**INTRODUCTION**

**Motivation**
- Ocean data is sparse
- Reliance on satellite imagery for marine forecasting
- Ocean Prediction Center (OPC) “mariner’s weather lifetime”

**GOES-16**
- Pacific, Atlantic, Pacific Alaska surface analyses - 24, 48, 96 hr
- Wind & wave analyses - 24, 48, 96 hr
- Issue warnings, make decisions

**Geostationary Operational Environmental Satellite - R Series (now GOES-16)**
- Compared to the old GOES:
  - 3x spatial resolution
  - 4x spatial resolution
  - 5x faster coverage
- Comparable to Japanese Meteorological Agency's Himawari

**REFERENCES**

**CASE STUDY ANALYSIS**

**Name/Identifier**
- Ibering Sea Bomb
- Winter ‘Underdog’
- Spring Transition
- TC Songda Transition

**Date Range**
- December 10-13, 2015
- January 17-19, 2016
- April 5-9, 2016
- October 12-15, 2016

**Reasons for Interest**
- One of the strongest (924 mb center)
- Non-tropical storms on record
- Large impacts
- Developed rapidly despite small size
- Late season cyclone
- Abnormal development
- Lost most of its tropical features
- Abnormal extratropical transition & development

**GROUP DATA & METHODS**

**Himawari-8 Airmass RGB**
- Upper layer: 6.2 µm channel
- Middle layer: 6.9 µm channel
- Lower layer: 7.3 µm channel

**Total Column Ozone & Ozone Anomaly**
- Used to help quantify Airmass RGB
- Examples of instruments:
  1. Aqua’s Atmospheric Infrared Sounder (AIRS)
  2. S-NPP Cross-track Infrared Sounder/Advanced Technology Microwave Sounder (CrIS/ATMS)
  3. Metop-B’s Infrared Atmospheric Sounding Interferometer (IASI)

**Scatterometer & Microwave Radiometer**
- Used to verify hurricane-force
- Measures backscatter of radar signal for wind speed & direction
- Microwave Radiometer
- Measures microwave signal response for only wind speed

**Conclusions**
- Rapid Development
  - RGB Airmass really shows the stream of dry, high PV air
  - Vortex ‘lobe’ streamers
  - Interaction of dry air from multiple systems
  - Comma cloud getting brighter

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