



Ocean Surface Vector Wind (OSVW)

Research Challenges and Operational Opportunities

IOC

WMO

CGMS

JCOMM

TT- SAT

David Halpern, JPL

IOC Representative and TT-SAT member

Action/Recommendation Proposed:

Develop capacity and capability for delivering and utilizing harmonized OSVW data products for research and operational oceanography and marine meteorological applications

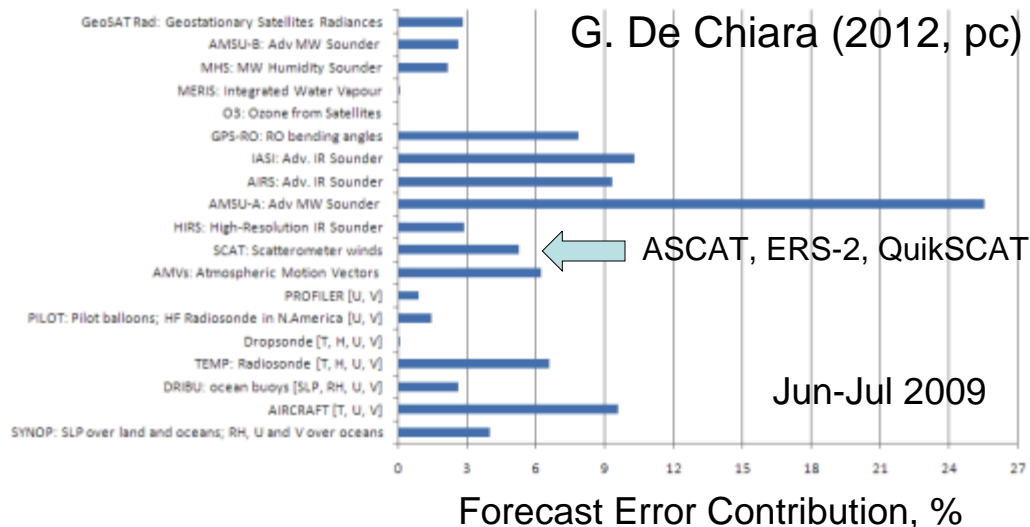
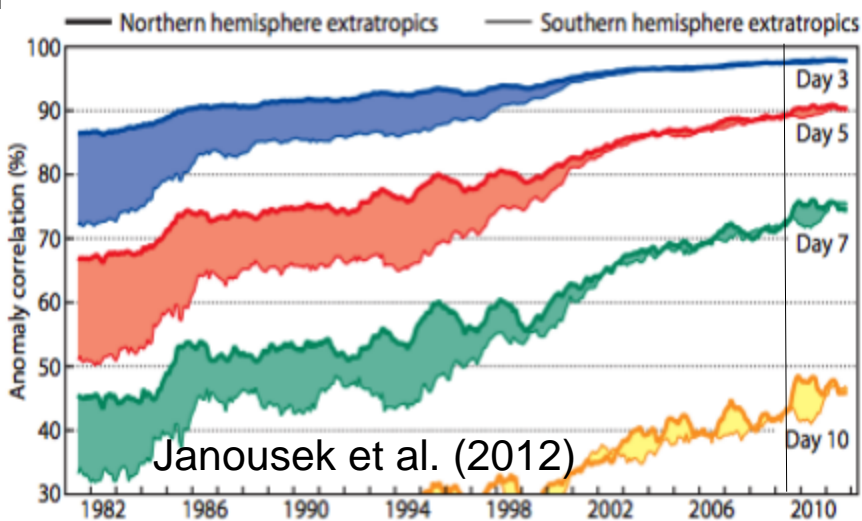
Contributors

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Coordinated with: CEOS OSVW Virtual Constellation, CGMS IWWG, and IOVWST₁



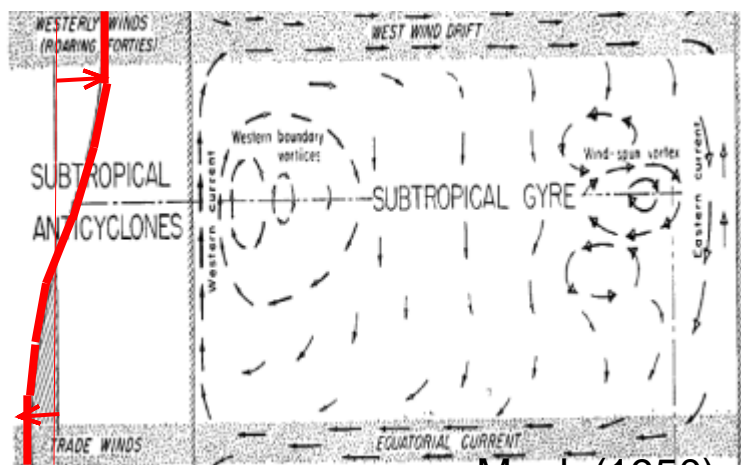
Importance of Wind Speed and Direction



GCOS Atmosphere ECV – surface wind speed and direction: $u(x,y)$, $v(x,y)$

x

GCOS Ocean ECV – surface wind stress and direction: $\tau_x(x,y)$, $\tau_y(x,y)$



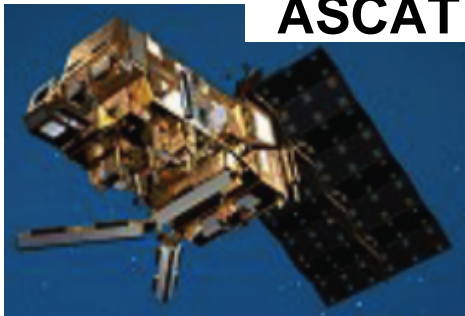
Munk (1950)





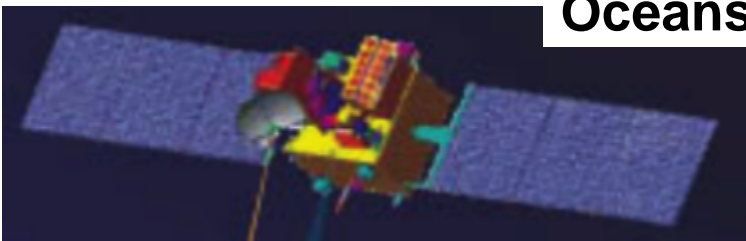
Current OSVW Data Products

ASCAT / Metop-A: Oct 2006 [C-band]



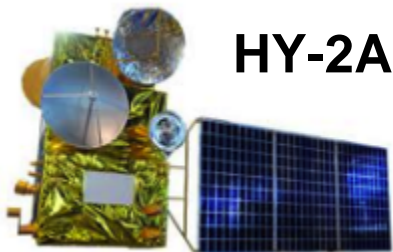
1B: EUMETSAT
2B: COAPS, KNMI, NOAA, RSS

Oceansat-2 SCAT: Sep 2009 [Ku-band]



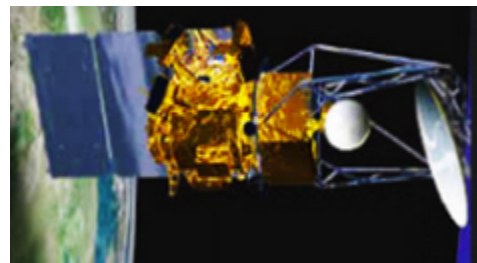
1B: ISRO
2B: ISRO, KNMI, NOAA, JPL

HY-2A SCAT: Aug 2011 [Ku-band]



1B: NSOAS
2B: NSOAS

WindSat / Coriolis: Jan 2003 [polarimetric radiometer]

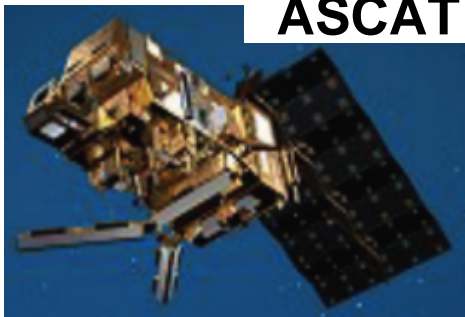


1B: FNMOC
2B: FNMOC, NOAA, RSS



Future OSVW Data Products (2012-2017)

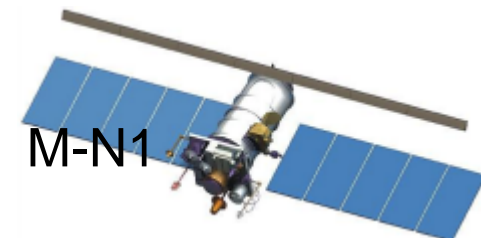
ASCAT / Metop-B: Sep 2012 [C-band]



ASCAT / Metop-C: 2017 [C-band]

1B: EUMETSAT

2B:



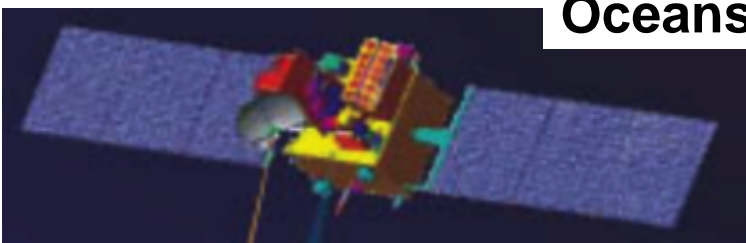
M-N1

**Meteor M-N3: 2015
[Ku-band]**

1B: ROSC/ROSH

2B:

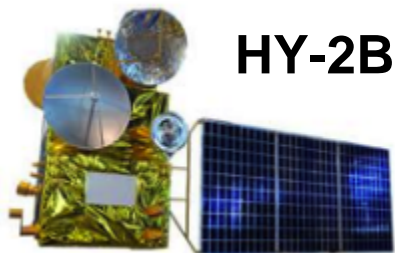
Oceansat-3 SCAT: 2014 [Ku-band]



1B: ISRO

2B:

HY-2B SCAT: 2016 [Ku-band]



1B: NSOAS

2B:



FY-3

**FY-3E: 2017
[C- and Ku-band]**

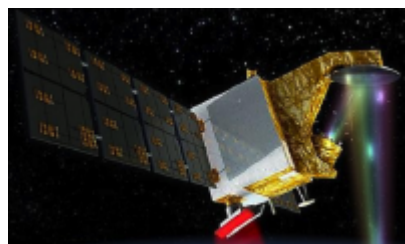
1B: NSMC

2B:

CFOSAT: 2015 [Ku-band]

1B: NSOAS

2B:





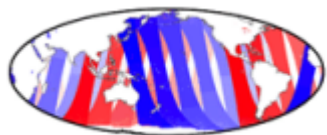
JCOMM Coordination With Other Groups



- 1994
- Biennial workshop: 5% on OSVW
- Harmonization of cloud- and water vapor-derived AMV



- 2008
- Satellite OSVW-measuring instruments



IOVWST

- 2010
- Annual workshop: 95% on OSVW



- Provide best-quality harmonized wind speed vector, wind stress vector, curl and divergence fields
- Develop user-stated unified standards in processing, quality-control procedures, resolution, metadata, timeliness, uncertainty
- Exchange in-situ verification data, software, statistical methodologies
- Generate climate-quality datasets
- Generate ocean forecasting services
- Generate ocean currents
- Produce GHRSSST-type deliverables
- Integrate in-situ and satellite data
- Optimize collaborative interactions [no duplication] with IWWG, CEOS OSVW VC, and IOVWST
- Build capacity for OSVW utilization



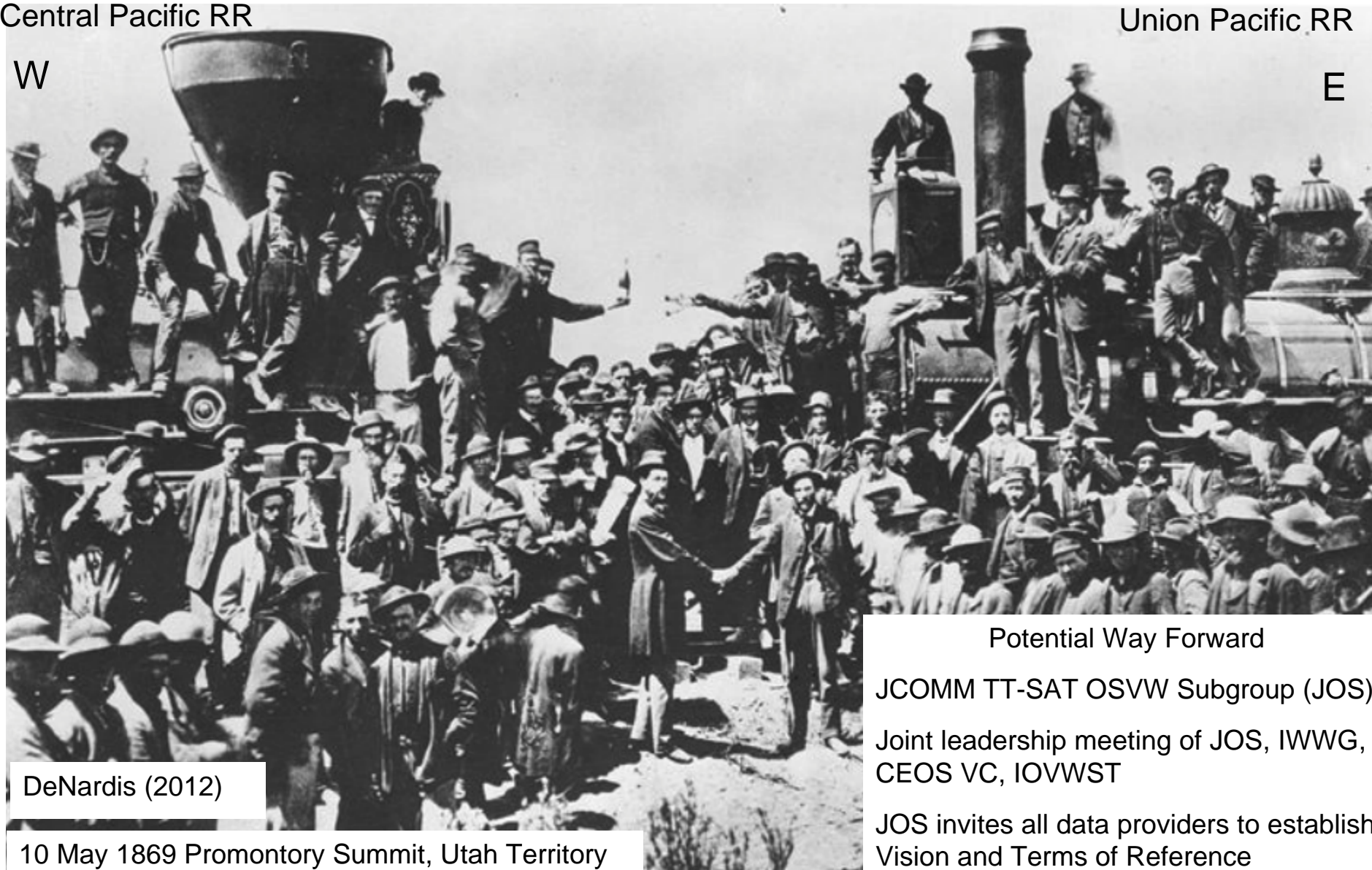
An Example of Successful Interoperability

Central Pacific RR

Union Pacific RR

W

E



DeNardis (2012)

10 May 1869 Promontory Summit, Utah Territory

Potential Way Forward

JCOMM TT-SAT OSVW Subgroup (JOS)

Joint leadership meeting of JOS, IWWG, CEOS VC, IOVWST

JOS invites all data providers to establish Vision and Terms of Reference