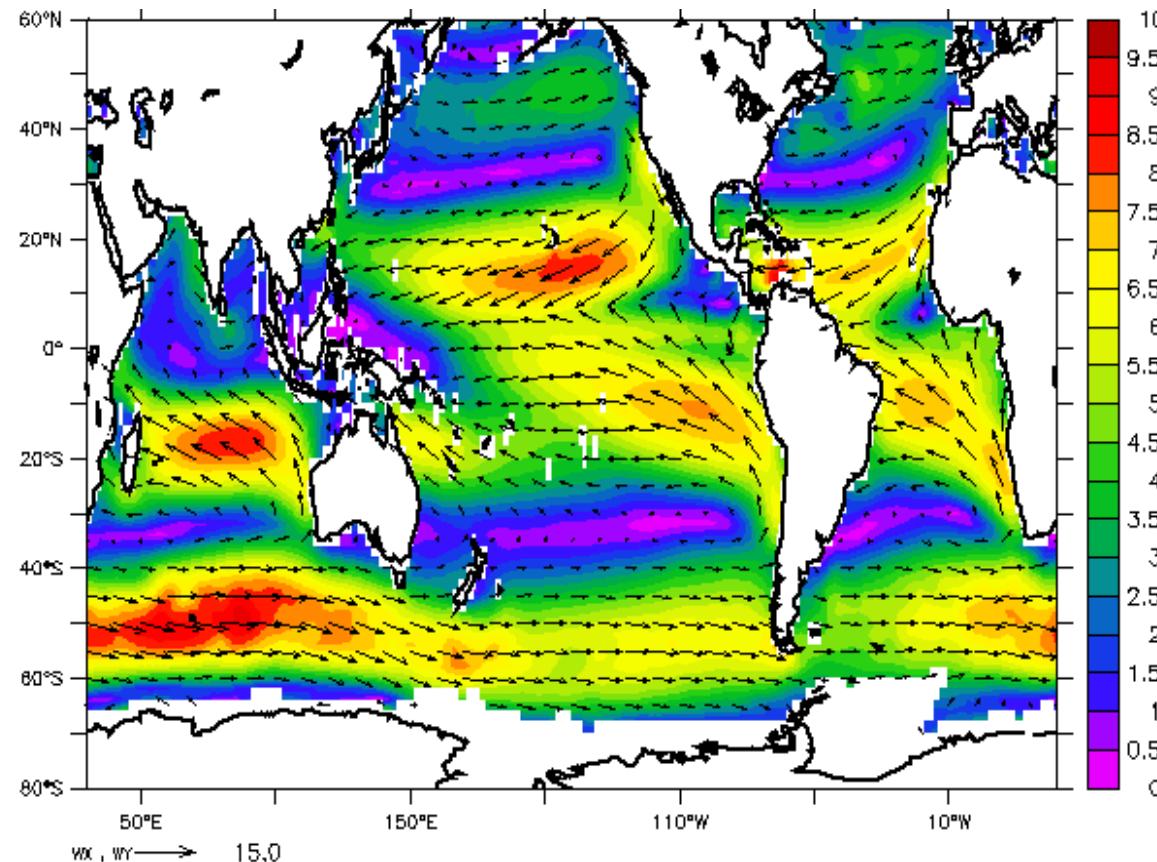


Validation and intercomparison for high resolution gridded product of surface wind vectors over the global ocean



Hiroyuki Tomita (Nagoya University)

Shin'ichirou Kako (Kagoshima University)

Tsutomu Hihara (JAMSTEC)

Kunio Kutsuwada (Tokai University)

Masahisa Kubota (Tokai University)

Yu Takahashi (Tokai University)

Outline

IOWVST meeting in La Jolla
May 2, 2017

Introduction of our new gridded product

Overview

Current status

J-OFURO 3

Validation of our product including other ones
using **Quality Control System (QCS)**
by comparisons with buoy measurements

Intercomparisons among gridded products

Wind-divergence and curl fields

Summary

J-OFURO3

Japanese **O**cean **F**lux data sets
with **U**se of **R**emote **S**ensing **O**bservations

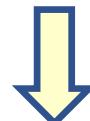
J-OFURO1 → J-OFURO2 → J-OFURO3

2000

2008

2016

<http://dtsv.scc.u-tokai.ac.jp/j-ofuro/>



<https://j-ofuro.scc.u-tokai.ac.jp/en/>

Available fluxes and parameters

IOWVST meeting in La Jolla
May 2, 2017

Latent heat flux

Sensible heat flux

Net shortwave radiation flux

Net longwave radiation flux

Net heat flux

Sea surface temperature

Zonal and meridional components of momentum flux

Scalar wind speed at 10m height

Zonal and meridional components of surface wind vectors

Surface and air (10m height) specific humidity

Sea-minus-air specific humidity

Air temperature

Sea-minus-air temperature

Our Group

IOWVST meeting in La Jolla
May 2, 2017

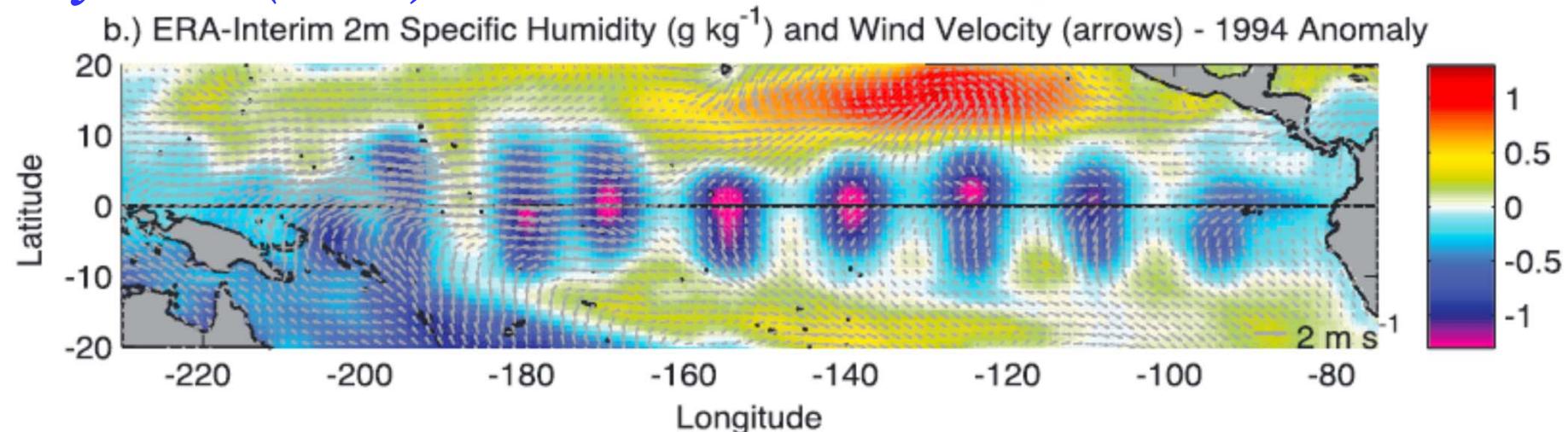
Hiroyuki Tomita (Nagoya University)	Supervisor, SST, heat flux
Shin'ichirou Kako (Kagoshima University)	wind-vector, momentum flux
Tsutomu Hihara (JAMSTEC)	validation (QCS)
Kunio Kutsuwada (Tokai University)	wind-vector
Masahisa Kubota (Tokai University)	heat flux
Yu Takahashi (Tokai University)	momentum flux

Status in our Air-sea Flux Products

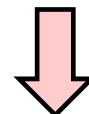
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May 2, 2017

Products with **higher spatial resolution** to examine small-scale phenomena in marginal and/or coastal areas

Josey et al. (2014) GRL



The NWP model products have reliabilities which are spatially inhomogeneous, possibly due to assimilation by buoy measurement data



Construction based on **satellite measurement data**

	J-OFURO2	J-OFURO3
Available period	1988-2008	1988-2013 <i>*2002-2013, currently</i>
Temporal grid	daily mean	daily mean
Spatial Grid	1.0 degree grid 0.25degree grid for 2002-2008	0.25 degree grid
Sea Surface Temp.SST	MGDSST (AVHRR+AMSR-E)	EMSST (8 satellite products)
Humidity QA	Schlussel et al. 1995 with SSMIs	New Algorithm SSMIs, SSMISs, AMSR-E, TMI, and AMSR2
Wind Speed W, Wind Vector U, and V	SSMIs, ERS-1/2, QuikSCAT, AMSR-E, TMI	SSMIs, SSMISs, ERS-1/2, QuikSCAT, AMSR-E, TMI, WindSAT, Ascot, and AMSR2



https://j-ofuro.scc.u-tokai.ac.jp/en/



Microsoft...

メール - kk...

Satelli...

S ...

ス ...

このページ

ファイル(F) 編集(E) 表示(V) お気に入り(A) ツール(T) ヘルプ(H)

x Canon

Easy-WebPrint EX

印刷 プレビュー

クリップ

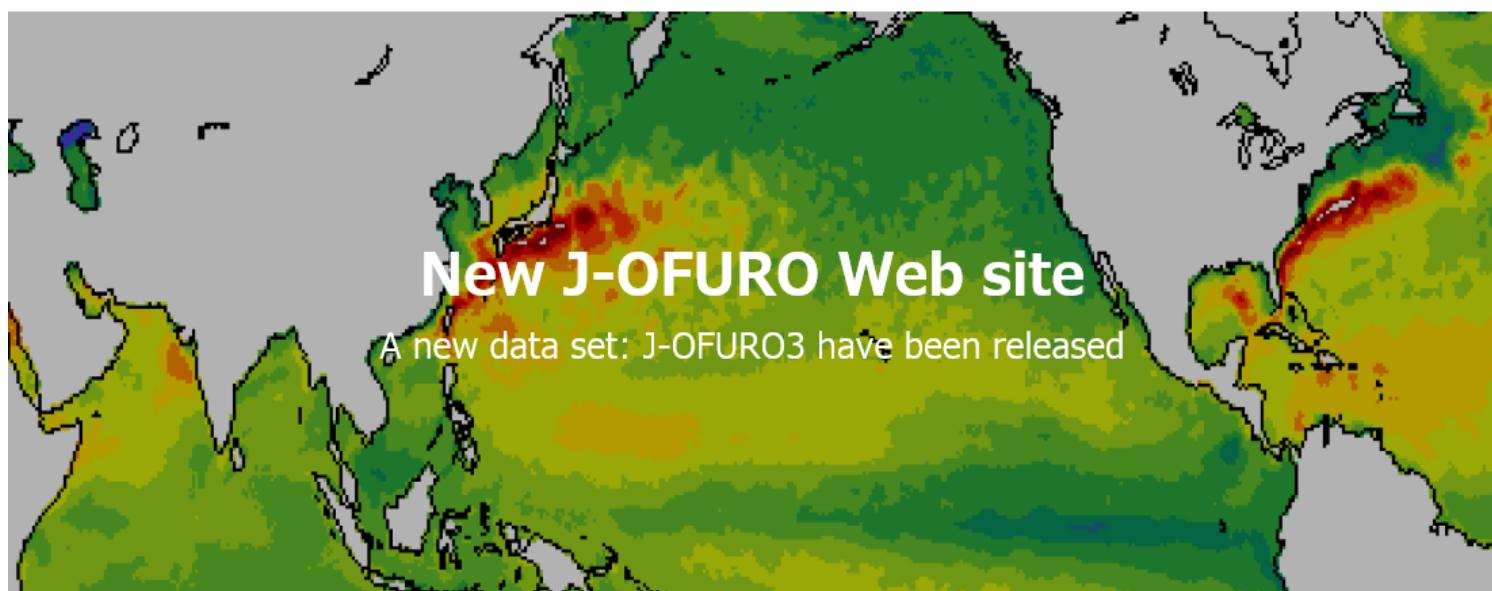
自動クリップ

クリップリスト

https://j-ofuro.scc.u-tokai.ac.jp/en/

J-OFURO Web site

日本語 Home News Project Data set Member site



RSS Update & News

See more

03-04-2017 News Web site maintenance

01-11-2016 News The new data set: J-OFURO3 is public in the new web site

05-08-2016 News Renewal of the web site for J-OFURO have been started

Search

Major contents

See more

J-OFURO3

Download

Taylor Diagram for LHF@global in 2008 V1.0: Summary of inter-

Banner

J-OFURO3

データセット

2016年夏期会議

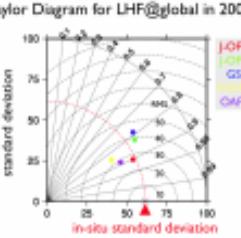
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Major contents

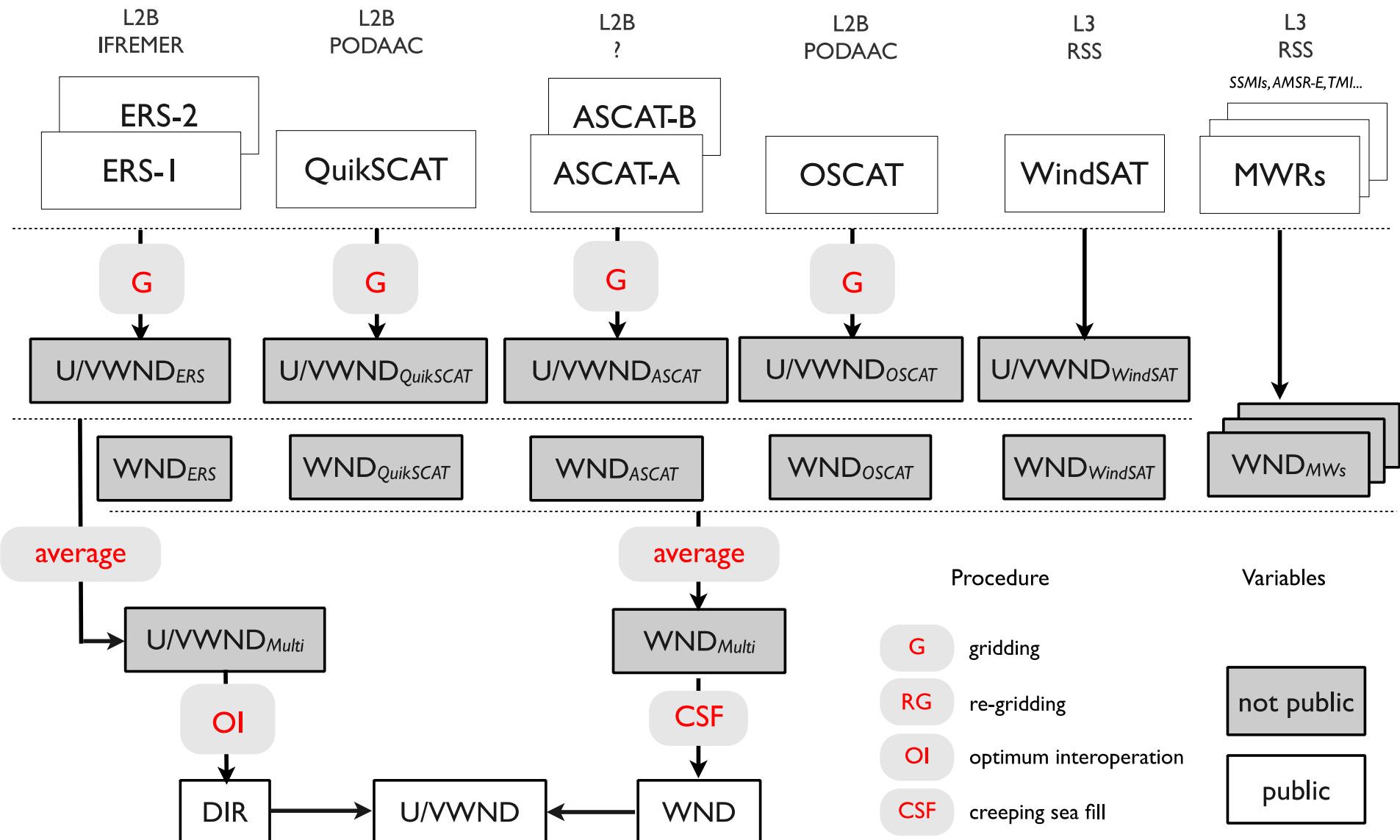
See more

<p>J-OFURO3 </p>	<p>Download</p> <p>This page describes the instructions to download J-OFURO3 data set.</p> <p>INTRODUCTION All publicly ava...</p>	 <p>V1.0: Summary of inter-comparison</p> <p>OVERVIEW To confirm how much J-OFURO3 has improved compared with the previous version, and to und...</p>									
	<p>Overview of J-OFURO3 dataset</p> <p>J-OFURO3 is a satellite-derived dataset of surface flux between the atmosphere and the ocean, and...</p>	 <p>Area, spatial and temporal resolutions, and temporal period</p> <p>Spatial area and resolution J-OFURO3 provides numerical dataset of air-sea fluxes and related phy...</p>									
<p>J-OFURO3 acknowledgment </p>	<p>Acknowledgment</p> <p>The research project J-OFURO uses results from other scientific researches, projects, and dataset...</p>	<p>J-OFURO3 Variables</p> <p>A list of variables defined in J-OFURO3</p> <table border="1" data-bbox="1170 1403 1349 1503"><tr><th>name</th><th>description</th><th>unit</th></tr><tr><td>LHF</td><td>...</td><td>...</td></tr><tr><td>SHF</td><td>...</td><td>...</td></tr></table> <p>Public status: public: O not-public: X public in fu...</p>	name	description	unit	LHF	SHF
name	description	unit									
LHF									
SHF									

Data flow for wind vector

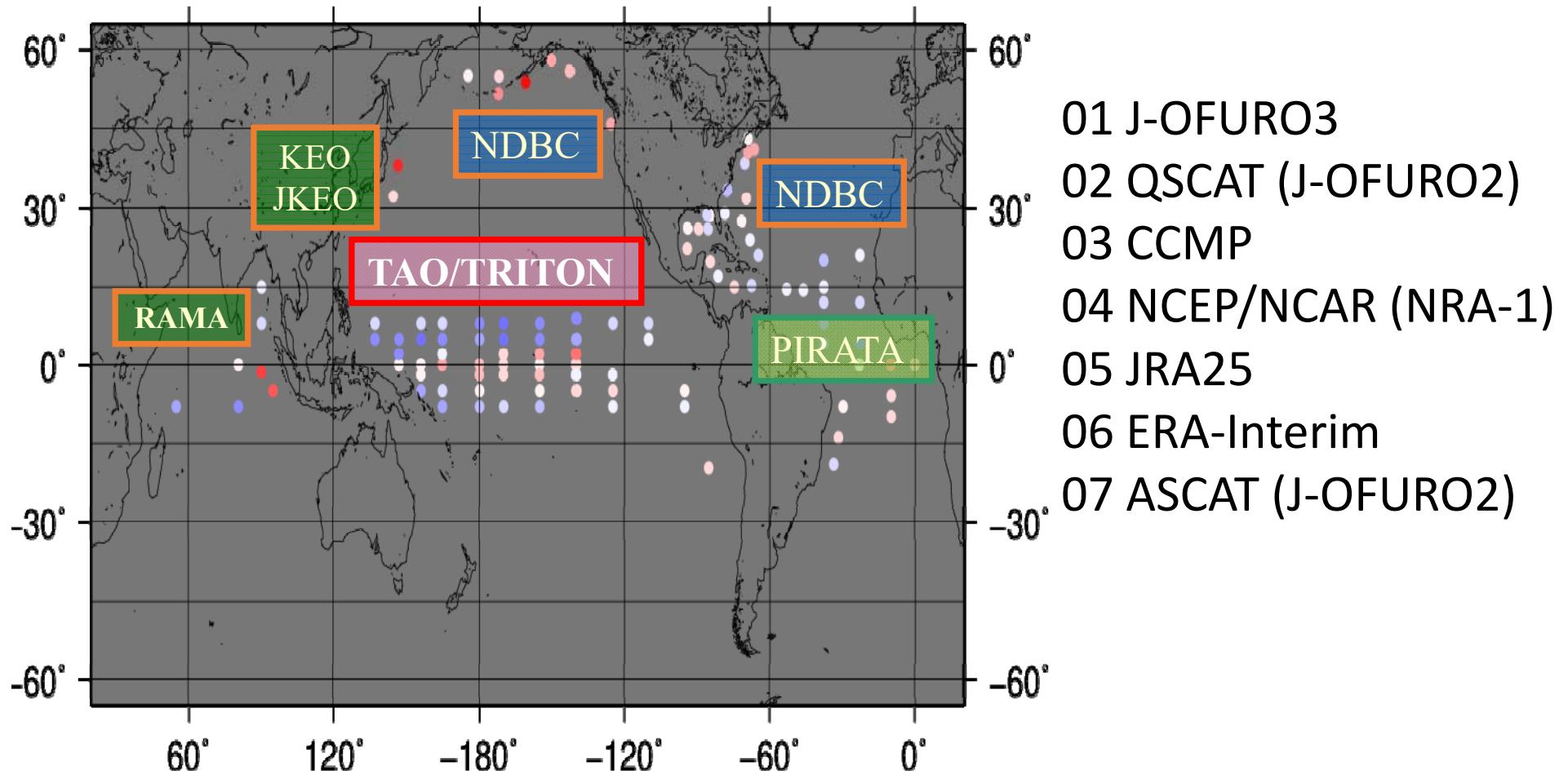
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最終更新 May 2, 2017

Satellite sensors and data sources



Quality Control System (QCS) for Validation of our products including other gridded ones

In-situ Data *Buoy Locations*



Statistics for some products by QCS2 in 2008

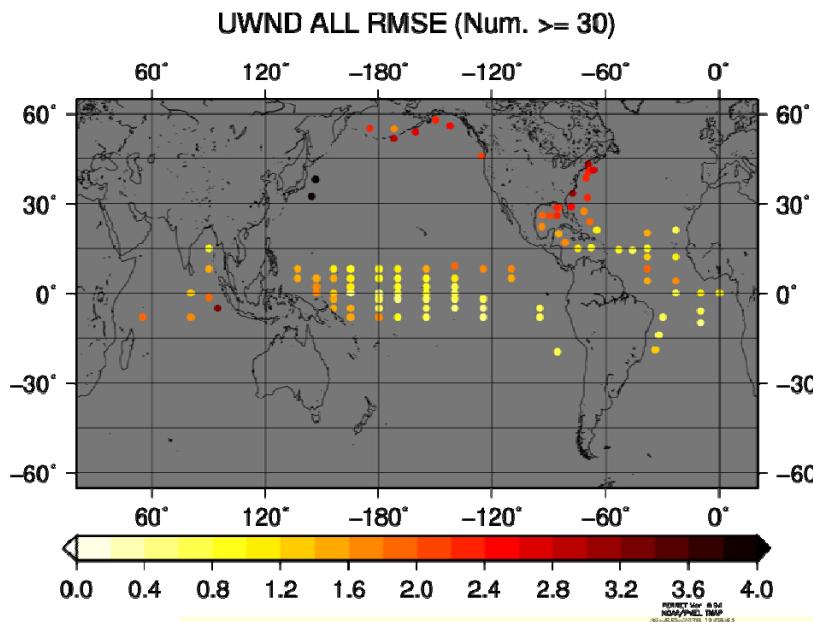
Zonal Wind	J-OFURO3	QSCAT	CCMP	NCEP	JRA25	ERA-Interim	ASCAT
Bias	-0.171	0.104	-0.021	0.214	0.25	0.174	0.172
RMSD	1.226	1.102	0.59	1.137	0.912	1.268	1.046
Correlation	0.933	0.944	0.984	0.941	0.965	0.925	0.951
Meridional Wind	J-OFURO3	QSCAT	CCMP	NCEP	JRA25	ERA-Interim	ASCAT
Bias	0.289	0.28	0.106	0.034	0.147	0.172	0.294
RMSD	1.143	1.032	0.538	1.317	0.933	1.455	1.175
Correlation	0.936	0.945	0.985	0.908	0.957	0.886	0.927

The J-OFURO3 and CCMP products have relatively high reliabilities, compared with others.

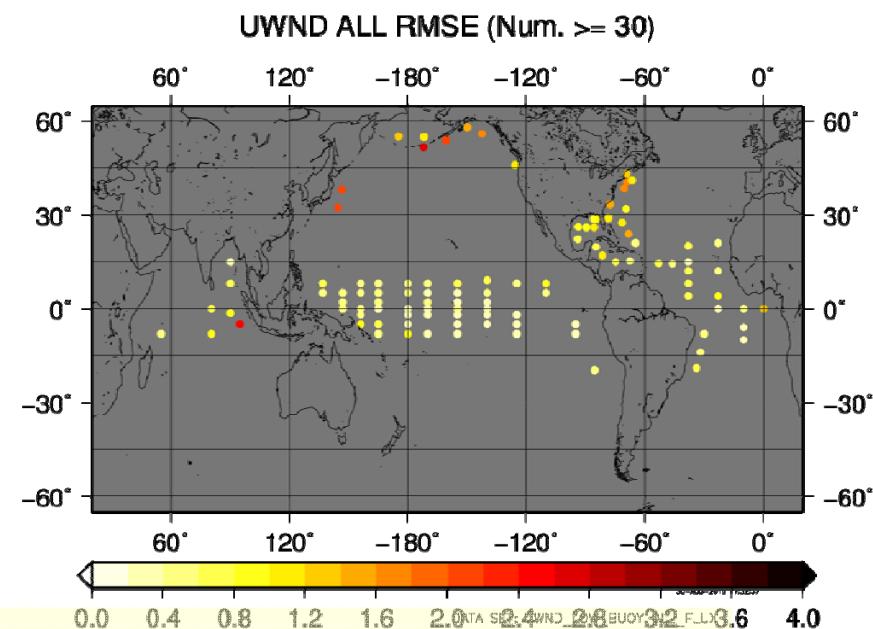
Quality Control System V2(QCS2)

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May 2, 2017

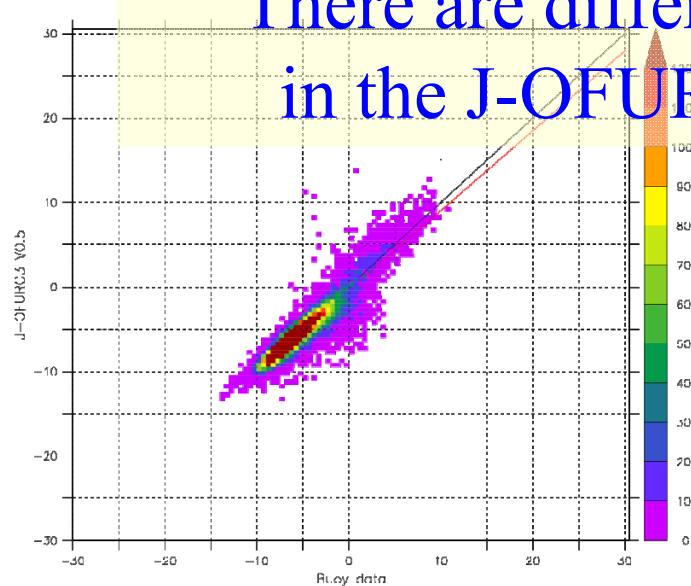
J-OFURO3



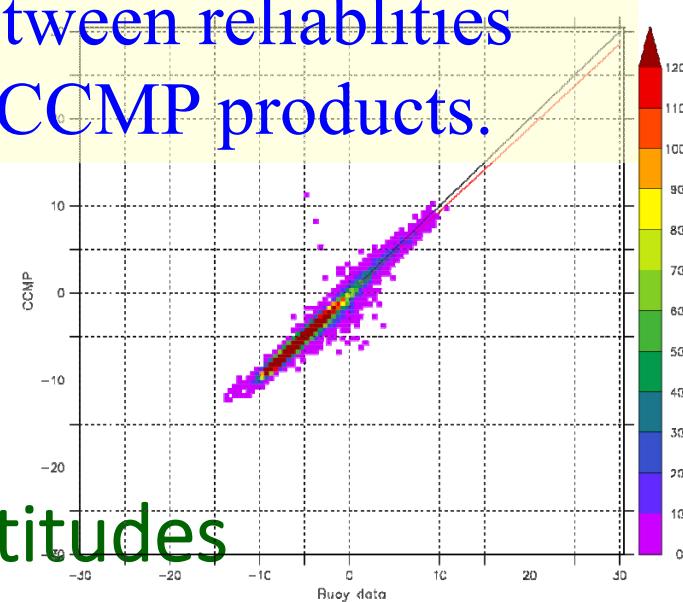
CCMP



There are differences between reliabilities
in the J-OFURO3 and CCMP products.



Low latitudes

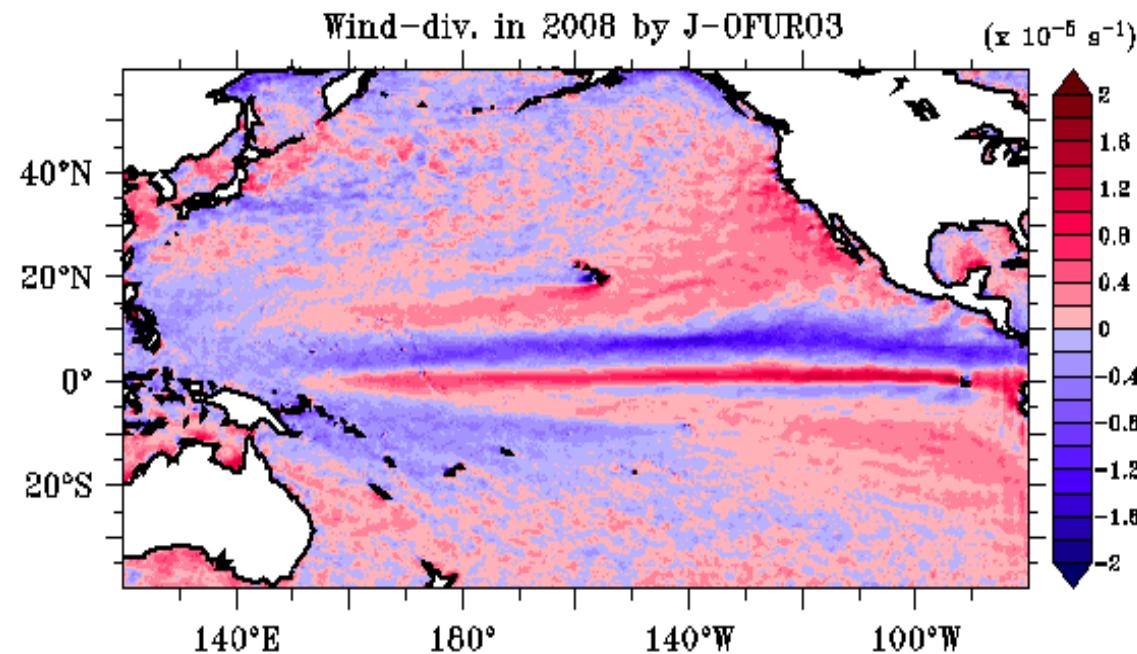


Intercomparison between J-OFURO3 and CCMP data sets

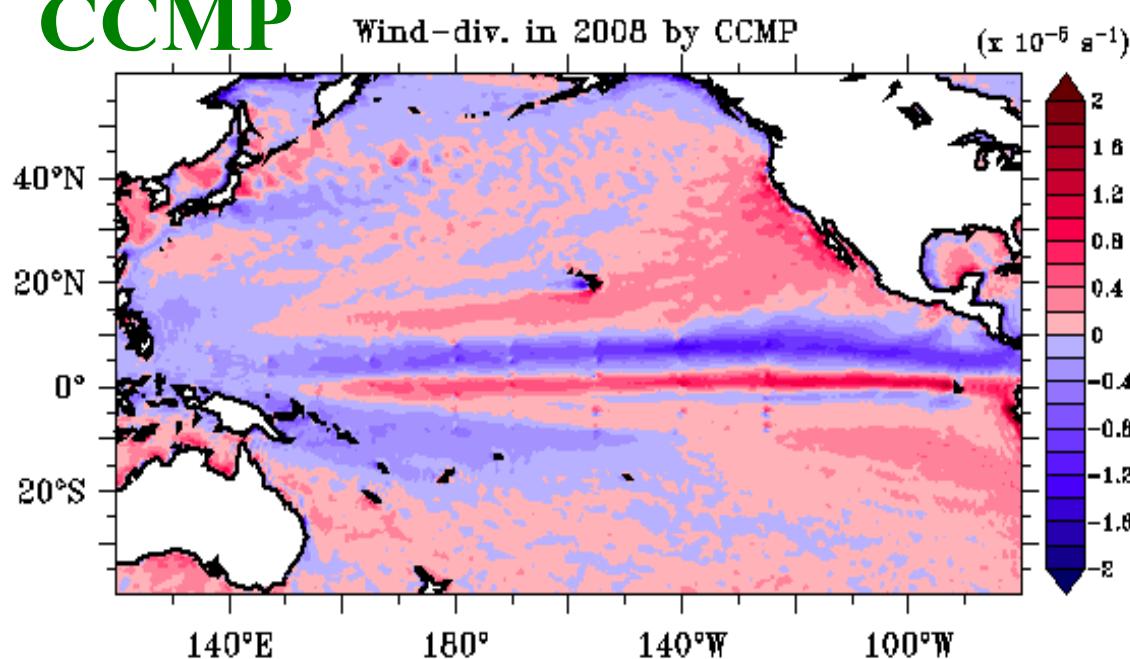
**Divergence/Convergence
of Wind Field**

Curl of Wind Field

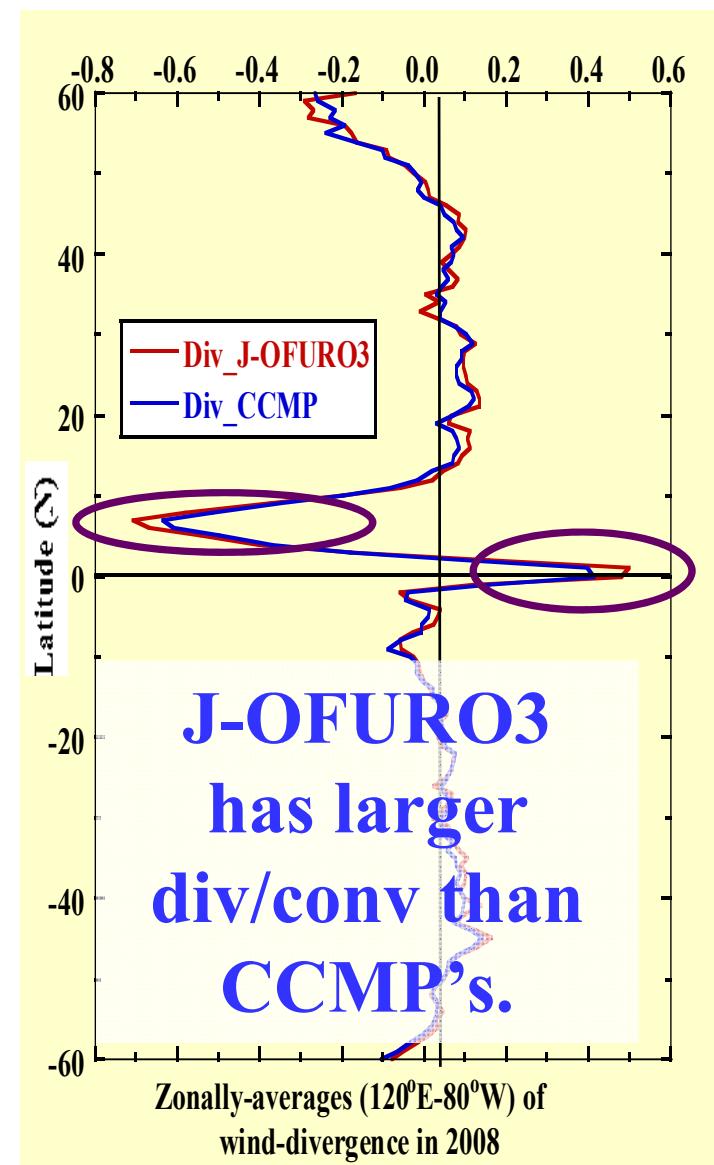
J-OFURO3



CCMP

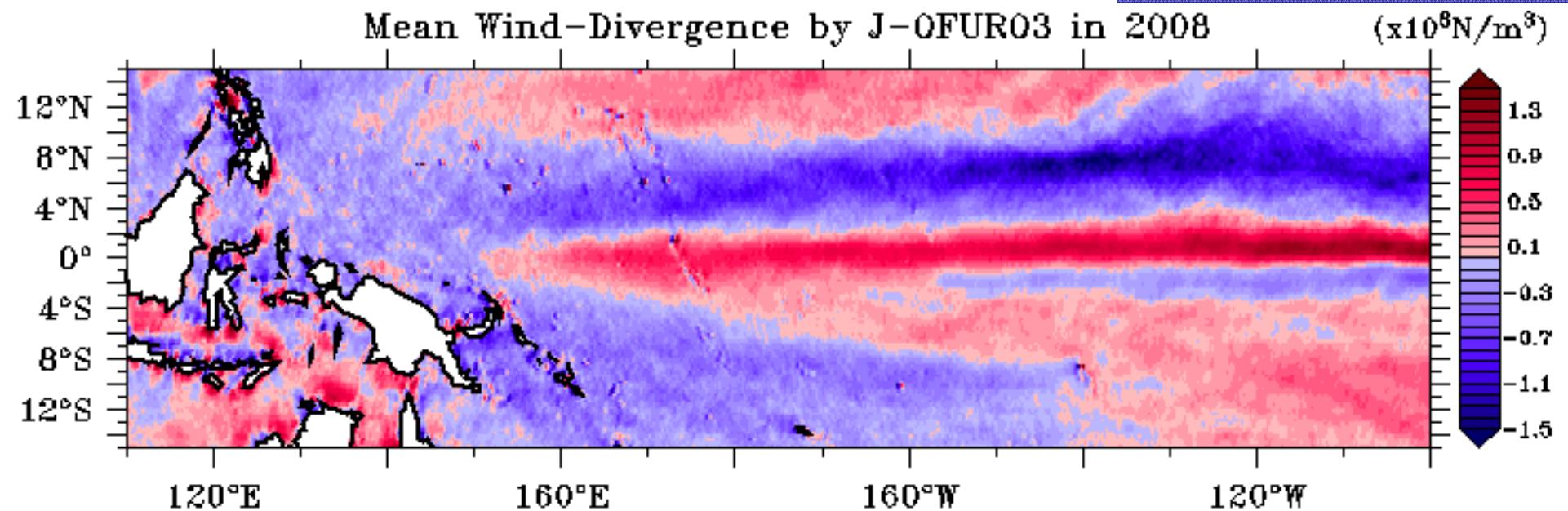


IOWVST meeting in La Jolla
May 2, 2017

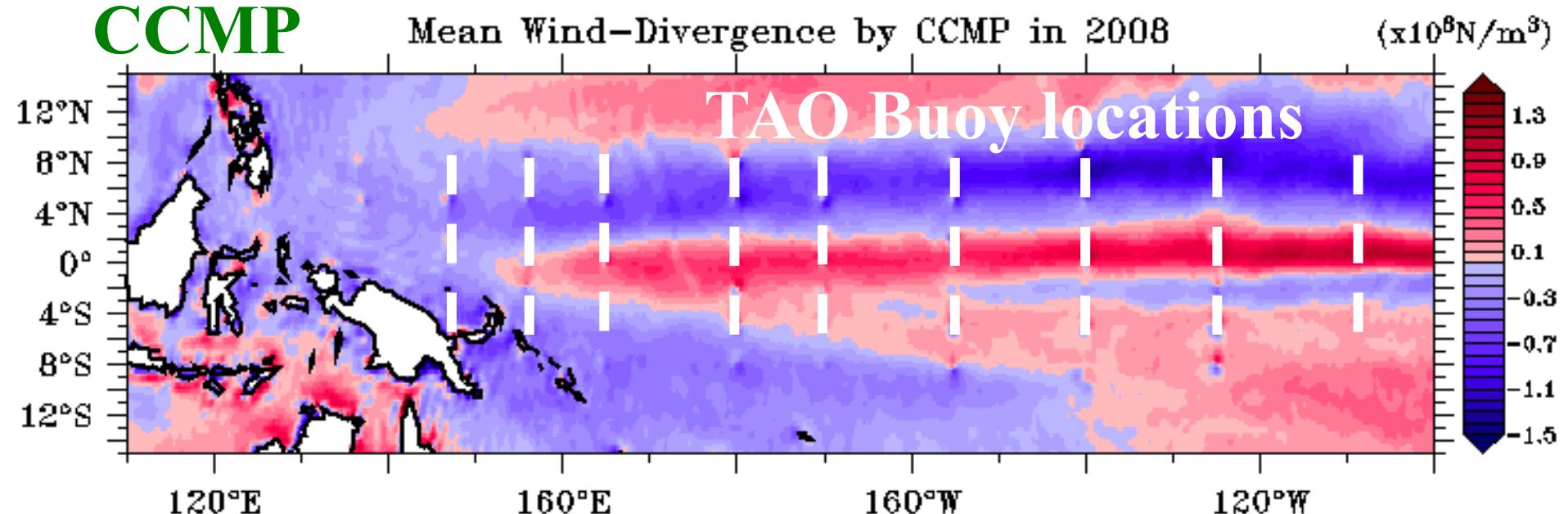


J-OFURO3

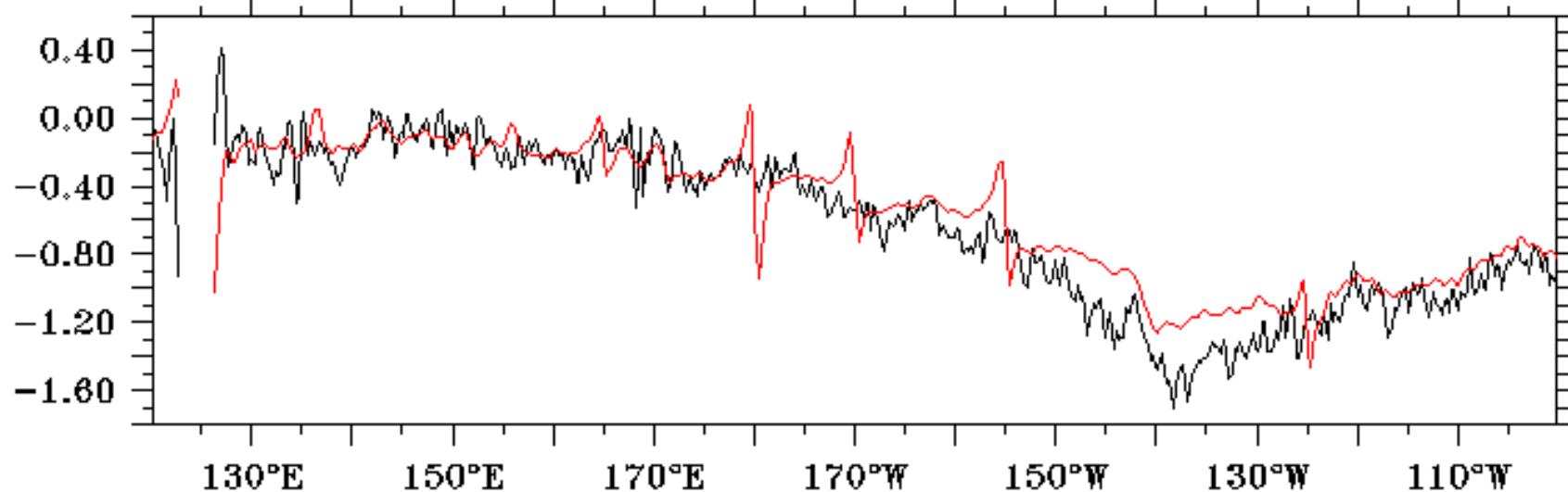
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May 2, 2017



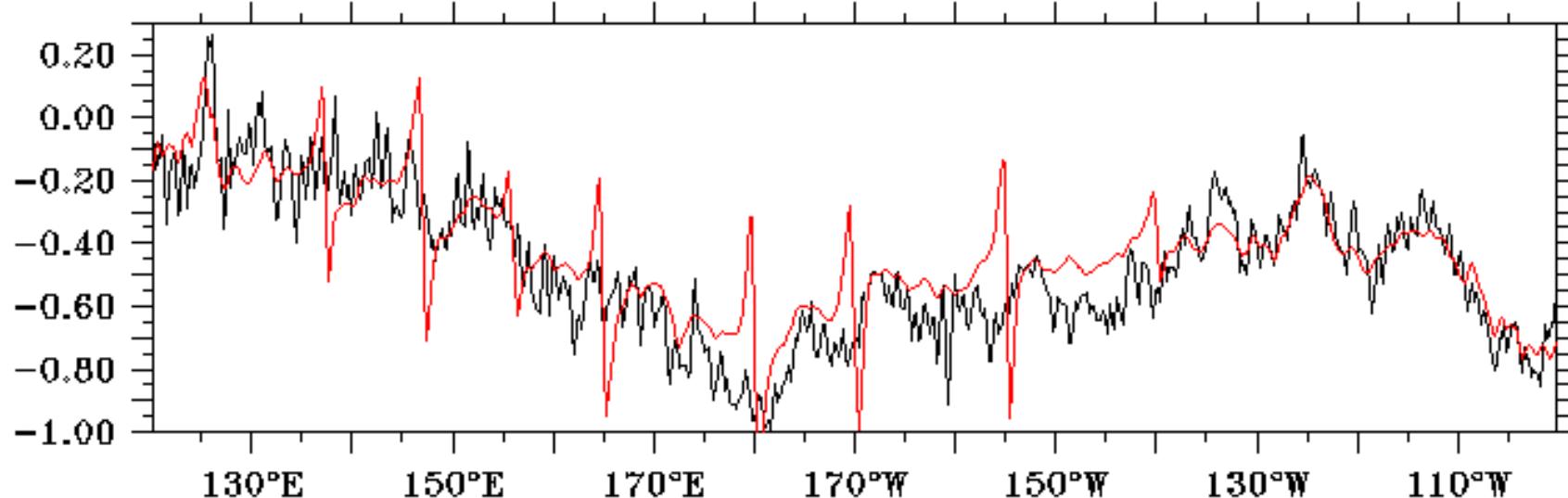
CCMP



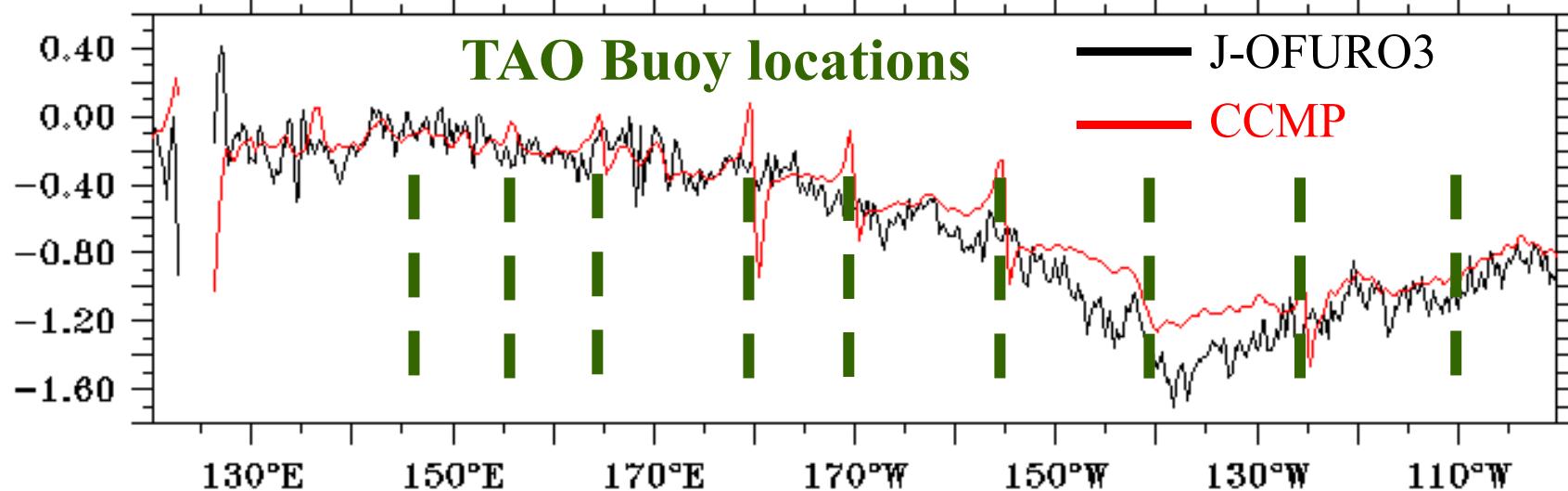
Zonal section of Wind-divergence along 8°N in 2008



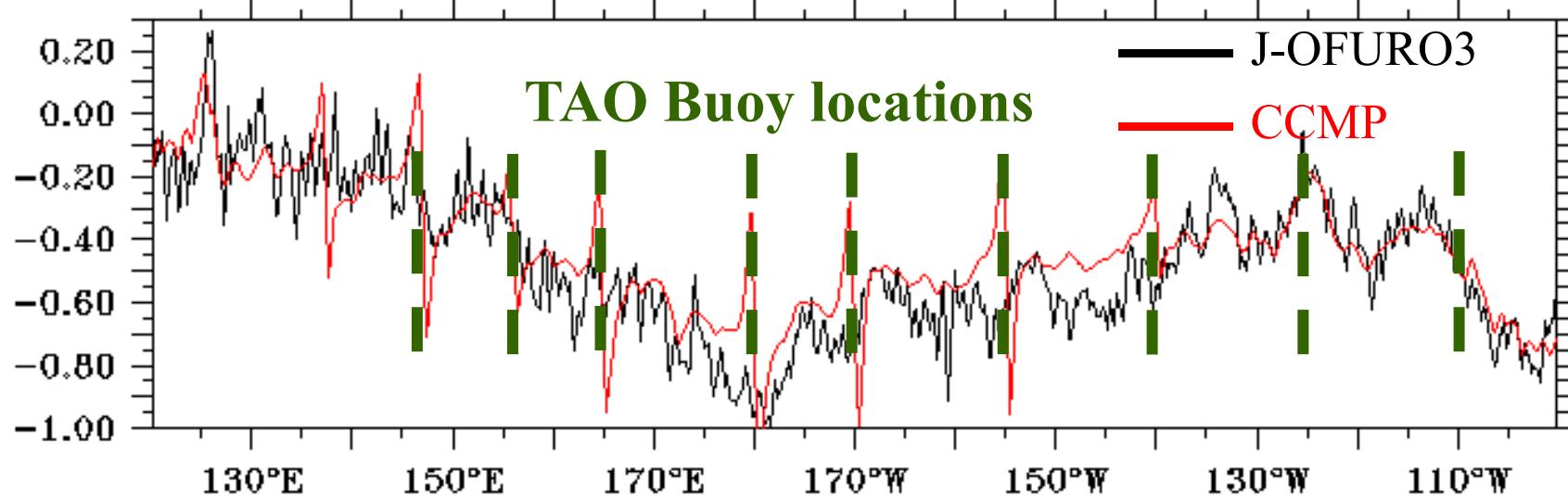
Zonal section of Wind-divergence along 5°N in 2008



Zonal section of Wind-divergence along 8°N in 2008



Zonal section of Wind-divergence along 5°N in 2008



Summary 1

*IOWVST meeting in La Jolla
May 2, 2017*

We constructed the new satellite-derived global air-sea flux data set (**J-OFURO3**) including SST and surface meteorological parameters.

The data set is available for users in our web:

<https://j-ofuro.scc.u-tokai.ac.jp/en/>

Spatial resolution : 0.25 x 0.25 deg

Spatial coverage : global

Time resolution: daily and monthly

Time coverage: planned for a period of 1988-2013
currently 2002-2013

Summary 2

*IOWVST meeting in La Jolla
May 2, 2017*

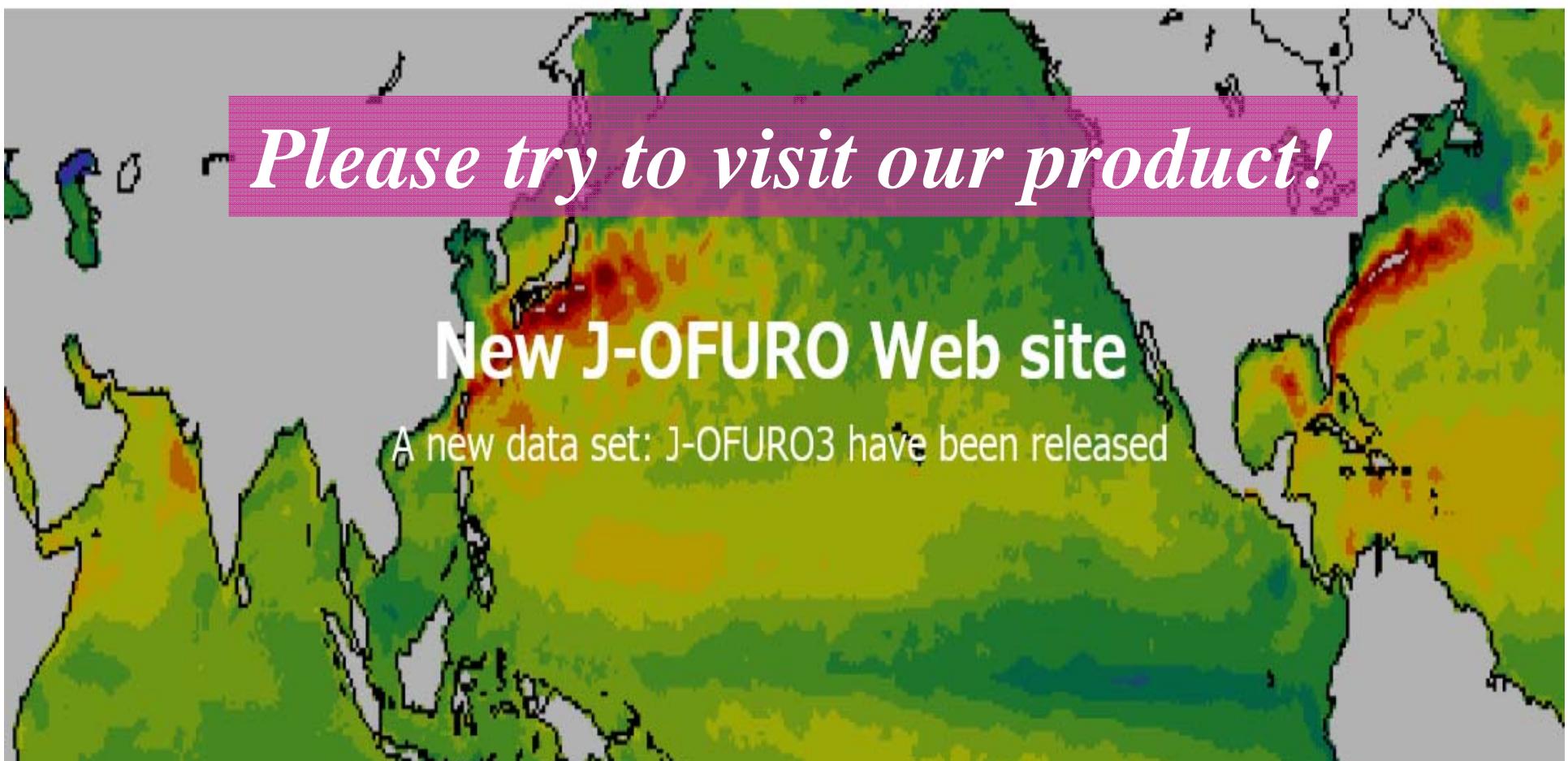
We have made our product with other global wind ones using our designed **Quality Control System** (QCS), and made intercomparisons among them.

The results revealed that the CCMP product (using satellite and NWP data) has highest reliability for buoy comparisons in the tropical Pacific, and also inhomogeneously spatial features in the wind divergence and curl fields, possibly depending on buoy locations.

It is suggested that the CCMP product has errors, possibly due to the data assimilation.

J-OFURO Web site

日本語 Home News Project Data set Member site



Please try to visit our product!

New J-OFURO Web site

A new data set: J-OFURO3 have been released

Thank you for your attention!