

PROJECT INFORMATION

Lead Principal Investigator	James Butler
Institute	National Oceanic & Atmospheric Administration, Earth System Research Laboratory, Global Monitoring Division
Project Title / Grant #	NOAA Summit Clean Air and Ozonsonde Program (NOAASummit)
NSF Program and Manager	Other Agency - NOAA, Ms. Renee Crain
PFS Project Manager	Sandra Starkweather

LOGISTICS SUMMARY

For this NOAA program, on-site Summit science technicians complete a suite of year-round measurements on behalf of NOAA researchers. These measurements began in the mid 1990s and are ongoing. NOAA representatives visit Summit annually to install/maintain instruments, train science technicians, and conduct measurements. Starting in 2005, NOAA corps members began serving rotations as Summit science technicians during the summer and mid-late winter phases. When NOAA Corps officers are not available, NOAA will staff Summit with another qualified technician. Monitoring projects on site include: Carbon Cycle Gas sampling flasks; Black Carbon measurements (continuous); Halocarbons and trace species flask sampling; Station Meteorology; Stratospheric ozonsondes; Stratospheric water vapor sondes; Surface ozone, and an *in-situ* Gas Chromatograph for greenhouse gas measurements.

In 2008 in addition to ongoing work, researchers extended the ozonsonde experiment by launching about 20 balloons in April and again in July. NOAA augmented their staff on station for the July mission to accomplish this work. In the fall, NOAA provided one science technician for each of the three winter phases; the additional staffing means NOAA personnel are present at Summit Station nine months per year.

In February 2009, a NOAA staff member flew to Summit via the twin otter turnover flight to repair an instrument, departing the station on the return flight after about 1 week. During the summer of 2009, several NOAA staff members will rotate through for short deployments to do maintenance on the Temporary Atmospheric Watch Observatory (TAWO) instruments, tower and for familiarization with Summit operations. NOAA field coordinator Brian Vasel also will attend an on-site planning meeting at the end of August.

CPS support includes coordination of personnel / cargo transport to and from Summit, access to the station's infrastructure, purchase of ozone sondes, construction support and science technician support when NOAA researchers are not on-site.

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=NOAASummit

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

OUTSTANDING ACTIONS AND NOTES

Issue	Responsibility	Date Completed
Review support plan for accuracy and distribute to all field team members	PI	
Obtain all necessary permits for fieldwork	PI	Included in Summit comprehensive permit
Visit all hyperlinks and review all documents referred to in the support plan	Entire field team	
Contact the GEOSummit Science Coordination Office (SCO) sco at summitcamp.org regarding your project's plans for the season	PI	April 2, 2009

Complete medical clearance process 6-8 weeks before desired deployment date	Field team exempt due to limited stays	
Note: Passports are required for Air National Guard and international travel. It is a good idea to bring two IDs and to pack a copy of your passport in case the original is lost.	Entire field team	
Complete Critical Success Factors	PI	March 27, 2009

ALLOCATIONS AND SERVICES

Allocations from Inventory

Quant/Unit	Item
1-2 ea	Arctic Oven Sleep Tents (multiple deployments, 1-2 persons per deployment)
2-4 ea	Sleep Pads (multiple deployments, 1-2 persons per deployment)
1-2 ea	ECW issue gear (multiple deployments, 1-2 persons per deployment)
1-2 ea	Sleep Kits (multiple deployments, 1-2 persons per deployment)

Other Services

Project Allocations	Comments
Temporary Atmospheric Watch Observatory (TAWO) maintenance	CPS will procure an additional 10' tower section and install it on the TAWO tower per the PI's request. Since the timing of the tower install cannot be coordinated with NOAA personnel site visits, Brian Vasel will prep and outline the TAWO tower instrument relocations during his April visit. CPS science techs will move instruments after the tower is extended.
Addition of solar instruments to the TAWO roof	NOAA staff will visit and install additional solar radiation instruments on the TAWO roof. Install will be coordinated with Brian Vasel's August visit. Researchers will require all available bench space in TAWO during installation, and room for an additional computer and data logger in existing rack space after install. They will also require a roof penetration for instrument lines to be made by CPS construction staff or Brian Vasel.
Access to TAWO	As per discussions with PI, there will be no snow removal around TAWO to improve access. The PI understands that access to the facility will be more laborious (involve hand shoveling) during the upcoming winter.
Special electrical service	Uninterruptible power supply (UPS) in TAWO, to be maintained by CPS.
Flask Crates, Special shipping considerations: Flasks should return from Scotia to Boulder via commercial air carrier cargo (or via NOAA FedEx acct.).	To accommodate limited flask crate supplies, NOAA will occasionally need to ship flask crates during turnover flights. Fragile and Do Not Freeze shipping instructions to be specified by PI as applicable.
Gas Cylinders: Nitrogen, Helium, P5	Gas cylinders will be ordered and paid for by NOAA. Shipping paid by NOAA. NOAA will provide all regulators for the cylinders. CPS will stage cylinders at TAWO or in balloon barn as appropriate. Other cylinders should be stored on deck at TAWO.
Ozone sondes	CPS will purchase a one-year supply of ozone sondes for this project.
Balloon Barn	CPS will provide balloon launch and Helium storage space (minimum 4 cylinder storage) for this project. There will be a significant disruption to the Balloon Barn launch area from June 19 thru mid-August. During this time, the techs will need to

	launch balloons outside or coordinate with mechanics to prep launches out of the old Shop.
Daily CPS Science Technician Tasking (summer only).	~1 hour per day of instrument checks.
Storage space: for white flask crates	Indoor heated storage area needed to store sampled CCGG and HATS flasks. ~20sq ft.
Summer Clean Air Sector Management Protocol	NOAA staff participated in a pre-season clean air policy review and has signed off on the new protocol for this season's operation. See the Appendix.
Summer Planned Electrical Power Outages	CPS techs are empowered to coordinate and conduct all shutdowns and startups related to planned power outages. They will put an entry into each instrument log noting the outage.
Participate in End-of-Season on-site planning meeting	Brian Vasel has been invited to participate in the EOS planning meeting during the Aug 17-24 flight week at Summit Station. Brian's participation will be vital to planning the required 2010 move of the facility toward the current Flux/Sat Camp location.

LOCATION INFORMATION

Please visit <http://www.polar.ch2m.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 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.polar.ch2m.com/> and navigate to Greenland > Calendars/Schedules.

If you need **technical support** with the Cargo Tracking System, contact [Mike Dover](#) .

Customs instructions are available on our Web site at <http://www.polar.ch2m.com/> (go to Greenland > Customs). More information is available via the *Greenland Guide*, under Greenland on the CPS site. The following is our current understanding of your overall cargo requirements:

Cargo List

Items	Weight/Cube
Northbound - CCGG flasks supply (7 White plastic crates per year) (Conway/Heller)	~420 lbs / 42 cube Via C-5/Stewart
Northbound - Cylinders: Nitrogen (x12), P5 (x10)	Via C-5/Stewart
Northbound - HATS flasks supply (3 White plastic crates per year) (Montzka/Siso)	~180 lbs / 18 cube
Northbound - Helium re-supply (20 cylinders)	Via C-5/Stewart
Northbound- Cylinder: Freon (x1) for balloons	~131 lbs / 3 cube
Southbound - CCGG flasks supply (7 White plastic crates per year) (Conway/Heller)	~420 lbs / 42 cube
Southbound - Cylinders: Nitrogen (x??), P5 (x??) for GC	~2458 lbs / 58 cube
Southbound - HATS flasks supply (3 White plastic crates per year) (Montzka/Siso)	~180 lbs / 18 cube

Southbound - Helium empties (?? cylinders)	~5440 lbs / 128 cube
Southbound- Cylinder: Freon (x1) for balloons	~66 lbs / 3 cube
Northbound – Ozone sondes, balloons	

FIELD TEAM INFORMATION

Name	Location	Date In	Date Out	Email
Clarke, Andrew	Kangerlussuaq	2/5/2009	2/16/2009	clarkean at gmail.com
	Summit	2/9/2009	2/15/2009	
Vasel, Brian	Kangerlussuaq	4/19/2009	5/1/2009	See below
	Summit	4/21/2009	4/29/2009	
	Kangerlussuaq	8/17/2009	8/24/2009	
	Summit	8/18/2009	8/21/2009	
Schnell, Russ	Kangerlussuaq	7/7/2009	7/14/2009	See below
	Summit	7/9/2009	7/12/2009	
Dutton, Geoff	Kangerlussuaq	7/27/2009	8/6/2009	
	Summit	7/29/2009	8/4/2009	
Johnson, Bryan	Kangerlussuaq	7/27/2009	8/6/2009	See below
	Summit	7/29/2009	8/4/2009	

PROJECT CONTACT INFORMATION

Research Team

Role	Name	Email	Phone / Fax
Principal Investigator	James Butler	James.H.Butler at noaa.gov	303.497.6898 / 303.497.6975
Co-PI	Thomas Conway	Thomas.J.Conway at noaa.gov	303.497.6681 / 303.497.6290
Co-PI	Bryan Johnson	Bryan.Johnson at noaa.gov	303.497.6842 / 303.497.5590
Co-PI	Samuel Oltmans	Samuel.J.Oltmans at noaa.gov	303.497.6676 / 303.497.5590
Co-PI	Russell Schnell	Russell.C.Schnell at noaa.gov	303.497.6733 / 303.497.5590
Co-PI	James Elkins	James.W.Elkins at noaa.gov	303.497.6224 / 303.497.6290
Field Coordinator	Brian Vasel	Brian.Vasel at noaa.gov	303.497.6655 / 303.497.5590

CPS Team Members

Contact for	Name	Email	Primary Phone(s)
Summit operations	Sandy Starkweather	Sandy at polarfield.com	Denver: 303.518.8714
Greenland on-island support	Mark Begnaud	Mark at polarfield.com	Denver: 720.320.6160 Greenland: 011.299.524218
Greenland on-island support, Cargo	Ed Stockard	Ed at polarfield.com	Greenland: 011.299.524281
Scotia operations & customs	Earl Vaughn	Earl.Vaughn at gmail.com	Scotia: 518.331.3103
Sat phones & comms	Roy Stehle	Roy.Stehle at sri.com	Menlo Park: 650.859.2552
Denver operations	Jill Ferris	Jill at polarfield.com	Denver: 720.320.6155

CPS Offices

Denver	Kangerlussuaq	Scotia
CH2M HILL Polar Services Western Office 8110 Shaffer Parkway	CH2M HILL Polar Services Attn: Name of Employee/Researcher	Earl Vaughn C/O 109 th Aerial Port Bldg. 20

Suite 150 Littleton, CO 80127 Tel: 303.984.1450/1439 Fax: 303.984.1445	Postboks 1015 DK-3910 Kangerlussuaq, Greenland Tel: 011.299.841598 Fax: 011.299.841599	Stratton Air Base Scotia, NY 12302-9752 Tel: 518.344.2635 Cell: 518.331.3103 Fax: 518.344.2537
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Summit Station

Winter	Summer
CH2M HILL Polar Services Western Office Attn: Name of Employee/Researcher 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 - Summit Station C/O Earl Vaughn 109 th Aerial Port Bldg. 20 Stratton Air Base Scotia, NY 12302-9752 Tel: 518.344.2635 Fax: 518.344.2537

Other

Organization	Internet	Phone
Summit Science Coordination Office (SCO)	http://www.geosummit.org sco at summitcamp.org	John Burkhart +47 96 82 5011

SAFETY, ENVIRONMENT, HEALTH and PERMITS

All science teams planning to conduct research in Greenland must complete an **annual application** in order to obtain approval from the Danish Polar Center (DPC). The application forms are available from the DPC at <http://www.dpc.dk/>. Applications are submitted directly through the DPC. For assistance with the application process, contact:

Poul Henrik Sorensen
E-mail: [phs at dpc.dk](mailto:phs@dpcc.dk)
Telephone: +45 3288 0100

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
Preservation of clean air sector through adherence to Clean Air Sector Management Protocol
Available and reliable power at TAWO

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.