

AGENDA: US CLIVAR/SeaFlux Workshop
Surface Fluxes: Challenges for High Latitudes
March 17-19, Center Green, NCAR, Boulder, Colorado

Wednesday: Challenges.

8:00-8:30: Registration, Coffee

8:30-9:00: Introduction, Logistics, Programmatic Issues, Summary of Objectives

9:00-10:00: *Invited Talks:* Why improve fluxes at high latitudes? (user requirements)

● Ivana Cerovecki, Southern Ocean air-sea buoyancy flux estimates from a data-assimilating ocean model.

● Martin Vancoppenolle, Heat fluxes over sea ice in observations and models .

● Jennifer E. Kay, The local atmospheric response to sea ice loss in CAM4, atmospheric reanalysis, and satellite observations.

10:00-10:30: Discussion. (Panel discussion on user requirements with 3 invited speakers)

10:30-11:00: Coffee break

11:00-11:30: *Invited Talk:* Chris Fairall, Observational challenges for turbulent and radiative fluxes at high latitudes.

11:30-12:00: *Invited Talk:* William B. Rossow, Difficulties in Determining Surface Fluxes in the Polar Regions.

12:00-12:30: Discussion

12:30-1:30: Lunch

1:30-3:15: Break out sessions (20 minute scheduled talks)

SeaFlux: Budgets and Trends	CLIVAR: Upper Ocean Physics and Budgets
1:30-1:50: <u>Axel Anderson</u> , Christian Klepp, Stephan Bakan, Jorg Schulz, Karsten Fenni, Global Ocean Freshwater Flux Components from the HOAPS-3 Satellite Climatology.	1:30-1:50: <u>Andrew Chiodi</u> , D. E. Harrison, Reproducing the structure of the seasonal cycle of SST in ocean mixed layer models forced with contemporary surface flux estimates.
1:50-2:10: <u>Frank J. Kelly</u> , Alberto M. Mestas Nunez, Abderrahim Bentamy, Kristina B. Katsaros, Rachel T. Pinker, William M. Drennan, James A. Carton, Trends in 15 years (1993-2007) of Satellite Derived Oceanic Evaporation.	1:50-2:10: <u>Sarah Gille</u> , Gordon Stephenson, Janet Sprintall, ChuanLi Jiang, Mixed-Layer Depth and Air-Sea Exchange in the Southern Ocean: Examples from Drake Passage.
2:10-2:30: <u>Masahisa Kubota</u> , Tsuyoshi Watabe, Shinsuke Iwasaki, Freshwater flux over the ocean.	2:10-2:30: <u>De-Zheng Sun</u> , Yongqiang Yu, The Role of Extratropical Cooling/Warming in Determining the Level of El Nino-Southern Oscillation (ENSO) Activity.
2:30-2:50: <u>Abderrahim Bentamy</u> , W. Drennan, S. Grodsky, A. Mestas-Nunez, K. Katsaros, R. Pinker, T. Santorelli, Analysis of Long Time	2:30-2:50: <u>J. Brent Roberts</u> , Franklin R. Robertson, <u>Carol Anne Clayson</u> , Analysis of

Series of Turbulent fluxes estimated from remotely sensed observations.	atmosphere-ocean surface flux feedbacks in recent satellite and model reanalysis products.
Discussion: Budget/Trends implications (25 min)	Discussion: Physics requirements for fluxes (25 minutes)

3:15-3:45: Coffee break (posters up)

3:45-5:00: Break out session discussions (or talks continuing): Charting the way forward.

SeaFlux: High Latitude Analyses (15 MIN talks)	CLIVAR: Upper Ocean Physics and Budgets (cont)
3:45-4:00: <u>Joy Romanski</u> , Anastasia Romanou, William B. Rossow, Identification of Evaporation/Wind and Evaporation/SST Regimes in the Southern Ocean from Satellite Data.	3:45-4:05: <u>W. Timothy Liu</u> , Xiaosu Xie, Ocean-atmosphere fresh water flux in global water balance.
4:00-4:15: Jiping Liu, Intercomparisons of Air-Sea Heat Flux over the Southern Ocean.	4:05-4:25: <u>Matthew Mazloff</u> , Antarctic Circumpolar Current Sensitivity to Air-Sea Fluxes.
4:15-4:30: <u>Xiaolei Niu</u> , Rachel T. Pinker, M. Wonsick, Towards Improved Estimates of Radiative Fluxes at High Latitudes.	Discussion: physics requirements for fluxes (35 minutes)
Discussion: (30 minutes)	

5:00-6:30: Poster session/reception

Alec Bogdanoff, J. Brent Roberts, Carol Anne Clayson, The inclusion of a diurnally varying sea surface temperature in surface energy budget calculations.

Mark Bourassa, Joshua Griffin, Characterization of Errors In Various Moisture Roughness Length Parameterizations.

Jeremiah Brown, A Bulk Flux Model Graphical User Interface.

Michael Brunke, Xubin Zeng, Uncertainties in global surface flux datasets in high latitudes.

Carol Anne Clayson, New developments and remaining issues with satellite-derived air-sea flux climatologies.

Aaron Paget, Cold air outbreaks: evaluation with satellite fluxes.

T. Santorelli, A. Bentamy, J. Carton, W. Drennan, S. Grodsky, A. Mestas-Nunez, K. Katsaros, Rachel T. Pinker, Why do oceanic heat flux estimates over the Atlantic Ocean differ?

Shawn R. Smith, Mark A. Bourassa, Jeremy Rolph, Kristen Briggs, High-quality surface meteorological and oceanographic observations from research vessels to support flux applications.

Rachel Weihs, Mark A. Bourassa, Resolving the diurnal cycle in satellite derived sea surface temperatures and its significance on surface heat fluxes.

Thursday: New Data and New Products.

8:00-8:30: Coffee

8:30-9:00: *Invited Talk:* Ian Renfrew, Air-sea interaction at high latitudes: A focus on the International Polar Year.

9:00-9:30: *Invited Talk:* Bill Large, Gridded products at high latitudes. Challenges and issues.

9:30-9:50: Richard Cullather. Evaluation of Arctic Energy and Moisture Budgets in the MERRA Reanalysis

9:50-10:10: P. Ola G. Persson, Andrey Grachev, Chris Fairall, Ian M. Brooks, Cathryn Birch, Amy Solomon, Cassie Wheeler, Turbulent Fluxes Over Arctic Sea Ice: Measurements, Interactions, and Comparisons to Models

10:10-10:40: Coffee

10:40-11:00: William Drennan and E.Sahlee. On air-sea fluxes at high winds.

11:00-11:20: Sergey Gulev, Konstantin Belyaev, Extreme turbulent air-sea heat fluxes over the global World ocean and their climate variability.

11:20-11:40: Rachel T. Pinker, X. Niu, M. Wonsick, Y. Ma, Surface and Top of the Atmosphere Radiative Fluxes at High Latitudes.

11:40-12:00: Kay I. Ohshima, Takeshi Tamura, Sohey Nihashi, Katsushi Iwamoto, Daisuke Simizu, Yasushi Fukamachi, Global Mapping of sea ice production and heat/salt flux in ice-covered regions, using satellite passive microwave data.

12:00-12:30: Discussion

12:30-1:30: Lunch

1:30-3:10: Break out sessions (presentations)

SeaFlux OR CLIVAR (Gas Fluxes; IPY Analysis and IPY requirements of gridded products)

SeaFlux (New methodologies)	CLIVAR (Gas Exchange)
1:30-1:50: <u>Shenfu Dong</u> , Assessing the potential of the AIRS surface temperature and specific humidity in turbulent heat flux estimates in the Southern Ocean.	1:30-1:50: <u>Silvia Gremes-Cordero</u> , D. Bogucki, W. Drennan, S. Woods, T.Papakyriakou, Measurements of air-sea gas transfer in the Arctic Ocean during IPY.

<p>1:50-2:10: <u>Yongxiang Hu</u>, Carl Weimer, Global high resolution wind speed statistics from satellite lidar measurement.</p> <p>2:10-2:30: <u>Shinsuke Iwasaki</u>, Masahisa Kubota, Development of an algorithm for estimation of specific humidity using TMI data.</p> <p>2:30-2:50: <u>Neil Van de Voorde</u>, Clark Rowley, Real-Time Satellite-Derived Ocean Surface Parameters for Ocean Model Forcing.</p> <p>Discussion (20 minutes)</p>	<p>1:50-2:10: Barry Huebert, <u>Byron Blomquist</u>, Mingxi Yang, Trace gas fluxes in the polar seas: The importance of direct observations and improved measurement methods.</p> <p>2:10-2:30: <u>Sarah Woods</u>, D. Bogucki, W. Drennan, S. Gremes-Cordero, T. Papakyriakou, Improved estimation of Arctic air-sea CO₂ fluxes from QuikSCAT and shipboard measurements of surface wave slope.</p> <p>2:30-2:50: <u>Nicole S. Lovenduski</u>, Takamitsu Ito, Southern Ocean CO₂ fluxes: the importance of realistic representation in climate models.</p> <p>Discussion (20 minutes)</p>
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3:10-3:40: Coffee break

3:40-5:30: Break out session discussions continue

SeaFlux (New Methodologies and current data sets)	CLIVAR (The observing system: open ocean and ice)
<p>3:40-4:00: <u>Darren Jackson</u>, Gary Wick, Status on a Multi-sensor Approach to Satellite-based Retrievals of Near-surface Humidity and Temperature.</p> <p>4:00-4:20: <u>Huai-Min Zhang</u>, Lei Shi, Richard W. Reynolds, Air-Sea Turbulent Fluxes and Related Variables at NOAA National Climatic Data Center.</p> <p>4:20-4:40: <u>Hiroyuki Tomita</u>, Masahisa Kubota, Shinsuke Iwasaki, Satellite-derived Surface Heat Flux Data Set of Japanese Ocean Fluxes Using Remote Sensing Observation.</p> <p>4:40-5:00: <u>Chung-Lin Shie</u>, Long S. Chiu, Si Gao, R. Chokngamwong, Robert Adler, I-I Lin, Eric Nelkin, Joe Ardizzone, Feng-Chin Wang, A Recently Revived Production of Global Air-sea Surface Turbulent Fluxes - the Newly Produced GSSTF2b Dataset .</p> <p>Discussion (30 minutes)</p>	<p>3:40-4:00: <u>Masanori Konda</u>, Tamami Ono, Osamu Tsukamoto, Naoto Iwasaka, Kunio Kutsuwada, Shipboard measurement of turbulent fluxes by eddy covariance technique in the Kuroshio Extension region.</p> <p>4:00-4:20: <u>ChuanLi Jiang</u>, Sarah Gille, Janet Sprintall, Kei Yoshimura, Masao Kanamitsu, Length scale of the turbulent heat fluxes in the Southern Ocean.</p> <p>4:20-4:40: <u>Meghan Cronin</u>, NOAA PMEL Ocean Climate Station reference time series.</p> <p>4:40-5:00: <u>Sohey Nihashi</u>, Kay I. Ohshima, Noriaki Kiumura, Creation of heat/salt flux data set in the Okhotsk Sea using AMSR-E sea ice data.</p> <p>Discussion (30 minutes)</p>

Friday: The Future.

8:00-8:30: Coffee

8:30-8:50: Meghan Cronin, Chris Fairall (with input). Overview of the observing system.

8:50-9:20: *Invited Talk:* Mark Bourassa, Eric Lindstrom. Satellites and Satellite Observing in the Future.

9:20-9:40: Carol Anne Clayson (with input). Overview of newly developed technologies.

9:40-10:00: Sarah Gille (with input). Recap of user requirements.

10:00-10:30: Coffee

10:30-12:00: Charting the way forward: wrap up open discussion and charge for action. Follow up with *EOS* Conference Summary; *BAMS* White Paper: *J. Climate* special collection.

Some discussion questions:

What are priorities for analysis of existing data?

What new satellite observations and what types of field observations would be most useful for high-latitude surface fluxes?