

**Application for Consent to Conduct Marine Scientific Research
in Areas Under National Jurisdiction of**

Taiwan
(name of coastal state)

Date: 02/04/09

1. General Information

1.1 Cruise name and/or #:	Quantifying, Predicting, and Exploiting Uncertainty (QPE) Experiment
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1.2 Sponsoring institution:	
Name:	U.S. Office of Naval Research
Address:	875 North Randolph Street, Suit 1425 Arlington, VA 22203-1995
Name of Director:	

1.3 Scientist in charge of the project (include CV and passport photo):	
Name:	Dr. Ren-Chieh Lien Dr. Thomas B. Sanford Dr. Luca Centurioni
Address:	Applied Physics Laboratory University of Washington 1013 NE 40th St Seattle, WA 98105-6698 USA Scripps Institution of Oceanography 9500; Gilman Drive 0244 La Jolla CA 92093-0244 USA
Telephone:	206-685-1079 Lien 206 543-1365 Sanford 858 534-6182 Centurioni
Fax:	206-543-6785 Lien and Sanford
Email:	lien@apl.washington.edu Sanford@apl.washington.edu lcenturioni@ucsd.edu

1.4 Scientist(s) from coastal state involved in the planning of the project:	
Name(s):	Dr. Sen Jan
Address:	Institute of Hydrological and Oceanic Sciences National Central University 300 Jung-da Road, Jungli 32001, Taiwan Tel: +886-3-4223410 Fax: +886-3-4222894

1.5 Submitting officer:	
Name and address:	Elizabeth Brenner/Rose M. Dufour Scripps Institution of Oceanography

	University of California, San Diego La Jolla, California 92093-0210
Nationality:	USA
Telephone:	(858) 534-2841
Fax:	(858) 822-5811
Email:	Shipsked@ucsd.edu

2. Description of Project (Attach additional pages as necessary)

2.1 Nature and objectives of the project:	
The primary task of this project is to understand the dynamics of Kuroshio interaction with continental shelf and slope.	

2.2 Relevant previous or future research cruises:	
A pilot study was conducted in August 22-Sept 11, 2008 led by Glen Gawarkiewicz on Taiwanese RVs.	

2.3 Previously published research data relating to the project:	
None	

3. Methods and Means to be Used

3.1 Particulars of vessel:	
Name:	R/V Melville
Nationality (Flag state):	USA
Owner:	Office of Naval Research
Operator:	Scripps Institution of Oceanography
Overall length (meters):	85 m
Maximum draught (meters):	5 m
Displacement/Gross tonnage:	2,516
Propulsion:	Two 1385 hp Z-Drive
Cruising & Maximum speed:	11.7 knots, 14 knots
Call sign:	WECB
Method and capability of communication (including emergency frequencies):	HF/SSB Radio, F77 voice 011 872 763452498 Email: master@rv-melville.ucsd.edu
Name of master:	Captain Christopher Curl
Number of crew:	21
Number of scientists on board:	38

3.2 Aircraft or other craft to be used in the project:	
None	

3.3 Particulars of methods and scientific instruments		
Types of samples and data	Methods to be used	Instruments to be used

R/V Melville		
T, S, and velocity profiles	Vertical profiles of floats	EM-APEX floats (Sanford)
T, and velocity profiles	Restrained ADCP moorings with T-chain	ADCPs and T-chains (Centurioni)
T, S, and velocity profiles	Subsurface moorings with ADCP and TC chain	75 kHz ADCPs and Seabird CTD sensors (Lien)

T and S profiles	Ship-based CTD casts	Shipboard Seabird lowered CTD
Water velocity profiles	Ship-based surveys	Shipboard ADCP, GPS, GPS attitude
Meteorological variables (e.g. wind speed, heat flux, air temperature, etc)	Ship-based surveys	Shipboard meteorological sensors
Underway (UW) multibeam	Swath mapping	Kongsberg em120 150 degree swath width, 121 bathymetry beams, plus backscatter imagery
UW Mags	Magnetometer deployment	Marine Magnetics total field gradiometer
UW Gravity	Gravimeter	Bell Gravimeter

3.4 Indicate whether harmful substances will be used:
No harmful substances

3.5 Indicate whether drilling will be carried out:
No drilling

3.6 Indicate whether explosives will be used:
No explosives will be used

4. Installations and Equipment

Details of installations and equipment (dates of laying, servicing, recovery; exact locations and depth):

Six subsurface moorings within the green boxes in the chart under 5.2: deployed on 3-9 August 2009 and recovered on 12-16 September 2009, exact locations will be determined before the cruise.
Work will be contained within
122° 28' E 25N, 122° 50 E 25° 28' N, 122° 45' E 25° 45' N, 122° 10 E 25° 15'N, and 122° 40' E 24° 45'N, 122° 10' E 24° 45'N, 122° 15 'E 24° 25' N, 122° 35' E 24° 20' N

CTD casts- in blue box during cruise from 13- 21 August. Work will be contained within 122° E 24° 20' N, 122° 28' E 24° 15' N, 123° 10' E 25° 15' N, 122° 30' E 25° 28' N, and 122° 28' E 25N, 122° 50 E 25° 28' N, 122° 45' E 25° 45' N, 122° 10 E 25° 15N

Four EM-APEX floats deployed within the brown boxes in the chart under 5.2: Floats will be deployed and recovered during the cruise on 23 August – 7 September 2009. Work will be contained within 122° 32'E 25° 30'N, 122° 20'E 25° 40'N, 122° 40'E 25° 55'N, 122° 50'E 25° 45'N and, 122° 20' E 25° N, 122° 07 E 25° 15N, 122° 30E 25° 10N, 122° 15 E 25° 28' N.

Five restrained ADCPs within northern brown box in the chart under 5.2: Restrained ADCPs will be deployed in the cruise 13-21 August 2009 and recovered in the cruise 12-16 September 2009. Work will be contained within:
122° 32'E 25° 30'N, 122° 20'E 25° 40'N, 122° 40'E 25° 55'N, 122° 50'E 25° 45'N

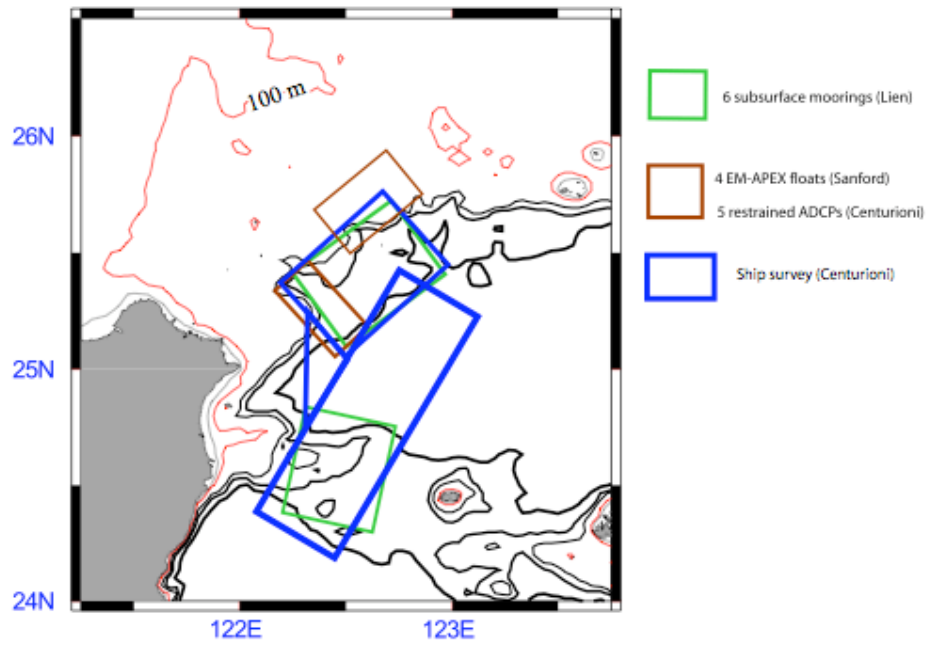
5. Geographical Areas

5.1 Indicate geographical areas in which the project is to be conducted (with reference in latitude

and longitude):

The project is to be conducted in Philippine Sea and East China Sea. The general areas of operations are shown in the following chart in 5.2.

5.2 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 positions of intended stations, the tracks of survey lines, and the locations of installations and equipment.



The exact locations of 6 subsurface moorings, 5 restrained ADCPs, and ship tracks of ship survey will be determined before the cruise. The 4 EM-APEX floats will be deployed within the brown boxes. Their deployment positions will be determined during the cruise subject to the change of the oceanic environments.

6. Dates

6.1 Expected dates of first entry into and final departure from the research area of the research vessel:

R/V Melville: First entry 01 August 2009, final departure in September 16, 2009

To summarize: We request clearance for this project from 01 August 2009 to September 16, 2009.
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6.2 Indicated if multiple entry is expected: yes, please see 2.2 for dates.

Multiple entry is likely

7. Port Calls

7.1 Dates and names of intended ports of call:
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Keelung, Taiwan

7.2 Any special logistical requirements at ports of call:

Normal: scientific equipment load out, fueling, stores, and personnel exchange of science party and crew
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7.3 Name/Address/Telephone of shipping agent (if available):
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We will be working with National Taiwan University, National Taiwan Ocean University, and National Central University to work out logistics and harbor
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needs.

Ship's Agent

Jardine, Matheson & Co
13/14F, No. 50 Hsin Sten South Road, Sec.1
Taipei, P.O. Box 81
Taiwan

Tel: 886-2 23931177
Fax: 886-2 23920435
Gen Email: operation.tpe@jm.com.tw

Deputy General Manager
L M Huang 23954636 27688577
(Mobile Phone: 886-930940281)
(E-mail: lm.huang@jm.com.tw)

It is anticipated that R/V *Melville* will be in Keelung for shipyard maintenance and drydocking 28 May – 31 July 2009

8. Participation:

8.1 Extent to which coastal state will be enabled to participate or to be represented in the research project:

There will be Taiwanese colleagues onboard of cruises.

8.2 Proposed dates and ports for embarkation/disembarkation:

Keelung, Taiwan
1-3 August 2009
9-13 August 2009
21-23 August 2009
7-8 September 2009
11-12 September 2009
16-19 September 2009.

9. Access to data, samples and research results

9.1 Expected dates of submission to coastal state of preliminary reports, which should include the expected dates of submission of the final results:

No more than 30 days from the end date of the cruise.

9.2 Proposed means for access by coastal state to data and samples:

CD or DVD provided at conclusion of cruise, with further access to the data via internet download or CD/DVD on request.

9.3 Proposed means to provide coastal state with assessment of data, samples and research results or provide assistance in their assessment or interpretation:

Participation in international workshops and science symposia during the analysis phase of the

project.

9.4 Proposed means of making results internationally available:

Publication in scientific journals and reports.

(Revised June 5, 2002)