

Meeting Conclusions (partial)

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The EUMETSAT
Network of
Satellite Application
Facilities



Thanks to Eric Lindstrom!

- Eric's vision led to the IOVWST
- He has contributed numerous ideas that contributed to the recognition a clearer and wider understanding of the importance of ocean vector winds



Next Meeting

- We are considering holding the next meeting (in early May or late April) in Bengaluru, India
 - In May there is a risk of high temperatures that would make many visitors uncomfortable
 - We have been told that July is good and need to rethink dates
 - What conflicts do we need to avoid in April to make this meeting work?
 - April 20 to 24: IWW15
 - May 3 to 8: EGU
- Need to set dates for meeting early
 - Provide paperwork for visas early



Communications

- As a community we are not adequately communicating the capabilities, strength, and weaknesses of different types of wind sensors
 - Decision makers (about the observing system) and operational users are misinterpreting capabilities
 - We are not communicating how these different platforms can (and should) be used together
- Our OceanObs19 paper is a partial solution, but lacks sufficient detail
- We need a paper that has
 - The easily read summary like the OceanObs19 paper
 - Details on the capabilities, strengths and weaknesses
 - Requirements for applications (for phenomena key to applications)
 - We need to better explain synergies between the different elements of the observing system



Capabilities and Calibration

- Sensors measure the space and time integral of the surface conditions, (weighted by the antenna pattern for remotely sensed data)
 - In the vast majority of cases, these surface conditions are a function of local stress-equivalent winds (stress)
- This averaging limits the ability for platforms to accurately observe features below spatial scales related to the observation method
- Atmospheric eddies/rolls will impact dropsondes and SFMR, and the spatial scale of these features should be considered when trying to compare these smaller scale observations to satellite observations.
 - Averaging over scales that partially resolve vigorous features causes large uncertainty, which could also contribute to errors in calibration
 - Therefore we must carefully consider the averaging scales when intercalibrating instruments



Other

- Coastal products should be further elaborated for users



<http://coaps.fsu.edu/scatterometry/>

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Extreme Winds and Stress Discussion Summary

- Greater improvements to calibration and applications are expected if we improve our understanding of the physics and measurement context that the various instruments (e.g., dropsondes, SFMR, satellites, buoys, aircraft) are responding to in order to translate the measurements between instruments for cal/val
 - The measurements are correlated, but there is a scaling difference



Recommended Actions

- Compile a Google document discussing these issues and how to approach solving them
 - Once Google document is complete with community input, take best ideas, summarize, publish article and ask sponsors for funding to support path(s) to improvements.
 - We need deadlines to make this work. 4 week deadline
- One solution: coordinate a multi-year field campaign that will collocate the various instruments (remote sensing and in-situ) from multiple platforms in hurricanes and extratropical systems to address the issue of measurement scale and understand the physical processes driving these scales.
 - NOAA P-3 routinely collects SFMR, dropsondes, IWRAP, TDR data in these systems
 - New addition would be collocating with satellite (SAR, scatterometers, radiometers, etc.) overpasses
 - Another new addition would be connecting the surface to the boundary layer via IWRAP with new measurements.
 - Also, try high fall speed sondes and new sampling patterns to get better collocations between in situ and remote sensing data



Recommended Actions

- Recommend that EUMETSAT consider the orbit phasing of METOP-B and METOP-C to minimize the gaps between the ASCAT swaths in the tropical latitudes (The Tristar configuration).
 - The Tristar configuration allows, complemented by a drifting ASCAT-A coverage, at times complete global coverage of high quality and timely vector winds in both the morning and the afternoon
- Endorse the need for a written report that objectively addresses the question: “What is really needed for the satellite OSVW observing system constellation?” A workshop is being planned in the November time frame with invited experts from the remote sensing and application communities.
- Wind product comparisons at algorithm level are very useful and lead to further product enhancement and standardization.
- **For coastal applications, we recommend that coastal needs for high resolution be considered when designing on board merging of observations**
 - **Solution: aggregation should be done on the ground**



Combined wind and ocean motion studies

- The coupling of the ocean and atmosphere is strongly influenced by surface currents and SSTs (and maybe surface waves) coupled with their modification of surface stress and surface stress derivatives.
- Recommendation: Acquire coincident observations of surface winds and currents (e.g., WaCM, **CFOSAT**).
 - For much of the globe SST for geosynchronous orbit might combined.
- Recommendation: with SKIM flying in convoy with SCA, a SCA Doppler capability would usefully extend the SKIM capabilities to provide vector ocean motion information by providing much greater global coverage, which would be highly advantageous because SKIM derivative fields are limited in accuracy by sampling.
 - **Alternatively, overlapping observations would be provide insights into air/sea coupling processes and the impacts of spatial averaging of currents**



Special Note

- **Larry is a monster!**



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Diurnal and Inertial Variability

- **The recommendation for one or more non-sun-synchronous orbit for one or more scatterometers is still valid.**
- **Recommendation: Examine the advantages and disadvantages of the choice of orbit(s).**
 - **What is better for examining the diurnal cycle?**
 - **What is better for inertial variability?**
- **Winds are valuable for a wide range of applications. It would benefit the winds community to expand annual events to include more activities related to ocean and atmospheric boundary-layers.**



Issues and Solutions to Air-Sea Coupling

- Do we have recommendations?
- Higher resolution data statement.... For derivative fields
- Work on improvement of knowledge gap
- BACKGROUND
- Microwave SST coupled = miracle of global cloud free observations
- Fluxes from future observations that include winds
- Comparing models to observations and work on taking advantage of high resolution modeling – comparison to observations....
- Applications of spatial derivatives
 - Storms
 - Cold pools
 - Accuracy of derivatives

