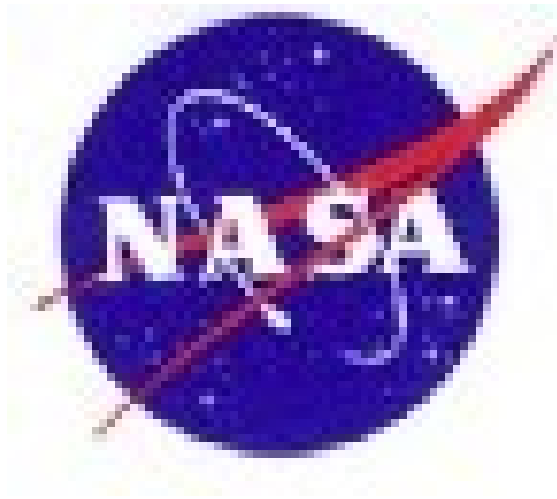


# **IOVWST 2025**

## **Discussion of Goals from Yesterday**

**Input from Mark, Session Chairs, and the  
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## Suggested Action: Comparison data recommendation

- We continue to need comparison (meaning calibration) data
  - We'd like to continue to have data from the open ocean
    - And to be notified when there are
      - Changes in metadata
      - Changes in calibration
  - We need data in near coastal regions, for extremes, and for rare conditions.
    - Extreme winds and rain are still conditions for which we believe there is greater room for improvement, and higher impact for societal applications.
    - We recommend continued data collection associated with tropical cyclones
    - We recommend, if possible, correction and reprocessing of the SFMR data record
    - We recommend increased use of Doppler radar to obtain near surface wind profiles (winds and multiple heights near the surface)
      - We recommends continued work to improve adjustment of these winds to 10 m winds (Mark, Ralph, Zorana)
    - Absolute calibration (even if indirectly from sensor to sensor) (EUMETSAT)



## Suggested Action: Comparison data recommendation

- We strongly recommend intercalibration of remotely sensed winds
  - Coastal winds from SAR, HF radars and scatterometers
    - Aircraft data would be welcome
    - Check for impacts of proximity to the coast and shallow water
  - Satellite to satellite calibration under as wide a range of parameter space as possible
- We recommend continued work and improvements of near-coastal products
  - Bryan, Giuseppe,
- We recommend collaborating across sensors to improve retrievals at multiple polarizations
  - Ad, Chris Jackson



## Suggested Action: Surface Currents

- Summary of the situation:
  - In the oceanography community, there is a strong interest in surface currents
    - May oceanographers in this group are working on surface current modeling, with a wide variety of approaches
      - Luc Lenain's approach looks very interesting (in a good sense of this phrase)
      - SMODE provided invaluable data
    - However, the community is limited by a lack of open ocean surface truth
- What can we do to get more surface truth?
  - How useful are currents from high frequency radar data?
  - How useful are single vector component SAR data?



# **Suggested Action: Suggestions for better linking efforts on modeling processes with Remotely Sensed Data**

- We've seen some exciting progress in modeling processes related to wind/wave/ocean coupling.
- We're seeing progress in remote sensing that might be informative regarding these processes
- Can we help each other move forward?



# Suggested Action: Winds Validation

- Statement:
  - We can intercalibrate wind most remotely sensed wind to a truly remarkable degree of accuracy!
    - However, there are some sensors (or processed datasets) that are noticeably dissimilar to other data sets
      - CYGNSS due to calibration to neutral winds rather than Equivalent neutral winds.
      - CFOSat's scatterometer's dependence on wind speed
      - While these differences are very minor for many applications, we'd prefer consistence
    - Differences in spatial scale, noise and consequently variability are going to be important for the interpretation of extremes and sampling requirements of calibration for extremes
- How to do move forward with 'truth' for extremes?
  - IWRAP seems good, but there are sampling issues impacting 10m winds
  - How does sampling impact links between mean winds and 1-minute maximum winds?
    - Note: it shouldn't – otherwise interpretation is impractical.



# Suggested Action: How can surface wind data be more useful for Tropical Cyclone forecasts?

- I suspect that we are under utilizing the measurements.
- However, we also need better modeling of the extreme winds
- There seems to be progress on both these topics.
  - How can remotely sensed winds, and other data, help modelers?



# Suggested Action #1: Put limits on how much stress (or U10EN or U10SE) depends on sea state

- There is a wide variety of parameterizations of how friction velocity and the drag coefficient depend on sea state.
  - Extreme differences in the function dependence on sea state (e.g., wave age and difference between wind and wave directions of propagation).
  - These are equivalent to stating that stress depends on sea state.
- Since satellites seem to respond to stress, this seems like a plausible means to test for dependencies of sea state on stress.
  - Provided that we can demonstrate that unaccounted for errors in scatterometer U10EN, U10SE, or stress are tiny relative to observed dependencies
    - It isn't clear we can make this statement at this time, but this seems like a good goal.
- How do we proceed?
  - CFOSAT – Marco L. working on this
  - Systematic errors in retrievals
    - Ray – update work based on feedback
    - Ad – Examine if there is a systematic change in cone statistics (residuals)
    - Others?





## **Suggested Action: The links between winds, Marine Heat Waves, and Atmospheric Rivers**

- These are high impact events for which surface wind data appears to be very useful.
  - Can we do a better job communicating the value of surface winds for these applications?
- Several of the mission updates point to data that could be used to further such studies.



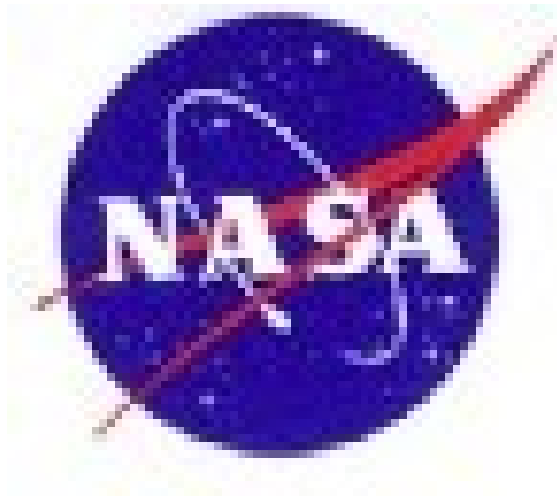
## Suggested Action: Reconsider metric for value of winds to NWP

- Are we using a reasonable metric for the impact of winds on NWP
  - It appears to be ‘What gives the greatest improvement?’
- Is this metric largely focused on synoptic scales and ‘good’ weather conditions?
  - The result is then what is the smoothest good wind, which means a larger spatial scale average of well calibrated winds.
  - Would it be more reasonable to focus on high impact weather?

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