

# Analysis of Small-scale Coastal Wind Features Using Scatterometers and Synthetic Aperture Radars

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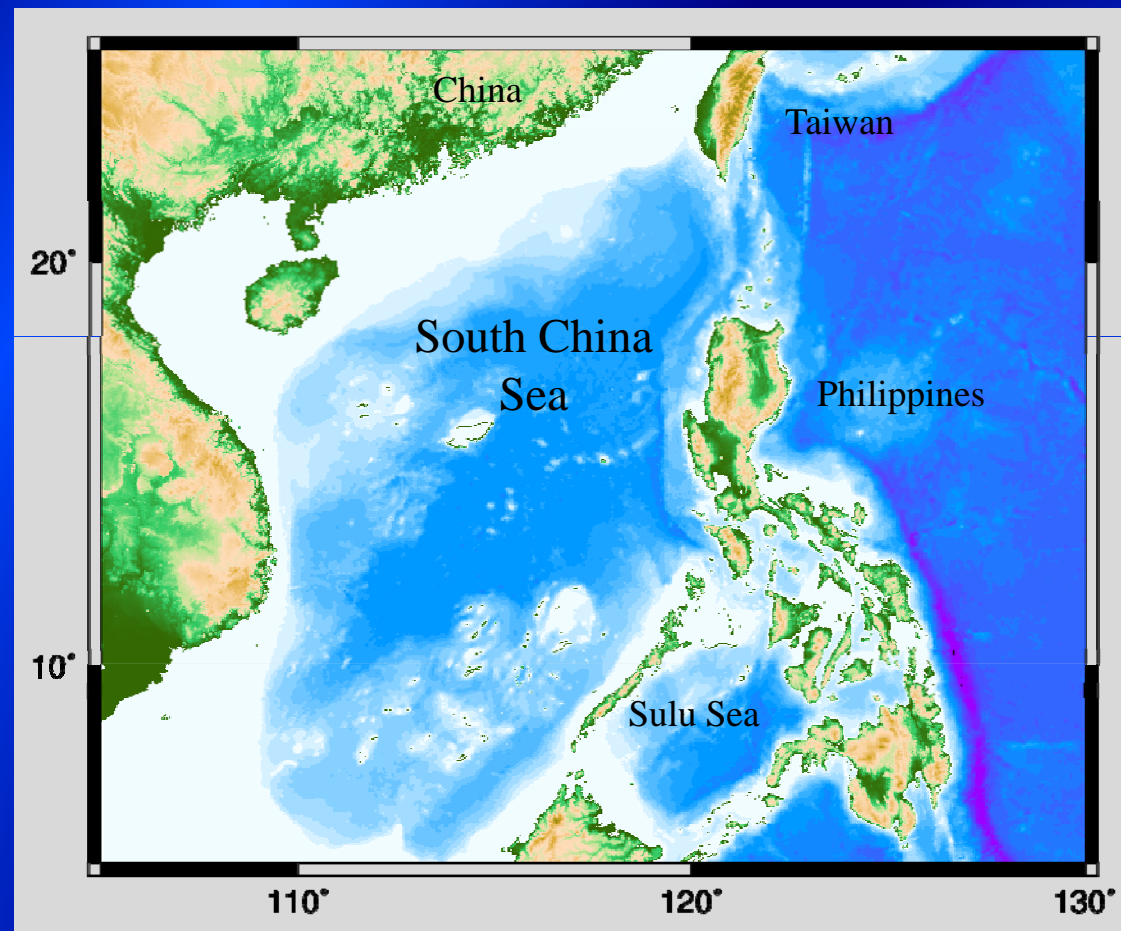
# Regional Wind Characteristics

- Sulu/South China Sea
  - Gap winds
    - Mexico/Central America
    - Alaska
    - Islands and straits
  - Seasonal and episodic
    - Monsoon driven
  - Time scales of 2 days, length scales of several hundred kilometers
- Western North Atlantic
  - Little orographic influence
  - Seasonal and episodic
  - West to east storm tracks
  - Internal waves, oceanic and atmospheric fronts

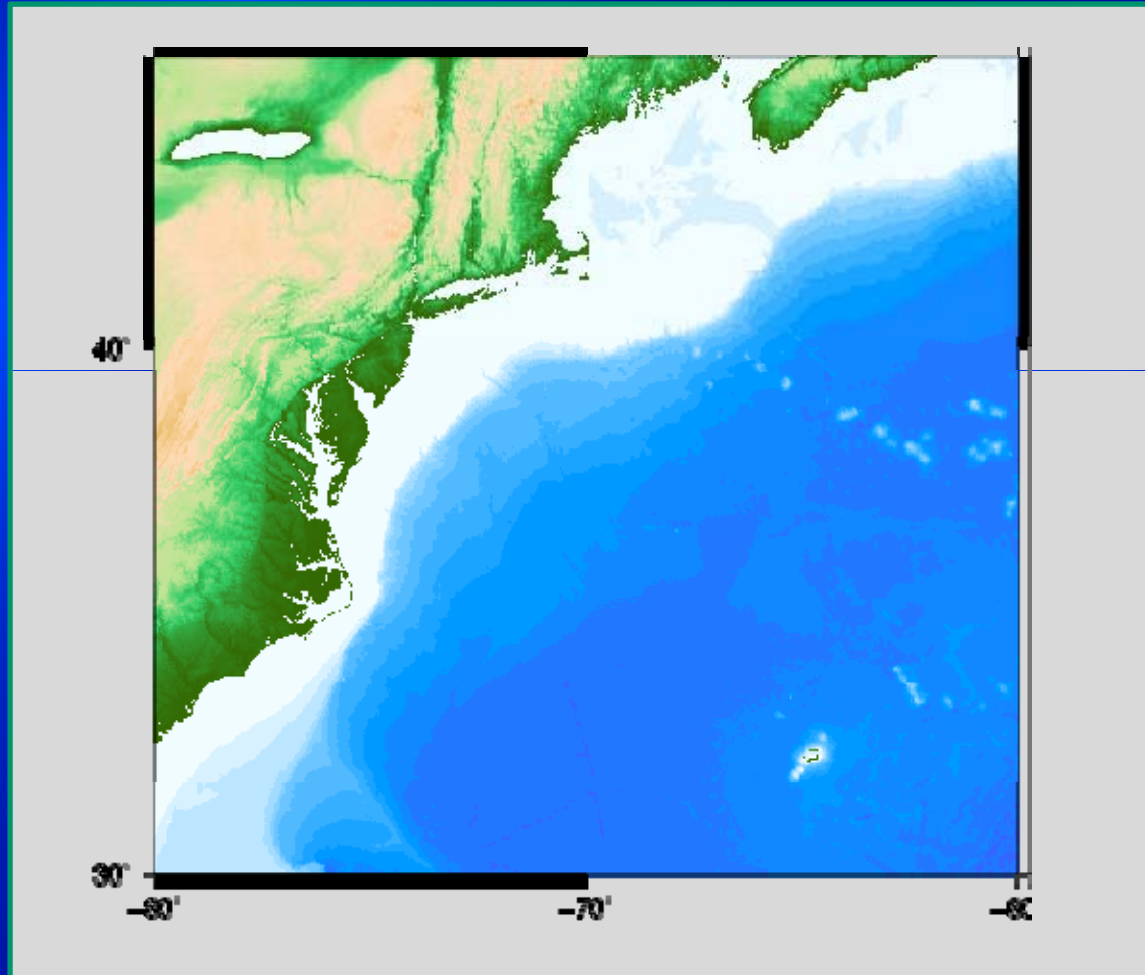
# Data

- QuikSCAT L2B12 winds
  - 12.5 km resolution winds
- Envisat ASAR
  - 150 m resolution  $\sigma_0$
  - 300 m resolution winds

# Sulu/South China Seas



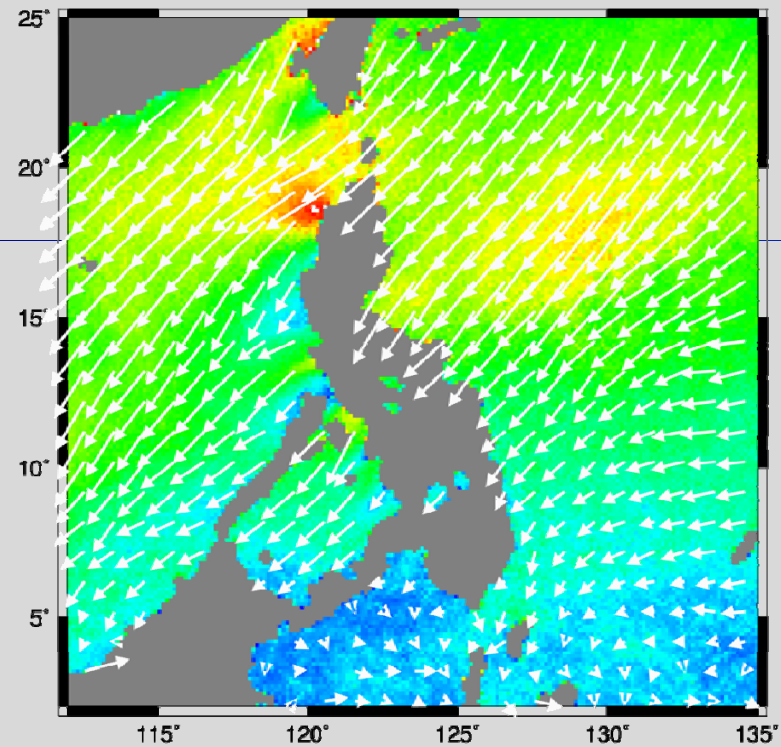
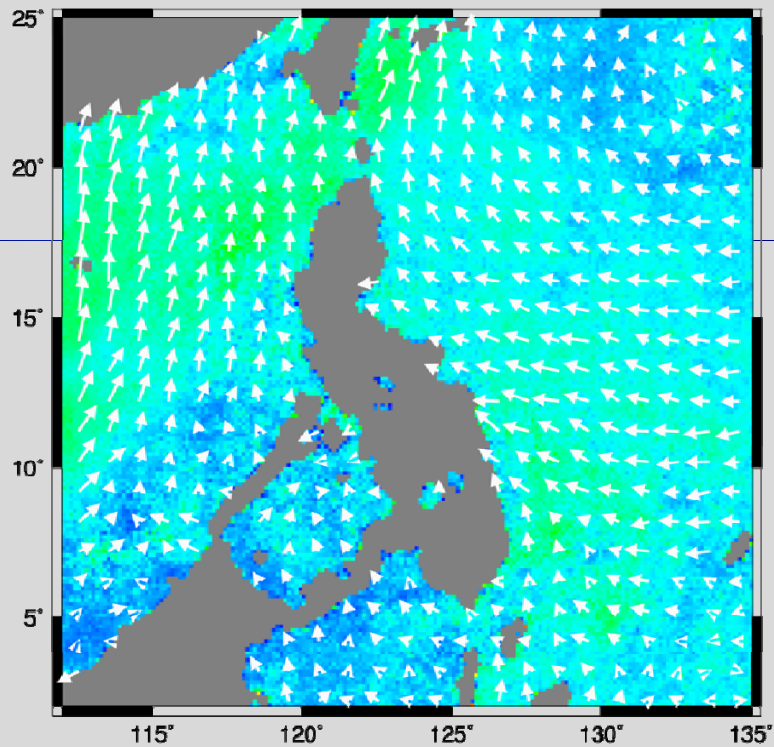
# Northwest Atlantic



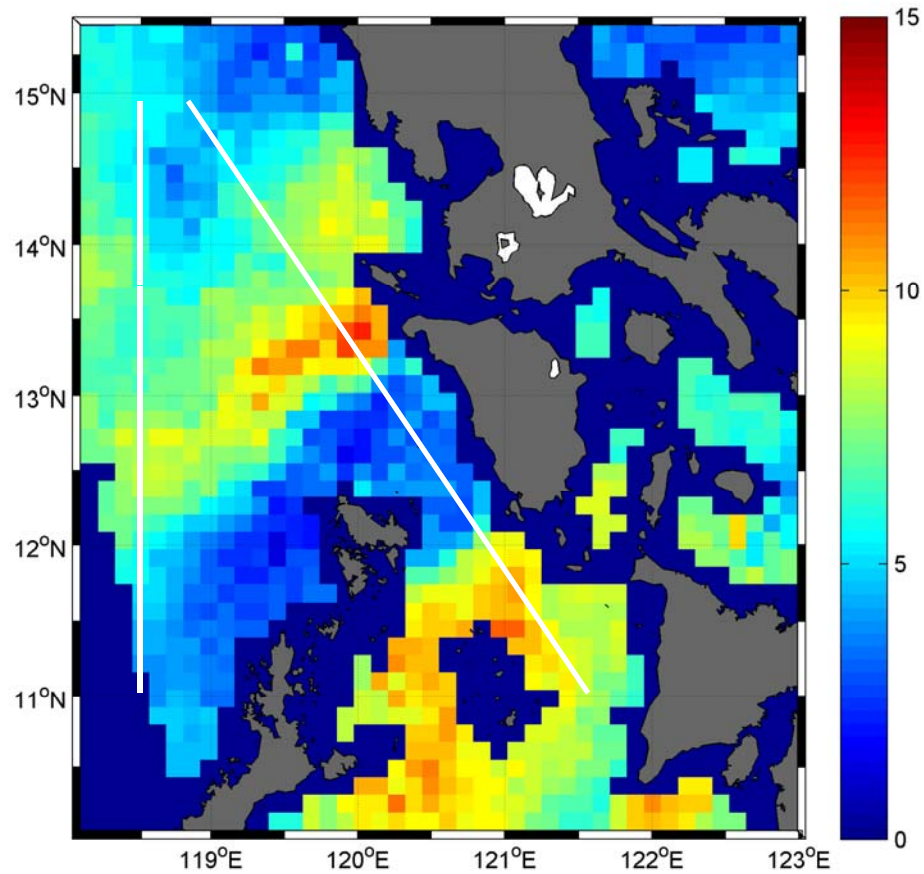
# Monsoon winds

June 2008

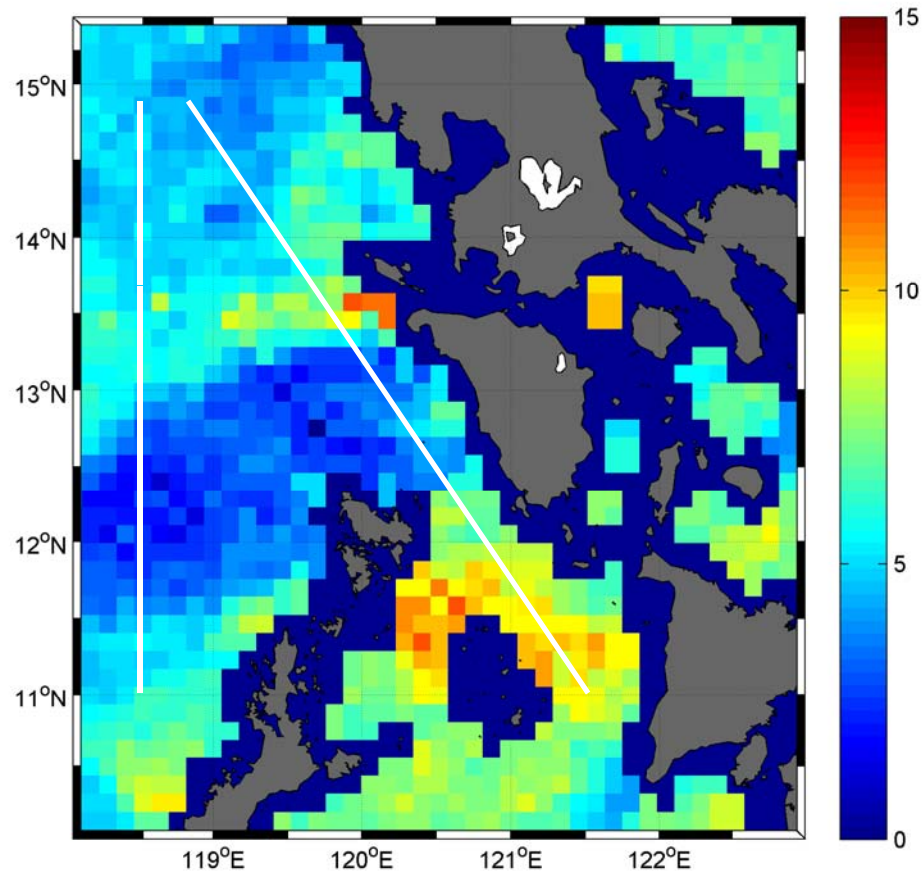
December 2008



# QS Winds Feb 20, 2009

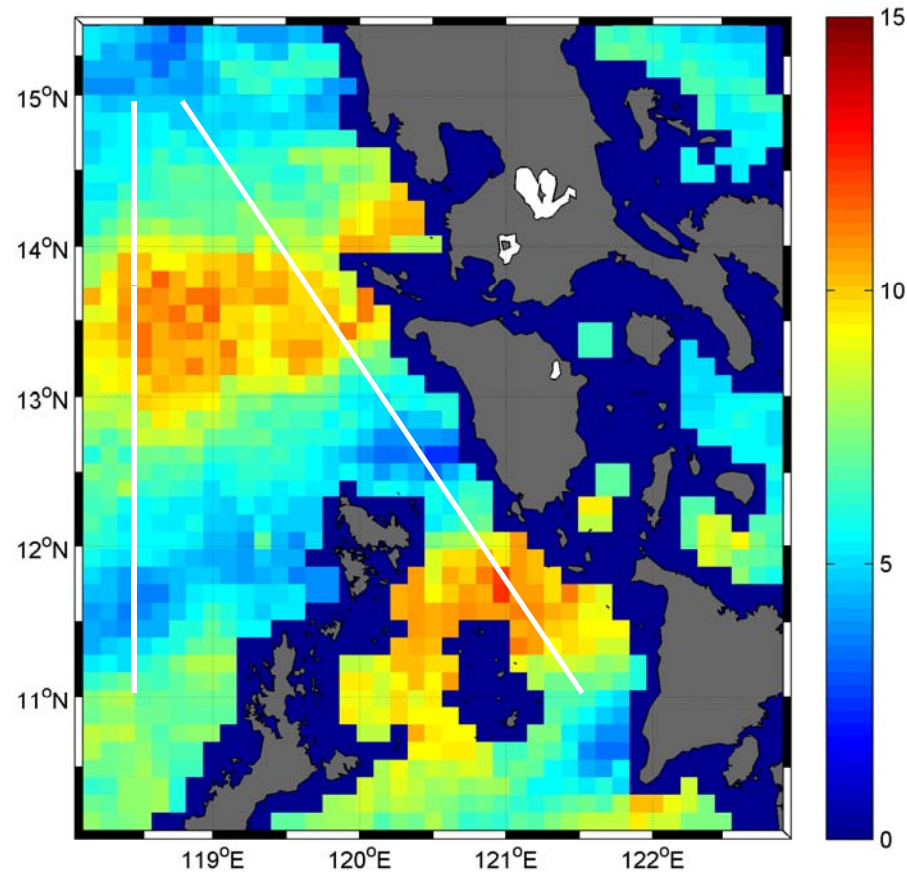


# QS Winds Feb 21, 2009

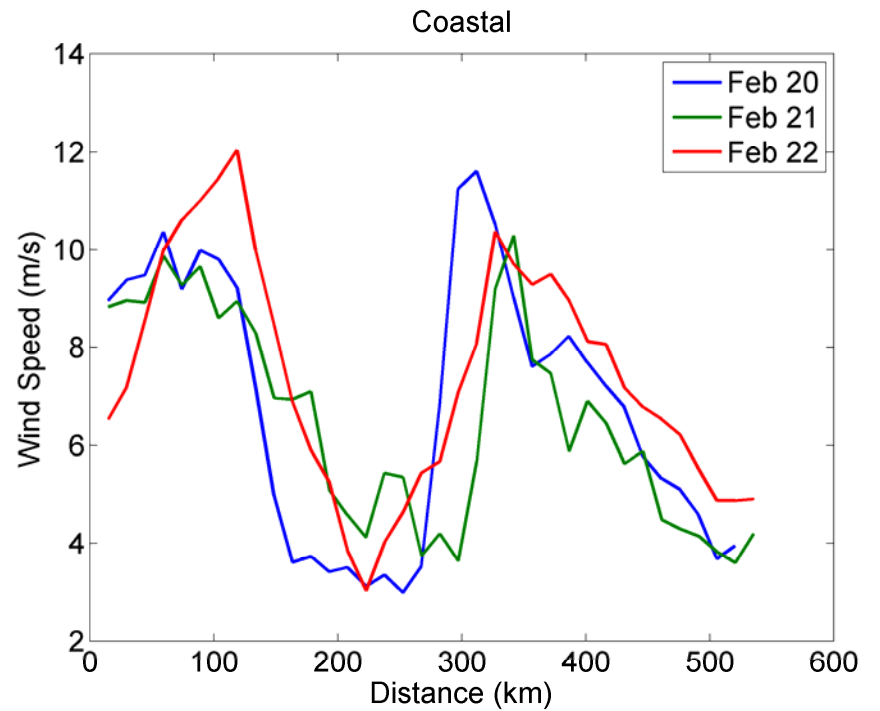
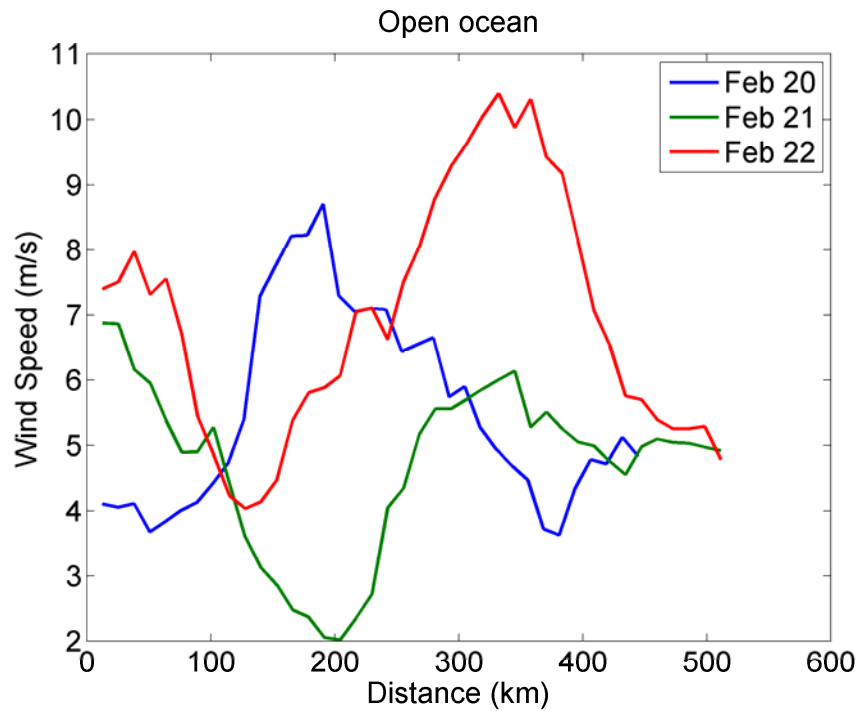




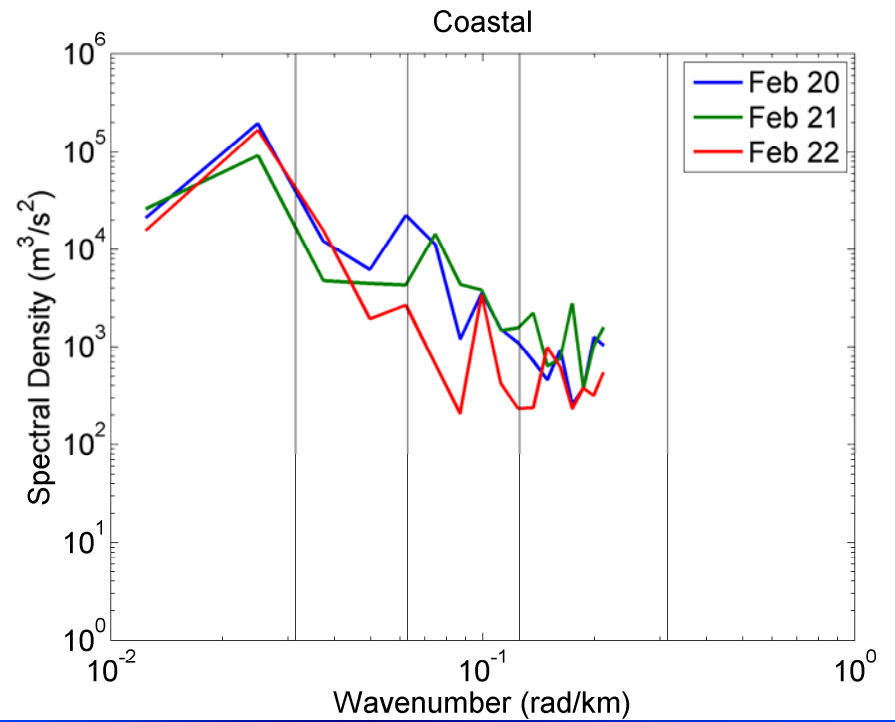
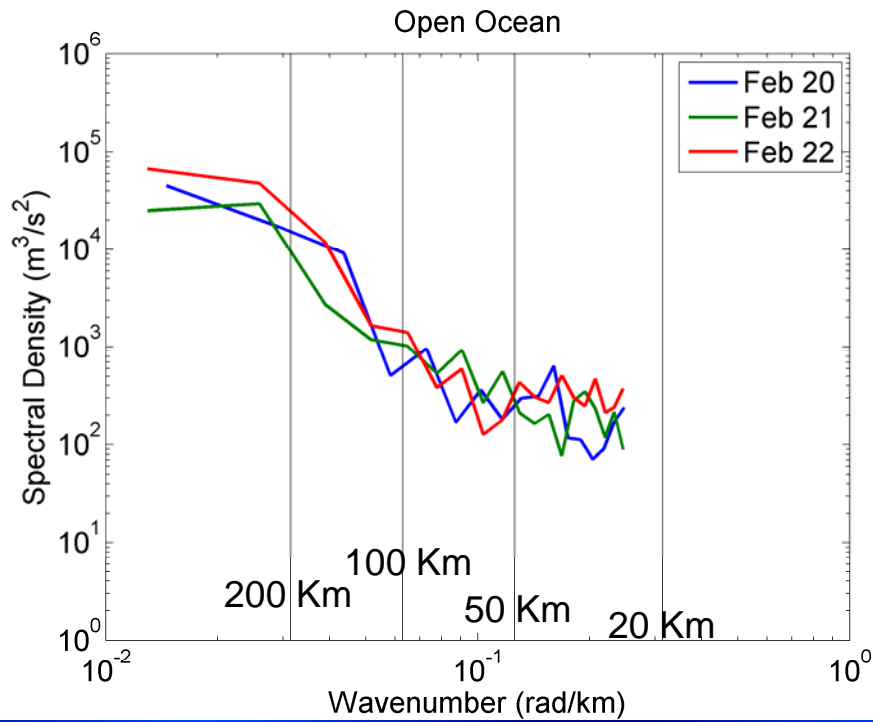
# QS Winds Feb 22, 2009



# QuikSCAT Winds

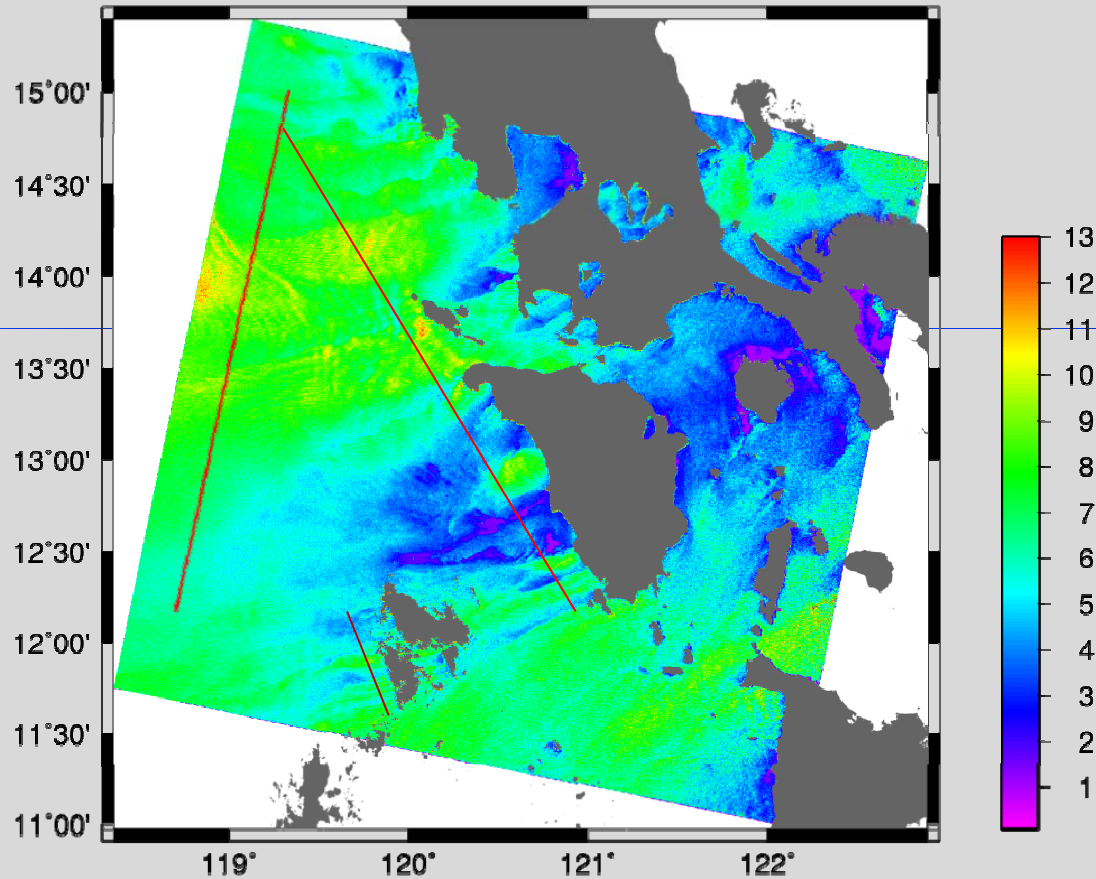


# QuikSCAT Spectra

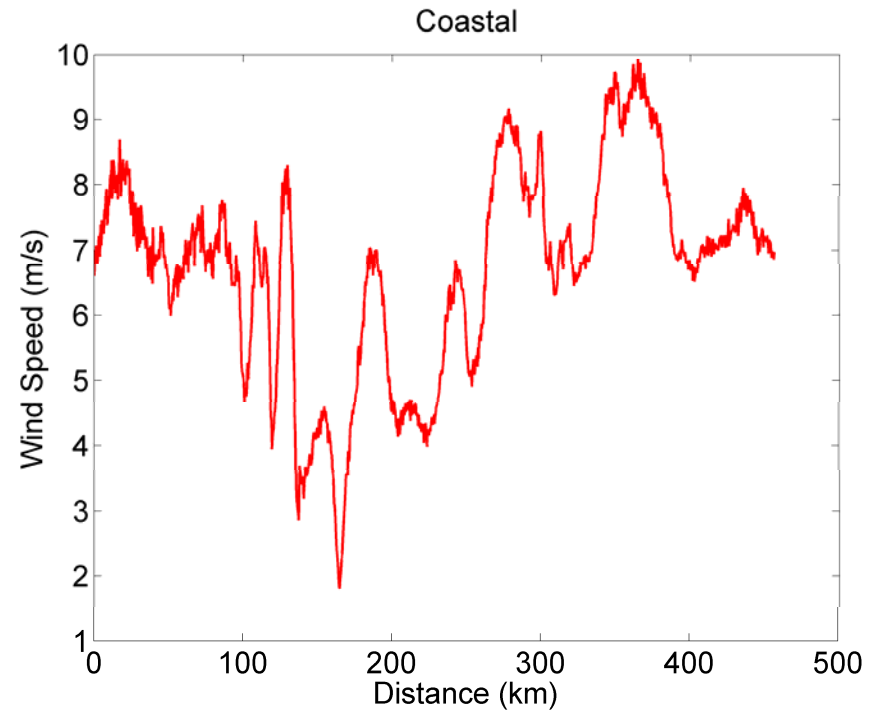
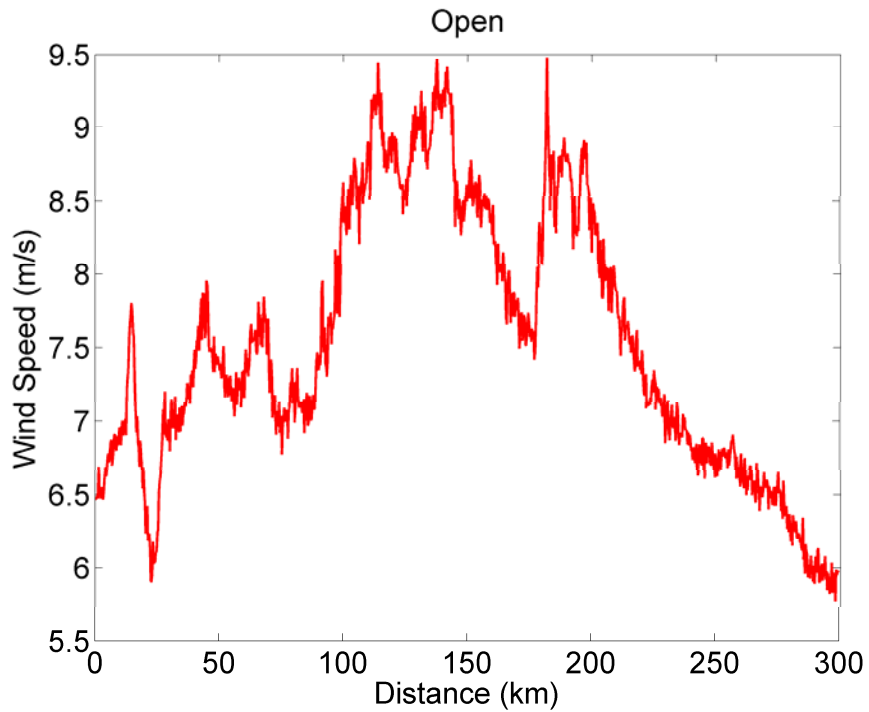


# Envisat Feb 22, 2009

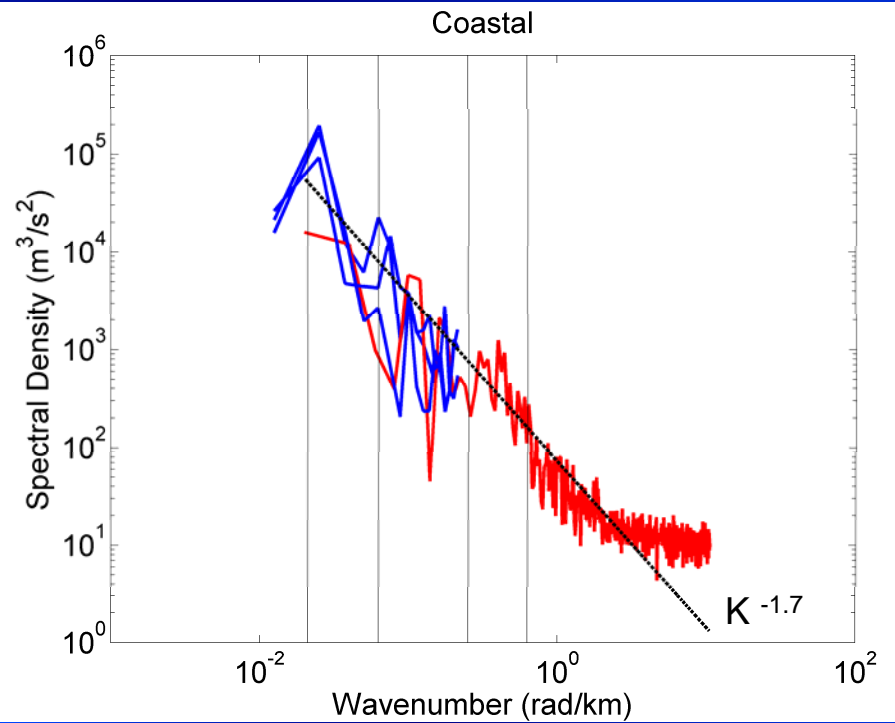
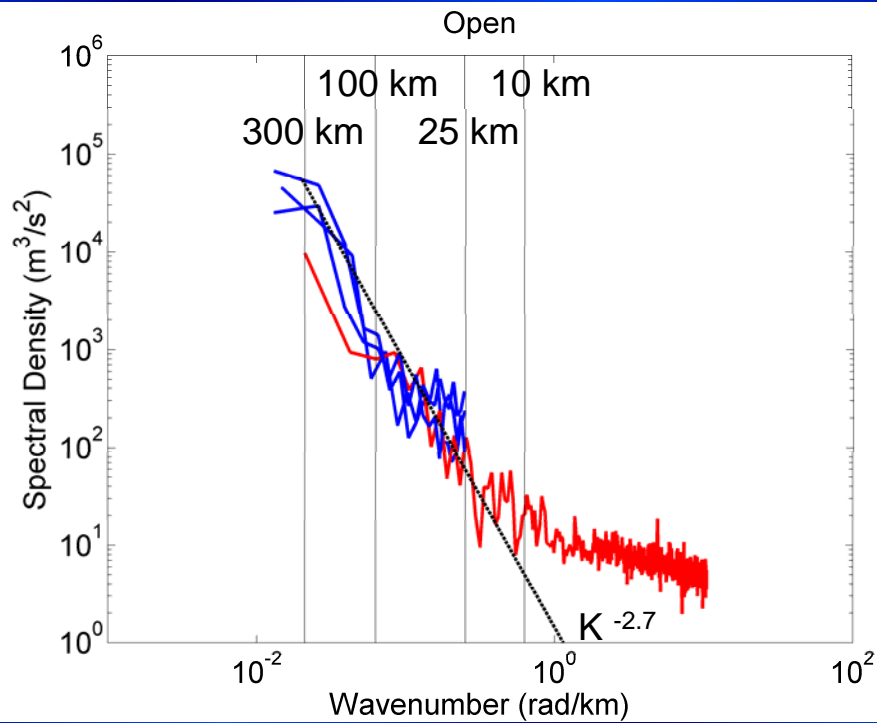
Envisat ASAR



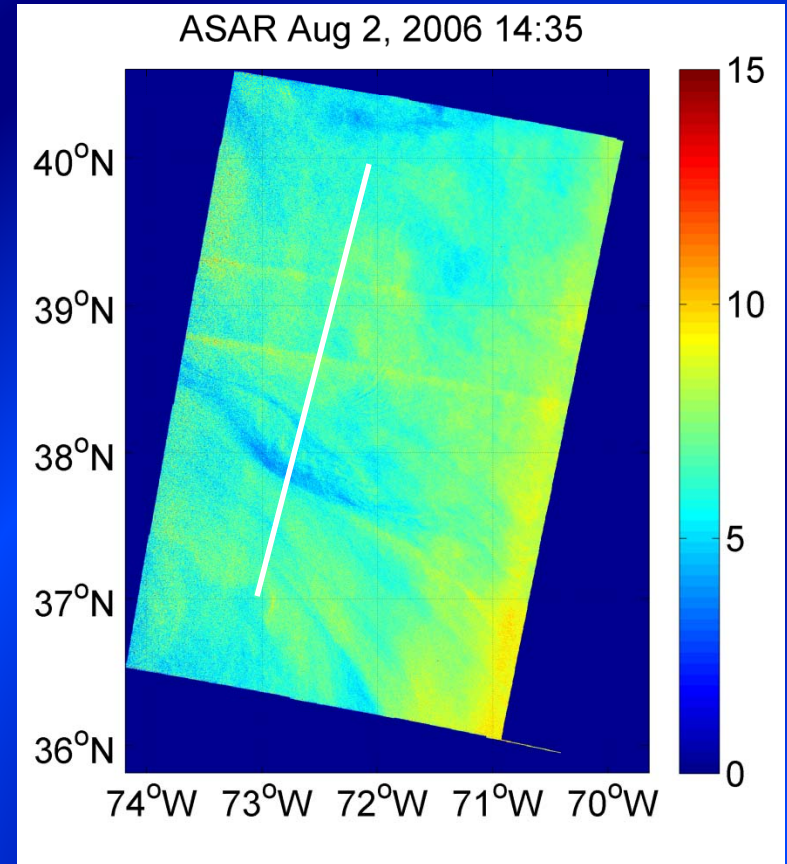
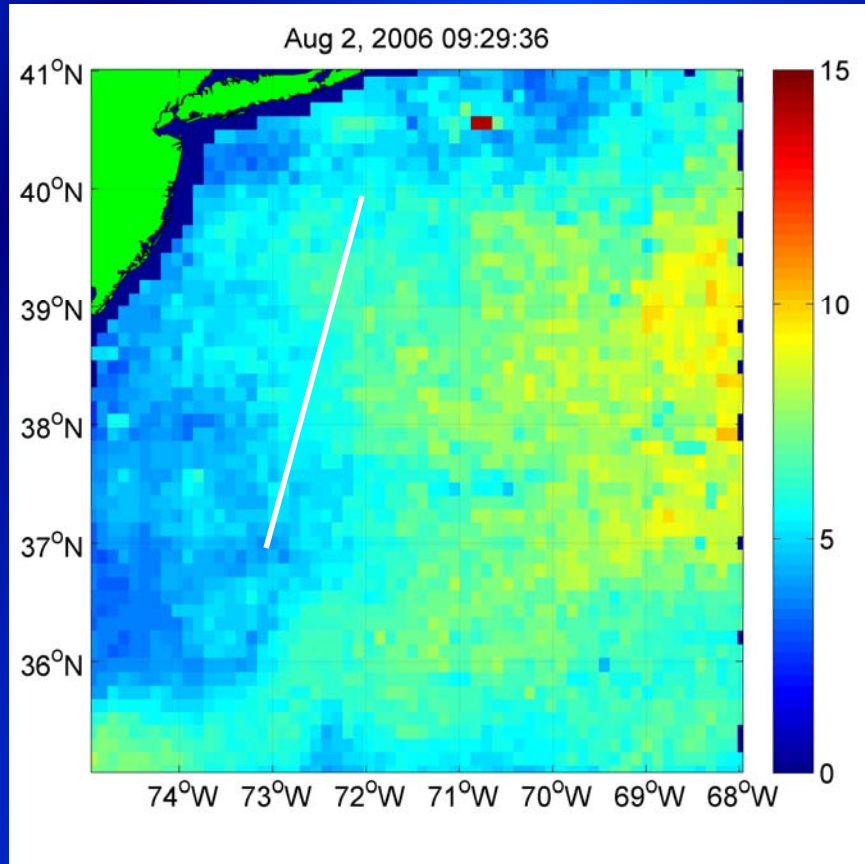
# Wind speeds



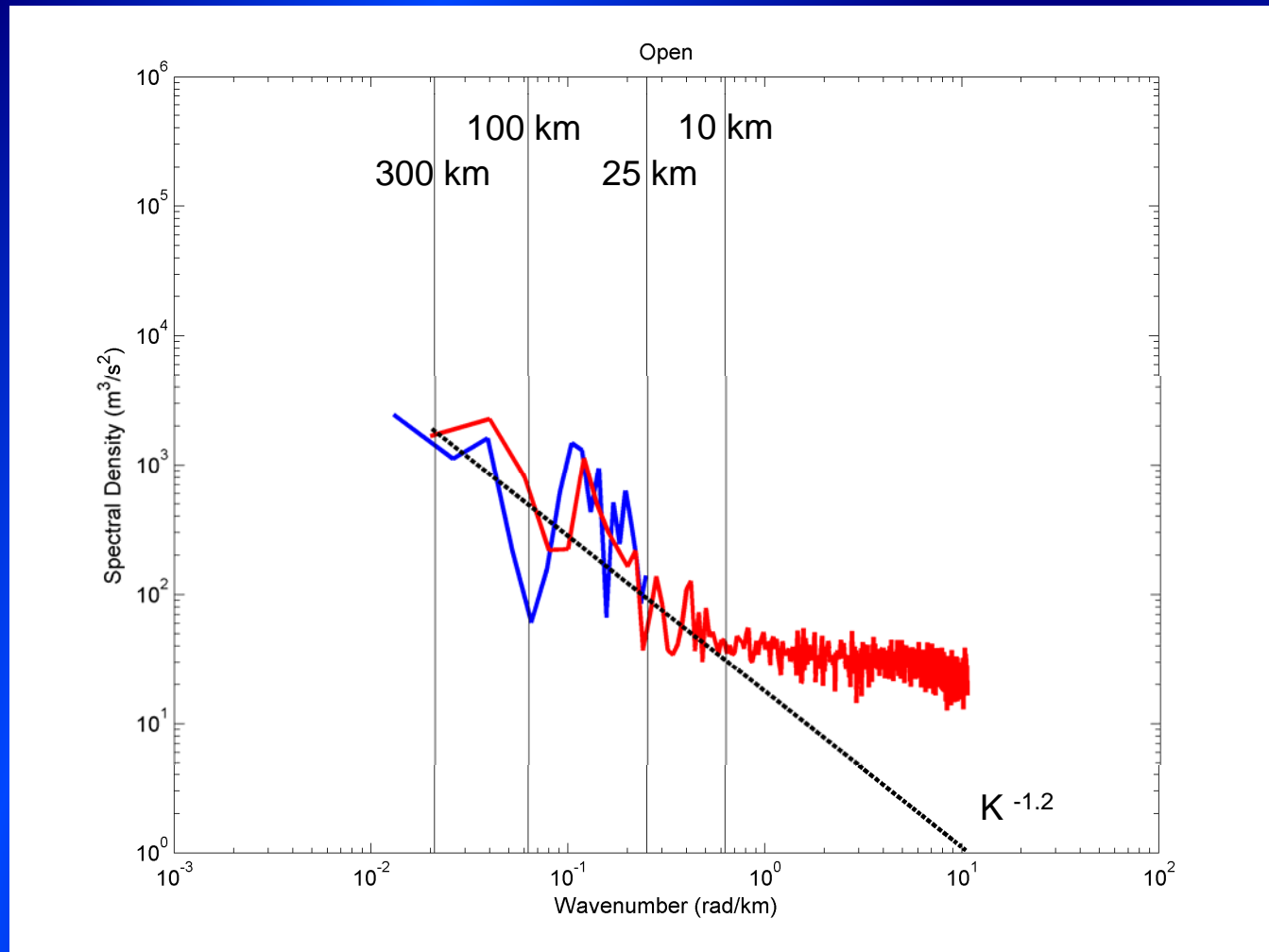
# Spectral density



# NW Atlantic



# Spectral density





# Summary

- QuikSCAT and SAR winds consistent between 25 and 300 km
- QuikSCAT wind speeds indicate noise floor above 25 km
- SAR wind speeds indicate a noise floor between 10 – 25 km in open ocean
- SAR wind speeds indicate noise floor of ~3 – 5 km in coastal regions.

Thank you



# Supporting slides

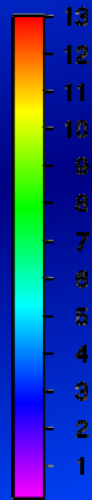
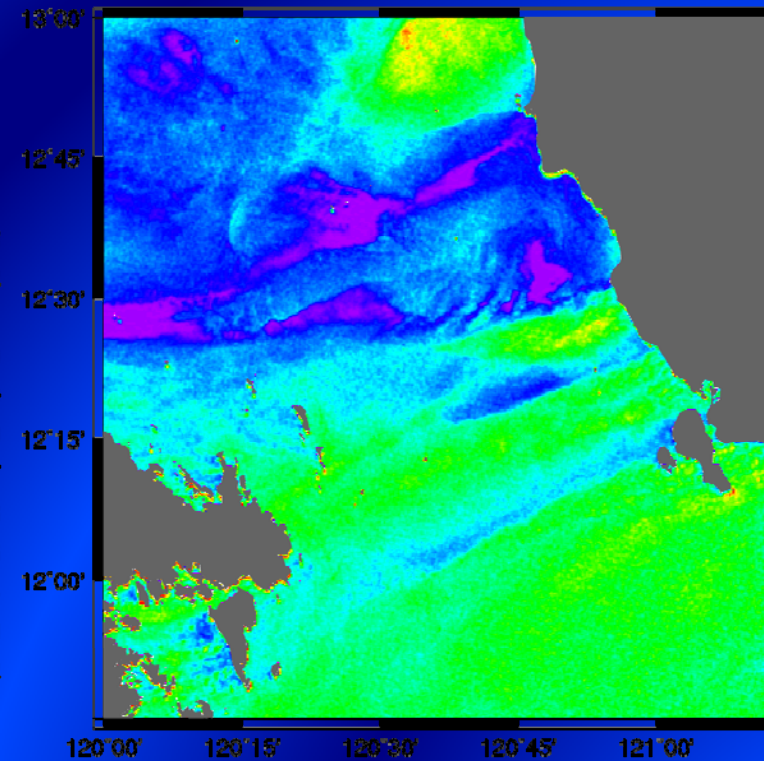
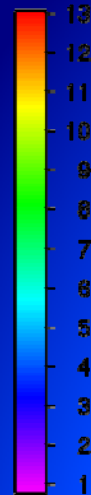
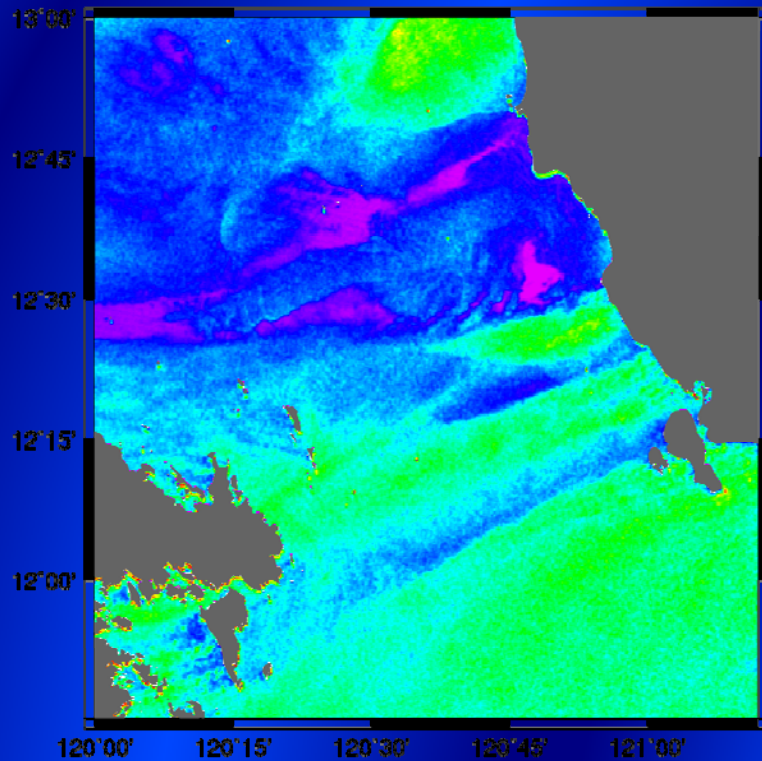
# Overview

- Wind features
- Sulu/South China Seas
- Western Atlantic
- Example wind fields
- Summary
- Future work

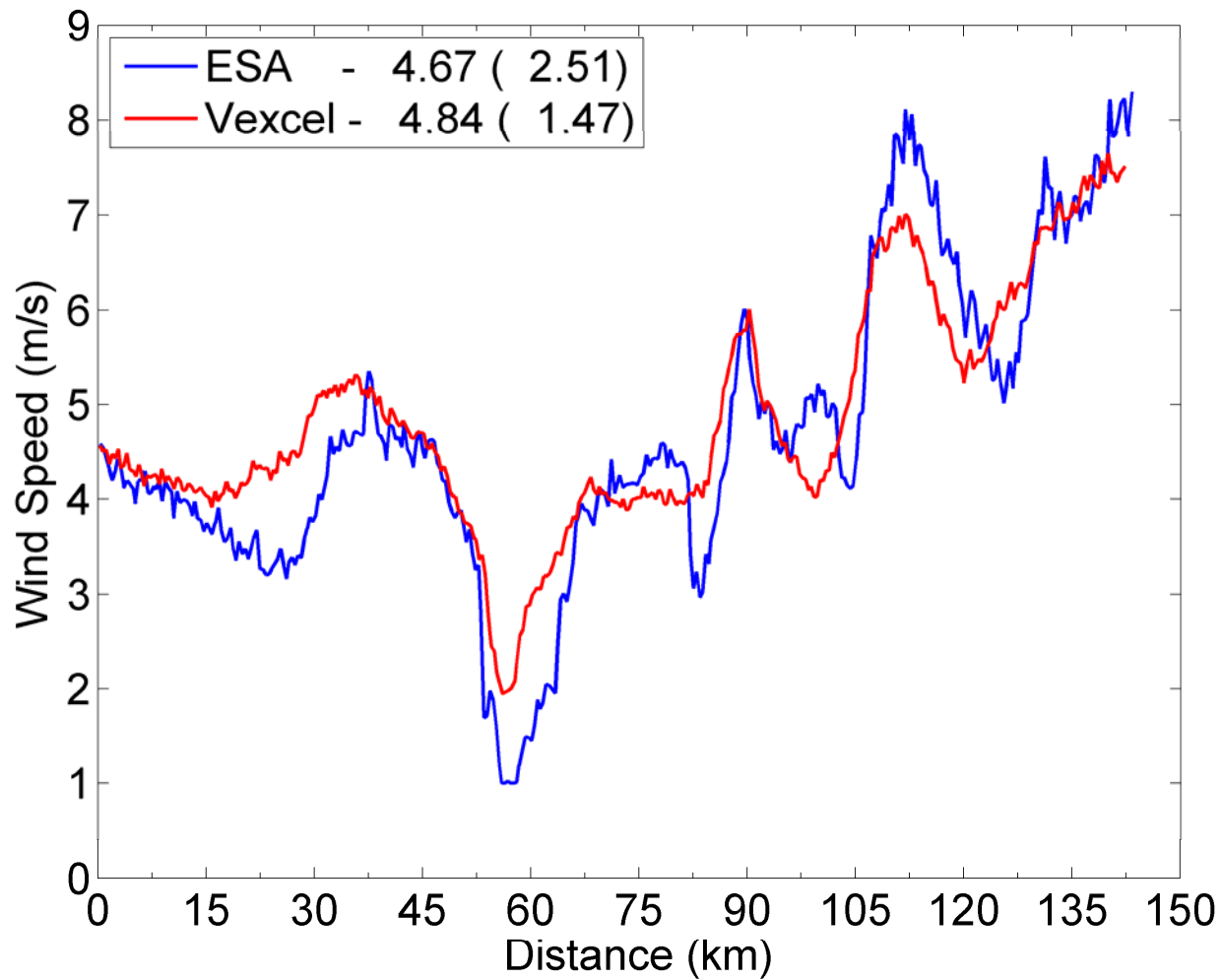
# Small scale gap winds

Vexcel

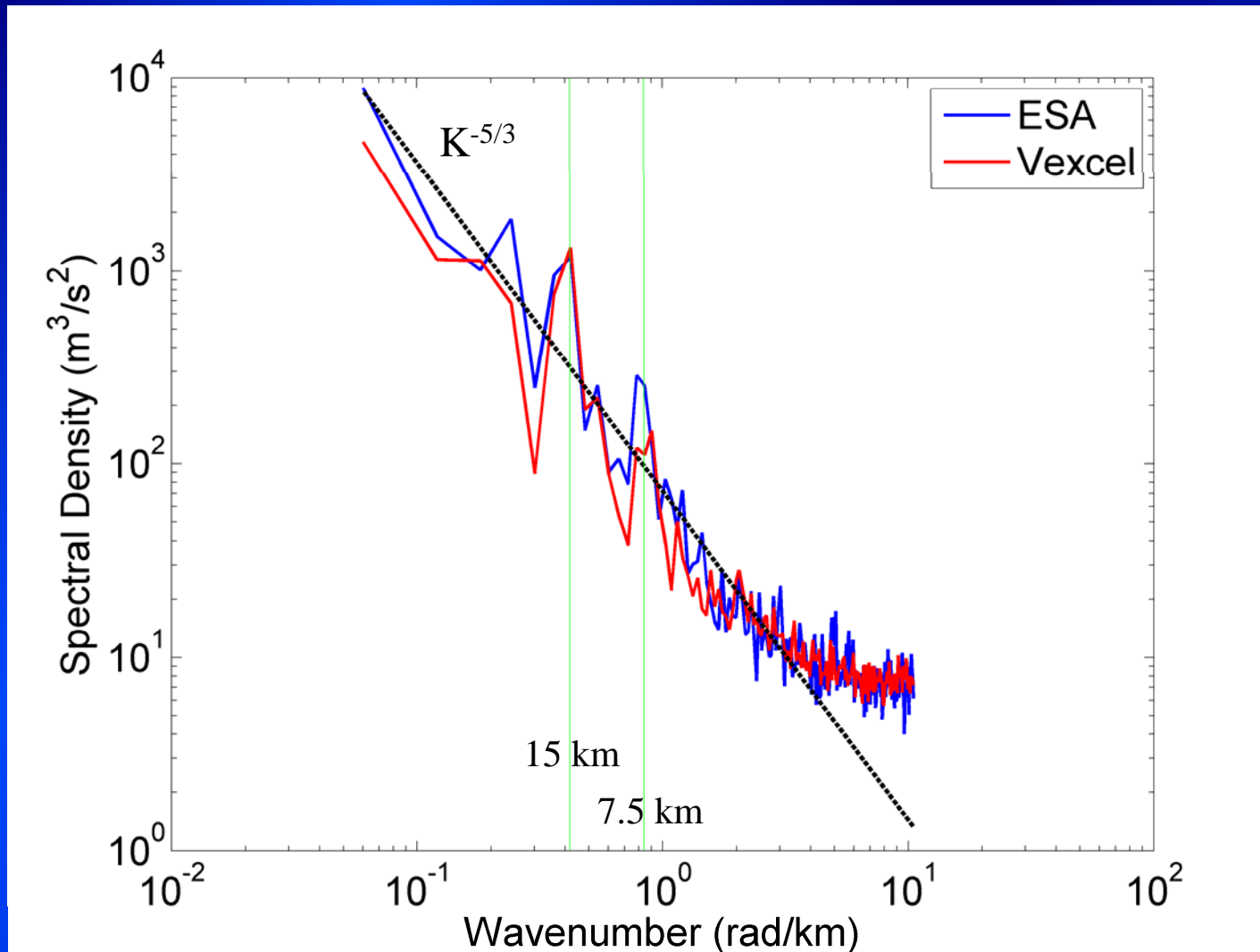
ESA



# Wind speeds



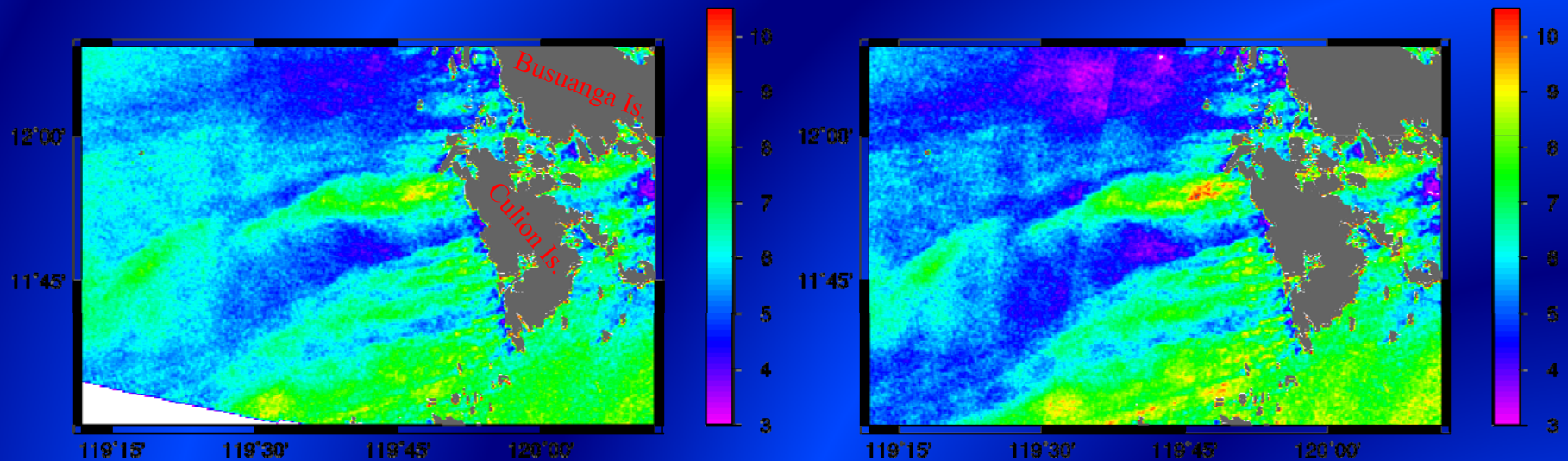
# Spectral density



# Fine scale gap winds

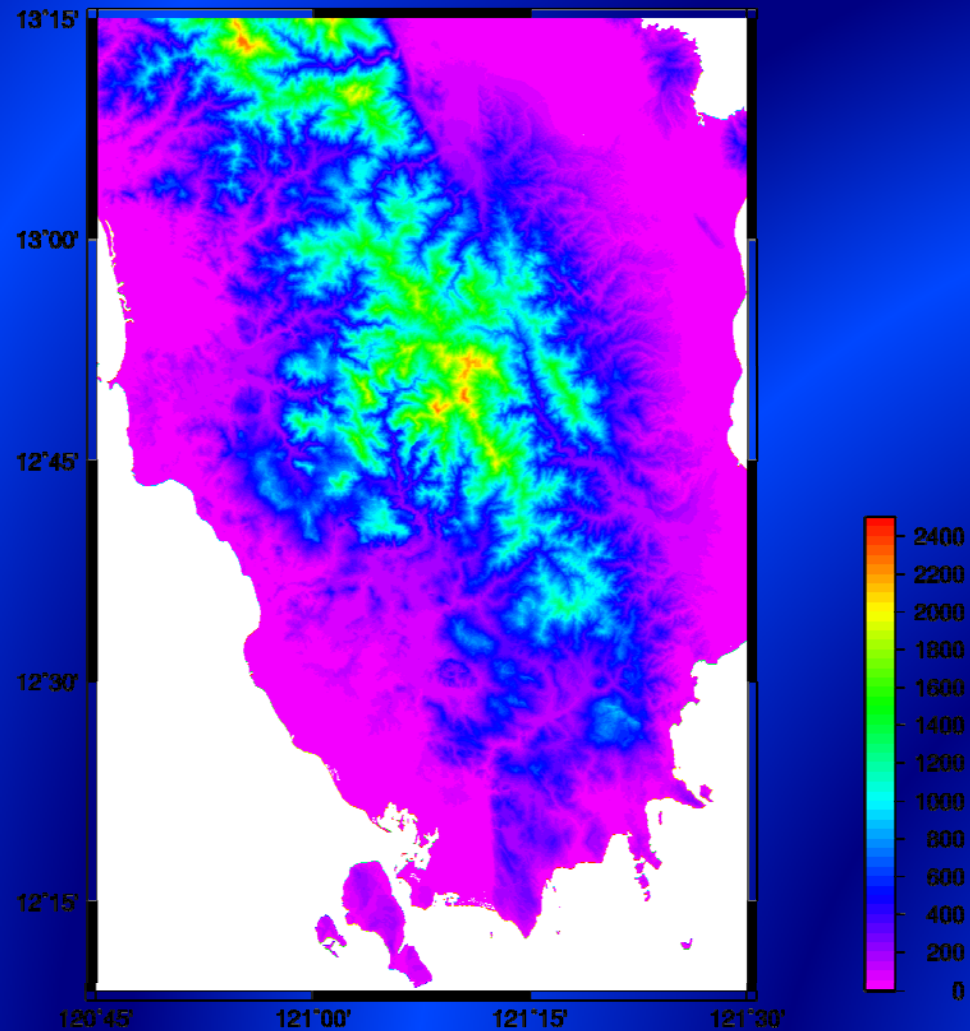
Vexcel

ESA

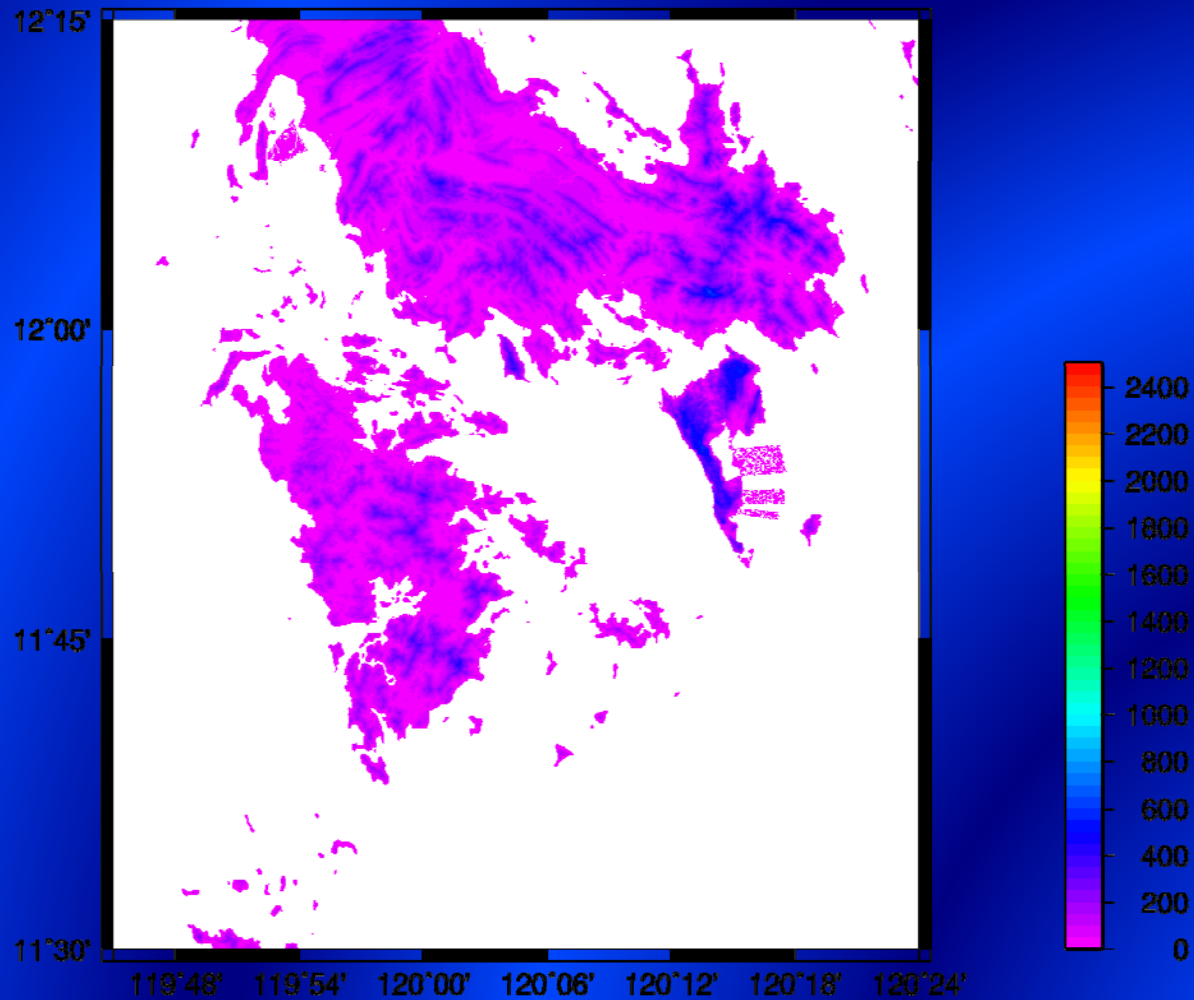




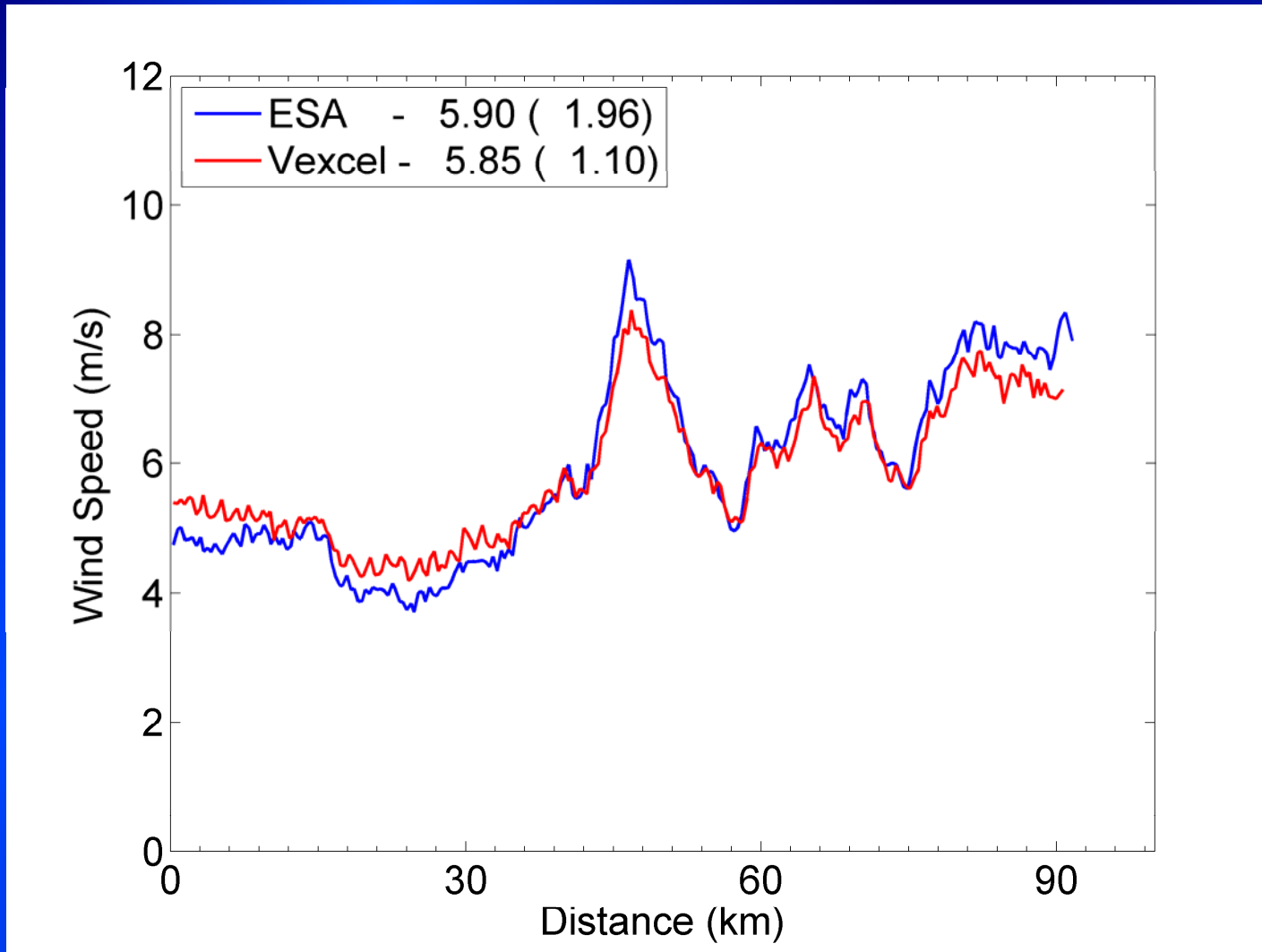
# Mindoro Elevation



# Culion Island



# Wind speeds



# Spectral density

