

Please review all of the following information, including the gear allocations and field team members, to ensure accuracy. This plan is an agreement between VPR and your group, documenting the logistics support you will receive.

• Project Information •

Lead Principal Investigator	Michael Bergin
Institute	Georgia Institute of Technology, School of Earth and Atmospheric Sciences
Project Title / Grant #	Collaborative Research: Particulate Organic Carbon in the Air and Snow at Summit, Greenland (0425471)
NSF Program and Manager	NSF/OPP ANS, Dr. Jane Dionne
VPR Project Manager	Sandy Starkweather

• Logistics Summary •

With this collaborative project--0425471 (Bergin, GATech Lead), 0425399 (Schauer, U of WI, Madison) and 0425406 (Dibb, UNH)--researchers aim to achieve a better understanding of the link between concentrations of carbonaceous aerosols in the air and the snow and of how carbonaceous aerosols are modified once they are deposited in the snow. This study of interactions and deposition processes will allow for a better historical analysis of ice cores for clues to the role of carbonaceous aerosols in past climate change.

A team of three will travel to Summit, Greenland in July, 2005 to conduct preliminary air and snow measurements. Then, a team of six will return for a full season during the summer of 2006. At a study site in the clean air sector south of the station, the researchers will use a satellite camp facility to conduct a suite of measurements of the air, the snow surface and in snow pits.

VPR will support the team via ANG arrangements, user days in Greenland, and access to the Summit infrastructure. Logistics details are combined under the lead PI, Bergin.

For the complete VPR online project record for this grant, including science objectives, go to:
http://www.vecopolar.com/arlss_reports/arlss_projectsdetail.asp?cbPropNum=0425471

• Outstanding Issues •

Issue	Responsibility	Date Completed
Review support plan for accuracy and distribute to all field team members	PI	
Obtain all necessary permits for fieldwork	PI	5-15-06
Visit all hyperlinks and review all documents referred to in the support plan	Field Team Members	
Contact the GEOSummit Science Coordination Office (SCO) mailto:sco@geosummit.org regarding your project's plans for the season	PI	1-26-06
Medical Clearance completed 8-6 weeks before desired deployment date	Field Team Members	5-12-06
Please note this important information for your field team: Bring 2 different forms of picture ID. Passports are now mandatory for entry into Greenland. Be sure to pack them!	Field Team Members	
Complete Critical Success Factors	PI	4-20-06

• Allocations & Services •

Allocations from Inventory

Quant/Unit	Item
5 ea	Arctic Oven Sleep Tents
10 ea	Thermal Sleeping Pads
2 ea	Wireless Card
3 ea	Banana sleds
5 ea	Tables
10 ea	Chairs
1 ea	Microwave
1 ea	Coffee Maker
1 ea	Coffee Grinder
1 ea	Wet waste containment
1 ea	Plastic 10-gallon drums (Human waste containment)
1 ea	Bag/bucket system (Human waste containment)
2 ea	Fire extinguishers

The description of other services and scheduling for the satellite camp are briefly outlined below; for complete details please refer to the Summit Operational Project Plan (<http://www.vecopolar.com/Files/PDFs/SummitOM2006Plan.pdf>).

Other Services

Project Allocations	Comments
Satellite Camp, Structures	Power will be run out to a site 2500' from the generators. The Bally building, a 15'x40' weatherport and an outhouse (with waste containment) will be allocated to the Sat Camp.
Satellite Camp, Comms	Wireless network access points will be installed in both buildings. A VHF base station will be installed in the weatherport. Handheld radios will be made available on an as-need basis.
Satellite Camp, Medical	A first aid kit and supply of sunscreen, lip balm, etc. will be made available.
Satellite Camp, Transportation	There will be 3 electric vehicles on station this summer. At least one of these will be at the disposal of Sat Camp team members.
Satellite Camp, Outhouse	There will be an outhouse set up for use at Sat Camp, but all waste will be contained and transported back to camp by field team members. Bags will be provided for solid waste that should be carried back and emptied into camp outhouses. Plastic drums will be provided for liquid waste that should be carried back and emptied into camp outhouse. Dirty bags should be double-bagged and dropped into the camp trash pallet.
Satellite Camp, Custom workbench	A custom workbench will be constructed and staged at the Sat Camp per request from Gayle Hagler.
Sample storage and shipping. Frozen samples.	Samples will be stored frozen on-site in the ground or in the Green House freezer trench. Frozen samples are approximately 1.5 pallets. Samples will be shipped out of Summit on a designated 'cold deck' flight to Kangerlussuaq where they will be stored in a freezer until a 'cold deck' flight is available to Scotia. From there, transport will be arranged via freezer truck to return frozen samples to their final destination. PI is responsible for the shipping from Scotia to home institute.
Gases	VPR will provide 1 @ 100 lb cylinder CARBON MONOXIDE IN NITROGEN 0.00005% TO 10%
Access to GH Clean Room	The science techs and several other projects will be sharing space in this area during a busy summer. Please coordinate access to the GH Clean Room with the science techs to help us schedule usage in this space.

• Location Information •

Please visit <http://www.vecopolar.com> and navigate to the Greenland menu for en route and location-specific Greenland information. Prior to deployment, your entire field team should be familiar with the content of the *Greenland Guide* and, if traveling to Summit, with the guidelines provided in the *Summit Users' Guide*. Both are available electronically via our web site's Greenland menu.

• Cargo and Customs •

All cargo required for your project should arrive in Scotia, NY no later than 2 weeks prior to the desired northbound Air National Guard (ANG) flight, must be entered into our online Cargo Tracking System, and must be properly registered with customs.

- ✓ For the most current ANG flight schedule go to <http://www.vecopolar.com> and navigate to Greenland > Calendars/Schedules.
- ✓ If you are a new user requiring access to the Cargo Tracking System, contact Robin Abbott (robin@polarfield.com).
- ✓ Customs instructions are available on our website at <http://www.vecopolar.com> (go to Greenland > Customs)
- ✓ For Customs requirements please refer to the *Greenland Guide*, also available at <http://www.vecopolar.com> under Greenland.

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

Cargo List

Items	Weight/Cube
Frozen samples (North Bound)	None
Frozen samples (South Bound)	~ 1.5 pallets of ice core boxes
Empty ice core boxes (North Bound)	13 core boxes with sample bottles
Total Northbound Shipment	Collectively the researchers will have roughly 3 total pallets going up with 1.5 pallets coming back on a cold deck flight

Note: Shipping is arriving for this project from 3 origination points: GATech (Hagler-Bergin), UW (Von Schneidmesser-Shauer) and UNH (Anderson-Dibb). Details on the shipments from each originator are listed in Appendix I. Detailed packing list for GATech and UNH are included in the distribution of this project plan as Appendix II.

• Support Schedule •

Date	Location	Activity
5/20	Scotia	First field team members arrive in Scotia
5/21	Kangerlussuaq	First field team members arrive in Kangerlussuaq via ANG
5/22	Summit	First field team members arrive at Summit
5/22 to 5/24	Summit	Move cargo in minimal loads out to Sat Camp location
7/25 to 7/27	Summit	Retro cargo from Sat Camp in minimal loads, palletize retrograde cargo and complete customs/haz mat paperwork
7/27	Summit	Last field team members leave Summit
7/29	Kangerlussuaq	Last field team member depart Kangerlussuaq for Scotia

For complete details on crew change outs, please refer to:

http://www.trumba.com/calendars/summit_schedule

• Field Team Information •

Name	Location	Date In	Date Out	Email
Bergin, Michael	Kangerlussuaq	05/21/06	06/10/06	mike.bergin@ce.gatech.edu
Bergin, Michael	Summit	05/22/06	06/08/06	
Dibb, Jack	Kangerlussuaq	06/9/06	07/12/06	jack.dibb@unh.edu
Dibb, Jack	Summit	06/10/06	07/13/06	
Griffin, Rob	Kangerlussuaq	06/05/06	06/17/06	rjg@gust.sr.unh.edu
Griffin, Rob	Summit	06/06/06	06/15/06	
Hagler, Gayle	Kangerlussuaq	05/21/06	07/29/06	gayle.hagler@ce.gatech.edu
Hagler, Gayle	Summit	05/22/06	07/27/06	
Anderson, Casey	Kangerlussuaq	05/21/06	06/17/06	canderson@gust.sr.unh.edu
Anderson, Casey	Summit	05/22/06	06/15/06	
Smith, Gene	Kangerlussuaq	06/9/06	07/29/06	gth136a@mail.gatech.edu
Smith, Gene	Summit	06/10/06	07/27/06	
Shafer, Martin	Kangerlussuaq	07/09/06	07/29/06	mmschafer@facstaff.wisc.edu
Shafer, Martin	Summit	07/10/06	07/27/06	
v. Schneidmesser, Erika	Kangerlussuaq	07/09/06	07/29/06	evonschneide@wisc.edu
v. Schneidmesser, Erika	Summit	07/10/06	07/27/06	
McMahon, Kevin	Kangerlussuaq	05/21/06	06/10/06	Kevin_McMahon@decatur-city.k12.ga.us
McMahon, Kevin	Summit	05/22/06	06/08/06	

• Project Contact Information •

Research Team

Role	Name	Email	Phone / Fax
Principal Investigator	Michael Bergin	mike.bergin@ce.gatech.edu	404 894-9723 / 404 894-8266
Collaborator	Jack Dibb	jack.dibb@unh.edu	603 862-3063 / 603 862-2124
Collaborator	James Schauer	jschauer@wisc.edu	608 262-4495 / 608 262-0454

VPR Team Members

Contact for	Name	Email	Primary Phone(s)
Greenland operations	Robin Abbott	robin@polarfield.com	Denver: 303.748.8507 Greenland: 011.299.524218
Greenland operations	Mark Begnaud	mark@polarfield.com	Denver: 720.320.6160 Greenland: 011.299.524281
Summit operations	Sandy Starkweather	sandy@polarfield.com	Denver: 303.518.8714
Medical & MAS	Jason Buenning	jason@polarfield.com	Denver: 303.638.6669
Denver operations	Jill Ferris	jill@polarfield.com	Denver: 720.320.6155
Scotia Operations & Customs	Earl Vaughn	earl.vaughn@nyscot.ang.af.mil vprscotia@hughes.net	Scotia: 518.331.3103

VPR Offices

Denver	Kangerlussuaq	Scotia	Summit
VECO Polar Resources Western Office 8110 Shaffer Parkway Suite 150 Littleton, CO 80127 Tel: 303.984.1450/1439 Fax: 303.984.1445	VECO Polar Resources Attn: Name of Employee/Researcher Postboks 1015 DK-3910 Kangerlussuaq, Greenland Tel: 011.299.841598 Fax: 011.299.841599	Earl Vaughn C/O 109 th Aerial Port Bldg. 20 Stratton Air Base Scotia, NY 12302-9752 Fax: 518.884.2904	VECO Polar Resources Attn: Name of Employee/Researcher Postboks 1015 DK-3910 Tel: 321.953.9650 Fax: 321.953.9651

Other

Organization	Internet	Phone
Summit Science Coordination Office	http://www.geosummit.org sco@geosummit.org	John Burkhart 209.658.7142

• Safety, Environment, Health, and Permitting •

Permits

Please refer to VPR's *Greenland Guide*, available at <http://www.vecopolar.com> under Greenland, for information about permits required to conduct fieldwork in Greenland.

• 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 VPR's support. Examples might be the availability of the helicopter or camp gear.

Factors
One critical success factor for us this season is to have the Bally building and associated weather port setup in the clean air sector. This will include having the necessary lab space and power. Right now it would appear that we are on track for this to happen and we have full confidence that VECO will make this happen as planned.

• Government Performance and 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 VPR's performance is a "facility-performance metric" which counts the number of productive days your project has in the field while relying on VPR facilities or support. Please keep track of any "lost days" and report these to us at the end of the season.

• Appendices •

Cargo Attachments:

- Appendix I: Extra Cargo Information
- Appendix II Bergin_packing_manifesto.xls
- Appendix III: Anderson – Dibb Packing List

Appendix I Extra Cargo Information

Gayle Hagler, GATech

Cargo breakdown:

Estimated space needed: ~ 3/4 pallet

items:

- 14 ice core boxes (filled with glass sample bottles)
- 4 cardboard boxes (air sampler)
- 1 crate (optical instruments)
- 1 black hardigg (optical instruments)
- 2 brown boxes (laboratory instrument, optical instrument)
- 3 small grey hardigg cases: pumps, tools, lab materials, etc
- 2 very small brown boxes: chemicals
- 1 bundle of poles

Casey Anderson, UNH.

We have 9 packages:

- 1 big black box
- 3 white boxes
- 1 large green hardigg
- 1 ice core box
- 2 crates
- 1 wooden pump box

Attached is a list of what is inside each parcel. The sizes and weights are not listed here, they are just on CTS. I think it should come to around ½ pallet, 1300 lbs.

From Erika, UW

Cargo breakdown: estimated space needed: 1.5 pallets

Items already shipped:

- 1 silver (60"x25"x30") crate (laminar flow hood, hi-vol sample filters and charts)
- 1 wooden (57"x3"x48") crate (laminar flow hood panel)

To be shipped (and therefore estimates):

- ~15 ice core boxes (glass and PE sample bottles)
- ~7 ice core boxes (foil/teflon sample bags)
- ~6 coolers (gloves, clean suits, bags, sample scrapers, sample tubes, etc)
- 1 cardboard box (shovels)
- 6 cardboard boxes (PE bins)

to be carried with on travel date:

- 3 coolers (80 glass sample bottles with isotopically labeled snow)

Bergin Packing Manifesto

Tracking Code GS-HaglerG-0000-

ShipmentID: 750

Item#	Description	Value	Comment ...
1	glass sample bottles	100	ice core box #1

Tracking Code GS-HaglerG-0001-

ShipmentID: 750

Item#	Description	Value	Comment ...
1	glass sample bottles	100	ice core box #2
2	clean room wipes	30	

Tracking Code GS-HaglerG-0002-

ShipmentID: 750

Item#	Description	Value	Comment ...
1	glass sample bottles	100	ice core box #3

Tracking Code GS-HaglerG-0003-

ShipmentID: 750

Item#	Description	Value	Comment ...
1	glass sample bottles	100	ice core box #4

Tracking Code GS-HaglerG-0004-

ShipmentID: 750

Item#	Description	Value	Comment ...
1	glass sample bottles	100	ice core box #5

Tracking Code GS-HaglerG-0005-

ShipmentID: 750

Item#	Description	Value	Comment ...
1	glass sample bottles	100	ice core box #6

Tracking Code GS-HaglerG-0006-

ShipmentID: 750

Item#	Description	Value	Comment ...
1	glass sample bottles	100	ice core box #7

Tracking Code GS-HaglerG-0007-

ShipmentID: 750

Item#	Description	Value	Comment ...
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1	glass sample bottles	100	ice core box #8
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Tracking Code GS-HaglerG-0008-

ShipmentID: 750

Item#	Description	Value	Comment ...
1	glass sample bottles	100	ice core box #9

Tracking Code GS-HaglerG-0009-

ShipmentID: 750

Item#	Description	Value	Comment ...
1	glass sample bottles	100	ice core box #10

Tracking Code GS-HaglerG-0010-

ShipmentID: 750

Item#	Description	Value	Comment ...
1	glass sample bottles	100	ice core box #11

Tracking Code GS-HaglerG-0011-

ShipmentID: 750

Item#	Description	Value	Comment ...
1	glass sample bottles	100	ice core box #12

Tracking Code GS-HaglerG-0012-

ShipmentID: 750

Item#	Description	Value	Comment ...
1	glass sample bottles	100	ice core box #13
2	quartz fiber filters	100	
3	clamps	20	
4	pvc elbows	20	

Tracking Code GS-HaglerG-0013-

ShipmentID: 750

Item#	Description	Value	Comment ...
1	ice core box #14	100	
2	quartz filters	100	
3	sterile sample bags	100	
4	sterile spatulas	20	
5	tape measure	5	
6	saw	10	
7	clean room suits	200	
8	bamboo skewers	5	

9	glass funnels	150	
10	filtration system	100	
11	rubber bulbs	10	
12	plastic bottles	20	
13	Nuclepore filters	100	

Tracking Code GS-HaglerG-0014-

ShipmentID: 750

Item#	Description	Value	Comment ...
1	TOC instrument, box #15	25000	
2	plastic filter holders	100	
3	wash bottle	5	
4	TOC accessories	100	

Tracking Code GS-HaglerG-0015-

ShipmentID: 750

Item#	Description	Value	Comment ...
1	LAISAIR, box #16	10000	
2	LAISAIR accessories	100	

Tracking Code GS-HaglerG-0016-

ShipmentID: 750

Item#	Description	Value	Comment ...
1	metal rack	100	#17
2	ring stands and clamps	200	
3	Garmin flow meter	500	
4	Dry gas meter	500	
5	Wind sensors and datalogger	2000	
6	Solar sensors and datalogger	2000	
7	copper tubing	75	
8	power strips (2)	20	
9	extension cords (3)	100	
10	rope	20	
11	PSAP optical instrument	5000	
12	Filter holder set-up (critical orifice, inlet, cyclones, filter holders)	1000	
13	Hepa filters (4)	100	
14	Wash bottle	5	
15	Black carbon powder in plastic bottle, measuring spoon	5	
16	Pipettors (2)	300	
17	Pipet tips (2 boxes)	50	

Tracking Code GS-HaglerG-0017-

ShipmentID: 750			
Item#	Description	Value	Comment ...
1	toolbox with tools	500	grey hardigg box, #18
2	carbon vane pump	200	
3	hex wrenches	50	
4	baking pans	40	
5	GPS	100	
6	Voltmeter	15	

Tracking Code GS-HaglerG-0018-			
ShipmentID: 750			
Item#	Description	Value	Comment ...
1	scale	200	grey hardigg box, #19
2	carbon vane pump	200	
3	baking pans	20	

Tracking Code GS-HaglerG-0019-			
ShipmentID: 750			
Item#	Description	Value	Comment ...
1	glass pipet tips	200	grey hardigg box, #20
2	vacuum flasks	200	
3	baking pans	40	
4	baked foil	5	

Tracking Code GS-HaglerG-0020-			
ShipmentID: 750			
Item#	Description	Value	Comment ...
1	phosphoric acid, 85%, 0.5 L (1 bottle)	50	box #21

Tracking Code GS-HaglerG-0021-			
ShipmentID: 750			
Item#	Description	Value	Comment ...
1	phosphoric acid, 6 M, 0.6 L (split between 2 containers)	100	box #22

Tracking Code GS-HaglerG-0022-			
ShipmentID: 750			
Item#	Description	Value	Comment ...

1	15% ammonium persulfate, 0.3 L (split between 2 containers)	50	box #23
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Tracking Code GS-HaglerG-0023-
ShipmentID: 750

Item#	Description	Value	Comment ...
1	potassium hydrogen phthalate, 500 ppm standards (4 X 100 mL)	50	box #24

Tracking Code GS-HaglerG-0024-
ShipmentID: 750

Item#	Description	Value	Comment ...
1	skis and ski poles	600	box #25
2	pvc pipes	20	

Tracking Code GS-HaglerG-0025-
ShipmentID: 750

Item#	Description	Value	Comment ...
1	carbon monoxide instrument	10000	red hardigg, #26
2	laptop	1000	
3	plastic tubing	20	
4	gas regulator	100	
5	Labjack	200	
6	spare swagelock fittings	100	

Tracking Code GS-HaglerG-0026-
ShipmentID: 750

Item#	Description	Value	Comment ...
1	hi-volume sampler top	1000	cardboard box, #27

Tracking Code GS-HaglerG-0027-
ShipmentID: 750

Item#	Description	Value	Comment ...
1	hi-vol sampler base	1000	box #28

Tracking Code GS-HaglerG-0028-
ShipmentID: 750

Item#	Description	Value	Comment ...
1	hi-volume sampler motor enclosure	500	box #29

2	extra motor and parts	500	
3	manual	10	
4	filter holder	100	
5	extension cord and surge protector	50	
6	flow measurement manometer	100	

Casey Anderson / Jack Dibb Summit 2006 Packing List

GS-AndersC-0001 Black box

DI water machine
Extra pump
Ring stand
3 Pump rebuild kits
1 extension cords
2 ethernet cables
Cordless drill
Drill bits
Rope
Sievers reagent
OC and Cu standards
Plastic bin with small items: electrical connectors, pipette ends, tweezers, etc.
Inlet insulation

Box:

Pipette and tips

Box:

Cyclone
3 inlet filter holders
Monolith denuder casing
2 small head filters
2 unopened zefluor filter packs
3 half used zefluor filter packs

GS-AndersC-0002 Green Box

2 syringe pumps
2 mass flow controllers

GS-AndersC-0003 White container 1:

Wypalls
Jug for DI source
2 tarps

Box:

2 extra flow controllers
Carbon paper denuder
Carbon paper
Ring stand accessories
Spare UV lamp
AA batteries
D batteries
thermocouple

Box:
Extra water traps
Extra plastic bottles for water traps
9 glass bottles for making standards (100ml)

Box:
Swage fittings

Box:
191 sample bottles

Mist chambers:

Box: 2x16

Box: 1x16; 2x30

Box: 1x30; 2x16

Tool bag:

copper tubing cutter
teflon tubing cutter, large and small
2 crescent wrenches
head filter wrench
inlet filter wrenches
screwdrivers, flat and phillips
tape
green wrench
pliers
tape measure
wire strippers
small flashlight
allen wrench set
wire cutters
3/4 & 7/8 wrench
Nut driver
string

GS-AndersC-0004 White container 2:

Extra pump

3 10 L jugs

Boots

Inlet insulation

Space heater

1 extension cord

Box:

MC: 2x16; 2x30

Box:

2 Hepa filters

Box with 2 monolith denuders

500 ml flask

100 ml flask

GS-AndersC-0005 White container 3:

200' copper tubing
2 50' rolls bev-a-line

Plastic bin:

1/16" tubing and fittings
1/8" tubing and fittings
Head filters
Inlet filters
Hi/Lo thermometer
Extra flow controller cord
Velcro
Nylon unions
Small bungees
Small Ziploc bags
Extra wire connectors
Tweezers
Small syringe
Zip ties
Parafilm
Purple gloves
Dishwashing glove
Tape: teflon, labeling, plastic

Box:

2 inlet heaters
Balance
Heat gun
Box with small tubing and fittings

GS-AndersC-0006 Pump box

Pump
Pump outlet

GS-AndersC-0007 Firn Probe

GS-AndersC-0008 Firn Probe Bonnet

GS-AndersC-0009 Ice Core Box – snow sample bottles

