

APPLICATION FOR CONSENT TO CONDUCT MARINE SCIENTIFIC RESEARCH

1. General Information

1.1 Cruise name and/or number:	WACS2 - F2014-023
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1.2 Sponsoring institution(s):		
Name	Address	Name of Director
NOAA PMEL	7600 Sand Point Way NE Seattle, WA 98115	Chris Sabine

1.3 Scientist in charge of the project:	
Name:	Patricia Quinn
Country:	US
Affiliation:	NOAA, Pacific Marine Environmental Laboratory
Address:	7600 Sand Point Way NE Seattle, Washington 98117-0070 US
Telephone:	206-526-6862
Email:	Patricia.K.Quinn@noaa.gov

1.4 Entity(ies) /Participant(s) from coastal State involved in the planning of the project:	
Name:	See Section 6.2.
Country:	
Affiliation:	
Address:	
Telephone:	
Fax:	
Email:	
Website (for CV and photo):	

2. Description of Project

2.1 Nature and objectives of the project:
Characterize freshly emitted sea spray aerosol to assess its climate impacts, how it is influenced by surface seawater properties, and to develop number production fluxes for use in regional and global models.

2.2 Relevant previous or future research projects:
CalNex, WACS

2.3 Previous publications relating to the project:
Quinn, P.K. and T.S. Bates, The case against climate regulation via oceanic phytoplankton sulfur emissions, <i>Nature</i> , 480, 51-56, 2011. Gaston, C.J., H. Furutani, S.A. Guazzotti, K.R. Coffee, T.S. Bates, P.K. Quinn, L.I. Aluwihare, B.G. Mitchell, and K.A. Prather, Unique ocean-derived particles serve as a proxy for changes in ocean chemistry, <i>J. Geophys. Res.</i> , 116, D18310, doi:10.1029/2010JD015289, 2011. Bates, T.S., P.K. Quinn, A.A. Frossard, L.M. Russell, J. Hakala, T. Petaja, M. Kulmala, D.S. Covert, C.D. Cappa, S.M. Li, K.L. Hayden, I. Nuaaman, R. McLaren, P. Massoli, M.R. Canagaratna, T.B. Onasch, D. Sueper, D.R. Worsnop, and W.C. Keene, Measurements of ocean derived aerosol off the coast of California, <i>J. Geophys. Res.</i> , 117, doi:10.1029/2012JD017588, 2012. Vicars, W.C., S. Morin, J. Savarino, N.L. Wagner, J. Erbland, E. Vince, J.M.F. Martins, B.M. Lerner, P.K. Quinn, D.J. Coffman, E.J. Williams, and S.S. Bronw, Spatial and diurnal variability in reactive nitrogen oxide chemistry as reflected in the isotopic composition of atmospheric nitrate: Results from the CalNex 2010 field study, <i>J. Geophys. Res.</i> , DOI: 10.1002/jgrd.50680, 2013. Ryerson, T.B., A.E. Andrews, W.M. Angevine, T.S. Bates, C.A. Brock, B. Cairns, R.C. Cohen, O.R. Cooper, J.A. de Gouw, F.C. Fehsenfeld, R.A. Ferrare, M.L. Fischer, R.C. Flagan, A.H. Goldstein, J.W. Hair, R.M. Hardesty, C.A. Hostetler, J.L. Jimenez, A.O. Langford, E. McCauley, S.A. McKeen, L.T. Molina, A. Nenes, S.J. Oltmans, D.D. Parrish, J.R. Pederson, R.B. Pierce, K. Prather, P.K. Quinn, J.H. Seinfeld, C.J. Senff, A. Sorooshian, J. Stutz, J.D. Surratt, M. Trainer, R. Volkamer, E.J. Williams and S.C. Wofsy, The 2010 California research at the Nexus of air quality and climate change (CalNex) field study, <i>J. Geophys. Res.</i> , DOI: 10.1002/jgrd.50331, 2013. Quinn, P.K. et al., Contribution of sea surface carbon to organic matter enrichment in seaspray aerosol, <i>Nature Geoscience</i> , in press, 2014.

3. Geographical Areas

3.1 Indicate geographical areas in which the project is to be conducted (with reference in latitude and longitude, including coordinates of cruise track/ way points):
40.3N - 28N; 70.5W - 63W

3.2 Attach chart(s) at an appropriate scale (1 page, high-resolution) showing the geographical areas of the intended work and, as far as practicable, the location and depth of sampling stations, the tracks of survey lines, and the locations of installations and equipment.
Chart provided - see Section 10.1.

4. Methods and Means to be Used

4.1 Particulars of vessel:	
Name:	KNORR
Type/Class:	Ship
Nationality (Flag state):	United States
Identification Number (IMO/Lloyds No.):	
Owner:	Office of Naval Research
Operator:	Woods Hole Oceanographic Institution
Overall length (meters):	281.00
Maximum draught (meters):	16.70
Displacement/Gross tonnage:	2518.00
Propulsion:	Two Lips diesel-electric azimuthing stern thrusters, 1500 SHP each
Cruising:	11.00
Maximum speed:	13.00
Call sign:	KCEJ
INMARSAT number and method and capability of communication (including emergency frequencies):	500/2182 kHz
Name of master:	Kent Sheasley
Number of crew:	24
Number of scientists on board:	32

4.2 Other craft in the project, including its use:

N/A

4.3 Particulars of methods and scientific instruments:

Types of samples and measurements	Methods to be used	Instruments to be used
-Chemical composition of atmospheric particulates will be characterized with on-line analyses and by collection onto filter substrates with subsequent chemical analysis.-Aerosol microphysical properties will be measured including total particle number concentration and particle number size distribution. -Aerosol optical properties will be measured including light absorption and scattering. - Seawater properties will be measured at the surface and with vertical profiles.	-Chemical composition of atmospheric particulates will be analyzed using thermal-optical analysis, ion chromatography, fourier transform infrared analysis, and x-ray fluorescence. - Aerosol physical and optical properties will be measured with differential mobility particle analyzers, nephelometers, cavity ring down spectrometers, particle soot absorption photometers, and photo acoustic spectrometers. -Seawater will be analyzed for DOC, POC, DIC content; chlorophyll concentration; phytoplankton speciation, and alkalinity.	Aerodyne aerosol mass spectrometers, Cascade impactors, Ion Chromatographs, Carbon analyzers, aerodynamic particle sizer, cloud condensation nuclei counter, nephelometer, particle soot absorption photometer, cavity ring down spectrometer, photo acoustic spectrometer, fluorometer

4.4 Indicate nature and quantity of substances to be released into the marine environment:

No

4.5 Indicate whether drilling will be carried out. If yes, please specify:

No

4.6 Indicate whether explosives will be used. If yes, please specify type and trade name, chemical content, depth of trade class and stowage, size, depth of detonation, frequency of detonation, and position in latitude and longitude:

No

4.7 Indicate whether protected species be studied. If yes, please specify:

No

5. Installations and Equipment

Details of installations and equipment (including dates of laying, servicing, method and anticipated timeframe for recovery, locations and depth, and measurements):

No

6. Dates

6.1 Expected dates of first entry into and final departure from the research area by the research vessel and/or other platforms:

Project Start Date: May 19, 2014

Project End Date: Jun 06, 2014

6.2 Coastal State-specific details:		
Coastal Area	Estimated Entry Date	Estimated Departure Date
Canada	May 19, 2014	May 29, 2014
Explanation of multiple entries: N/A		
Research will be performed: between 12-200 nm		
Extent to which Canada will be enabled to participate or to be represented in the research project: Coastal state is welcome to participate in the cruise		
Name, affiliation and contact information for all participants from coastal state Canada:		
Coastal Area	Estimated Entry Date	Estimated Departure Date
Bermuda	May 28, 2014	Jun 05, 2014
Explanation of multiple entries: N/A		
Research will be performed: between 12-200 nm		
Extent to which Bermuda will be enabled to participate or to be represented in the research project: Coastal state is welcome to participate		
Name, affiliation and contact information for all participants from coastal state Bermuda:		

7. Port Calls

No port calls

8. Participation of the representative of the coastal State

8.1 Modalities of the participation of the representative of the coastal State in the research project:
See Section 6.2.

8.2 Proposed dates and ports for embarkation/disembarkation:
See Section 6.2.

9. Access to Data, Samples and Research Results

9.1 Expected dates of submission to coastal State of preliminary report, which should include the expected dates of submission of the data and research results:
No more than 60 days from the end date of the research as provided in Section 6.1.

9.2 Anticipated dates of submission to the coastal State of the final report:
No more than 2 years from the end date of the research as provided in Section 6.1.

9.3 Proposed means for access by coastal State to data (including format) and samples:
Data will be provided through official channels at no cost to the coastal State(s). Samples will be provided upon request.

9.4 Proposed means to provide coastal State with assessment of data, samples and research results:
Assessment of data, samples and research results will be provided at no cost to the coastal State(s).

9.5 Proposed means to provide assistance in assessment or interpretation of data, samples and research results:
Assistance in further assessment or interpretation will be provided upon request.

9.6 Proposed means of making results internationally available:
All data will be made publicly available at: http://saga.pmel.noaa.gov/data_servers.html

10. List of Supporting Documentation

10.1 List of attachments, such as additional forms required by the coastal State, etc.:			
Attachment Type	Description	Attachment	Submission Date
Proposed Cruise Track	Cruise track	0452812500_WACS II proposed cruise track for WHOI.pdf	Feb 05, 2014
Supplemental Material	CV for Patricia Quinn	3640468750_Quinn CV WACS2.pdf	Feb 13, 2014