

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

Philippines

(name of coastal state)

Date: 25 February 2009

1. General Information

1.1 Cruise name and/or #:	Impacts of Typhoons on the Western Pacific Ocean (ITWP) mooring operation
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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:	Dr. Terri Paluszkiwicz

1.3 Scientist in charge of the project (include CV and passport photo):	
Name:	Dr. Ren-Chieh Lien
Address:	Applied Physics Laboratory University of Washington 1013 NE 40th St Seattle, WA 98105-6698 USA
Telephone:	+1-206-685-1079
Fax:	+1-206-543-6785
Email:	lien@apl.washington.edu

1.4 Scientist(s) from coastal state involved in the planning of the project:	
Name(s):	Dr. Cesar Villanoy
Address:	Marine Science Institute University of the Philippines Dilman, Quezon City Email: c.villanoy@gmail.com

1.5 Submitting officer:	
Name and address:	Elizabeth Brenner/Rose Dufour
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:	
<p>The energy of tropical cyclones is derived from the ocean via the air-sea flux. The oceanic heat content in the mixed layer plays an important role in determining the typhoon's maximum potential intensity, structure, energy, trajectory, and dynamic evolution. Forced by tropical cyclones, the most energetic oceanic processes are surface waves, wind-driven current, shear and turbulence, and inertial currents. In order to understand the dynamics and structures of tropical cyclones, one needs to understand these oceanic processes and quantify their effects on</p>	

the air-sea flux during the passage of cyclones. In tropical cyclones, these processes are the least understood primarily because of the paucity of direct field observations, consequently leading to large uncertainties in air-sea fluxes. This experiment will provide long-term observations in western Pacific to understand the coupled dynamics in a wide-range of oceanic and atmospheric conditions.

In September-October 2009, Ren-Chieh Lien at Applied Physics Lab, University of Washington will service an array of three temperature-chain moorings in the western Pacific to study the evolution of oceanic response during the progressing typhoons. The surface buoy moorings will all be equipped with meteorology package and temperature sensors. Near real-time meteorology observations will be transmitted every 8 hrs via Iridium satellite

2.2 Relevant previous or future research cruises:

One pilot mooring, station A1, was deployed in June 2008 (please see map in 5.2). This pilot mooring, A1, is to be recovered and three moorings, A1, A2, and A3, are planned to be deployed in March 2009 from R/V Kilo Moana. We are acquiring clearance from Philippine for station A2. If the approval does not come in time, we will shift A2 eastward into international water.

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
Moored temperature/conductivity, surface wave properties, rainfall.	Subsurface moored sensors equipped on 3 Atlas type moorings	SeaBird SBE39, SBE37, and acoustic rain gauge
Moored air pressure, air temperature, relative humidity, wind speed/direction, rainfall,	Surface meteorology sensors mounted on 3 Atlas type buoys	Weatherpak meteorology sensors including pressure sensor, relative humidity

solar radiation		sensor, anemometer, rain gauge, and pyranometer.
T and S profiles	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):

The 3 Atlas type moorings will be serviced on cruise in Sept-Oct. 2009 in Western Pacific. The locations of moorings are listed as follows. Note that these three moorings are planned to be deployed in March 2009. We are acquiring the clearance from Philippines for station A2. If we do not get the permission from Philippine in time of the March cruise, the A2 mooring will be moved eastward into international water. In roughly April and Oct. 2010, there will be two cruises to service these three moorings.

Station A1: 127° 30'E 20° 30'N, 5550-m ocean depth, 127.5E 20.5N, International waters.
Station A2: 124° 30'E 20° 30'N, 5700-m ocean depth, 124.5E 20.5N Philippines Waters.
Station A3: 126°E 18° N, 6000-m ocean depth, 126E 18N, International waters.

5. Geographical Areas

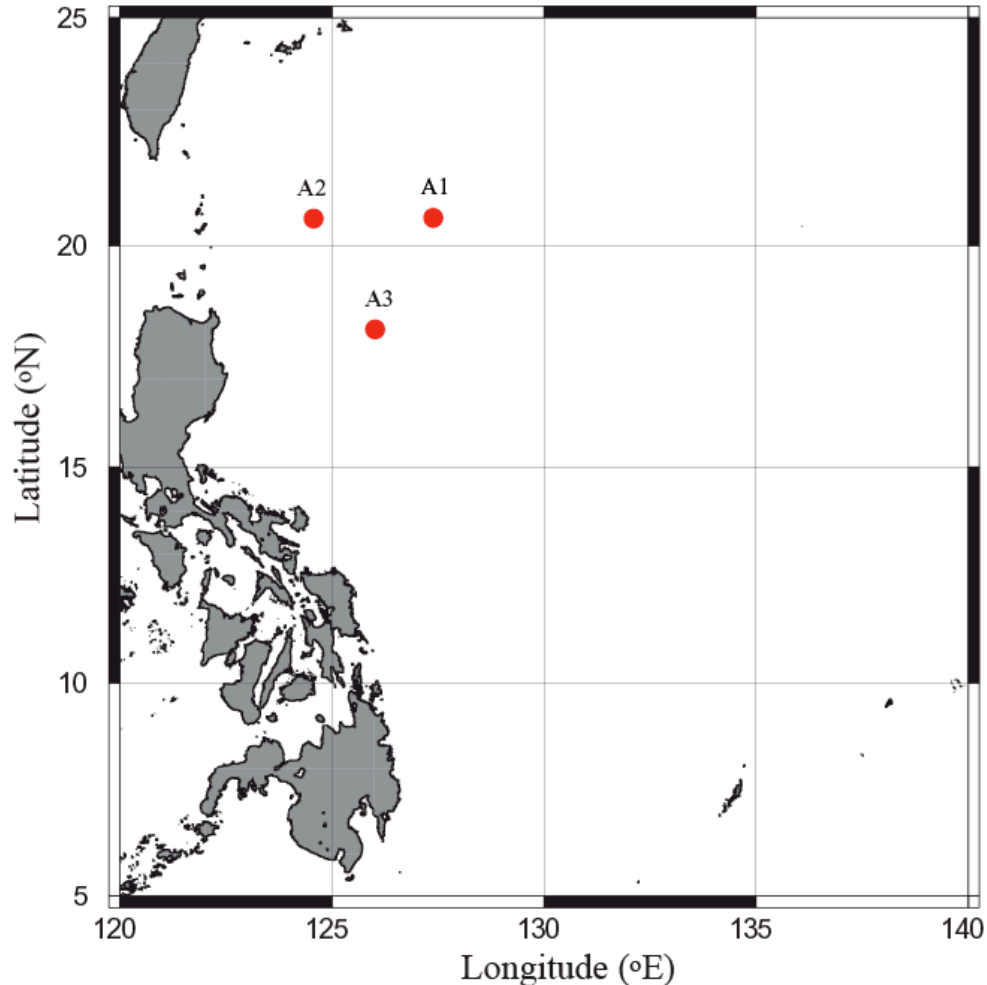
5.1 Indicate geographical areas in which the project is to be conducted (with reference in latitude and longitude):

We request permission to service three Atlas type buoys and to perform shipboard survey. The moorings will be deployed in the active region of typhoons in the Western Pacific. Please see attached chart (embedded below).

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 tracks of shipboard survey will be in western Pacific, most likely west of 140E and east of Taiwan Strait. The exact tracks will be determined before individual mooring operation cruise



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 19 September, final departure 9 October 2009

Two additional cruises will take place in 2010. Each cruise will be approximately 6 months apart. It is anticipated that the second cruise will take place in April of 2010, followed by a third cruise in October of 2010.

To summarize we request clearance from 19 September 2009 to 15 November 2010.

Note that this request covers 3 potential cruises for our specific field program. Entry/exit dates do not take into account of other operations in the region. However, at this point we are unable to predict what vessel the work will be carried out on.

6.2 Indicated if multiple entry is expected: yes, please see 2.2 for dates.

Multiple entry is likely (please see above).

7. Port Calls

7.1 Dates and names of intended ports of call:

We will require port calls in Kaohsiung and Keelung, Taiwan.

7.2 Any special logistical requirements at ports of call:

None.

7.3 Name/Address/Telephone of shipping agent (if available):

Port Keelung, Taiwan Dates Multiple calls at Keelung in 2009

Agent (sub-agent for Jardine, Matheson & Co, Ltd)

Tailung Shipping Agency Co. Ltd. 12 F, No. 296-1 Sin 2nd Road

Keelung, Taiwan

Tel: 886-2-2423-0161

Fax: 886-2-2428-6450

POC: Mr. Tony Wang Mobile: 886-9-3854-0743

Email: operation.kel@jm.com.tw Jardine, Matheson & Co, Ltd

POC: Mr. Jerome Ni,

Port Manager Tel: 886-2--2395-4696

Mobile: 886-9-3315-7817

Email: jerome.ni@jm.com.tw Copy both email addresses on all correspondence to Keelung.

Port Kaohsiung, Taiwan

Multiple calls at Kaohsiung in 2009

Ship's Agent Jardine, Matheson & Co, Ltd 5th Floor

, No. 21, Fubon Building Chung Hwa 3rd Road,

Kaohsiung, Taiwan

Tel: 886 7 2317141

Fax: 886 7 2015492 / 2111945

Gen Email: operation.kao@jm.com.tw POC H M Chao,

Port Manager Tel: 2317141 Ext 107 Mobile: 886 9 29639939

Email: hm.chao@jm.com.tw) D C Wang

Tel: 2317141 Ext 129 Mobile: 886 9 29633811

Email: dc.wang@jm.com.tw

8. Participation:

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

We invite two Philippine scientists to participate in our cruise.

8.2 Proposed dates and ports for embarkation/disembarkation:

R/V Melville will operate from Chi-lung to Kaohsiung
16-19 September 2009 Chi-lung, Taiwan
09-11 October 2009 Kaohsiung, Taiwan

2010 dates have not been established. The ship schedules will not be determined until September of 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 data analysis 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)