Introduction From The Organizing Committee

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TERMS OF REFERENCE

Goal:
- To build a community of scientists working on global surface vector wind fields over the ocean to further scientific cooperation and practical application of ocean winds to societal problems.

Purpose:
- To continuously examine and improve the range and quality of ocean vector wind products available to the community.
- To assure that scientific input is provided to development of a high quality climate record for winds over the ocean.
- To stimulate innovation of applications using ocean vector winds for scientific and societal problems.
- To provide scientific guidance for the development of the CEOS Ocean Vector Winds Satellite Constellation.
- To improve the user community’s knowledge of strengths and weaknesses of ocean vector wind products for their applications.

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The Main Challenges In Satellite OVW Measurement

- **Availability** of data (as near real time as possible),
- **Intercalibration** of wind and wind stress (vector and scalar) sensors and **continuity** of data records,
  - Accuracy of wind and stress curl and divergence
- **Insufficient sampling** of natural variability
  - Diurnal and inertial cycles
- **Insufficient resolution** and near coastal data for non-SAR instruments
- **Rain** contamination (all-weather retrievals)
- Accuracy for **high wind speeds** (>17ms⁻¹).
- Climate studies also require very small **calibration drift**; otherwise the challenges are similar for science and operations.
- Develop **international standards** for OVW products and their characterization;
- Encourage the **development of applications** exploiting the timely and high spatio-temporal resolution OVWs

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Intercalibration vs Diurnal Cycle
(QuikSCAT – ECMWF) minus (ASCAT – ECMWF)

Graphic from Ernesto Rodriguez and colleagues

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Calibration, Hurricanes & Footprint Size

Graphics from Ernesto Rodriguez and colleagues

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The Florida State University

IOVWST 2010
Different Retrieval Techniques

QSCAT L2B
25 km product

BYU Ultra High Resolution
Approximately 5km resolution

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Graphic from David G. Long
The Florida State University

IOVWST 2010
Diurnal Forcing and Ocean Mixing

- Change in SST with
  - Twice daily forcing (from QSCAT & ADEOS2 period)
  - Daily wind forcing (24 hour smoothing)
- Change in mixed layer depth influences the SST
- Ideally satellite orbits will be optimized to improve sampling

Graphics from Tong Lee and W. Timothy Liu

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The Way Forward

➢ Data policy
  ● Free and timely access to observations

➢ Calibration and validation of each spaceborne observing system
  ● E.g., QuikSCAT, ASCAT, ISRO Scatterometer
  ● Agreed definition for data products
  ● The definition of mutually agreed format(s) and inter-calibrated data product(s)

➢ Support for continued and coordinated data collection by all agencies to prevent a climate data gap (Continuation of ASCAT and OceanSat series)

➢ Harmonization of launches and orbits to optimize coverage in space and time
  ● Continuity of types of observations

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The Way Forward

- Development and demonstration of systems capable of collecting improved observations (new technology & combined observing techniques)
  - Enhanced capabilities
    - higher resolution
    - closer to the coast
    - improved all-weather and all-win-regime capabilities (low speed and high speed)
  - Examples
    - Dual Frequency Scatterometer (DFS)
    - eXtended Ocean Vector Winds Mission (XOVWM)
- Continued efforts to improve wind & stress products