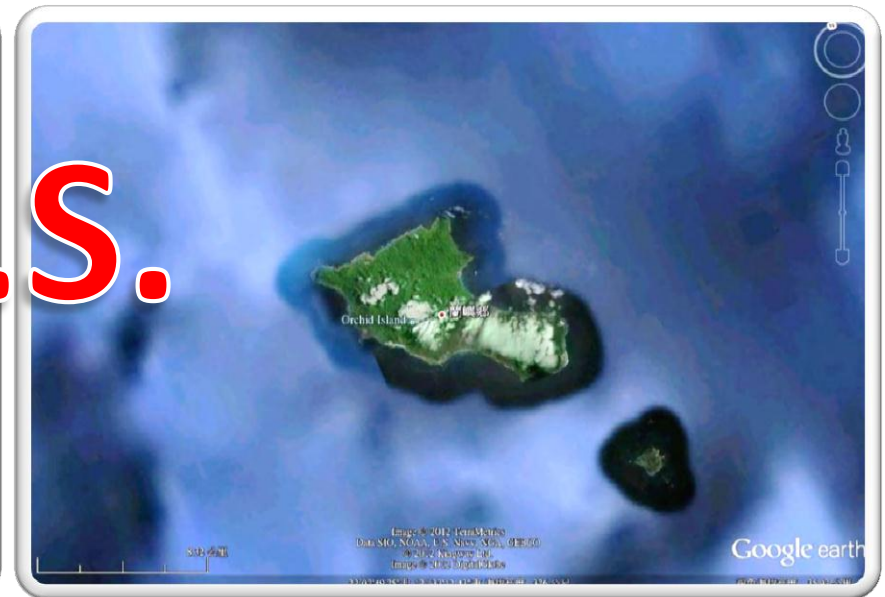 the " **Kuroshio** " and " **Island Wakes** "

The **Study Area**
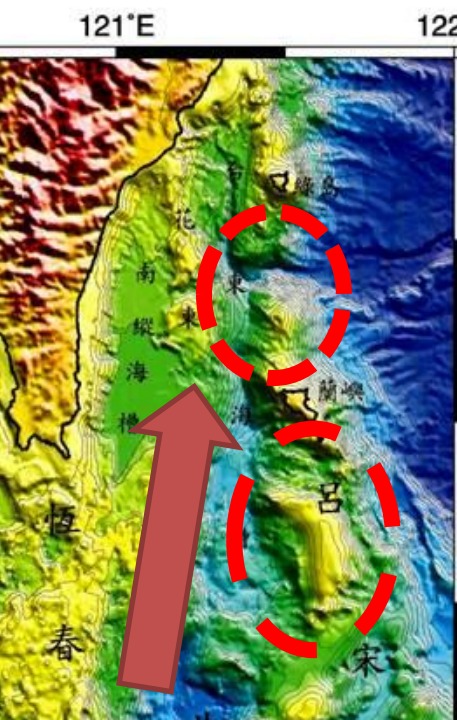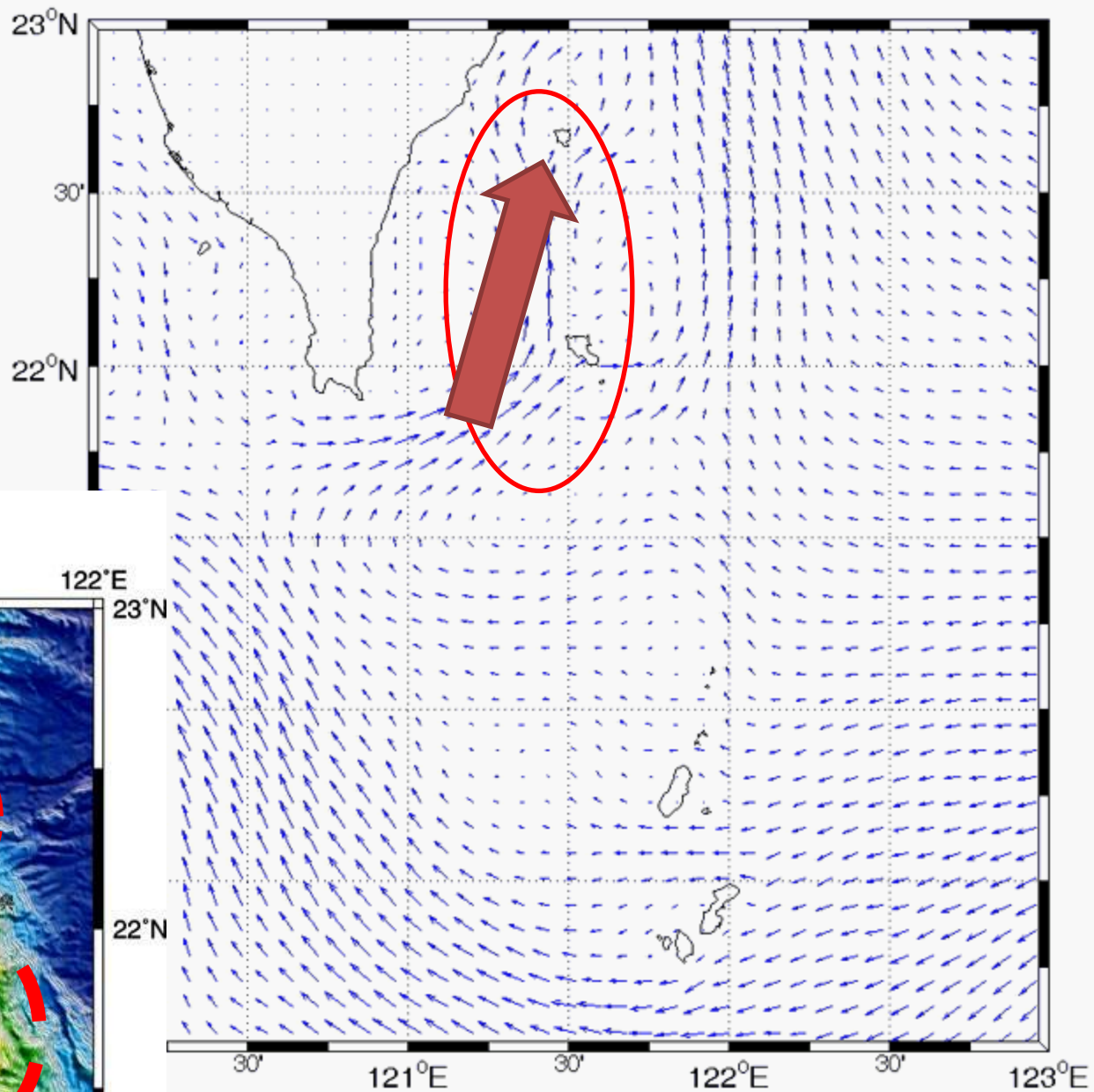## -Green Island or Lanyu?

Green Island   **Lanyu**

V.S.

Sea surface flow

glb$_a$nalysis$_1$20E123E20N23N$_2$0040101$_2$0040331.nc-1
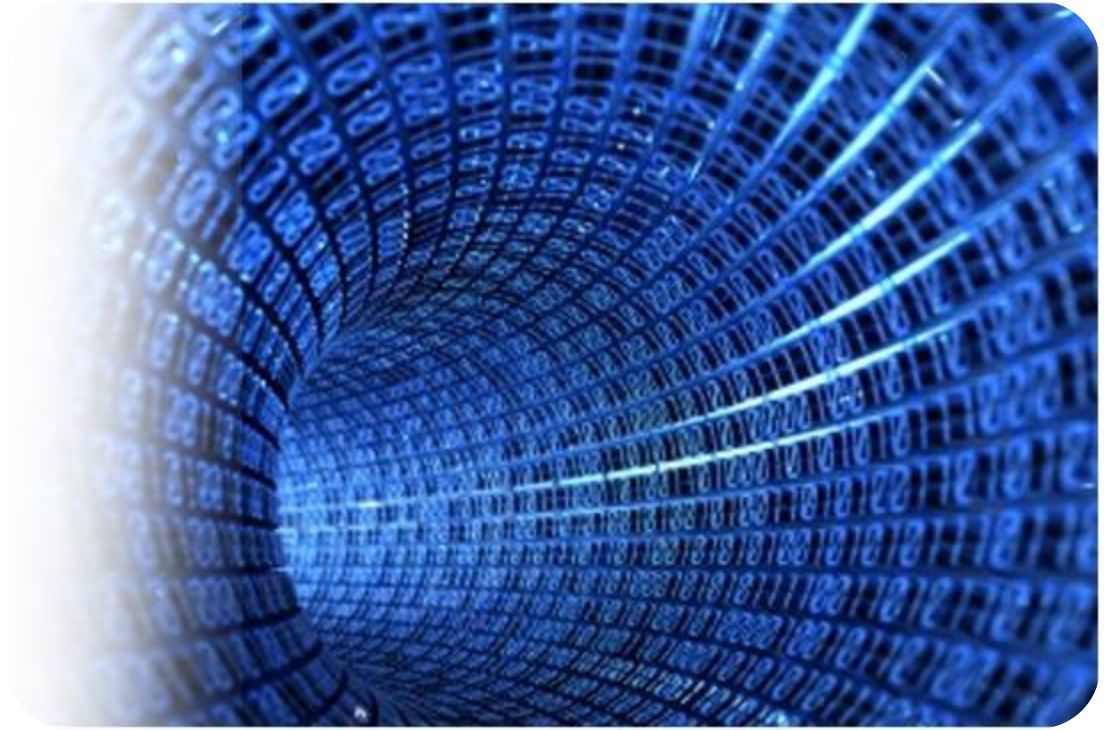
DATA & METHODS

Data & Methods

- **CHLA**
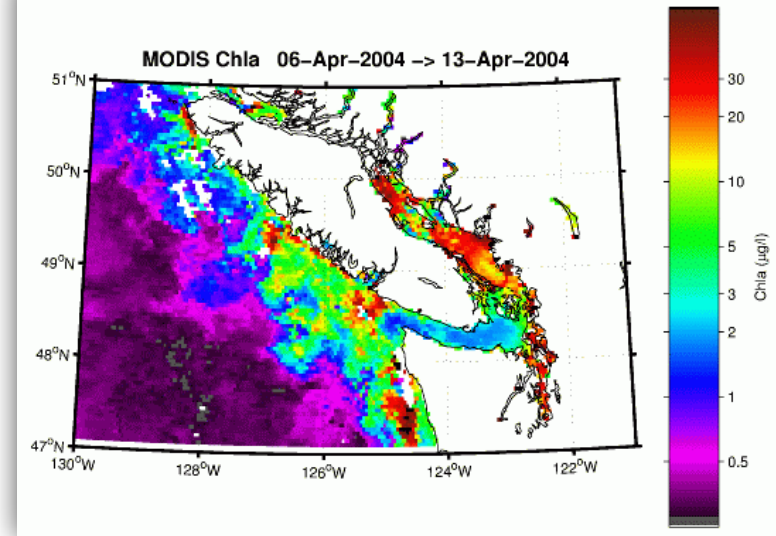
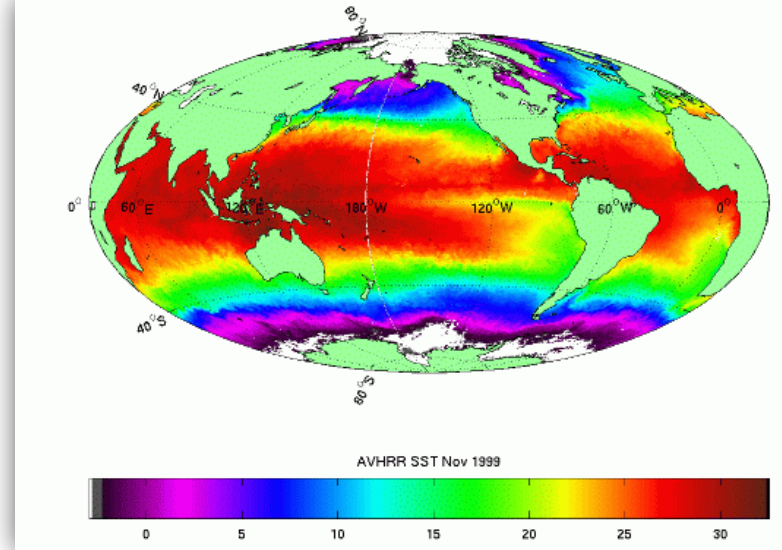   – http://oceandata.sci.gsfc.nasa.gov

    – NASA-Aqua Satellite

    • MODIS(Moderate-resolution Imaging Spectroradiometer)

    – Eight days average

    – The spatial resolution of 4kmx4km

Data & Methods

AVHRR SST Nov 1999

- **SST**

  - http://oceandata.sci.gsfc.nasa.gov

  - NASA-Aqua Satellite
    - MODIS(Moderate-resolution Imaging Spectroradiometer)
  - Eight days average
  - The spatial resolution of 4km

Data & Methods

- **Velocity of Current**
  - http://tds.hycom.org/
    - Dataset: /thredds/ncss/grid/glb_analysis

  - Daily sum of data
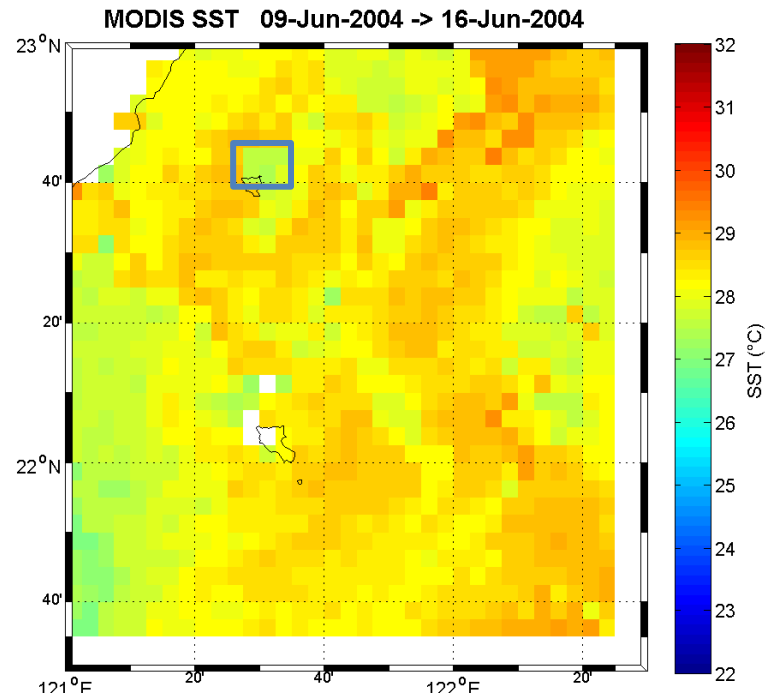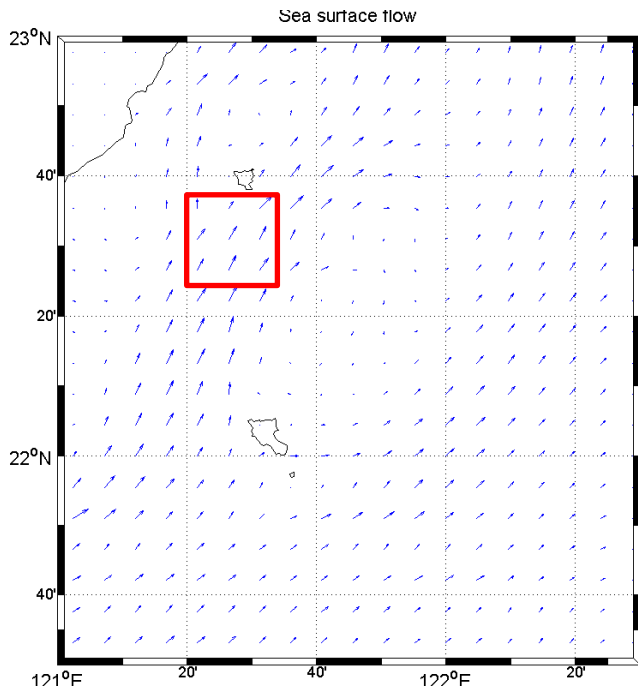 - Global 1/12° (~8km) Analysis

Data & Methods (tools)
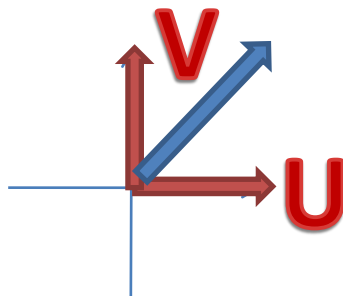
- Matlab 2011b

- Excel of Microsoft Office 2010

RESULTS & DISCUSSION

Part1-Statistical Analysis
The Strength of Kuroshio vs. IWs
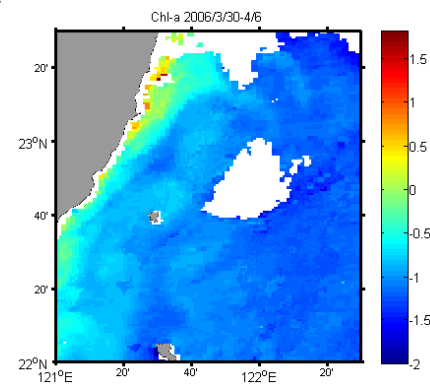

Current
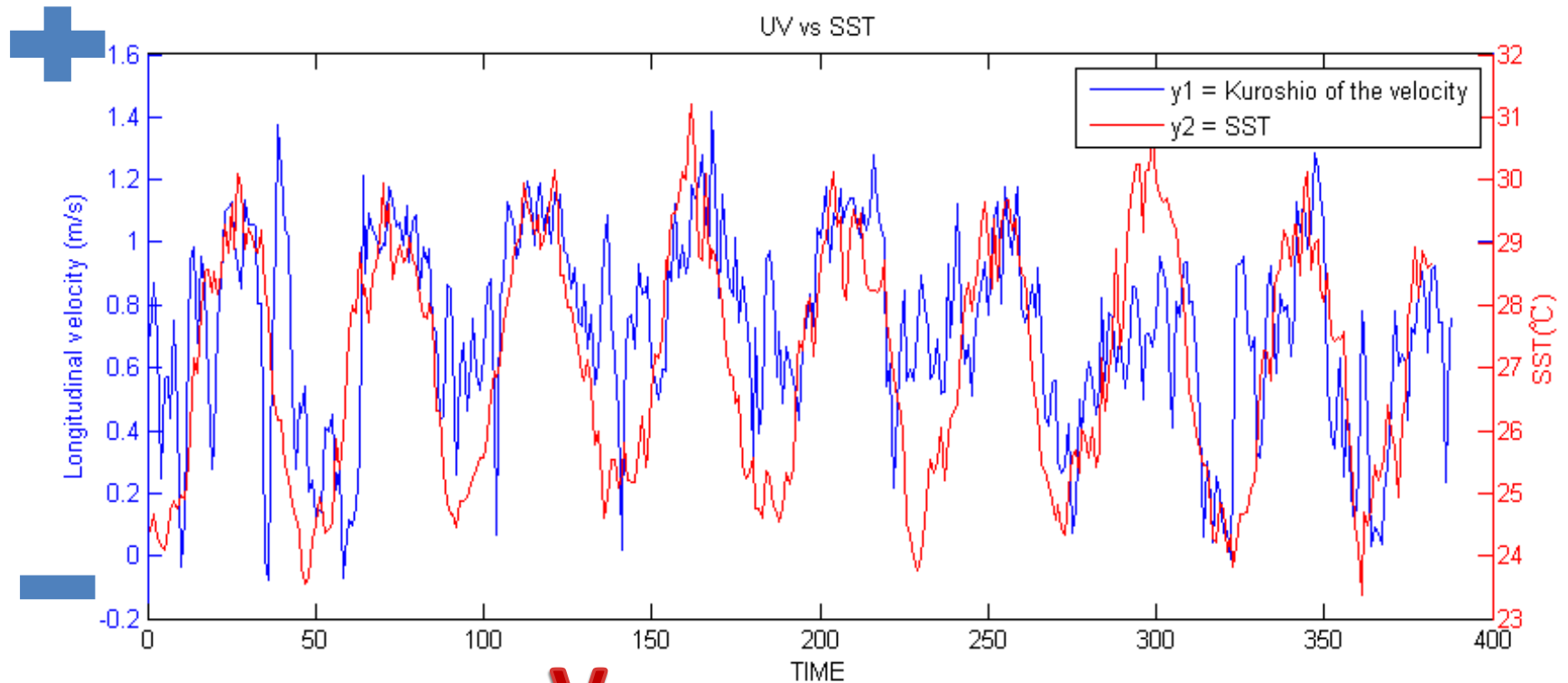
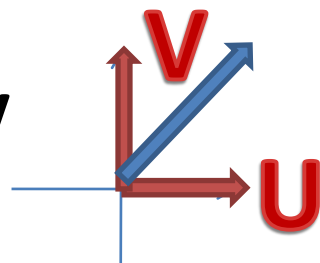**V velocity**

SST/Chl-A

Results & Discussion

Part1- Statistical Analysis
Comparison of The Strength with SST

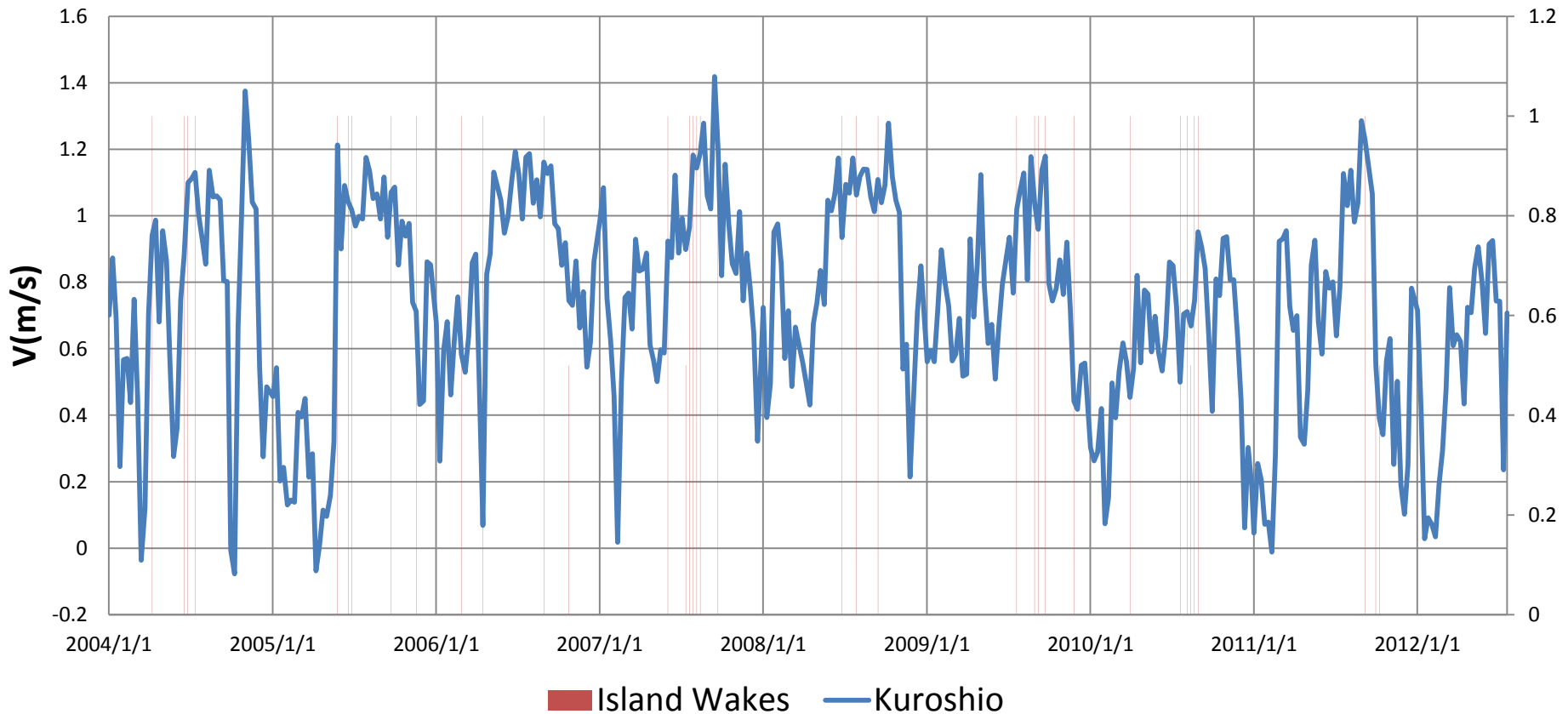**V velocity**

Part1- Statistical Analysis
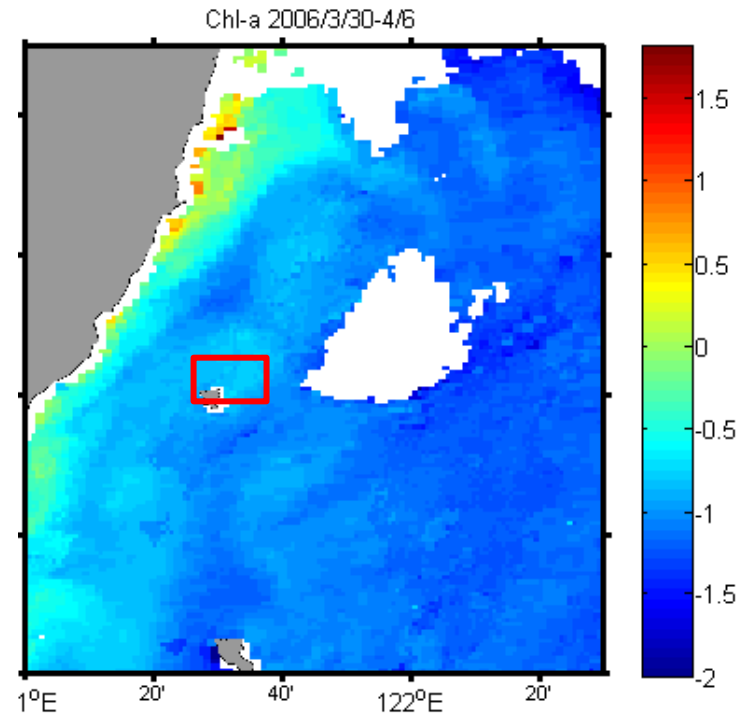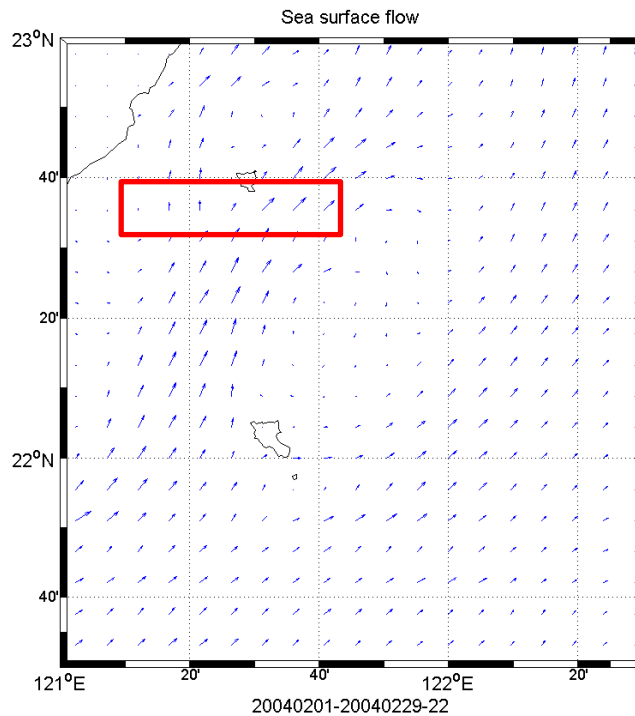
The Strength of Kuroshio v.s. Island Wakes

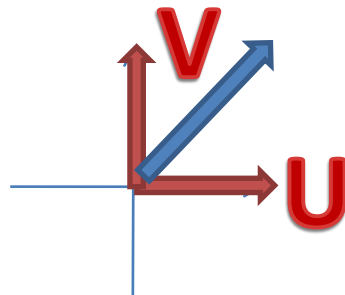The IW mainly took place in summer?

So far, we don't know this is the truth or due to data limitation?

Part2-Statistical Analysis
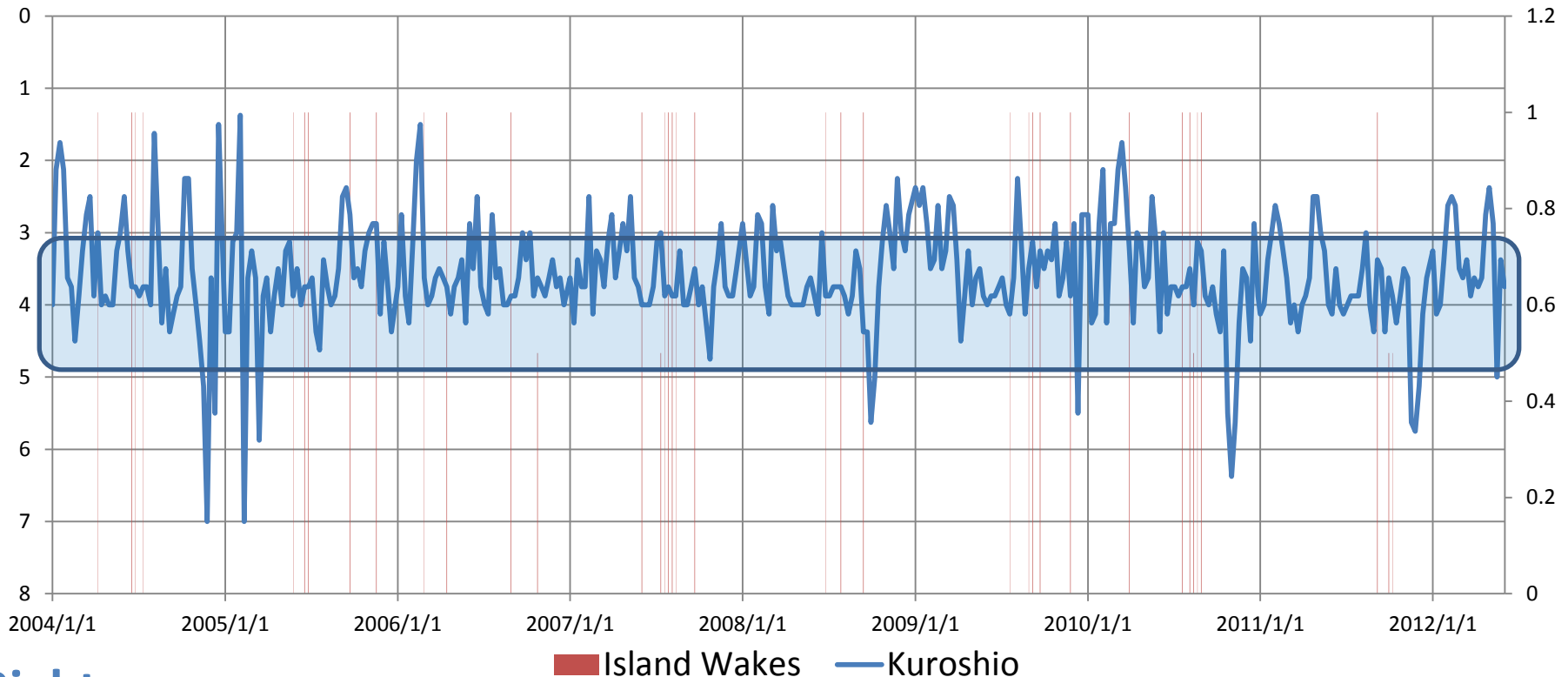# The Kuroshio migration vs. IWs

Current

V velocity

Chl-A

Part2- Statistical Analysis

Location of Kuroshio vs. Island Wakes

Left

Right

No migration => IWs ⬆ The more the Kuroshio shift =>IWs

This is the result what we expect!

Results & Discussion

CONCLUSIONS & FUTURE PROSPECTS

Conclusions & Future Prospects

So far, I preliminary learn the skill for data process (visualization) and analysis, but we don't really clarify the relationship between IWs and Kuroshio variations.

Future works

1. HYCOM-SST to find IW

2. The influence of wind

    1) Impact of Wind Wakes

Thanks for Your Attention