

PROJECT INFORMATION

<b>Lead Principal Investigator</b>	Meredith Nettles
<b>Institute</b>	Columbia University, Lamont-Doherty Earth Observatory
<b>Project Title / Grant #</b>	Collaborative Research: High-resolution studies of glacier dynamics at two major outlet glaciers in East Greenland (0713970)
<b>NSF Program and Manager</b>	NSFODVOPPARCVANS, Dr. William Wiseman
<b>PFS Project Manager</b>	Robin Abbott

LOGISTICS SUMMARY

For this collaborative study of outlet glacier dynamics (Nettles [Columbia, 0713970, Lead], Hamilton [U Maine, 0710891] and Davis [Smithsonian, 0713749]), researchers will collect seismological, geological, and glaciological information during 2008, 2009, and 2010 from two GPS networks they will install in East Greenland, one on Helheim Glacier and one on Kangerdlugssuaq Glacier. The experiment builds on a pilot study of the Helheim Glacier conducted during 2006-2007 under NSF grant 0612609.

In 2010, researchers will deploy twice to visit the Helheim Glacier sites, in June and in August. For the first trip, a team of three will travel via Iceland to Tasiilaq, and basing from there, use night-time helicopter transport to visit glacier sites. After about 10 days, they will return to the US, again via Iceland. A late August trip will be similar, except the field team will be larger (around six people) and the trip will be shorter by several days.

In addition, the PI will visit Søndalen at some point in the summer to remove, package and ship project gear to the home institution.

The project has several international collaborators: the Geological Survey of Denmark and Greenland (GEUS) will provide climate data from automated weather stations positioned on and near Helheim Glacier, as well as seismic data from local stations, and will help support the GPS network and assist with permitting. The Spanish Institute for Space Sciences will participate in instrument development and hardware support. The National Space Institute (NSI) (formerly known as Danish National Space Center) will provide airborne and GPS data.

For 2010, the PI's international collaborators will provide most of the logistics support. CPS will reimburse the PI for flight arrangements to/from Greenland, hotel accommodations in Tasiilaq, shipping of seasonal project cargo, and retrograde of the equipment from the Kangerdlugssuaq Glacier site at summer's end. CPS also will arrange helicopter support, though the costs associated with it will be borne by the PI's institution. All other costs will be arranged between the PI and her international collaborators, or paid from the grant.

For the complete CPS online project record for this grant, including science objectives, go to: [http://www.polar.ch2m.com/arlss\\_reports/arlss\\_projectsdetail.asp?cbPropNum=0713970](http://www.polar.ch2m.com/arlss_reports/arlss_projectsdetail.asp?cbPropNum=0713970)

OUTSTANDING ACTIONS AND NOTES

Issue	Responsibility	Date Due	Date Completed
Review support plan for accuracy and distribute to all field team members	PI		
Obtain all necessary permits for fieldwork	PI	No permit required since working within 150km of Tasiilaq	No area allotment required since all work is for < 24 hours duration.
Visit all hyperlinks and review all documents referred to in the support plan	Entire Field Team		

Keep all receipts. For speedier reimbursement, turn them in to your project manager as soon as your fieldwork is complete.	Entire field team		
Complete Critical Success Factors	PI		
Explore options for retrograde freight shipment and make final arrangements	PI and CPS		

## ALLOCATIONS AND SERVICES

Allocations from Inventory in 2008 (stored in Tasiilaq)

Quant/Unit	Item
2 ea	Coleman Stoves, 2 burner
2 ea	REI Mtn Tent
2 ea	Sleeping Bag
2 ea	Sleeping Pad - Thermarest
2 ea	Dinnerware set : Plates, Bowls, Fork, Knife, Spoon, Cup
1 ea Iridium SIM card	Provided to Gordon Hamilton
2 ea Iridium phone	Provided by SRI.
1 ea	Remote Medical Kit

For more information on satellite phones, radios, manuals and other field communications support, please visit the CPS communications Web site at <http://www.polar.ch2m.com/>.

Project Allocations	Comments
CPS will coordinate and request Bell 212 helicopter charters with Air Greenland for working in the Helheim area.	The air charter contract will be between Columbia University, Lamont-Doherty and Air Greenland
Arrange/pay for user days in Tasiilaq (hotel accommodations)	Bookings are made at Hotel Ammassalik
Reimbursement to Lamont for shipping freight from NY to Tasiilaq	CPS
Reimbursement for airline tickets/hotel costs via Iceland in June/early July, as well as in August.	CPS will reimburse up to 8 airline tickets. Submit expense reports and receipts to Polar Field Services address noted below - Attn: Henry Borne
Retrograde freight: PI will investigate options more closely once in Greenland for return shipment to US. For Tasiilaq-staged cargo, several options exist: shipping via Royal Arctic Line, sending commercial freight for USAP-bound cargo. Kangerdlugssuaq Glacier cargo will need to be shipped at the end of August, and Platina Mining, located in Søndalen, may have a ship or Twin Otter resources available.	CPS will work with PI to identify best shipping options, and will pay for costs associated with homeward freight, either by PO or by reimbursement
Remote medical call-in service	Via Remote Medical International (contact information below)
Arrangements with Platina Mining for flights to/from Søndalen	For cargo retrograde from Kangerdlussuaq Gl. PI will travel on the flight to ensure proper cargo handling.

## CARGO AND CUSTOMS

Shipments will be sent to/from Tasiilaq in SE Greenland by air freight via IcelandAir cargo system. Cost of the shipment will be paid for by the PI and reimbursed at a later date.

For the most current ANG flight schedule go to <http://www.polar.ch2m.com/> and navigate to Greenland > Calendars/Schedules.

The following is our current understanding of your overall cargo requirements:

### Cargo List

Items	Weight/Cube
Black Pelican case	80 lb (36 kg) 20x31x12 in
Black Pelican case	89 lb (40 kg) 20x31x12 in
Yellow Hardigg case	62 lb (28 kg) 25x24x11 in
White PVC tube	20 lb (9 kg) 48x5(diam) in
Grey Hardigg case	42 lb (19 kg) 24x15x18 in
Black Hardigg Storm case	32 lb (15 kg) 24x11x20
Grey Hardigg Storm case	63 lb (29 kg) 12x21x31 in
TOTAL Weight	388lbs (176kg)

## SUPPORT SCHEDULE

Approx Date	Location	Activity
21 June	US > Iceland	Meredith Nettles departs US
22 June	Tasiilaq	Meredith Nettles arrives in Greenland
26 June	Tasiilaq	Gordon Hamilton and Leigh Stearns arrive Greenland
28, 29 30 June	Tasiilaq > Helheim Glacier	Helicopter support on Helheim Glacier will take place at night due to availability issues during the day.
03 July	Tasiilaq > Kulusuk > Iceland	Gordon Hamilton and Leigh Stearns depart
TBD	Akureyri > Sødalen > Akureyri	Meredith Nettles flies to Platina Mining camp at Sødalen to pack up her equipment for shipment back to the States.
24 Aug	Iceland > Kulusuk > Tasiilaq	All field team members arrive Greenland for 2 <sup>nd</sup> deployment
26, 27, 28 Aug	Helheim Glacier	Helicopter support on Helheim Glacier will take place in the evening due to availability issues during the day.
01 Sept	Tasiilaq > Kulusuk > Iceland	All field team members depart Greenland

For the most up-to-date information on the project's schedule, please view the online Greenland calendar (<http://www.polar.ch2m.com/> > Greenland > Calendars/Schedules).

## FIELD TEAM INFORMATION

Name	Location	Date In / Date Out	Email
Hamilton, Gordon	Tasiilaq	26 June – 3 July 24 Aug – 01 Sept	<a href="mailto:gordon.hamilton@maine.edu">gordon.hamilton@maine.edu</a>
Hamilton, Gordon	Helheim Glacier	28, 29, 30 June 26, 27, 28 Aug	
Nettles, Meredith	Tasiilaq	26 June – 3 July 24 Aug – 01 Sept	<a href="mailto:nettles@Ldeo.columbia.edu">nettles@Ldeo.columbia.edu</a>
Nettles, Meredith	Helheim Glacier	28, 29, 30 June 26, 27, 28 Aug	
Nettles, Meredith	Kangerdlugssuaq Glacier	TBD	
Leigh Stearns	Tasiilaq	26 June – 3 July 24 Aug – 01 Sept	
Leigh Stearns	Helheim Glacier	28, 29, 30 June 26, 27, 28 Aug	

Goran Ekstrom	Tasiilaq	24 Aug- 01 Sept	
Goran Ekstrom	Helheim Glacier	26, 27, 28 Aug	
Steve Veitch	Tasiilaq	24 Aug- 01 Sept	
Steve Veitch	Helheim Glacier	26, 27, 28 Aug	
Okal, Marianne	Tasiilaq	TBD - August	

## PROJECT CONTACT INFORMATION

Role	Name	Email	Phone / Fax
Collaborator	James Davis	<a href="mailto:jdavis@cfa.harvard.edu">jdavis@cfa.harvard.edu</a>	617.496.7640 /617.495.7345
Co-PI	Goran Ekstrom	<a href="mailto:ekstrom@Ldeo.columbia.edu">ekstrom@Ldeo.columbia.edu</a>	845.365.8427 /845.365.8150
Collaborator	Gordon Hamilton	<a href="mailto:gordon.hamilton@maine.edu">gordon.hamilton@maine.edu</a>	207.581.3446 /207.581.1203
Principal Investigator	Meredith Nettles	<a href="mailto:nettles@Ldeo.columbia.edu">nettles@Ldeo.columbia.edu</a>	845.365.8613 /845.365.8150
<b>Project Participants (Including key personnel who will not participate in field work)</b>			
UNAVCO	M Okal		
UNAVCO	B. Johns		
Spanish PI	P. Elosegui		
Spanish researcher	J. de Juan		
Spanish researcher	I. Gonzalez		
Danish PI	Tine B. Larsen		
Danish researcher	M. L. Andersen		
Danish researcher	A.P. Ahlstrom		
Danish researcher	R. Forsberg		
Danish researcher	L. Stenseng		
Danish researcher	S.A. Khan		
LDEO team member	S. Veitch		
CfA team member	E. Malikowski		
UMaine team member	K. Schild		
UKansas team member	L. Stearns		

Gear Shipping Address for Iridium Phones, Comms Gear.

Roy Stehle SRI Bldg G; HIBAY 333 Ravenswood, Menlo Park, CA 94025
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Gear Shipping Address for Med Kit, camping equipment, PFS supplies:

CH2 Polar Services Postboks 1015 KISS Building 3910 Kangerlussuaq Greenland
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CPS Team Members

Contact for	Name	Email	Primary Phone
Greenland science planning & support	Susan Zager	<a href="mailto:Susan@polarfield.com">Susan@polarfield.com</a>	Denver: 720.320.6159
Greenland science planning & support	Robin Abbott	<a href="mailto:Robin@polarfield.com">Robin@polarfield.com</a>	Denver: 303.748.8507
Kangerlussuaq base operations	Kathy Young	<a href="mailto:Kathy@polarfield.com">Kathy@polarfield.com</a>	Denver: 720.320.6160 Greenland: 011.299.524218

Scotia (Stratton Air Base) operations & customs	Earl Vaughn	<a href="mailto:Earl.Vaughn@gmail.com">Earl Vaughn at gmail.com</a>	Scotia cell: 518.605.0979
Sat phones & comms	Roy Stehle	<a href="mailto:Roy.Stehle@sri.com">Roy.Stehle at sri.com</a>	Menlo Park: 650.859.2552
Remote Medical (kits & service) and Medical/Dental Clearance (PQ)	Robbie Score	<a href="http://polarfield.com">Robbie at polarfield.com</a>	Denver: 303.906.0093

**CPS Offices**

Denver	Kangerlussuaq	Scotia
Polar Field Services 8110 Shaffer Parkway Suite 150 Littleton, CO 80127 Tel: 303.984.1450/1439 Fax: 303.984.1445	CH2M HILL Polar Services Attn: Name of Employee/Researcher Postboks 1015 DK-3910 Kangerlussuaq, Greenland Tel: 011.299.841598 Fax: 011.299.841599	Earl Vaughn C/O 109 <sup>th</sup> Aerial Port Bldg. 20 Stratton Air Base Scotia, NY 12302-9752 Tel: 518.344.2635 Cell: 518.605.0979 Fax: 518.344.2537

**Other**

Organization	Internet	Phone
Medical Advisory Service (MAS) <b>(see below for Remote Telemed #)</b>	<a href="http://www.medaire.com/corp_medlink.html">http://www.medaire.com/corp_medlink.html</a>	Office: 480.333.3771

## SAFETY, ENVIRONMENT, HEALTH and PERMITS

### Medical Advisory Service (MAS) Support

If you need medical advice/assistance, do not hesitate to contact Medical Advisory Service (MAS) using the card included with the medical kit or the information below. Be sure that each team member knows where the kit is located and understands how to use the MAS service in the field. For further information on MAS, please visit our Web site <http://www.polar.ch2m.com/> and navigate to Medical>Remote Medical Services/Kits.

### MAS 24/7 Telemed Service

Worldwide Phone: 1.480.333.3876  
 Fax: 1.480.333.3821  
 Member ID: CH2M HILL Polar Services

## RISK ASSESSMENT

See Appendix for Risk Factors and Mitigation.

## CRITICAL SUCCESS FACTORS

Please list the factors that are most important for the success of your science. We track these factors in order to measure the success of CPS' support. Examples might be the availability of the helicopter or camp gear.

Factors
helicopter charters negotiated and transferred to LDEO
field crew lodging in Tasiilaq
cargo delivered to Tasiilaq prior to start of field work (PI arrange details for shipping via Iceland; cost reimbursement from CH2MHill)
retro cargo from Tasiilaq/Sødalén arranged
safety gear (sat phones, first-aid kit) provided

**GOVERNMENT AND PERFORMANCE REPORTING ACT OF 1993 (GPRA)**

NSF/OPP requires your help in complying with the Government Performance and Reporting Act of 1993 (GPRA). One measure of CPS' performance is a "facility-performance metric" which counts the number of productive days your project has in the field while relying on CPS facilities or support. Please keep track of any "lost days" and report these to us at the end of the season.

**APPENDIX**

**RISK FACTORS and MITIGATION**

Factor	Mitigation and Control
Cold Weather	<ul style="list-style-type: none"> <li>-Team members attend a cold weather injury training course such as Wilderness First Aid or Wilderness First Responder</li> <li>-Proper clothing</li> <li>-Appropriate camping gear, insure sleeping bags are adequately rated</li> <li>-Check forecast before going out of camp/town.</li> </ul>
Glacier Travel	<ul style="list-style-type: none"> <li>-Participate in glacier travel/crevasse rescue training</li> <li>-Include a mountaineer on team</li> <li>-Have a SAR plan in place</li> <li>-Carry and use equipment and gear properly</li> </ul>
Helicopter Travel and working around	<ul style="list-style-type: none"> <li>-Participate in helicopter training</li> <li>-Have a SAR plan in place</li> <li>-AHA working around aircraft</li> <li>-Carry survival bags on the aircraft if doing day trips, or if multiple put in flights insure people travel with survival items from camp supplies</li> </ul>