

# Heard Island 2016

Presentation by  
Robert W. Schmieder  
Cordell Expeditions

9 Feb. 2016

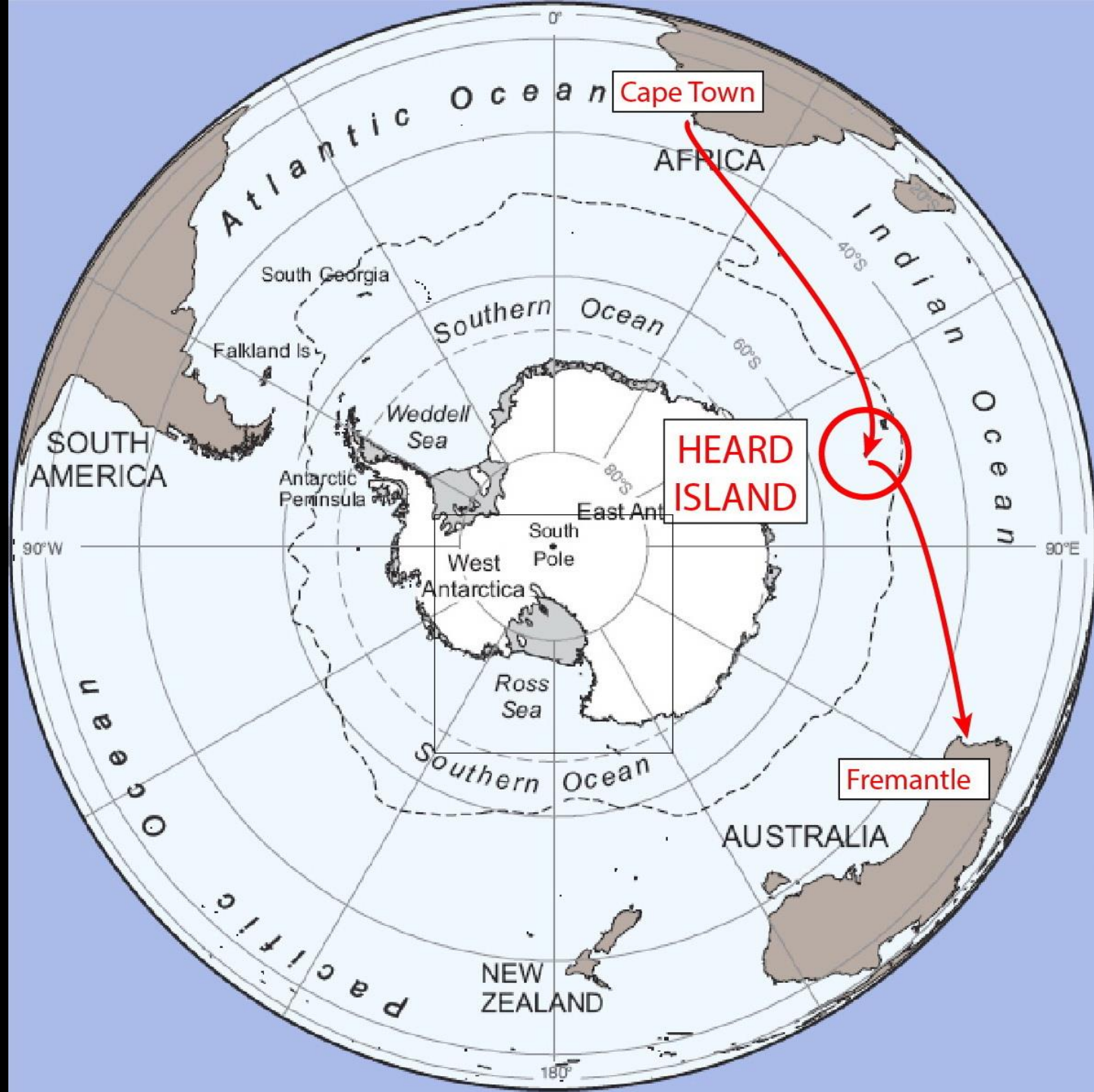


VKØEK

Heard Island 2016



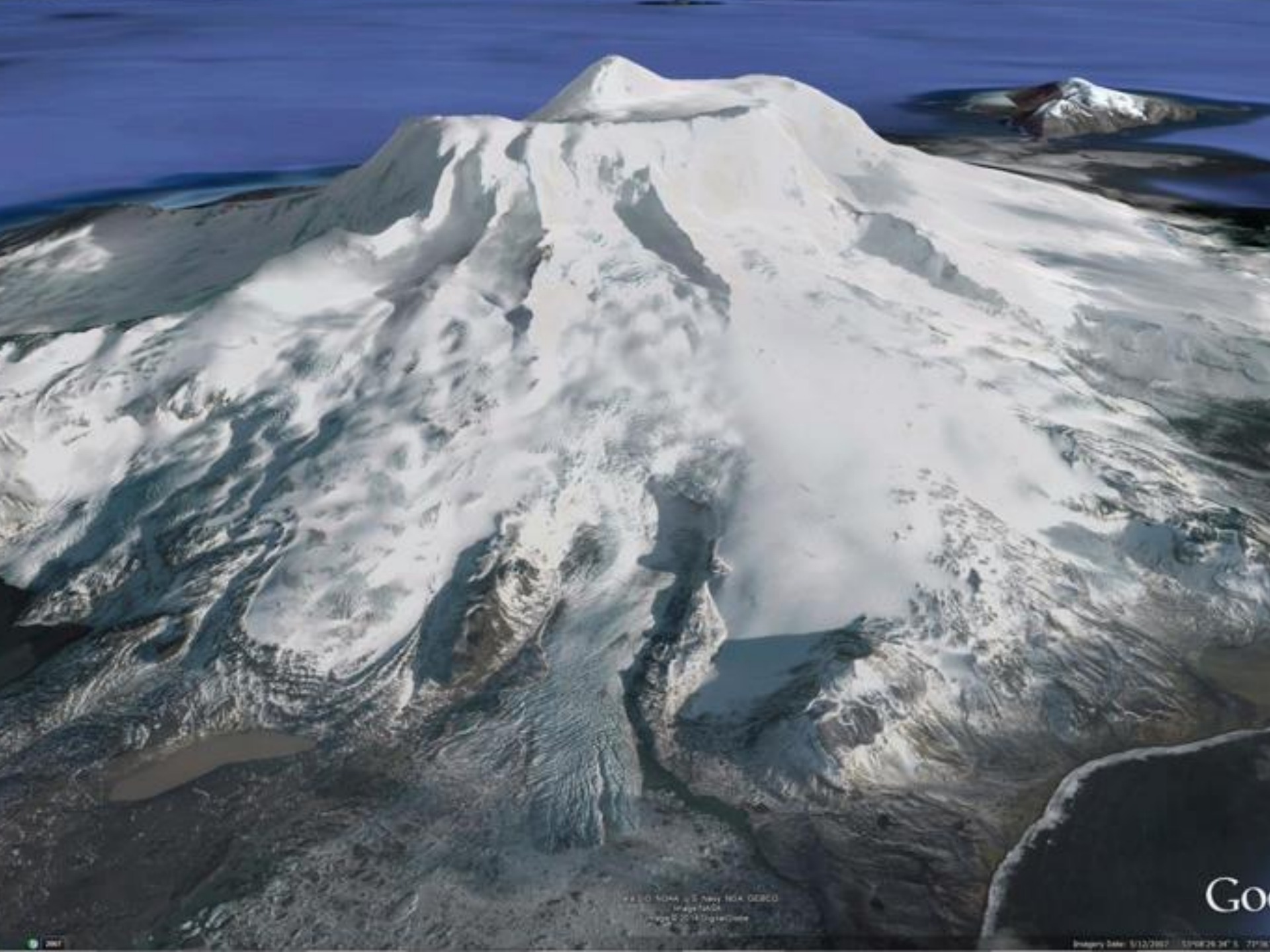
Heard Island







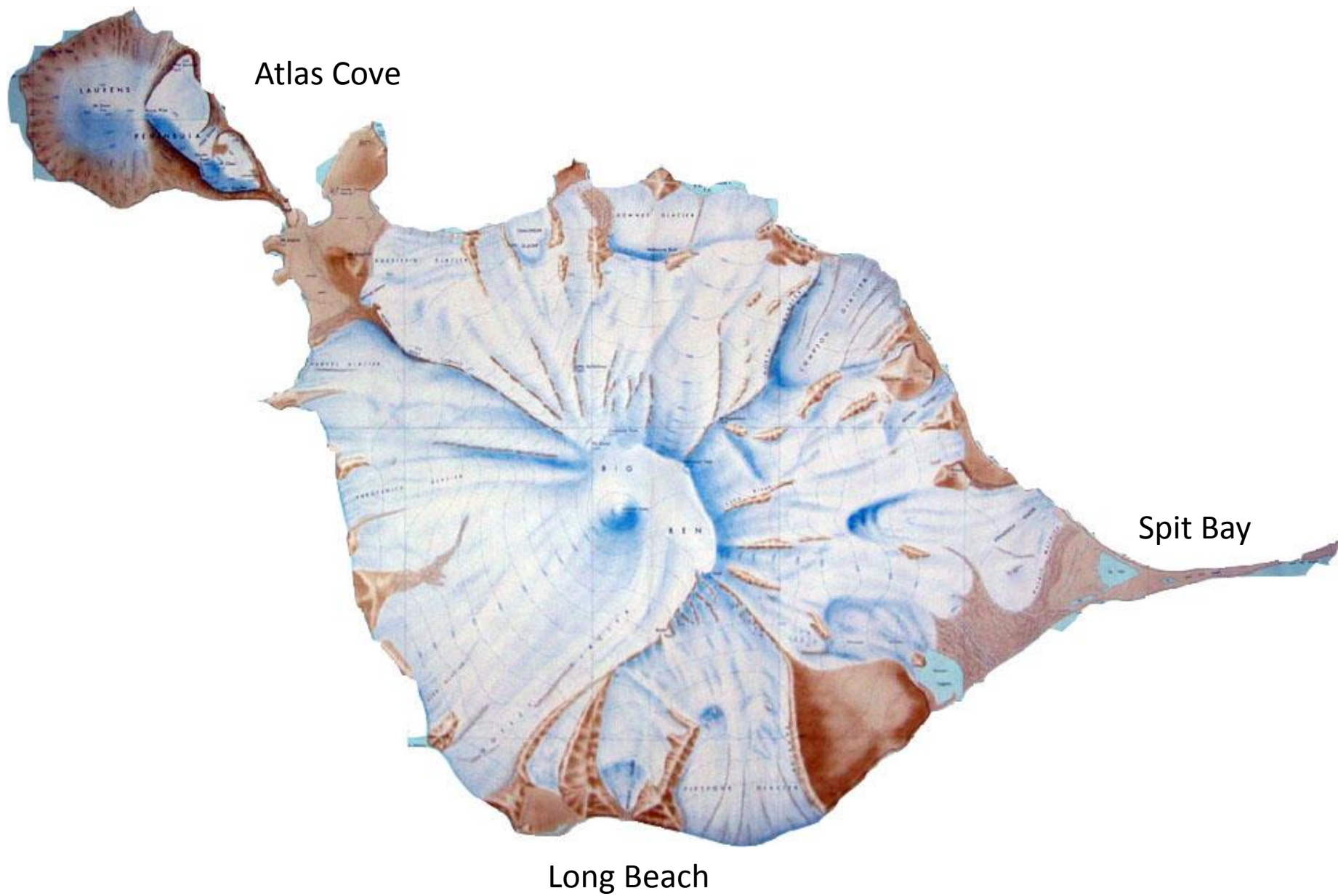




U.S. Navy NGA GEMO  
Imagery  
© 2014 DigitalGlobe

Go

Imagery Date: 5/12/2017 15°08'26.34" S 71°1'



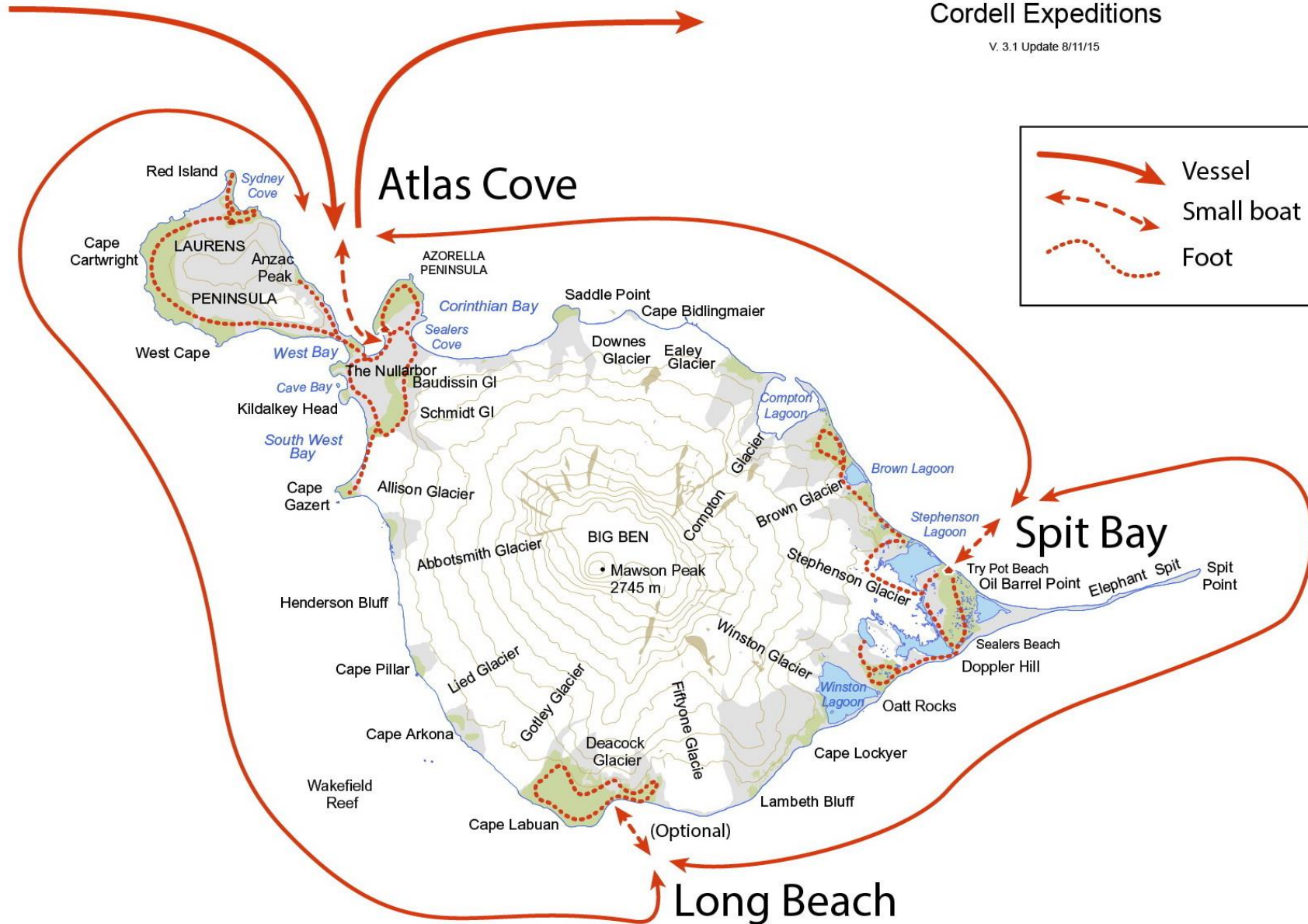
From Cape Town

To Fremantle

# Heard Island 2016

## Cordell Expeditions

V. 3.1 Update 8/11/15



Laurens Peninsula

Atlas Cove

VKØEK  
Campsite

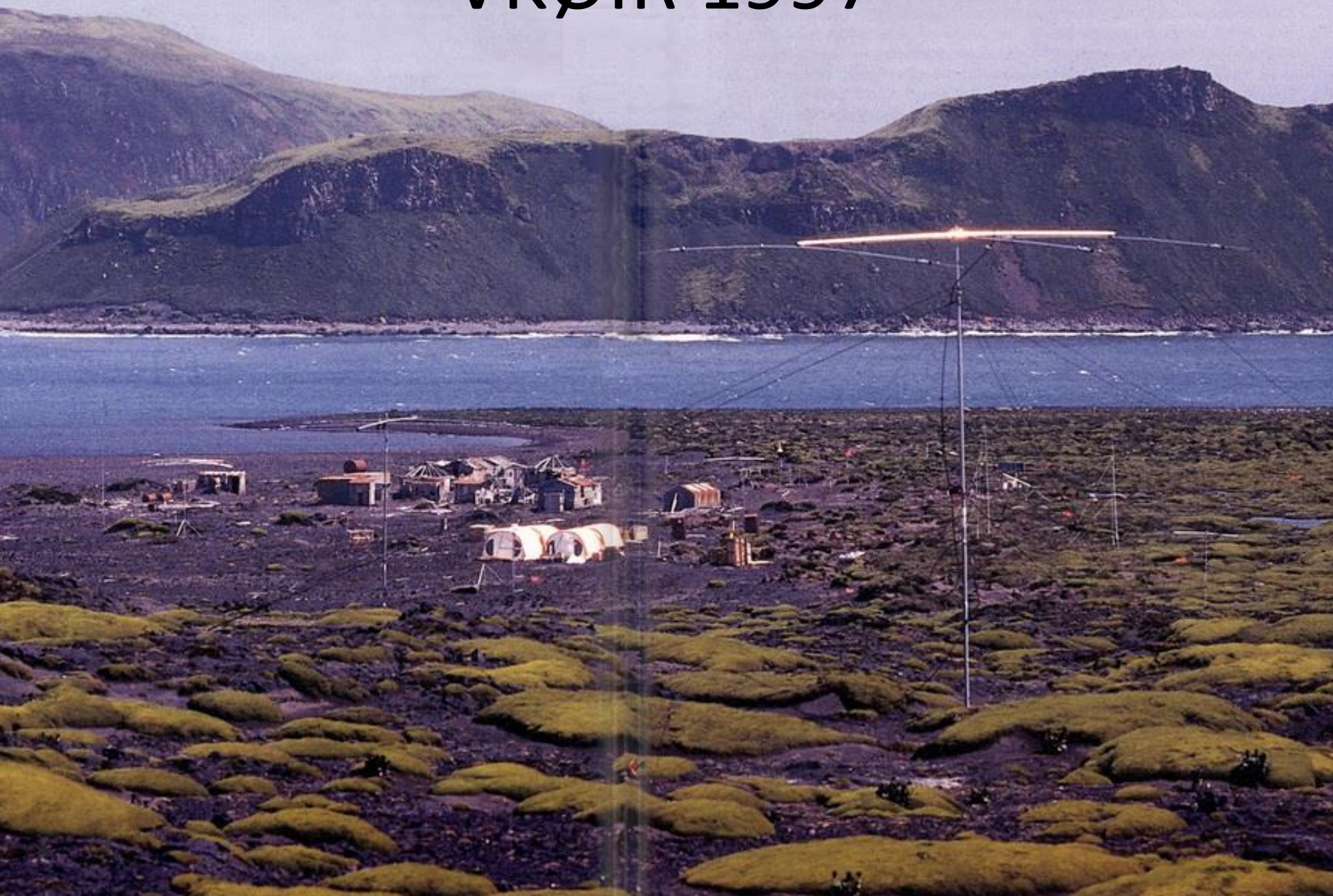
1947



1997

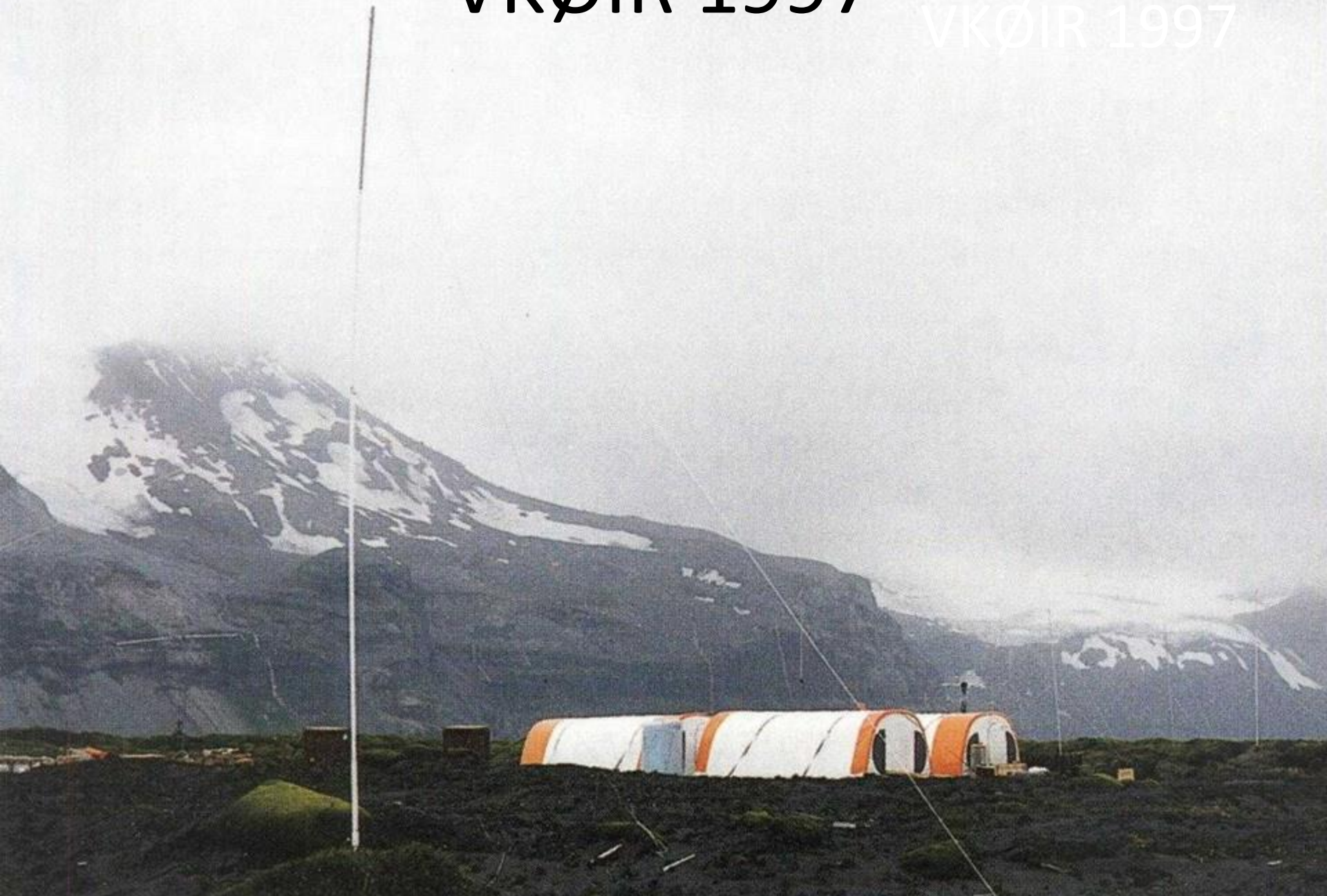


# VKØIR 1997



# VKØIR 1997

VKØIR 1997



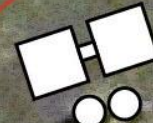




\* VKØEK

HDT Airbeams

● AAD Apple



AAD Tanks

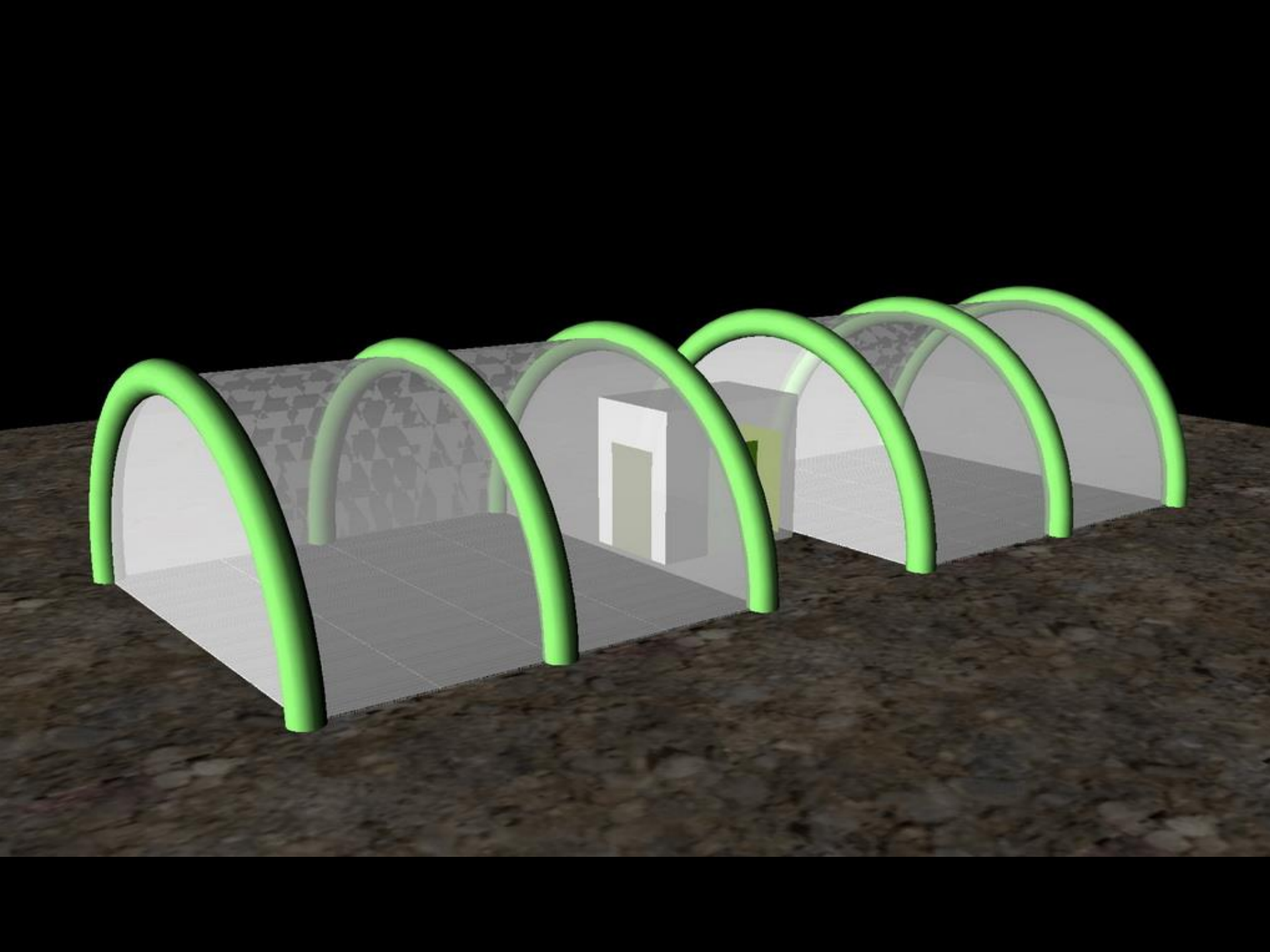
# VKØEK

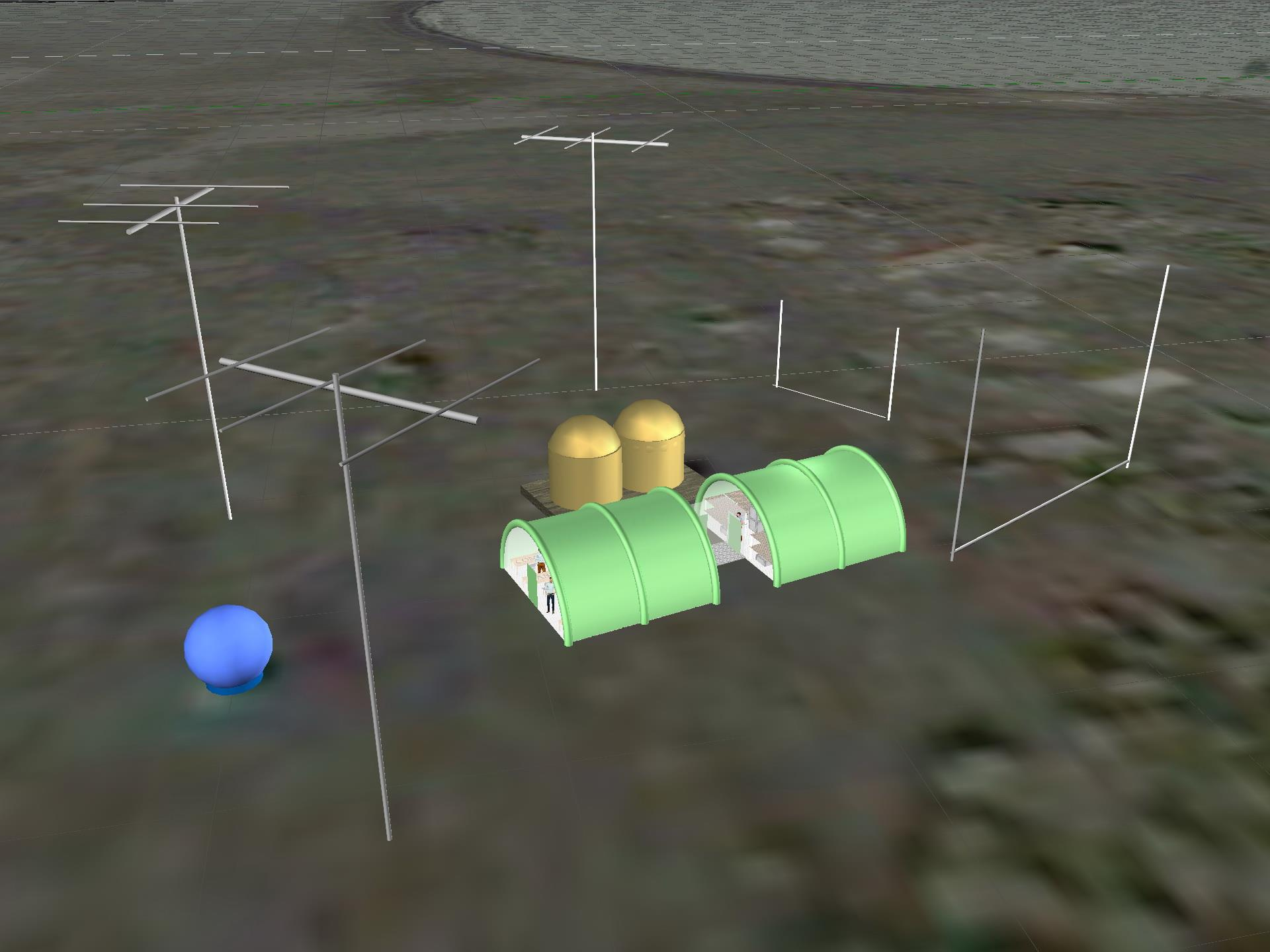
Mar-Apr, 2016

AAD  
Helo site

ANARE  
(Off limits)









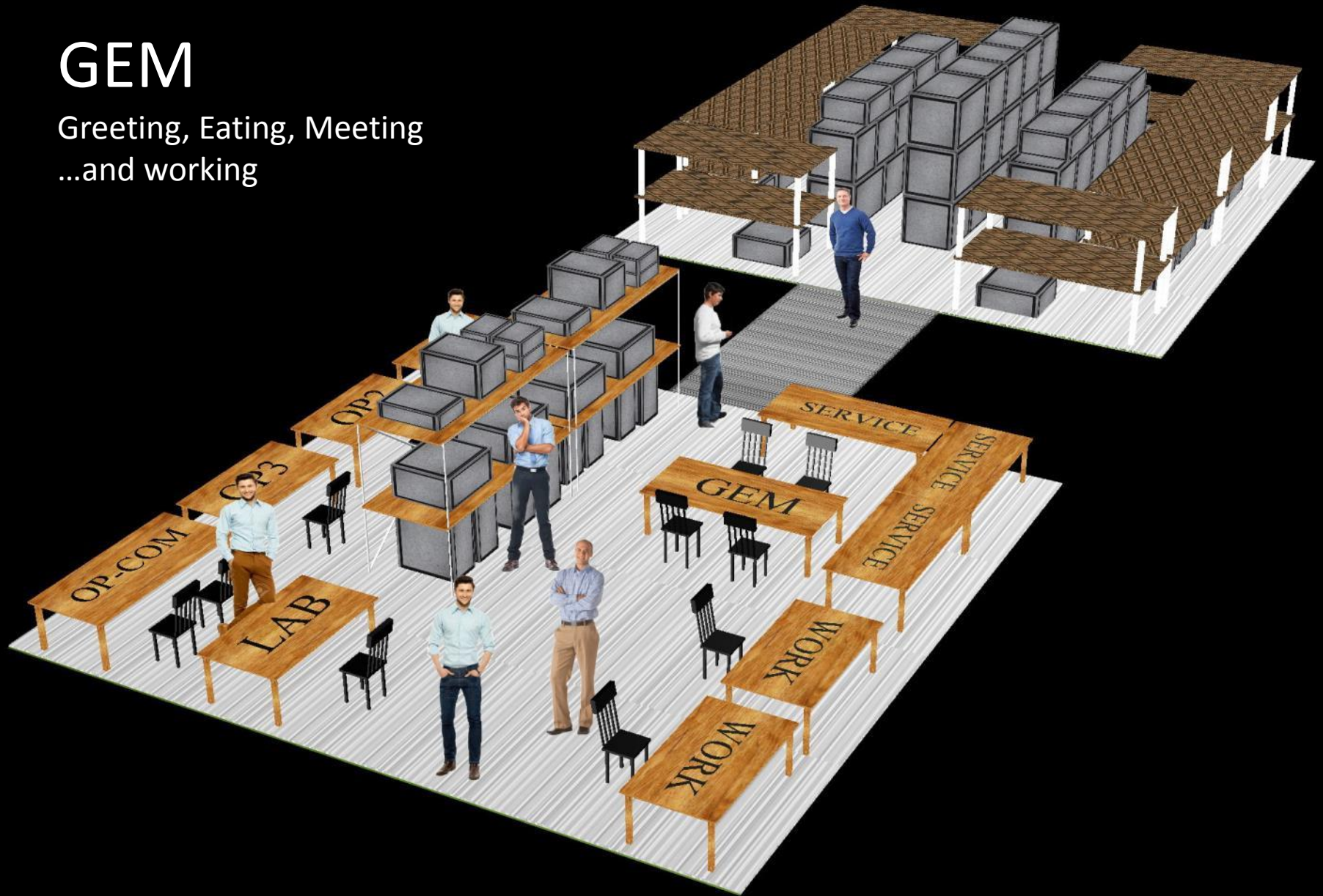
Dormitory

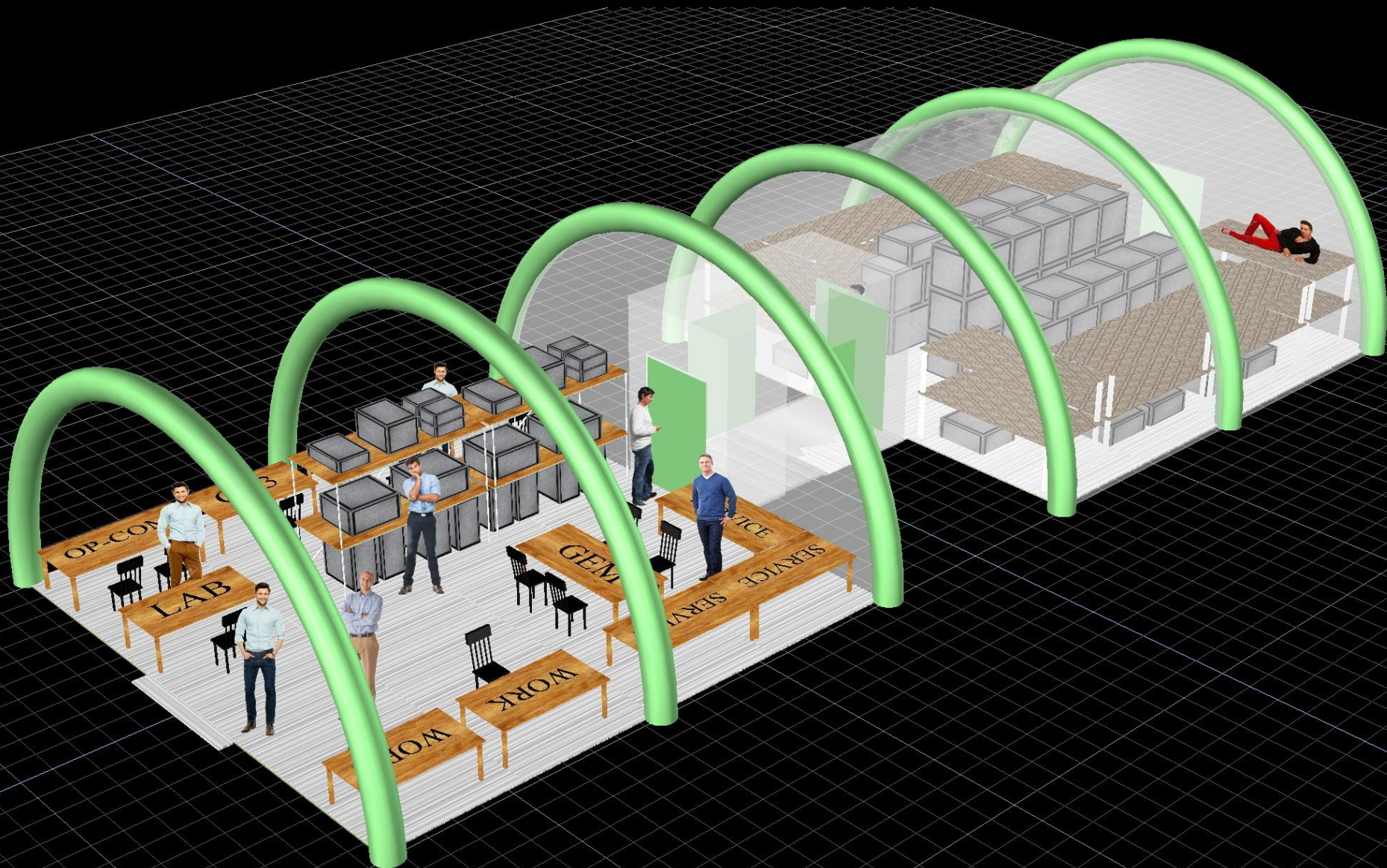


GEM

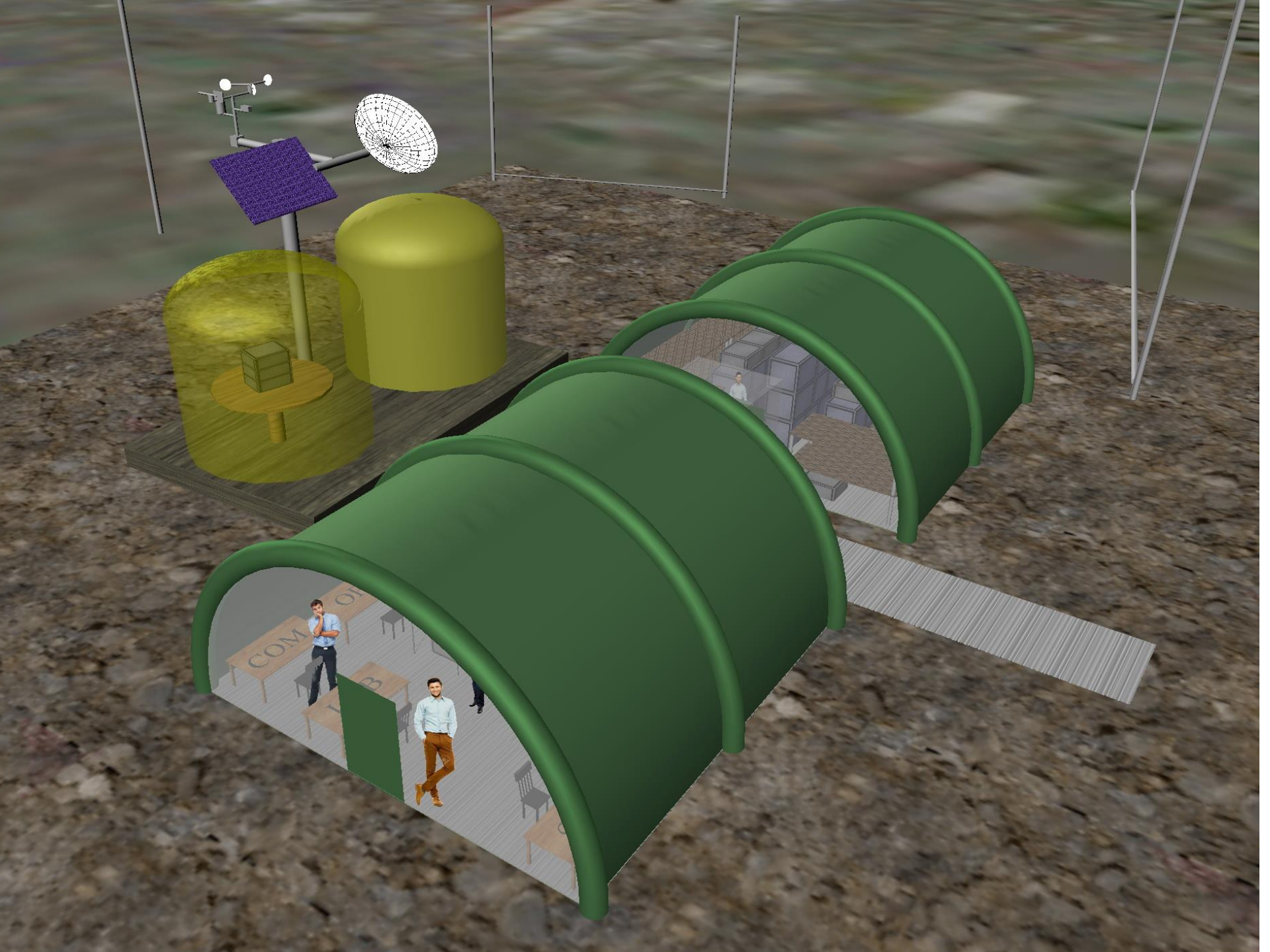
# GEM

Greeting, Eating, Meeting  
...and working





The main VKØEK campsite







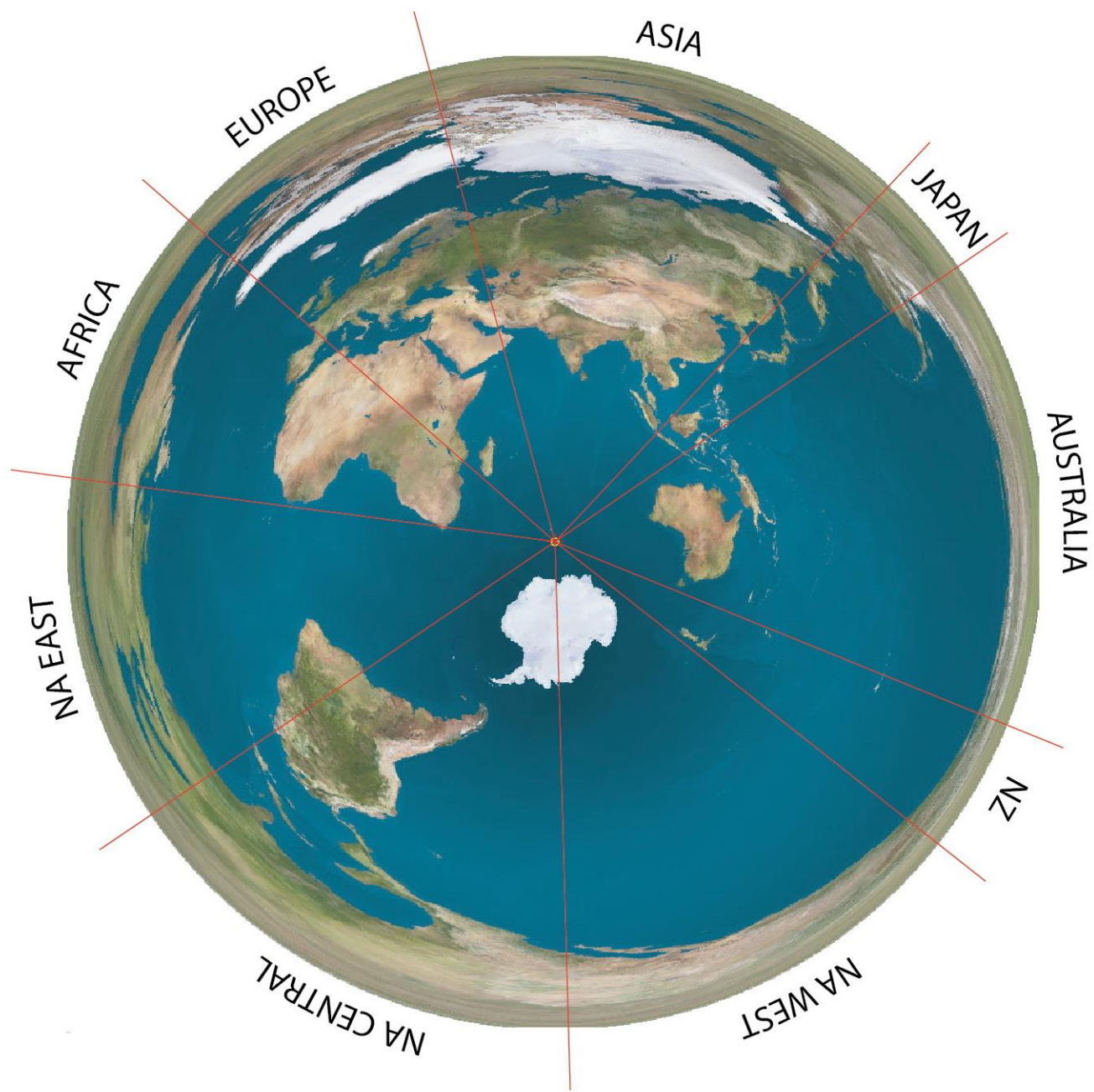
# Communications operations

## Goal:

- Log as many different amateur radio stations as possible
- Real-time communications
- Social media

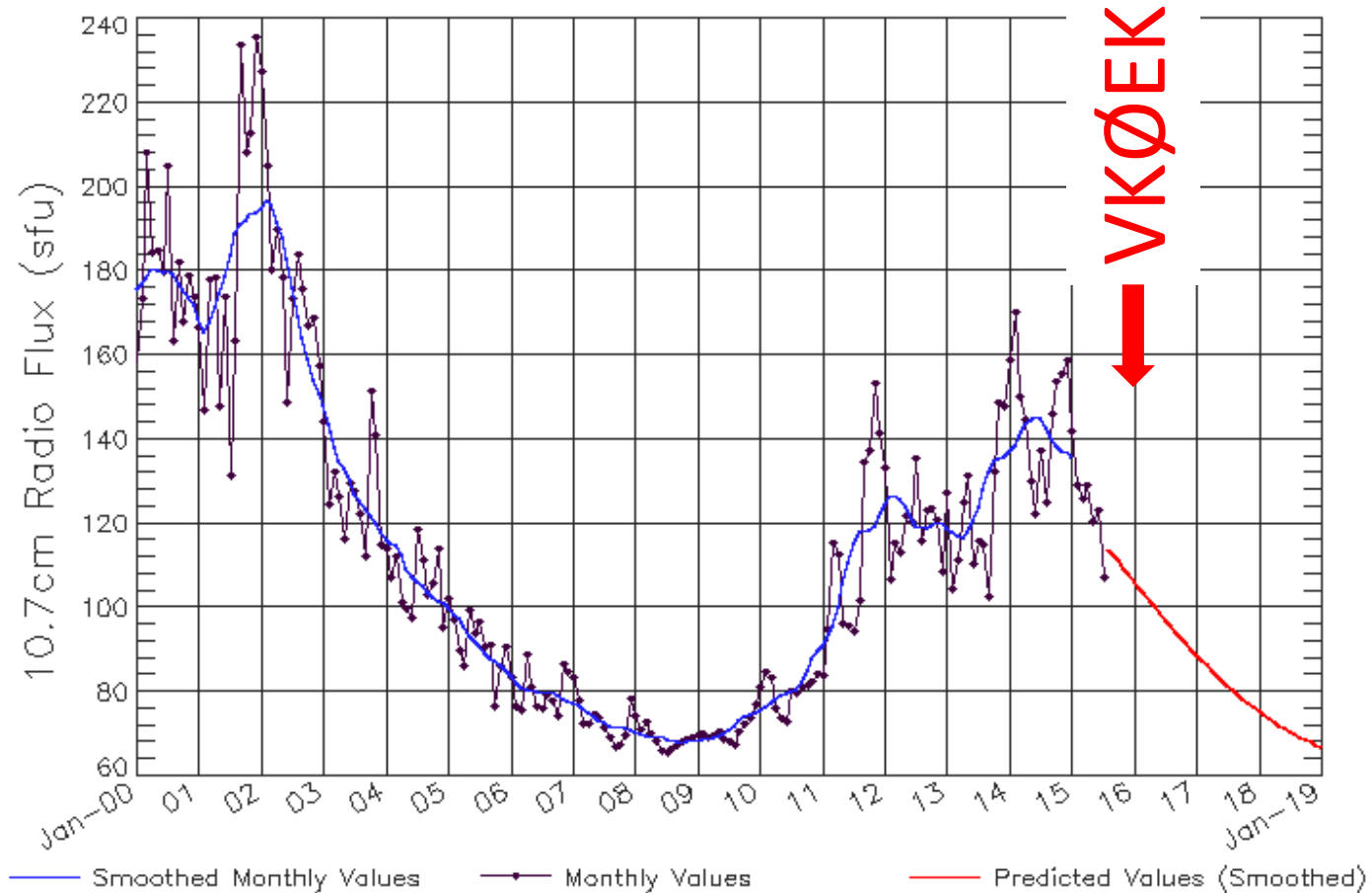
## Means:

- **Amateur radio stations** (6 stations, two locations, all-band, multimode)
- **DXA** (Real-time radio log online display)
- **Internet connection** (Inmarsat, Iridium)



# ISES Solar Cycle F10.7cm Radio Flux Progression

Observed data through Jul 2015



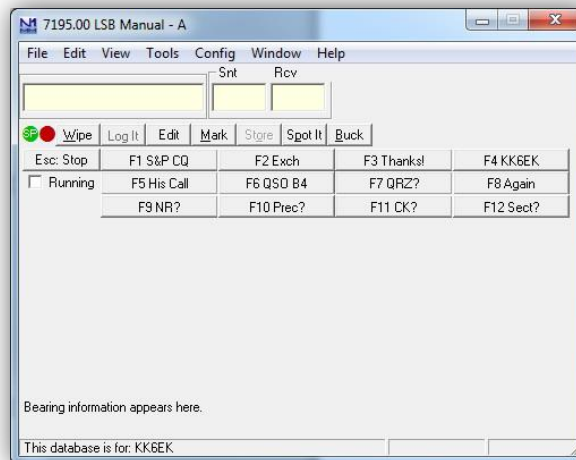
Updated 2015 Aug 8

NOAA/SWPC Boulder, CO USA

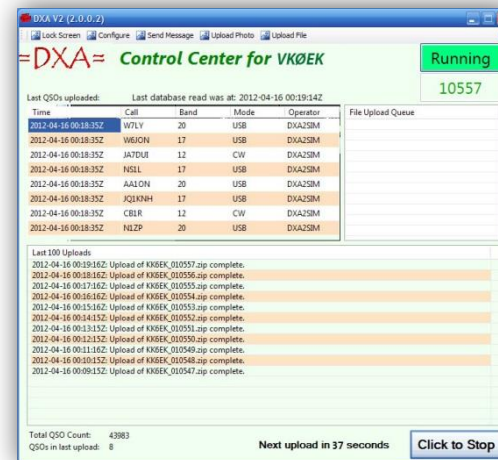
# Stations



Elecraft K3S

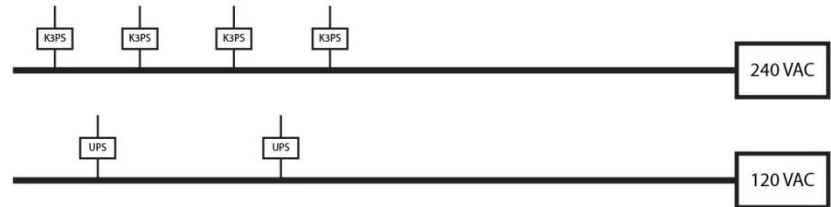
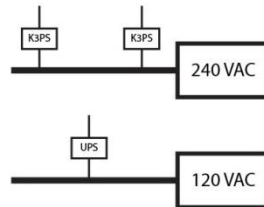
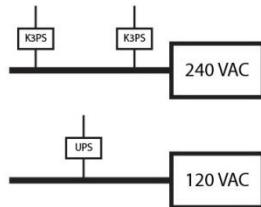
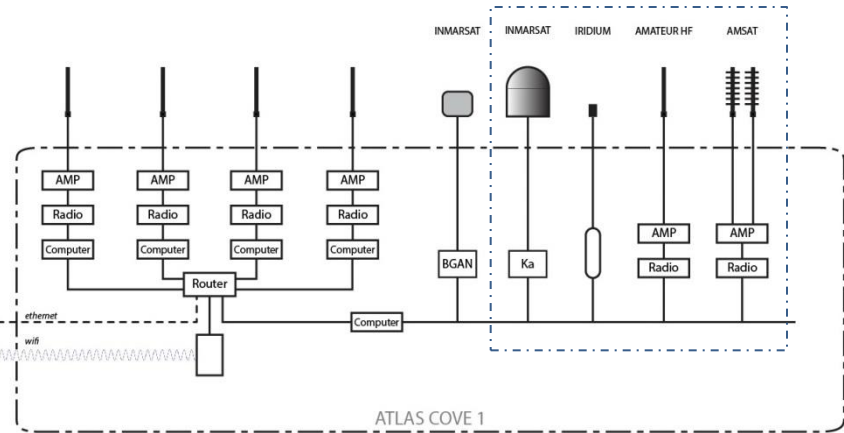
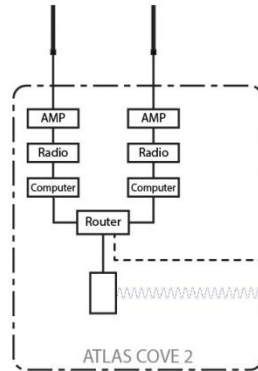
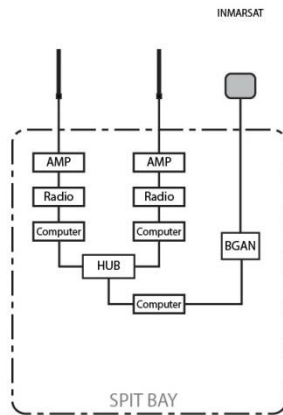


N1MM+

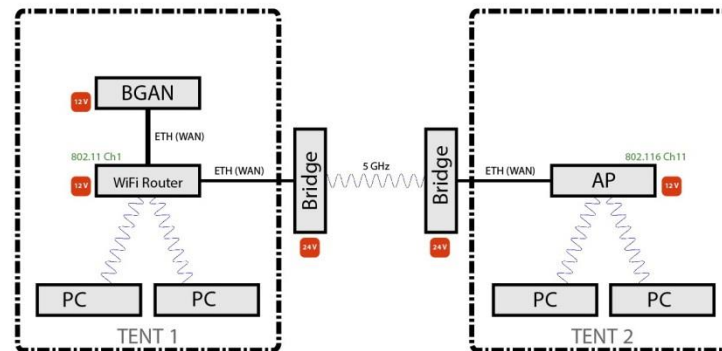


DXA3

# Basic wiring diagram for VKØEK

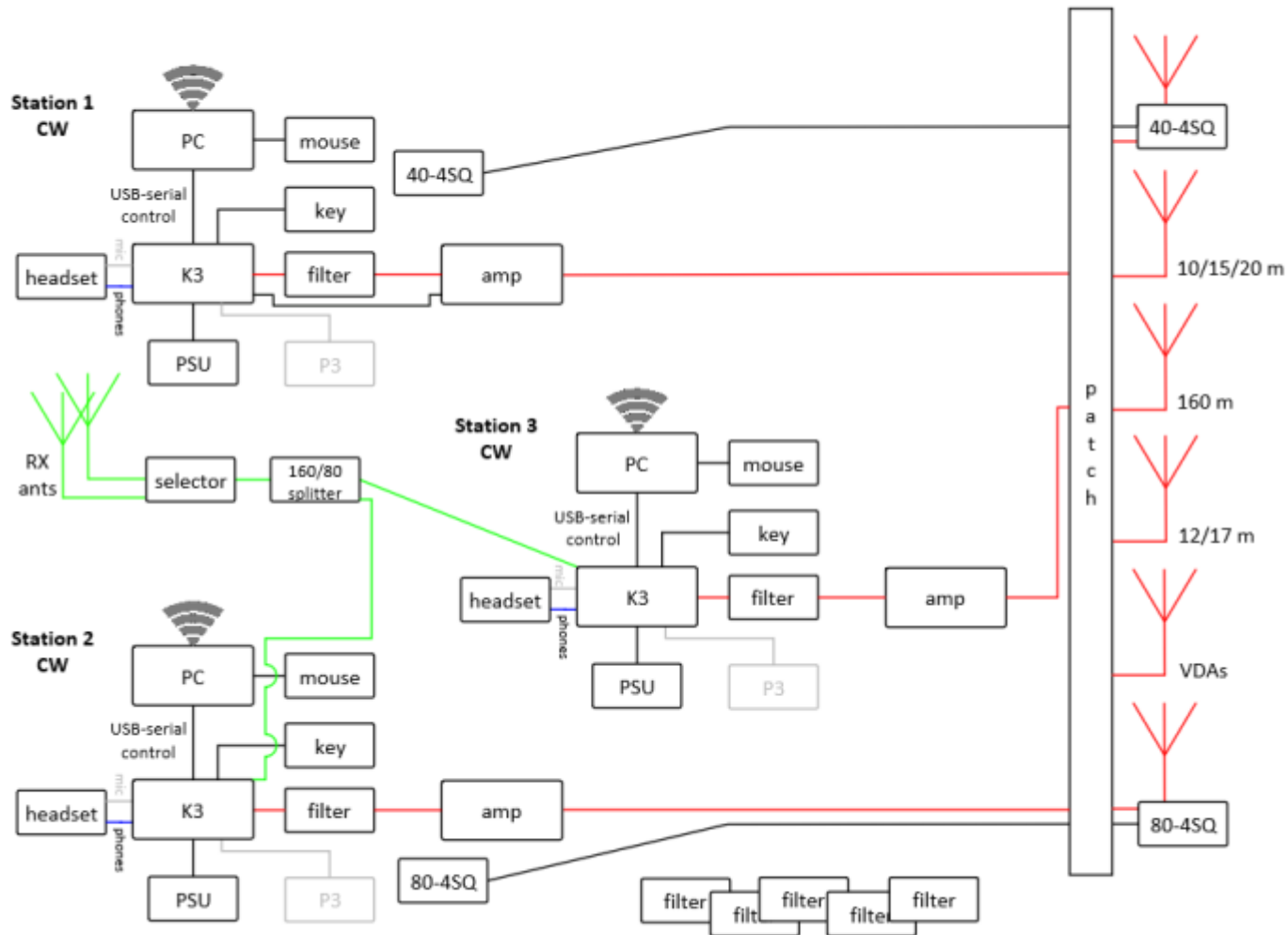


WiFi

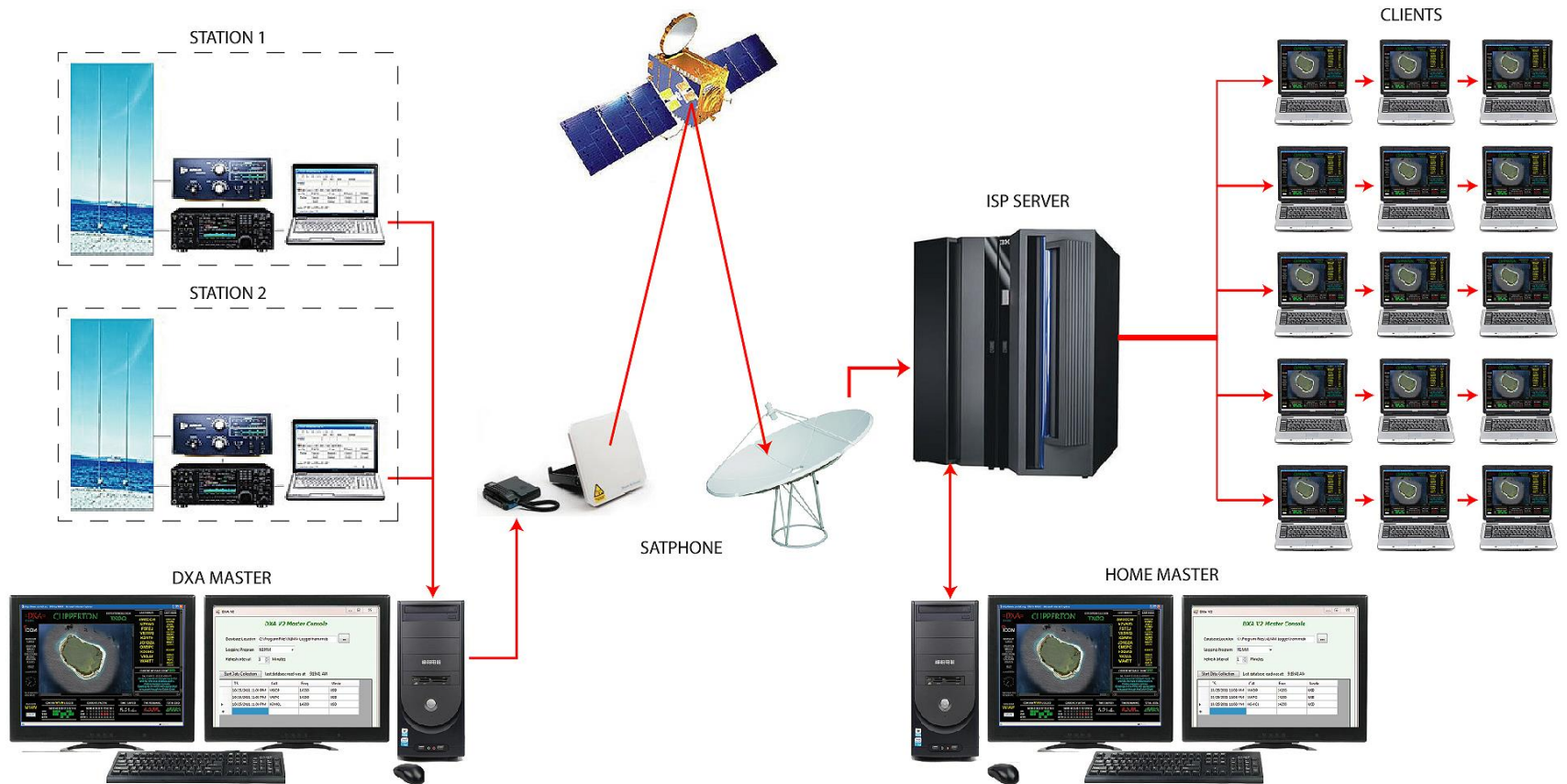


# Heard Island - Atlas CW Stations

VK0EK Atlas Cove: CW stations



# DXA - The Online Radio Log Server



Heard Island

Satellites

Internet

# DXA - The Online Radio Log Server


<http://www.dxa3.org>


DXA3

dx2.org/dxa3dev/

=DXA=

Version 3



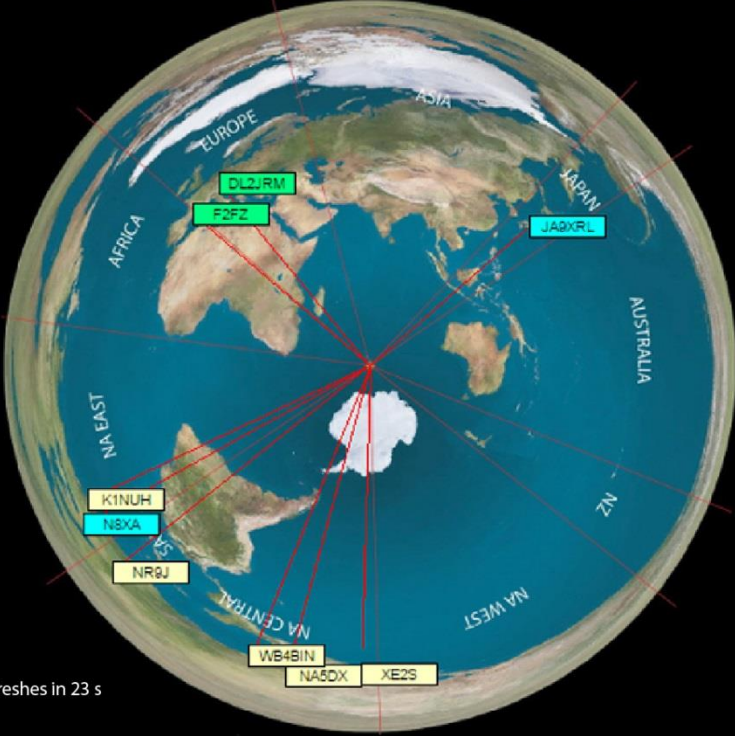


☐ Pause  
Select map  
Toggle data

Order QSLs  
E-mail VKØEK

HELP  
Quick tips  
About  
Privacy

## VKØEK Heard Island 2016



Refreshes in 23 s

Just Logged

DL2JRM  
JA9XRL  
N8XA  
F2FZ  
NA5DX  
K1NUH  
XE2S  
WB4BIN  
NR9J

Worked

1339 UTC  
F4ENK  
KB0MHM  
JA9RA  
W9JA  
DK6IM  
1339 UTC  
JA1QOA  
JA3KVT  
AD1C  
JA1CLZ  
NX0X  
JH9KVF  
JG1UL  
W4DKS  
JASNNIS  
1339 UTC  
NGAKI  
DF8AN  
DK2OY  
WSEK

Message from VKØEK

Spit Bay operation will commence on March 27 at 0000Z. Two stations will operate the strongest bands. We anticipate giving priority to NA West Coast for about 1 week, then opening to all stations worldwide.


QSO SEARCH


Please enter...  
**W1AW**  
...a valid call sign


CONFIRM

LOGGED

160 80 40 30 20 17 15 12 10 6

CW 


SSB 


DIGI 

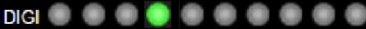
CURRENTLY

WORKING

160 80 40 30 20 17 15 12 10 6

CW 

SSB 

DIGI 

TIME REMAINING

7d16h19m

Fri, 10 Jul 2015  
13:40:33 UTC

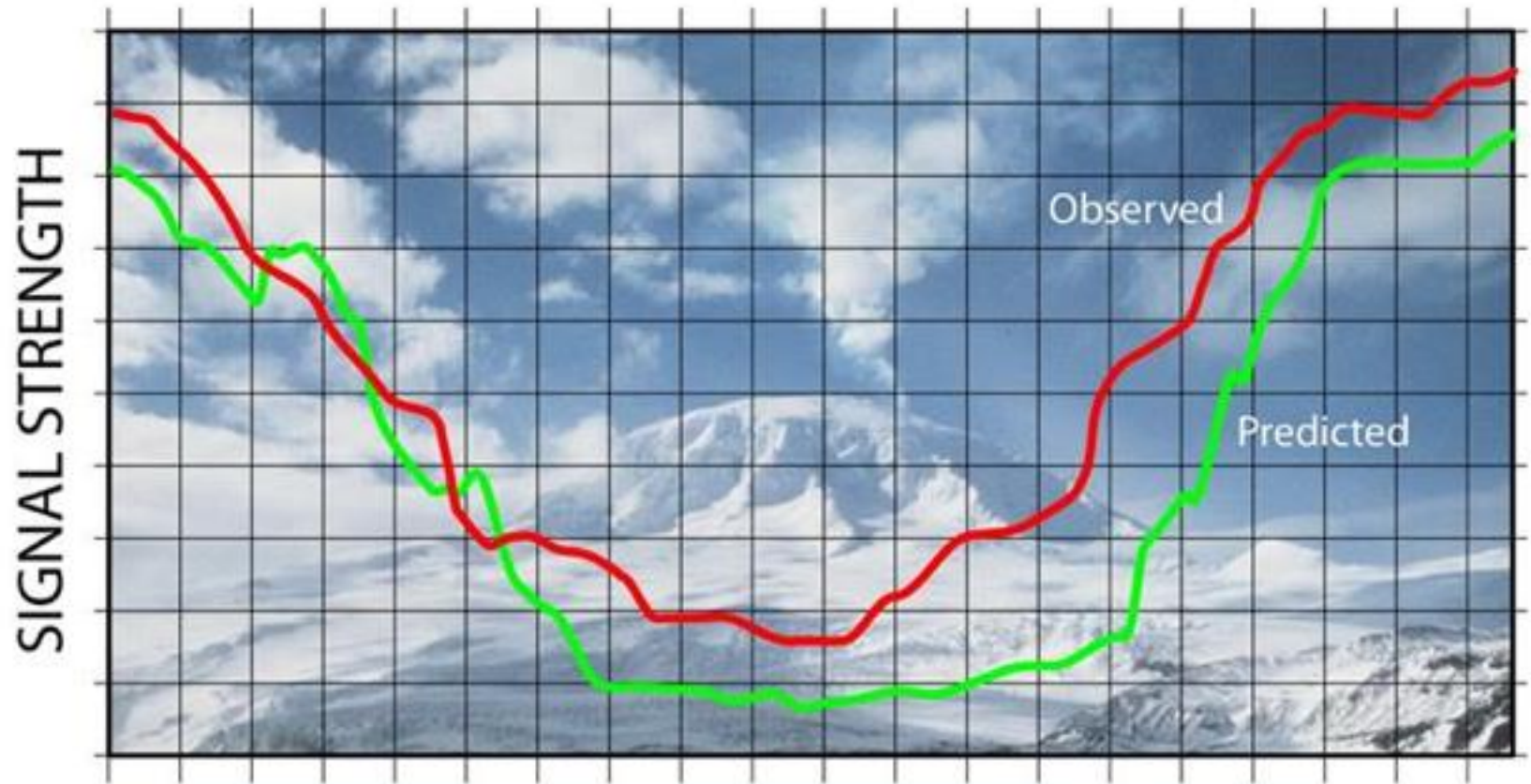
TOTAL QSOs

106856

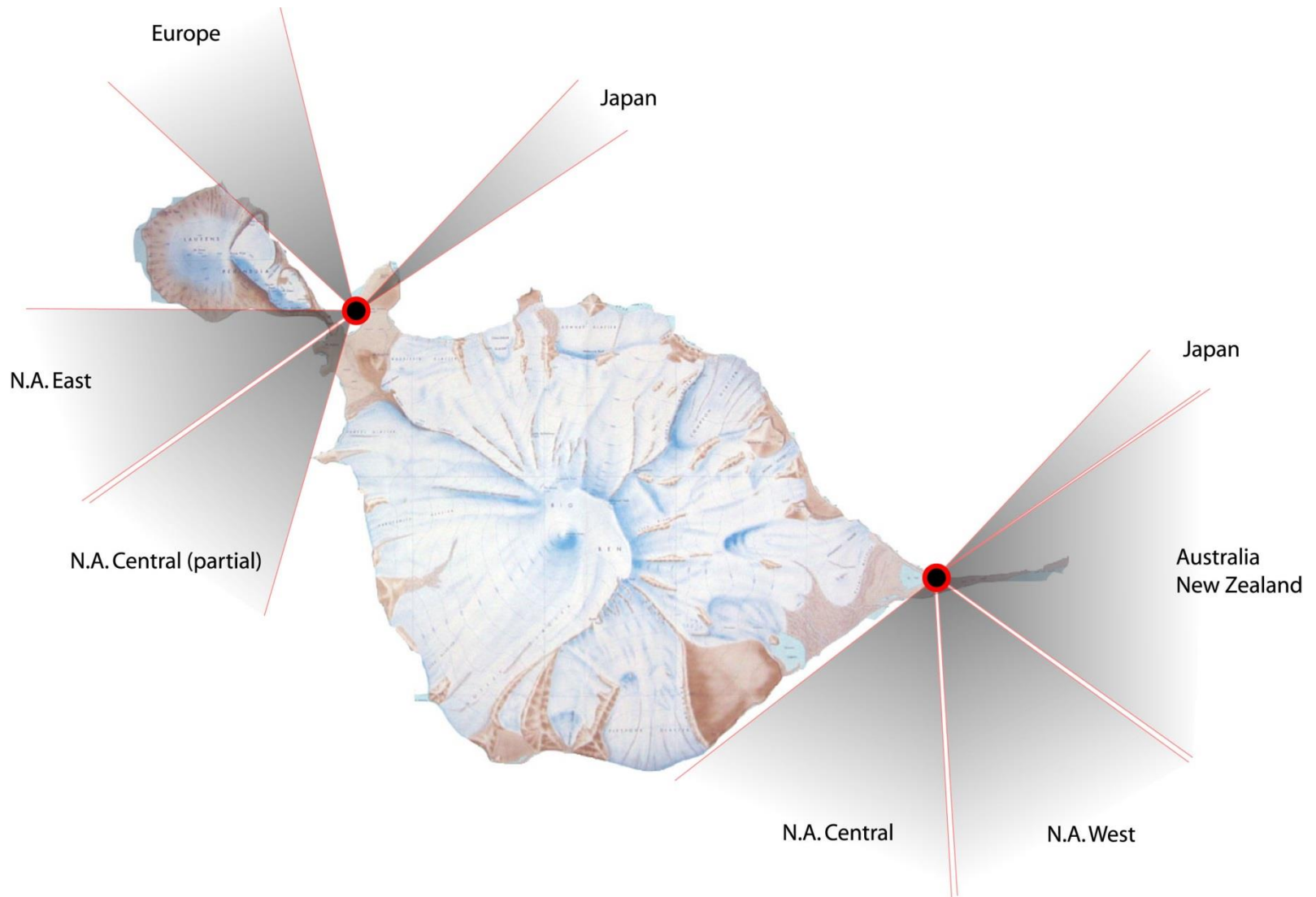
CW SSB DIGI  
56024 42685 8147



# Heard Island - Geography



# Radio paths to/from Heard Island



2014





Image © 2015 DigitalGlobe

1500 ft

Goog







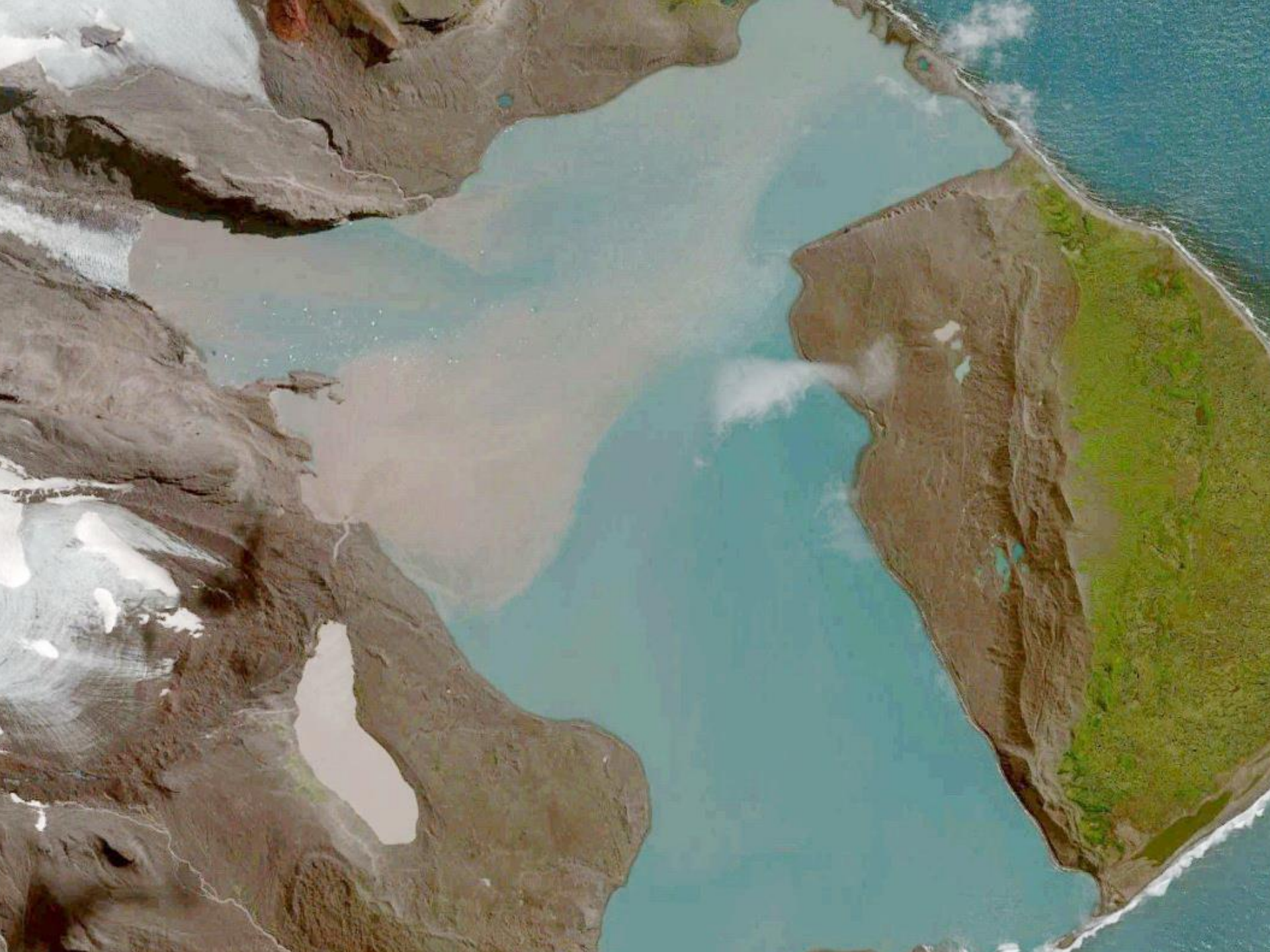
# Environmental research

## Goal:

- Obtain new observations and data relating to the effects of global climate change

## Means:

- **Collections of specimens** (rocks, water, soil, plants, invertebrates) to identify unknown species
- **Photogrammetry** to measure changes in glaciers, lagoons, and land, especially recently deglaciated land
- **Photodocumentation** of new geologic features such as emergent streams and plumes, eruption and venting, weather and atmospheric phenomena



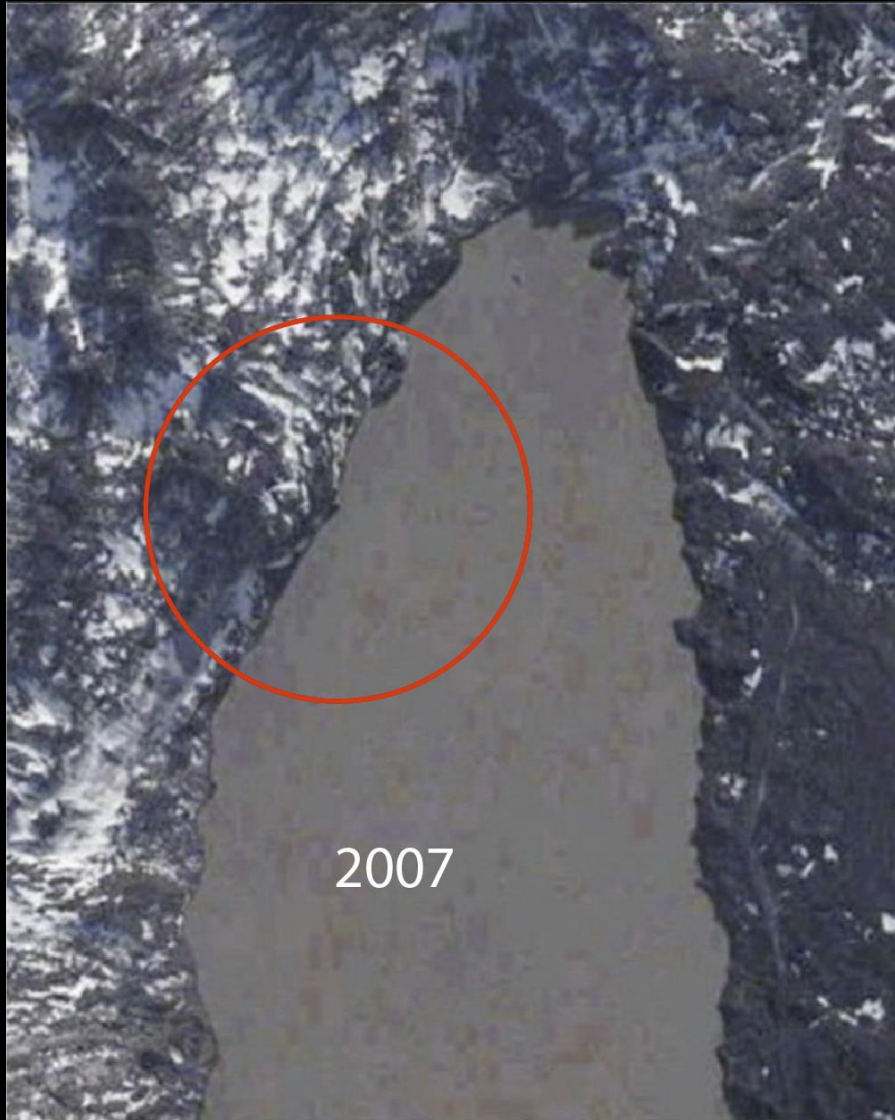


Google earth

Image © 2015 DigitalGlobe

Imagery Date: 2/5/2014 53°40'39.66" S 73°40'27.40" E elev 111 ft eye alt 6653 ft

2006







2014  
2014



## Aerial images using drone cameras

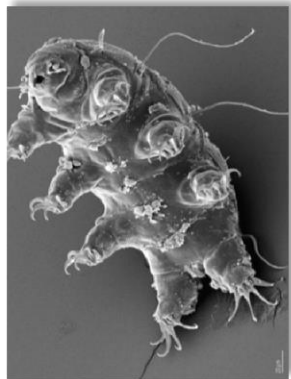


Multicopters (drones)

## Digital microscopes to image microscopic organisms



Foraminifera



Tardigrada



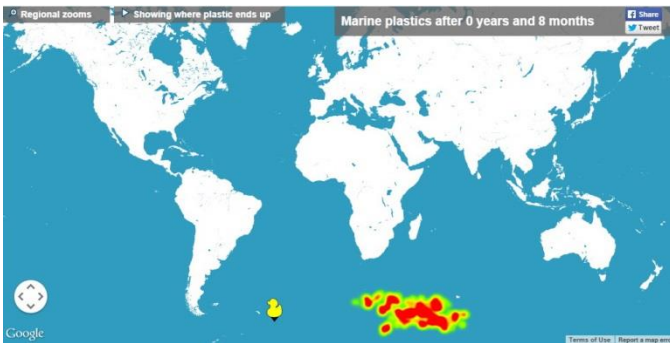
# Photo-documentation of environmental debris



Plastic



Bonal

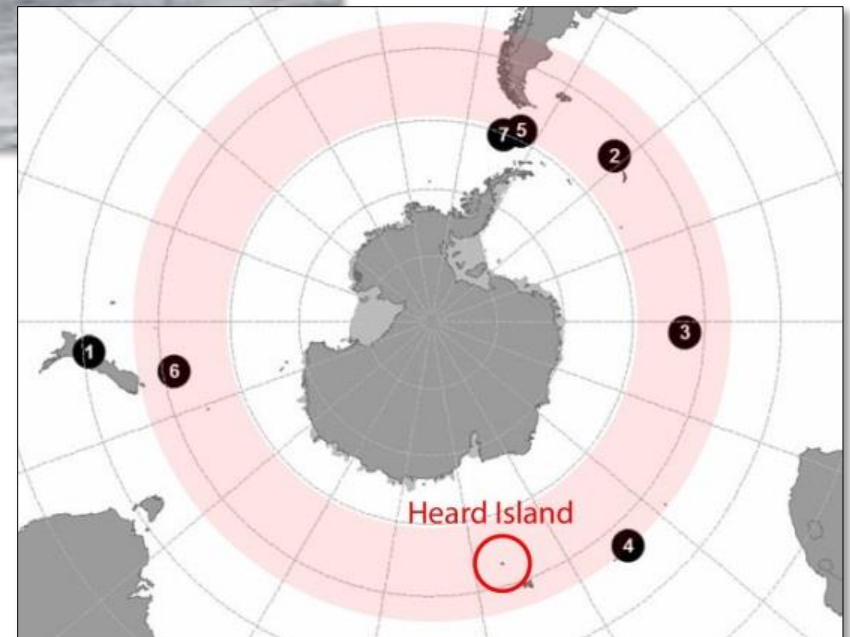


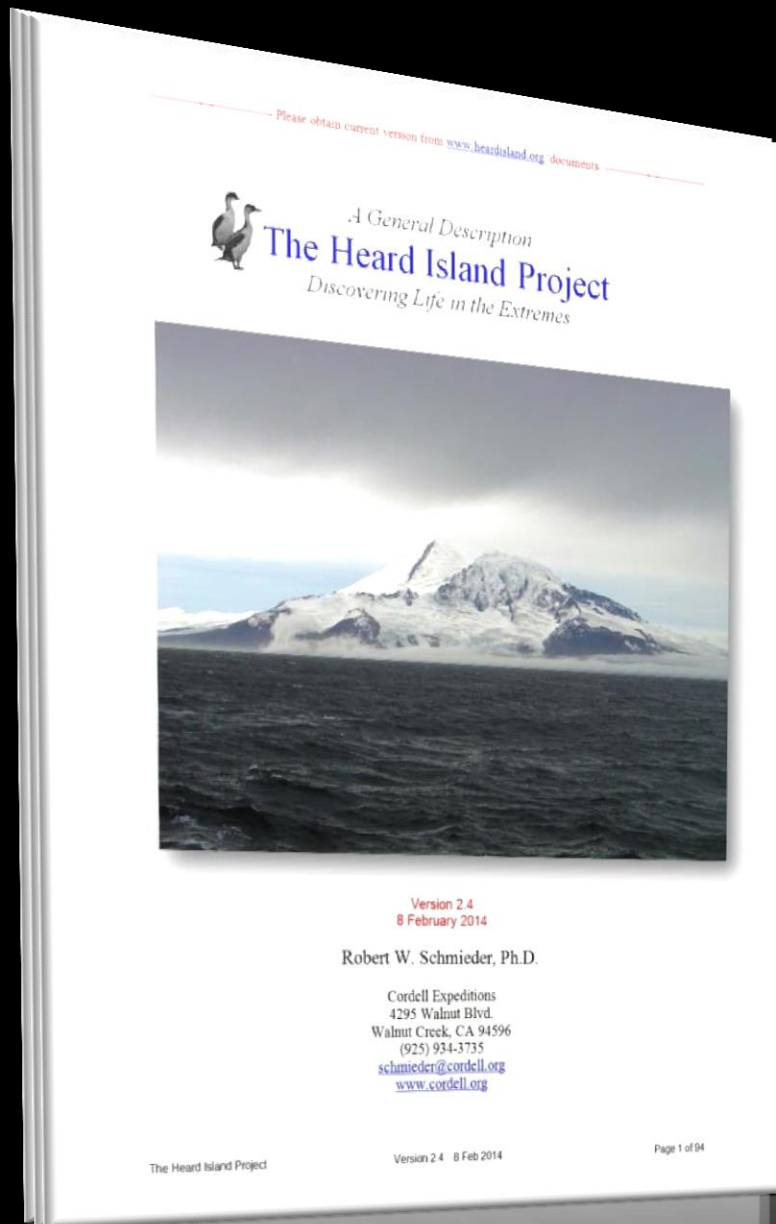
Heard Island  
receives floating  
debris directly from  
South Georgia

e



Search for the  
reported  
new Type of  
killer whale





Full Project Plan:  
[www.heardisland.org/DOCUMENTS/](http://www.heardisland.org/DOCUMENTS/)

The 1997 Expedition that broke all the records and  
defined a new spirit of collective pride in Amateur Radio.



VKØIR

# VKØIR

Heard Island

ISBN: 0-9626013-7-3

Cordell Expeditions  
4295 Walnut Blvd.  
Walnut Creek, California USA 94596

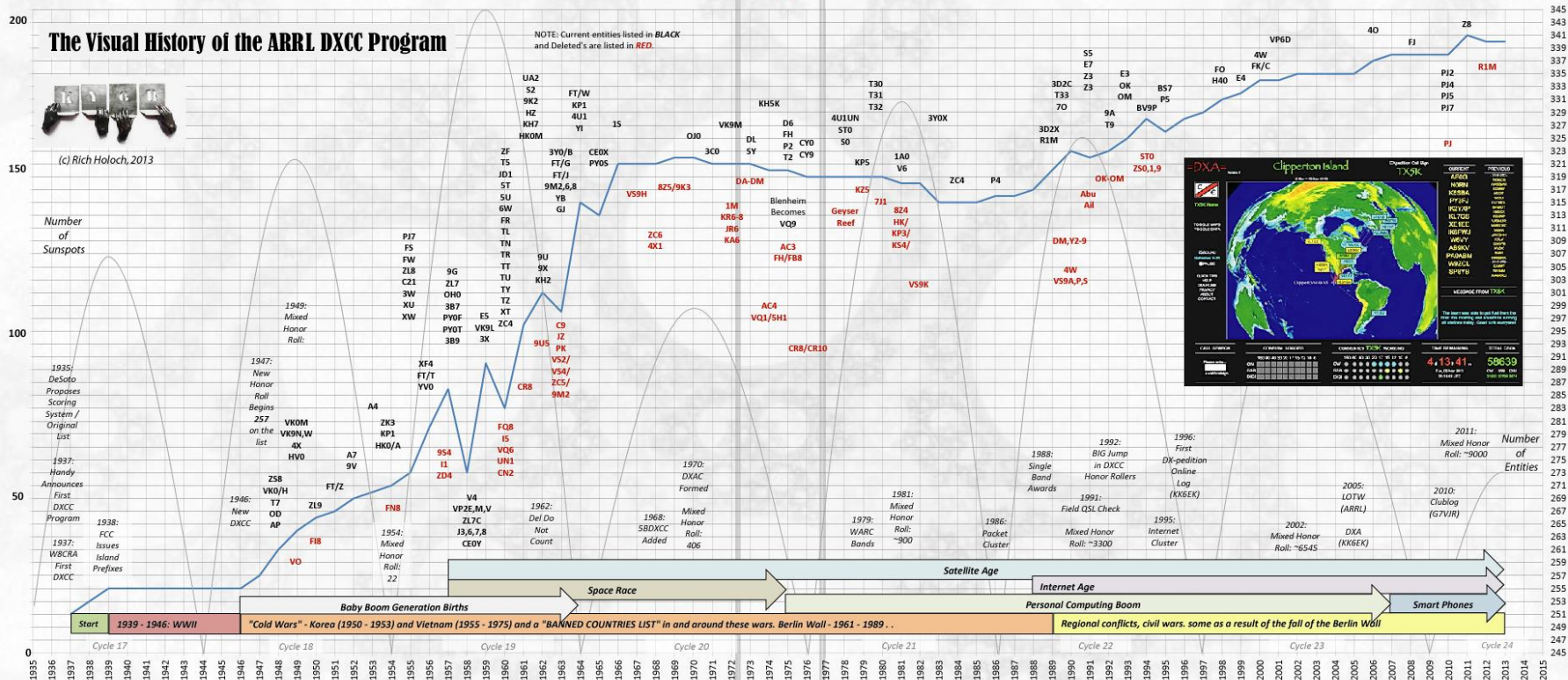
by KK6EK

Free download at  
[www.heardisland.org](http://www.heardisland.org)


$$=DXA=$$
$$=DXA=$$

## The real-time online radio log server

(c) Rich Holoch, 2013



Cordell Expeditions  
4296 Walnut Blvd  
Walnut Creek, CA 94596

KK6EK

by KK6EK

ISBN 0-9626013-7-5

Available from KK6EK  
kk6ek@cordell.org

# The Heard Island Newsletter

Free (electronic) subscription at:  
[www.heardisland.org/NEWSLETTER/](http://www.heardisland.org/NEWSLETTER/)

**GOAL FOR RADIO OPERATION: 100,000+ CONTACTS**

"Thank you! QZL..."  
 "WIAW"  
 "WIAW, Five and nine"  
 "Also five and nine."  
 "Thank you! QZL..."

So it goes, hour after hour, day after day. Hundreds, thousands of times. One thousand. Fifty thousand. Perhaps One hundred thousand.

This is the routine for logging calls from amateur radio stations worldwide, seeking the goal of confirming a contact with perhaps 20,000 different stations. For most, this is their very first contact with Heard Island. And it might be the last. The island is so rarely activated that the next time may be far in the future, and perhaps never. The last radio operation from Heard Island was in 1997, when a record 83,000 contacts were made. This time the team plans to exceed that record.

To do this, the team will use at least four stations operating around the clock.

Contact the radio Team Leader Dave K3EL at [k3el@earthlink.net](mailto:k3el@earthlink.net)

*"The goal is to maximize the number of all-time new contacts with Heard Island for the radio operators. There will be tens of thousands of them."*

**RESEARCHER SEEKS YELLOW-GREEN ALGAE**

Robert Anderson is seeking specimens of the alga Xanthophyceae, which members of genera that only occur in soils, rocky cold soils like those in the Alps. Anderson requests that soil samples be collected near the air-soil interface (i.e. collected in the top 1-2 cm of soil). Samples may be placed in a Zip-Lock bag for studying soil algae because of their morphological traits have been found to be very valuable. He will establish cultures to grow the algae, and then begin the process of isolating the algae. The cultures will be deposited in public culture collections. It is possible - even likely - that new species will be discovered from the isolated Heard and McDonald Islands.

Contact Robert Anderson at [raa@earthlink.net](mailto:raa@earthlink.net)

## PARTNERS WITH HDT GLOBAL

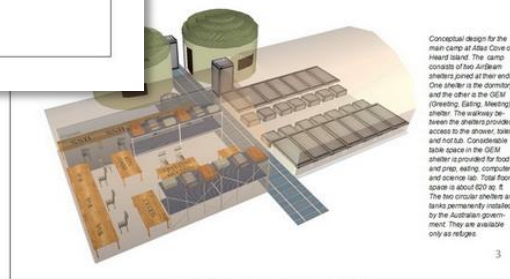
used to announce that we have parties, as well as military chemical, biological, radiological, and nuclear (CBRN) air filtration systems and protection systems. The company also offers robotic systems for commercial, healthcare, underwater, and military applications. Its products are used to meet the specific needs of command posts, hospitals, military barracks, emergency medical treatment units, CBRN decontamination facilities for first responders, and command and control operation centers.

In addition, the company provides engineering design and product development, application engineering and systems integration, logistics support, product training, and other sales support services.

Its products are used by the U.S. and allied military units, homeland security, civilian government, contractors, and commercial customers in the United States, Sweden, Canada, Japan, the European Union, the United Kingdom, Chile, and Australia. The company is based in Solon, Ohio.

Contact HDT at [www.hdtglobal.com](http://www.hdtglobal.com).

## CAMPSITE DESIGN USING AIRBEAM SHELTERS



Heard Island Expedition Newsletter Vol. 1 No. 1 June 1, 2015

Conceptual design for the main camp at Alca Cove on Heard Island. The camp consists of two Airbeam shelters joined at the ends. One shelter is the dormitory and the other is the GEM (Geology, Ecology, Meteorology) shelter. The pathway between the shelters provides access to the shower, toilet and notepad. Considerable space in the GEM shelter is provided for food and gear, including computers and science lab. Total floor space is about 120 sq ft. The two circular shelters are built permanently installed by the Australian government. They are available only as refuges.

Dr. Robert Schindler  
[schindler@correll.org](mailto:schindler@correll.org)  
 Co-organizer  
 Rich Holoch KY8R  
 Double DXers  
[holoch@gmail.com](mailto:holoch@gmail.com)  
 Radio Team Leader  
 Dave Lloyd K3EL  
[k3el@earthlink.net](mailto:k3el@earthlink.net)

## MAKE IT HAPPEN...



to put on a great performance you in the adventure. We want you to feel like the team, who Heard Island or not. We want the excitement, a satisfaction from the

Heard Island is among the most remote destinations in the world. It is well prepared to this most difficult project, it cannot be done without the help of the group make a contribution. You could also donate or lend equipment, spare tools, shipping cases, etc., or you could obtain services at reduced cost. If you are a programmer, we could use your help in developing our website.

"Contributions are tax-deductible according to the code governing 501(c)(3) nonprofit organizations."



**The HEARD ISLAND Project**  
 Discovering Life in the Extremes  
 Correll Expeditions

**EXPEDITION SCHEDULED FOR MAR- APR 2016**

Wednesday, 13 May 2015.  
 Today Correll Expeditions signed a contract with Niagal Jolly, owner and operator of the Braveheart (above), for the expedition to Heard Island, and moved the project schedule to March-April, 2016. The ship will depart March 8 from Cape Town, South Africa, proceed directly to Heard Island, and finally to Fremantle, Australia on April 22. The stay at Heard Island will be nominally March 18-April 10.

The nominal 22-day stay at Heard Island will enable amateur radio operations, using the callign VKOEX. While the radio operation is the primary goal, the team will also carry out a limited scientific program, including a search for new species that can enhance our understanding of biodiversity and the effects of climate change.

Heard Island is about 20 km to-to-top, with a 9000 ft volcano at the center. Campsites for 2016 will be at the points marked A and S.

For further information, please contact the Expedition Leader, Dr. Robert Schindler, [schindler@correll.org](mailto:schindler@correll.org).

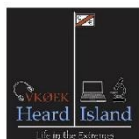
government expedition of 2003. The island is very near the top of the world-wide most-wanted list for radio operations. Scientists have predicted that perhaps 200 species remain to be discovered there. In addition, the team will document plastic debris on the beach, and the penguins, seabirds, and marine mammals. The team will also look for microscopic forms of life, especially those never seen before.

Heard Island Expedition Newsletter Vol. 1 No. 1 June 1, 2015

# The 2016 Heard Island DXpedition

## the On-Island Team

Adam Brown	K2ARB
Alan Cheshire	VK6CQ
Arliss Thompson	W7XU
Bill Mitchell	AEØEE
Carlos Nascimento	NP4IW
Dave Farnsworth	WJ2O
David Lloyd	K3EL
Fred Belton	WM4MXD
Gavin Marshall	VK2BAX
Hans-Peter Blattler	HB9BXE
Jim Colletto	N6TQ
Kenneth Karr	NG2H
Robert Schmieder	KK6EK
Vadym Ivliev	UT6UD



## COLLABORATORS

NCarolinaSU: Prof. Harold Heatwole  
 BakerU: Prof. William Miller  
 USGS: Dr. Mary McGann  
 UMICH: Dr. Robert Anderson  
 NASA: Dr. Rocco Mancinelli  
 Univ. NSW: Dr. Erik van Sebille  
 CalifAcadSci: Dr. Robert van Syoc  
 CalifAcadSci: Rich Mooi  
 LACoMusNatHist: Dr. Gordon Hendler  
 LACoMusNatHist: Dr. Regina Wetzler  
 LACoMusNatHist: Dr. Jody Martin  
 Indep: Maria Hauger  
 UTaz: Jodi Fox  
 FloridaInstTech: Dr. Nezamoddin N. Kachouie  
 UnivCalifJeppenHerbarium: Andrew Doran  
 UnivCalifJeppenHerbarium: Richard Moe  
 Dorothy Grant Elementary: Beverley Matheson  
 Morristown High School: Janyce Trampler  
 UTaz: Prof. Jocelyn McPhie  
 UTaz: Dr. Rebecca Carey  
 UTaz: Patrick Quilty  
 UnivSydney: Grahame Budd  
 Albrecht-von-Haller-Institut: Thomas Friedl  
 Georg-August-Universitaet: Nataliya Rybalka  
 The Fungi Foundation: Giuliana Furci

## AUSTRALIA SUPPORT TEAM

Northern Corridor Radio Group VK6ANC  
 Keith Bainbridge VK6RK  
 Stuart Bedford VK6LSB  
 Andrew Albinson VK6IA  
 Wayne Johnson VK6EH  
 Richard Beck VK6BEC  
 Zeljko Krestelica VK6VY  
 Wes Beck VK6WX  
 Peter McMahon VK3HEX

## Australian Team

Fremantle  
 22 April 2016

## REAL-TIME IT

Peter Bourget W6OP  
 Dean Straw N6BV  
 Mike Coffey KJ4Z

## CUSTOMER SERVICE

OnlineServiceDesk: DiabloDXers  
 Souvenirs: The Virginia Team

## QSLs

Tim Beaumont M0URX  
 Max Van Rymenant ON5UR

## SPOUSES

Kay Schmieder  
 Cheryl Karr  
 Debby Belton  
 Maya Blattler  
 ... Lloyd  
 Katy Colletto  
 Kim ...  
 ... Marshall  
 ... Brown  
 Cecilia Nascimento  
 ... Farnsworth  
 Holly Thompson  
 Oksana Ivliev  
 Kat Holoch

## DXERS

40,000 ham radio operators

Cape Town  
 10 March 2016

HEARD ISLAND  
 VKØEK

## ADVISORS

Explorers Club: Donald Walsh  
 Explorers Club: (Pres): Alan Nichols  
 NCDXF: Donald Schliesser K6RV  
 AustReptilePark: John Weigle  
 MonatUniv: Rohan Clarke  
 UTaz: Eric Woehler

## EQUIPMENT

Bill Hein AA7XT  
 Tom Schiller N6BT

## CONTRACTORS

iContainers  
 Meihuizen International  
 Pentgon

## SOUTH AFRICA SUPPORT TEAM

Paul Johnson ZS1S  
 Malcolm DeBeer ZS6MAL  
 Pierre Trompf ZS1HF  
 Sue ZS1AFR and Tom ZS1AFS Morgan

Braveheart



## CALIFORNIA SUPPORT TEAM

Chip Margelli K7JA  
 John Miller K6MM  
 Peter Hoffman W6DEI  
 Aaron Williamson  
 Eduardo Gonzales-Fuentes K6EGF  
 Daniel Brock WB4RFQ  
 Elliot Medrich N6PF  
 Jim Nicastro K6SDF  
 Mathison Ott K6DZB  
 Saran Turnnee

## VIRGINIA SUPPORT TEAM

Manny Rodriguez K4MSR  
 Dave Scott KN4ZQ  
 James Kirkham K4JK  
 Glenn Schumacher W4XR  
 Lee Moyer K4ISW

## US Team

## CORPORATIONS

Acoustical Solutions  
 Arian Communications  
 Array Solutions  
 Disc-O-Bed  
 DX Engineering  
 EAntenna  
 Elecraft  
 FPV-Factory  
 HDT Global Inc.  
 Hermann HB9CRV  
 InnovAntennas  
 Insight Aerial Technologies  
 KINSS Design  
 Lovitt and Touche  
 Masters Home Improvement  
 N6BT  
 Northern Corridor  
 Radio Group  
 Robert Griffin K6YR  
 Sound Seal  
 Spiderbeam  
 Texas Antennas

## ORGANIZATIONS

599 DX Association  
 Amateur Radio Club of Lucerne  
 Arkansas DX Association  
 ARRL Colvin Award  
 British Amateur Radio Teledata Group  
 Carolina DX Association  
 CDXC The UK DX Foundation  
 Central Arizona DX Association  
 Central Texas DX and Contest Club  
 Clipperton DX Club  
 Cordell Expeditions  
 Danish DX Group  
 Delta DX Association  
 Diabolo DXers  
 Dominion DX Group  
 East Tennessee DX Association  
 Eastern Iowa DX Association  
 European DX Foundation  
 German DX Foundation  
 GM DX Group  
 Great Southern DX Association  
 Helvetica Telegraphy Club  
 Idaho DX Association  
 International DX Association (INDEXA)  
 Jake McClain Driver Memorial Amateur Radio Club  
 Kansas City DX Club  
 LA DX Group  
 Lone Star DX Association  
 Long Island DX Association  
 Lynx DX Group  
 Madison DX Club  
 Magnolia DX Association  
 Mediterraneo DX Club  
 Mile High DX Association  
 Mississippi Valley DX/Contest Club  
 North Alabama DX Club  
 Northeast Wisconsin DX Association  
 Northern California DX Club  
 Northern California DX Foundation  
 Northern Illinois DX Association  
 Northern Ohio DX Association  
 Oceania Amateur Radio DX Group  
 OH (Finland) DX Foundation  
 Oklahoma DX Association  
 Orca DX and Contest Club  
 Passau DX Club  
 Pentagon Amateur Radio Club  
 SE Michigan DX Association  
 Southeastern DX Club  
 Southeastern DXing and Contesting Organization  
 South-West Ohio DX Association  
 Spokane DX Association  
 Swiss DX Foundation  
 Tokyo 610 DX Group  
 Twin Cities DX Association  
 Twin Cities DX Association  
 West Tennessee DX Association  
 West Virginia DX Association  
 Western NY DX Association  
 Western Washington DX Club  
 Willamette Valley DX Club

600 individual donors

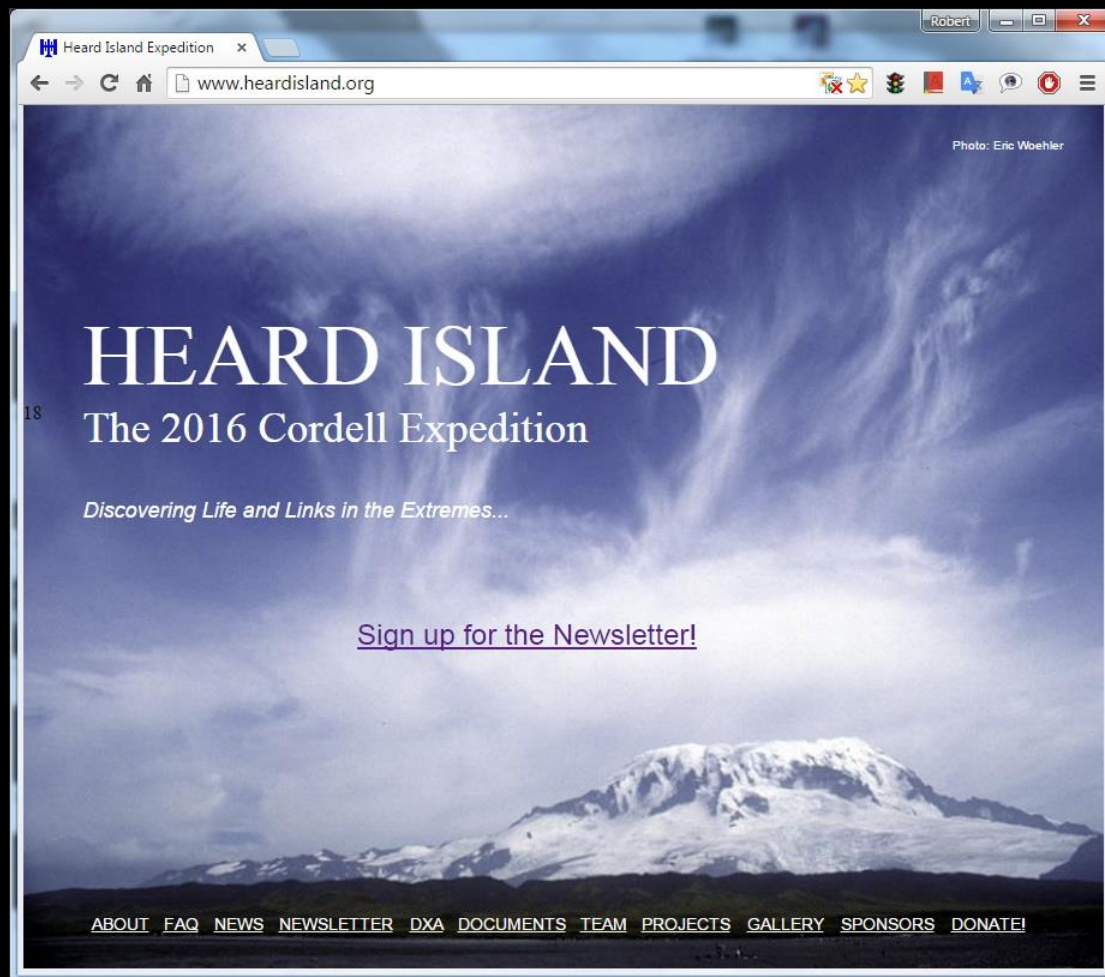
Dr. Robert W Schmieder  
KK6EK

Cordell Expeditions  
4295 Walnut Blvd.  
Walnut Creek, CA 94596

Phone:  
(925) 934-3735

e-mail:  
[schmieder@cordell.org](mailto:schmieder@cordell.org)

Website:  
<http://www.cordell.org>



[www.heardisland.org](http://www.heardisland.org)

# Supplement



Images of Heard Island



# Mawson Peak



# Laurens Peninsula









Image © 2015 DigitalGlobe

Google

# Lagoons



2014







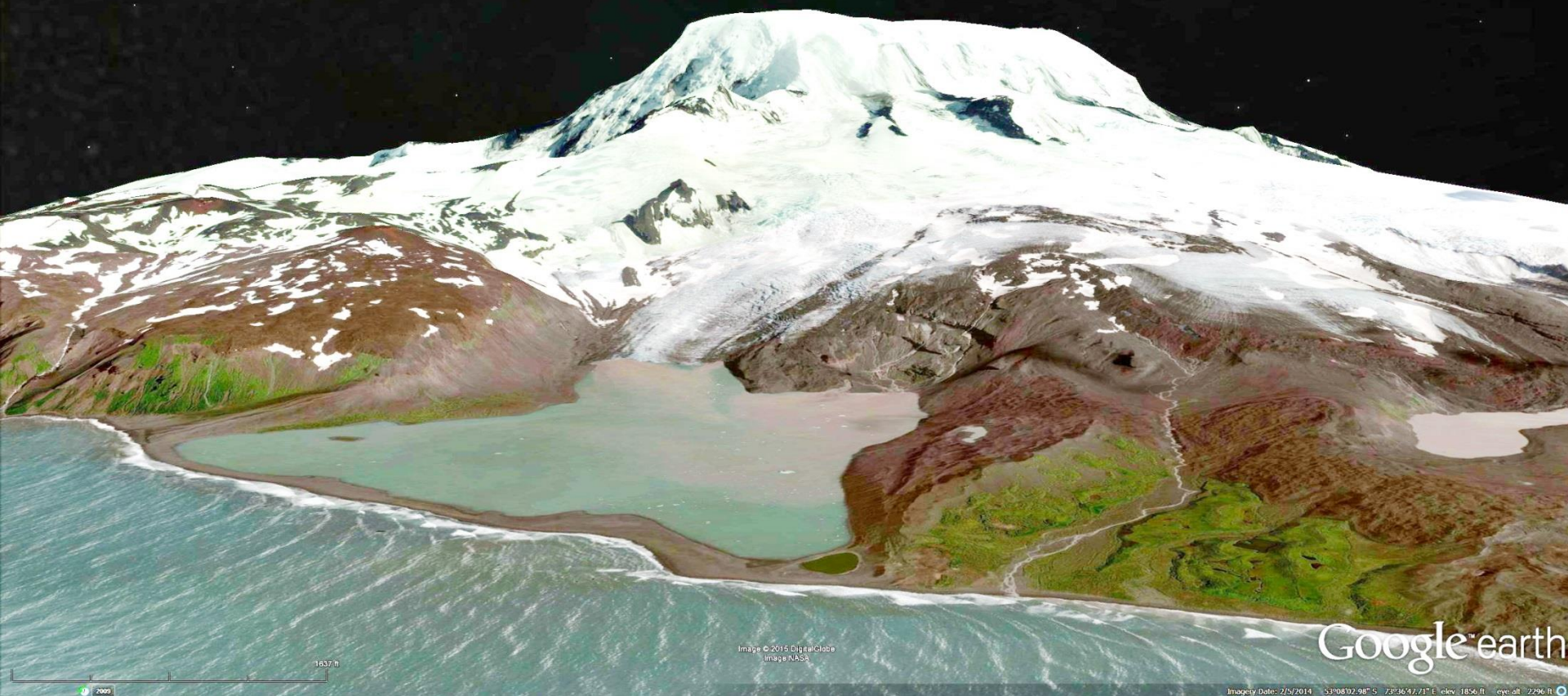
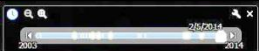


Image © 2015 DigitalGlobe  
Image NASA

Google earth

Imagery Date: 2/5/2014 53°08'02.98" S 73°36'47.71" E elev 1856 ft eye alt 2296 ft

2009



Google earth

Image © 2015 DigitalGlobe

Imagery Date: 2/5/2014 53°04'28.46" S 73°39'36.18" E elev 29 ft eye alt 6694 ft



2/5/2014



Google<sup>™</sup>earth

Image © 2015 DigitalGlobe

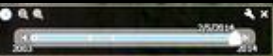
4.9 ft

2006

Imagery Date: 2/5/2014 53°04'28.61" S 73°39'42.18" E elev 5 ft eye alt 2126 ft

2007





2014



Google earth

309 ft

Image © 2015 DigitalGlobe

Imagery Date: 2/5/2014 53°04'10.70" S 73°39'37.61" E elev 2 ft eye alt 1.56 ft



2/5/2014



Image © 2014 Google

Google earth

Imagery Date: 2/5/2014 53°03'03.14" S 73°37'14.22" E elev 0 ft eye alt 18001 ft

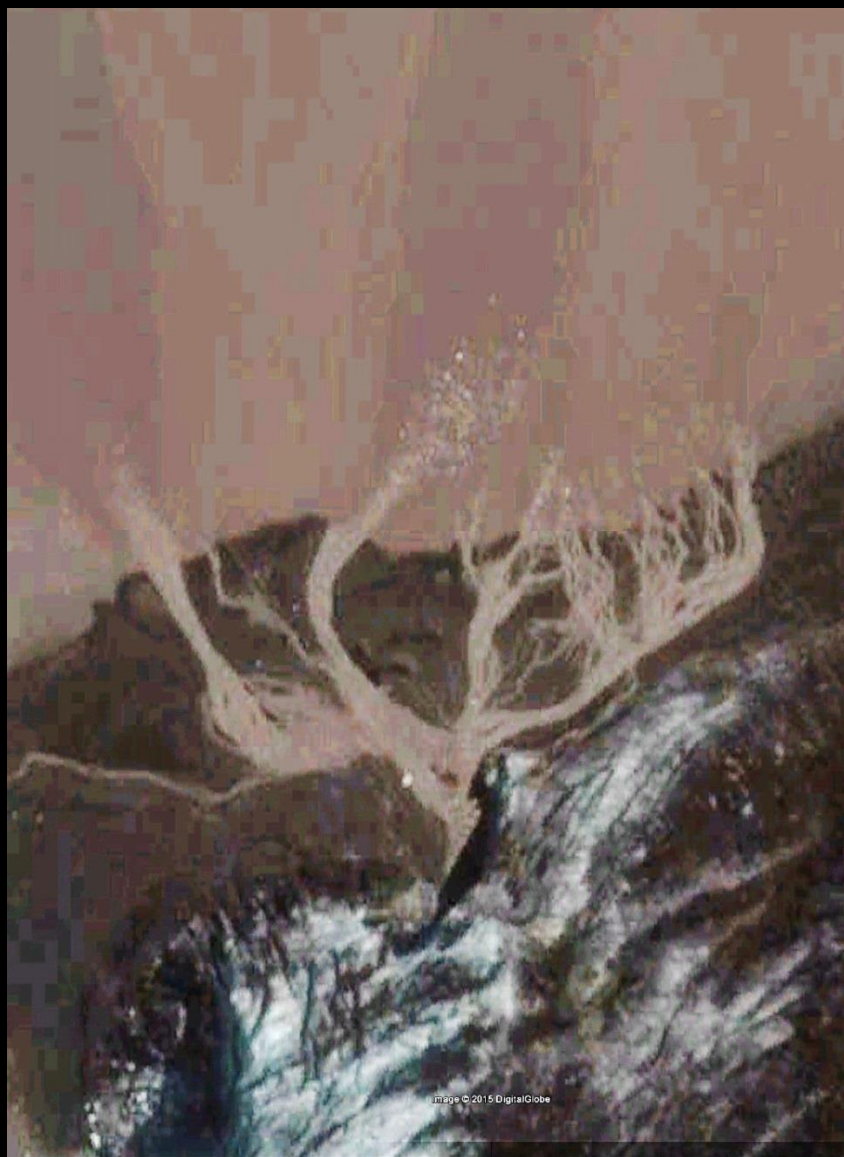


Image © 2015 DigitalGlobe

# Glacial soil slumping

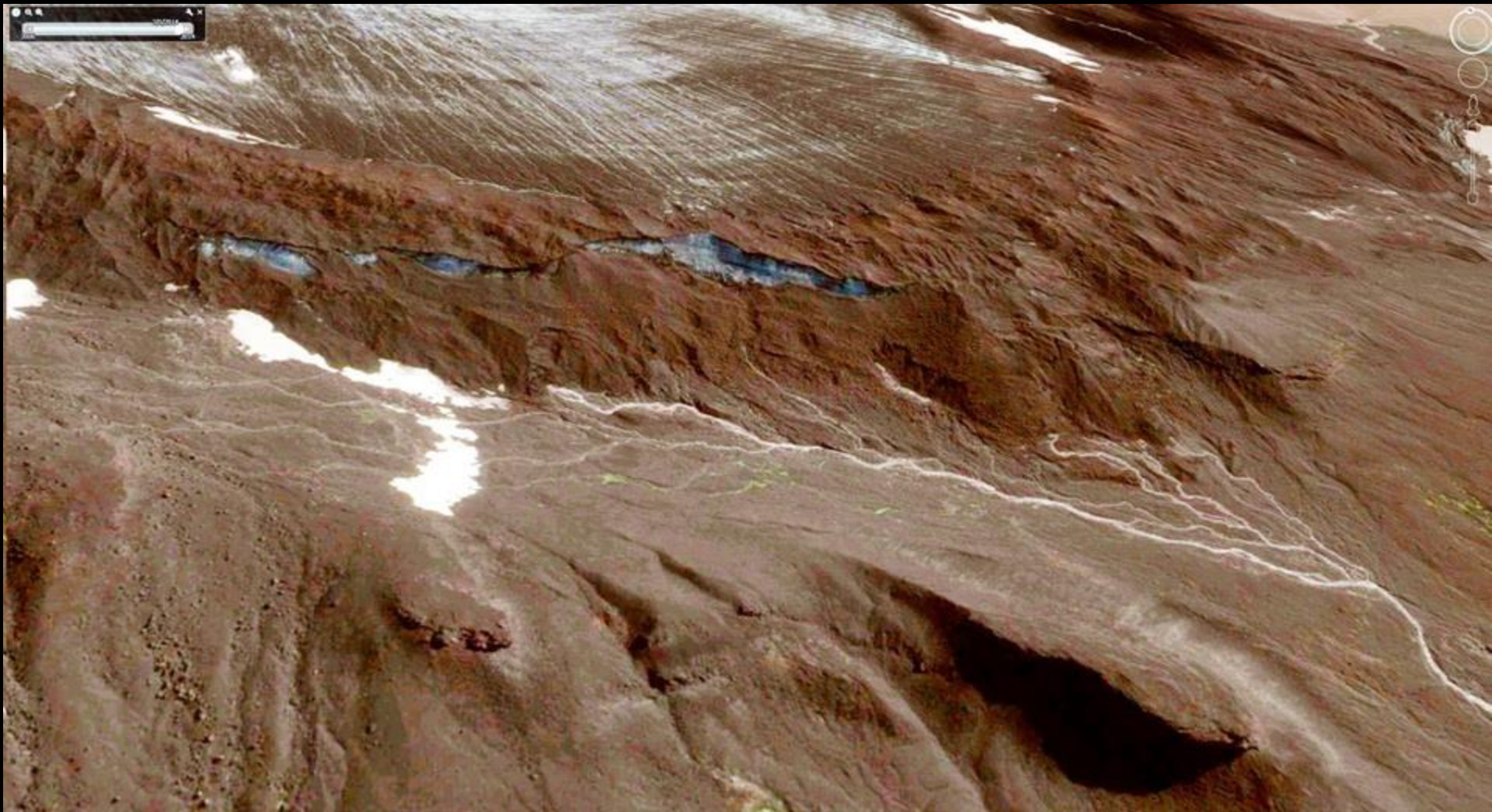




Image © 2015 DigitalGlobe

Google earth

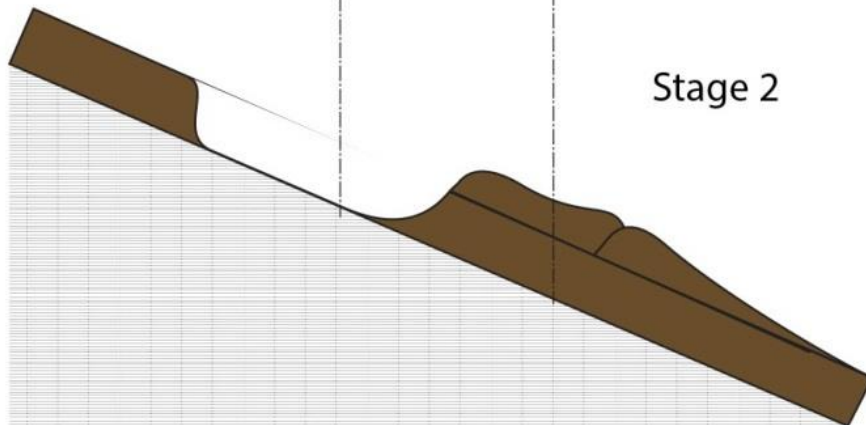
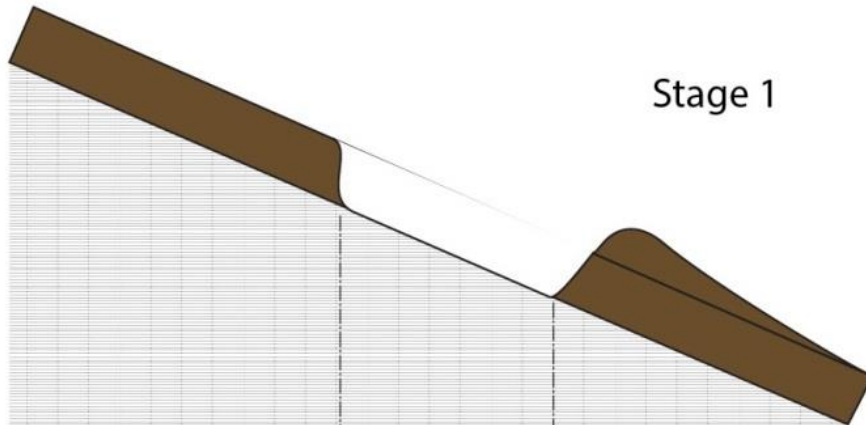
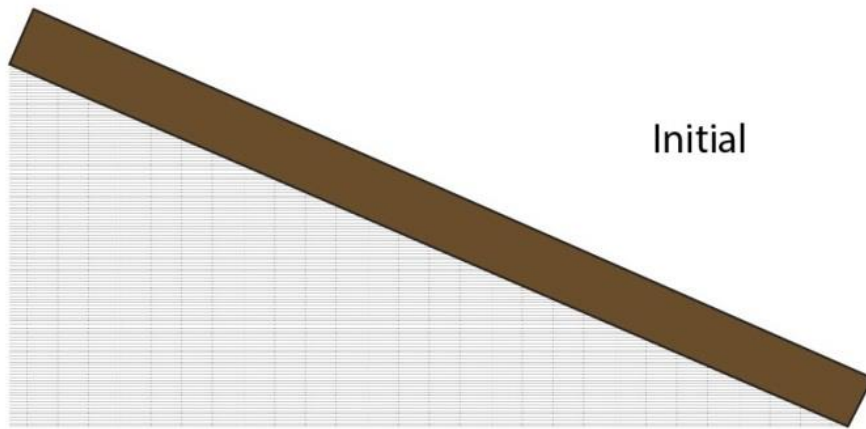
Imagery Date: 2/8/2015 53°07'48.63" N 72°19'09.90" W elev: 771 ft eye alt: 1000 ft



2007

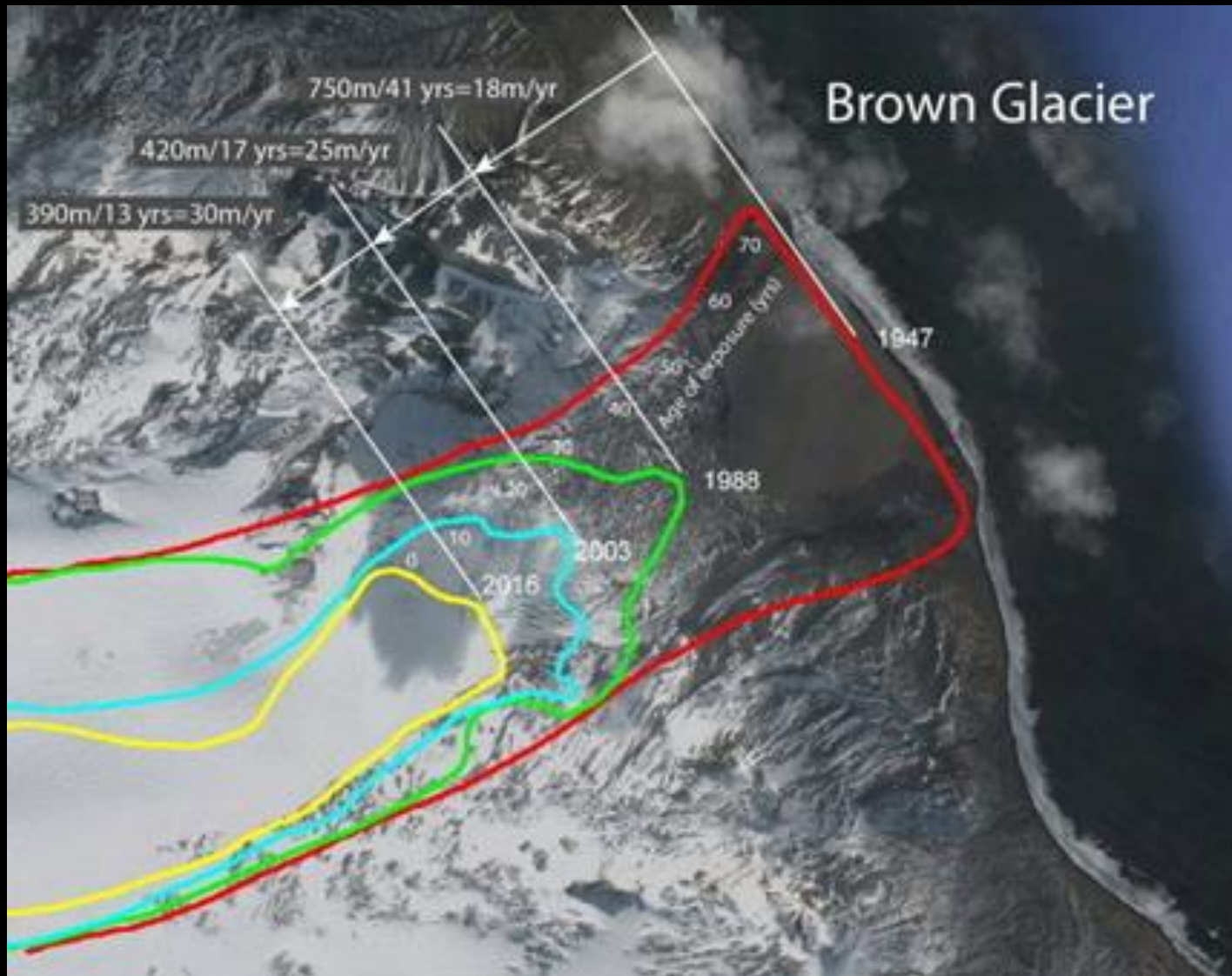


2014



Mechanism for  
the gas to  
move upward  
in time

# Glacial retreat



1/24/2006

2006

Google earth

Image © 2006  
Image © 2006 Google

Imagery Date: 1/29/2006 53°06'40.97" S - 73°40'34.52" E elev 295 ft eye alt 2333 ft



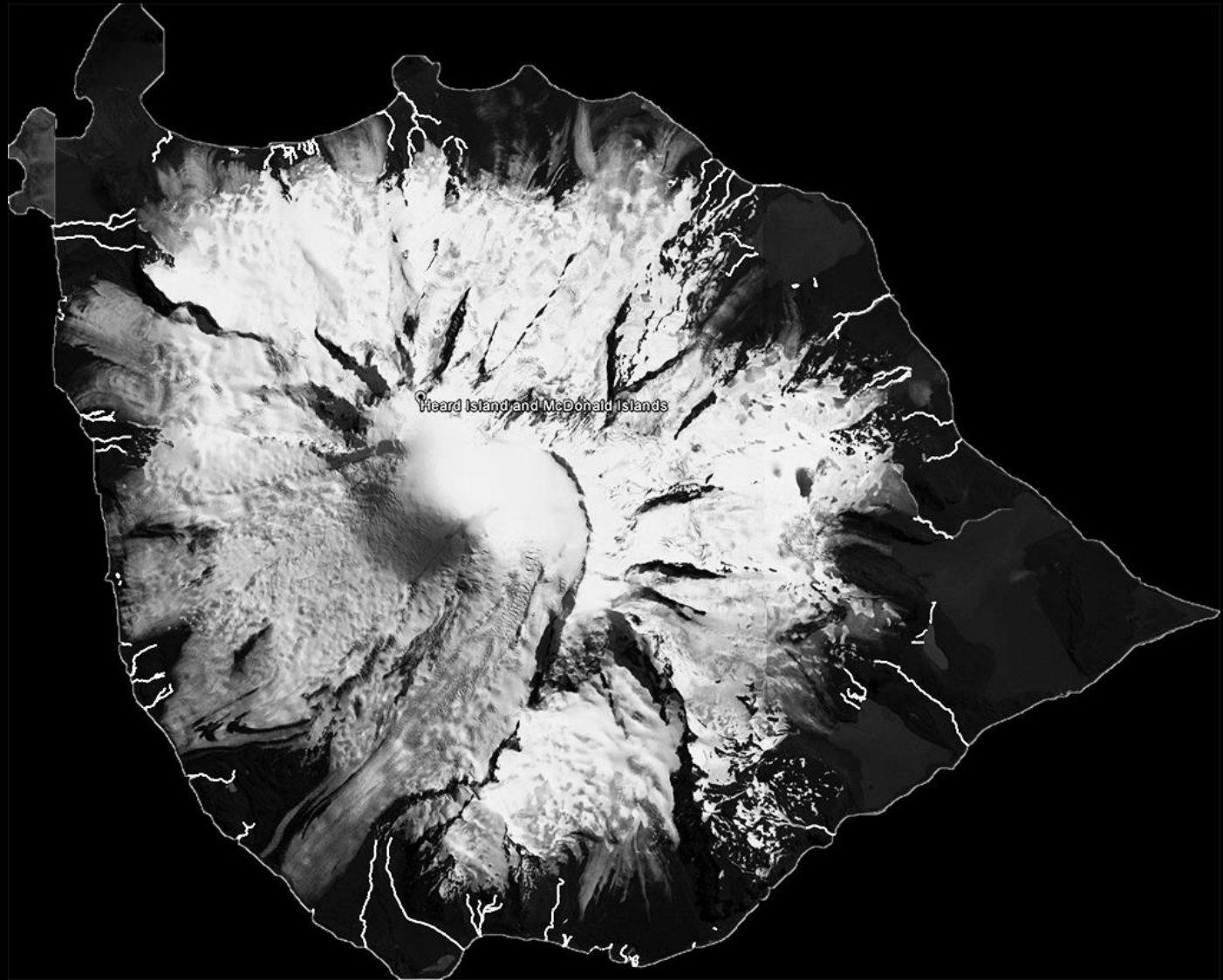
2014

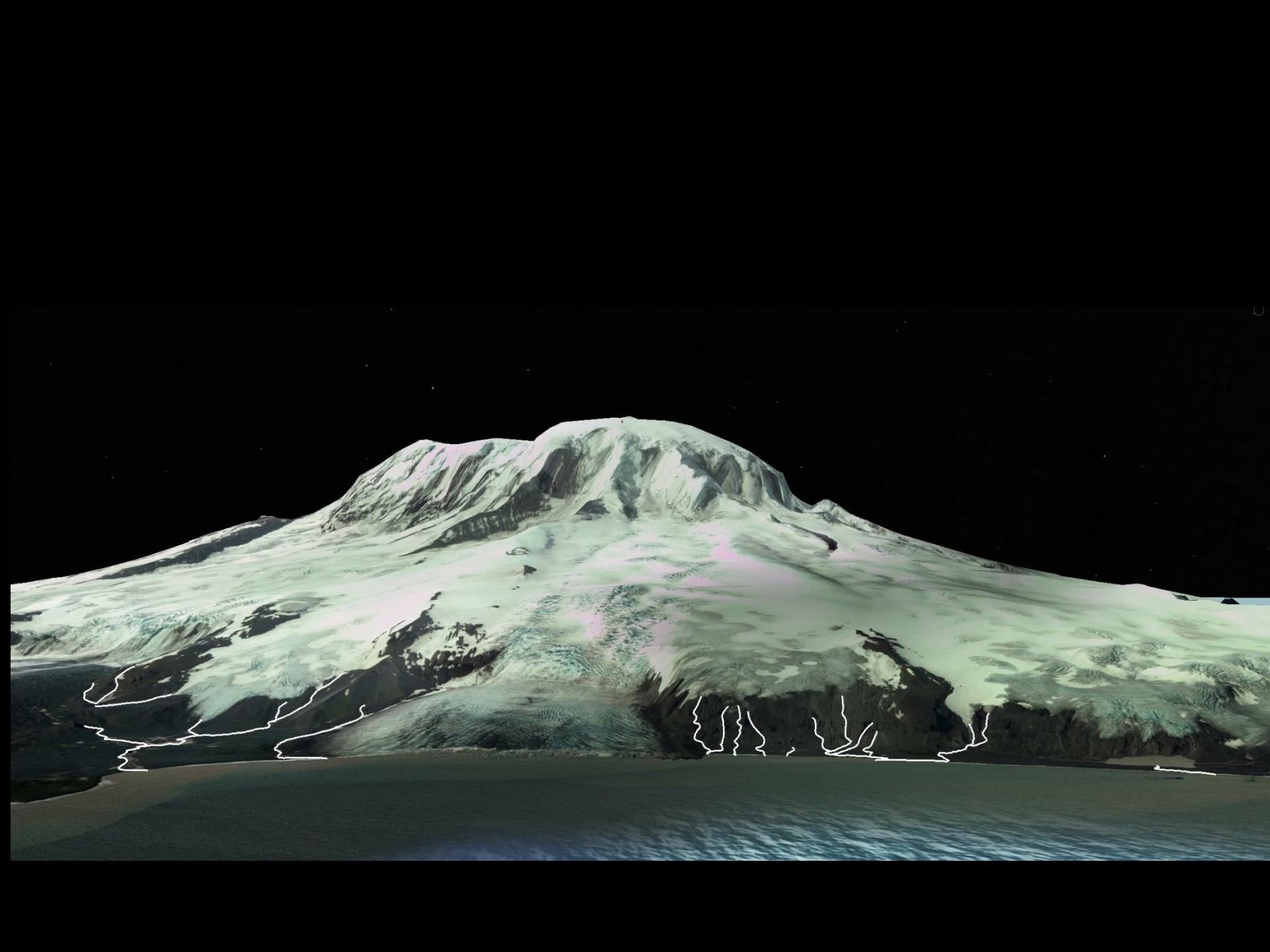
Image NASA  
Image © 2015 DigitalGlobe

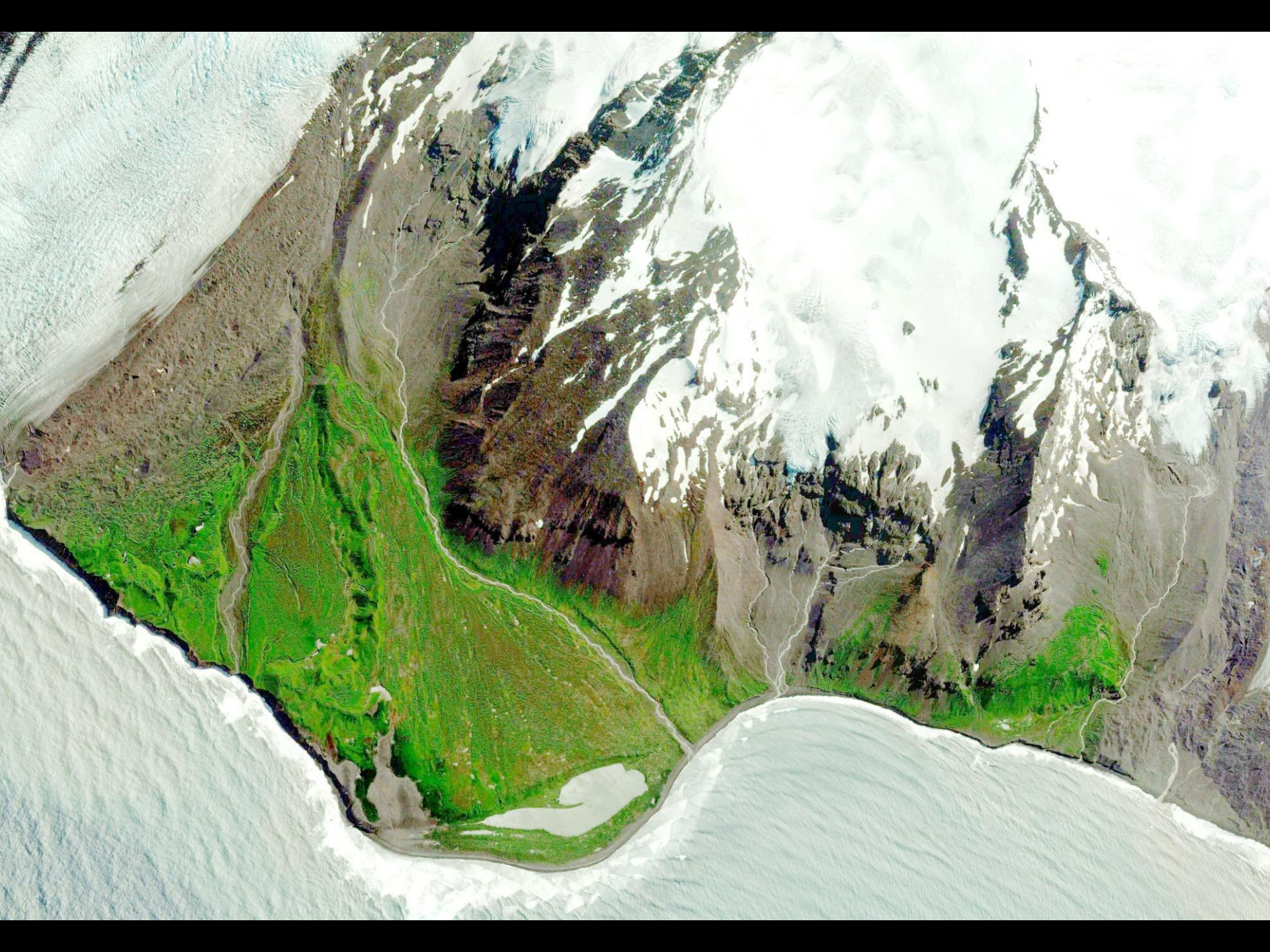
Google earth

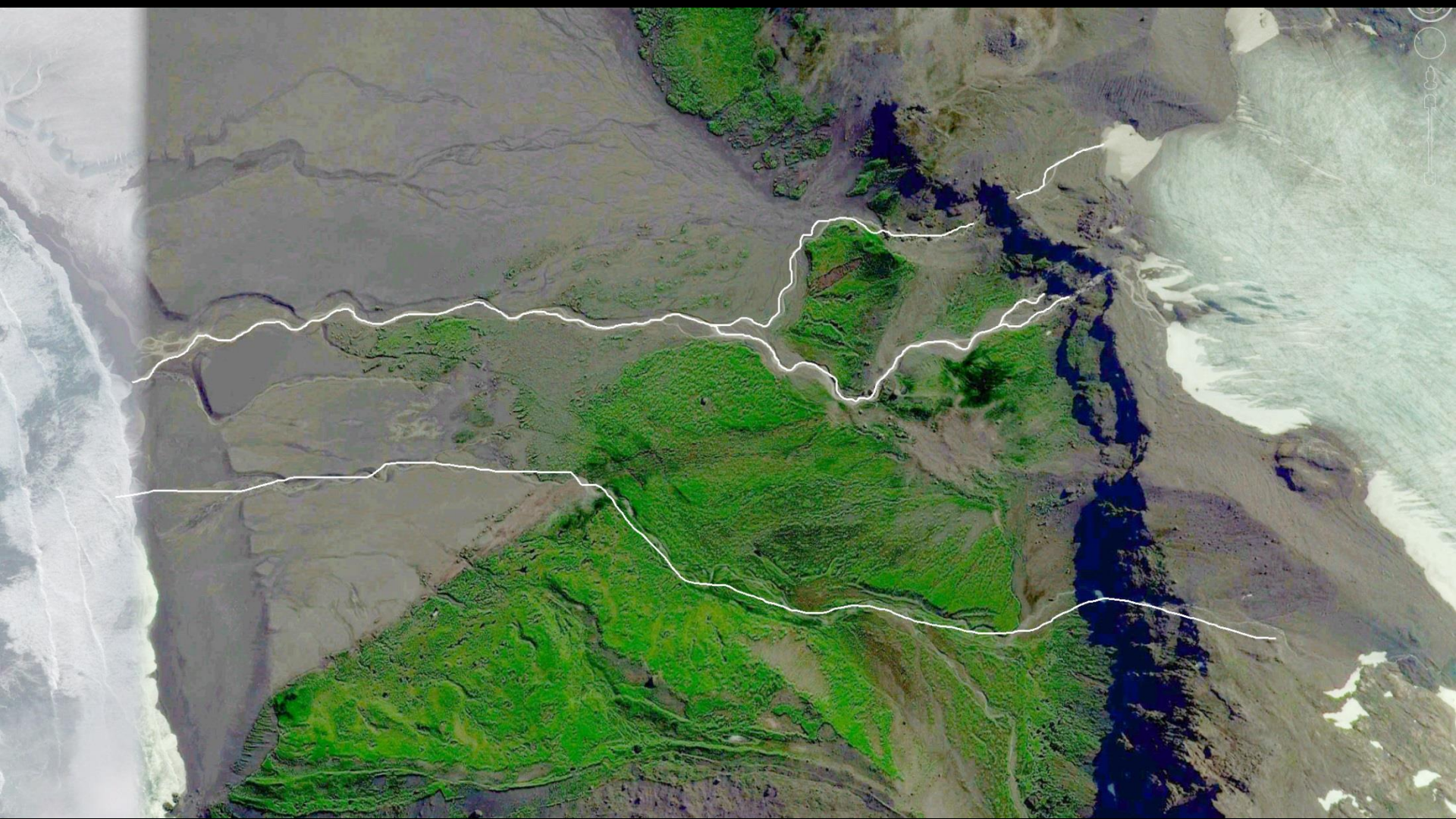
Imagery Date: 2/3/2014 53°06'40.97" S 73°40'34.52" E elev. 299 ft eye alt. 2333 ft

# Streams











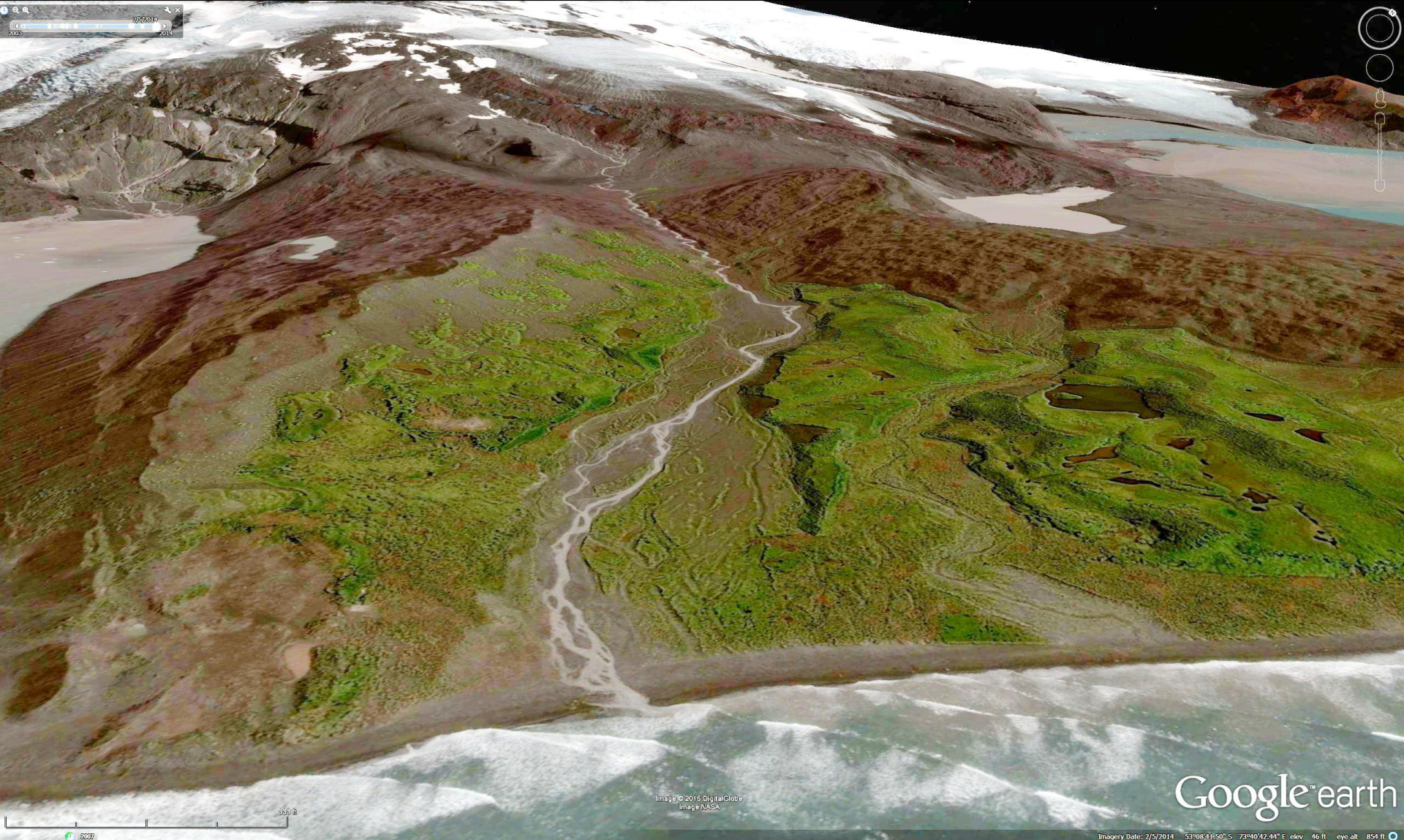
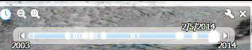


Image © 2015 DigitalGlobe  
Image 100%

Google<sup>™</sup> earth

Imagery Date: 2/5/2014 53°08'41" S 73°40'42.44" E elev 46 ft eye alt 854 ft

2007

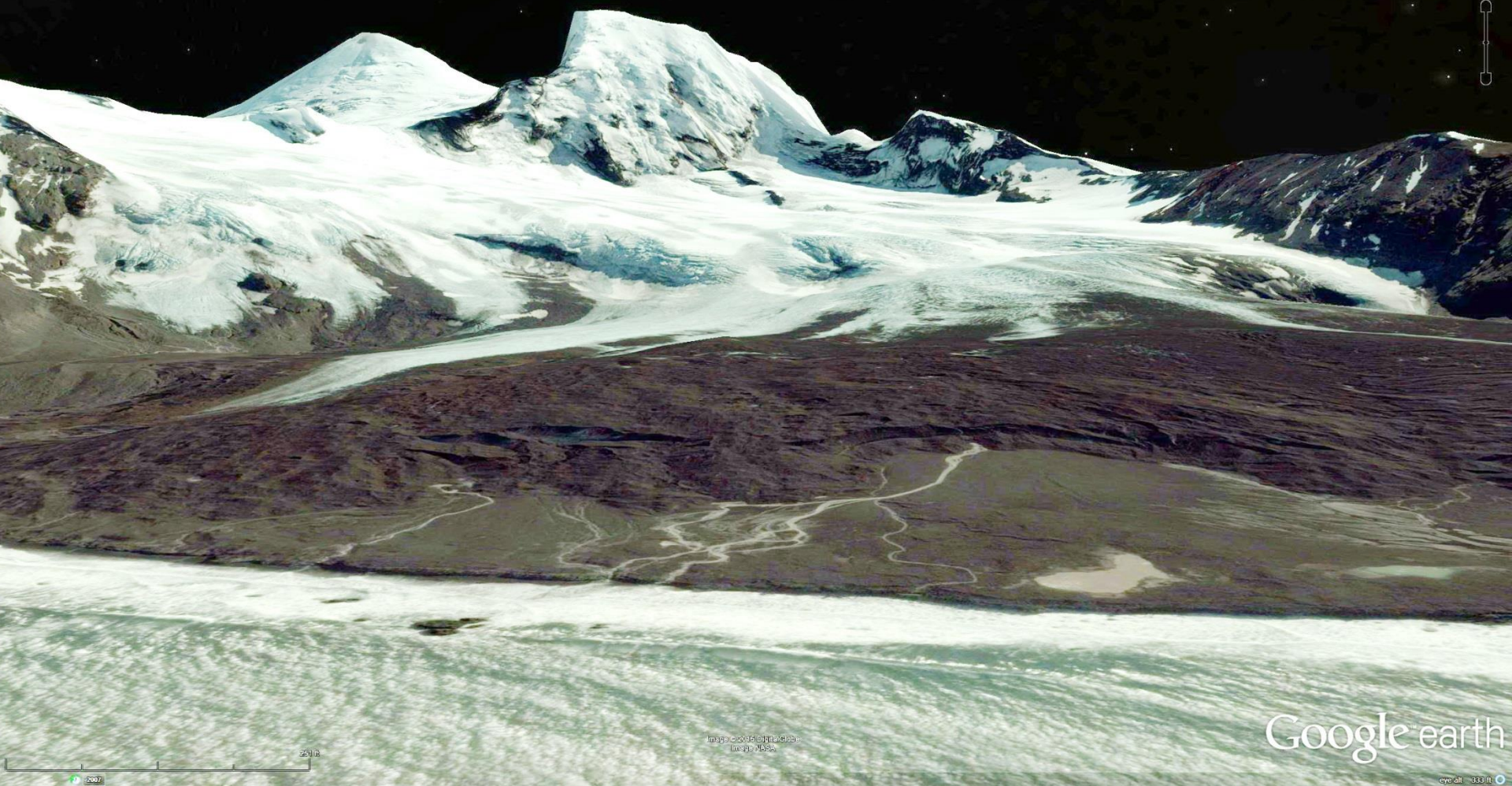
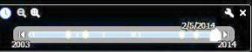


Image © 2013 Imagery © 2013

Google earth

eye alt 333 ft



130m  
Underground

This is an aerial photograph of a coastal area. A river or stream flows from the top left towards the bottom right, eventually meeting the sea. The land is covered in dense vegetation, appearing in shades of green and brown. A dashed white arrow points from the text '130m Underground' to a specific spot on the riverbank. The sea is visible on the right side of the image, with a lighter, hazy appearance.



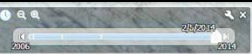
Image © 2015 DigitaClobe



Image © 2015 DigitaClobe



Image © 2015 DigitaClobe



Enters glacier

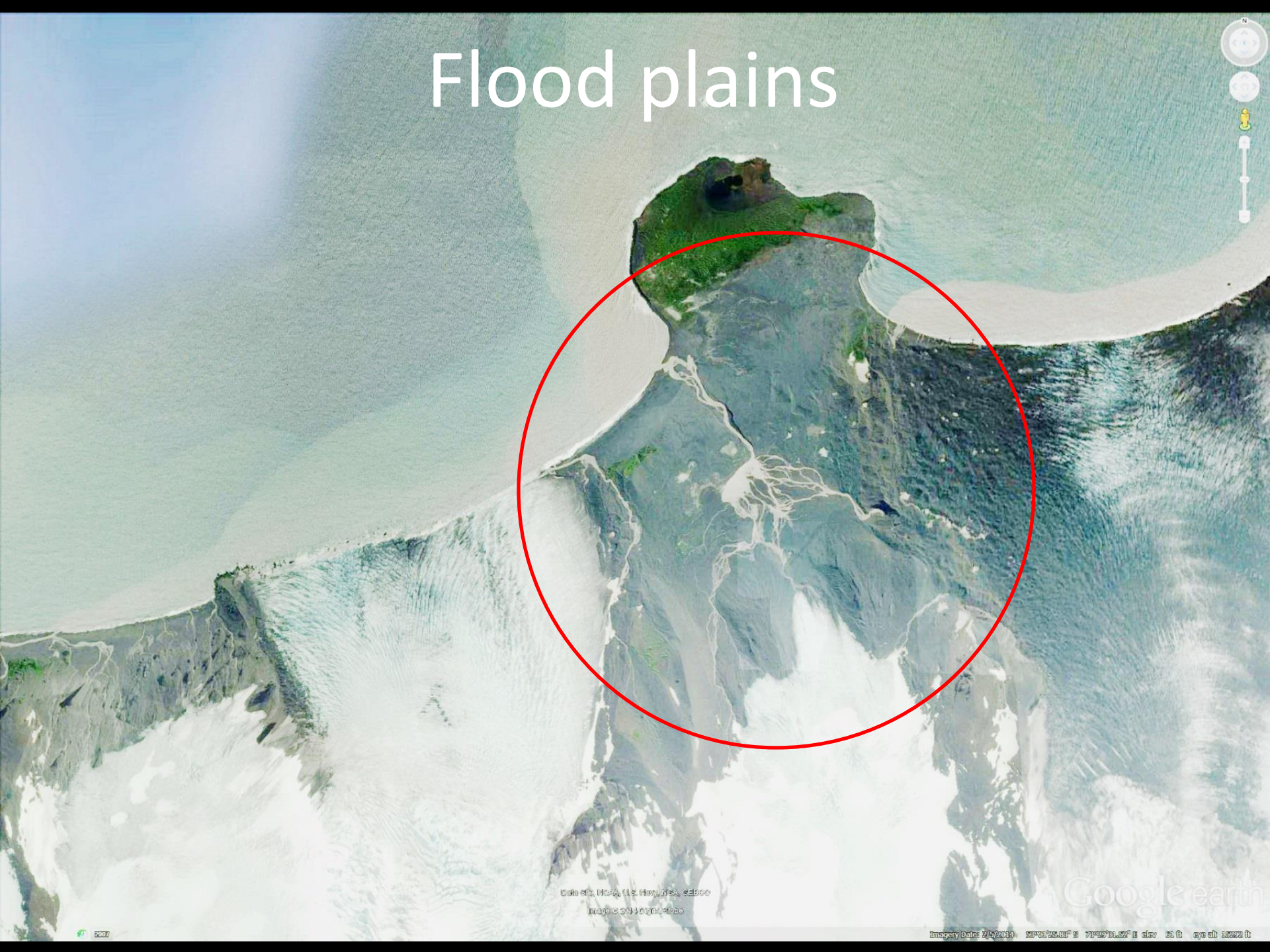
Exits glacier

Image © 2016 DigitalGlobe

Google earth

Imagery Date: 2/5/2014 53°06'10.64" S 73°39'39.19" E elev: 593 ft eye alt: 4883 ft

# Flood plains



Cape Cod, MA, U.S. Map, 1850  
Image © 2014 Google Earth

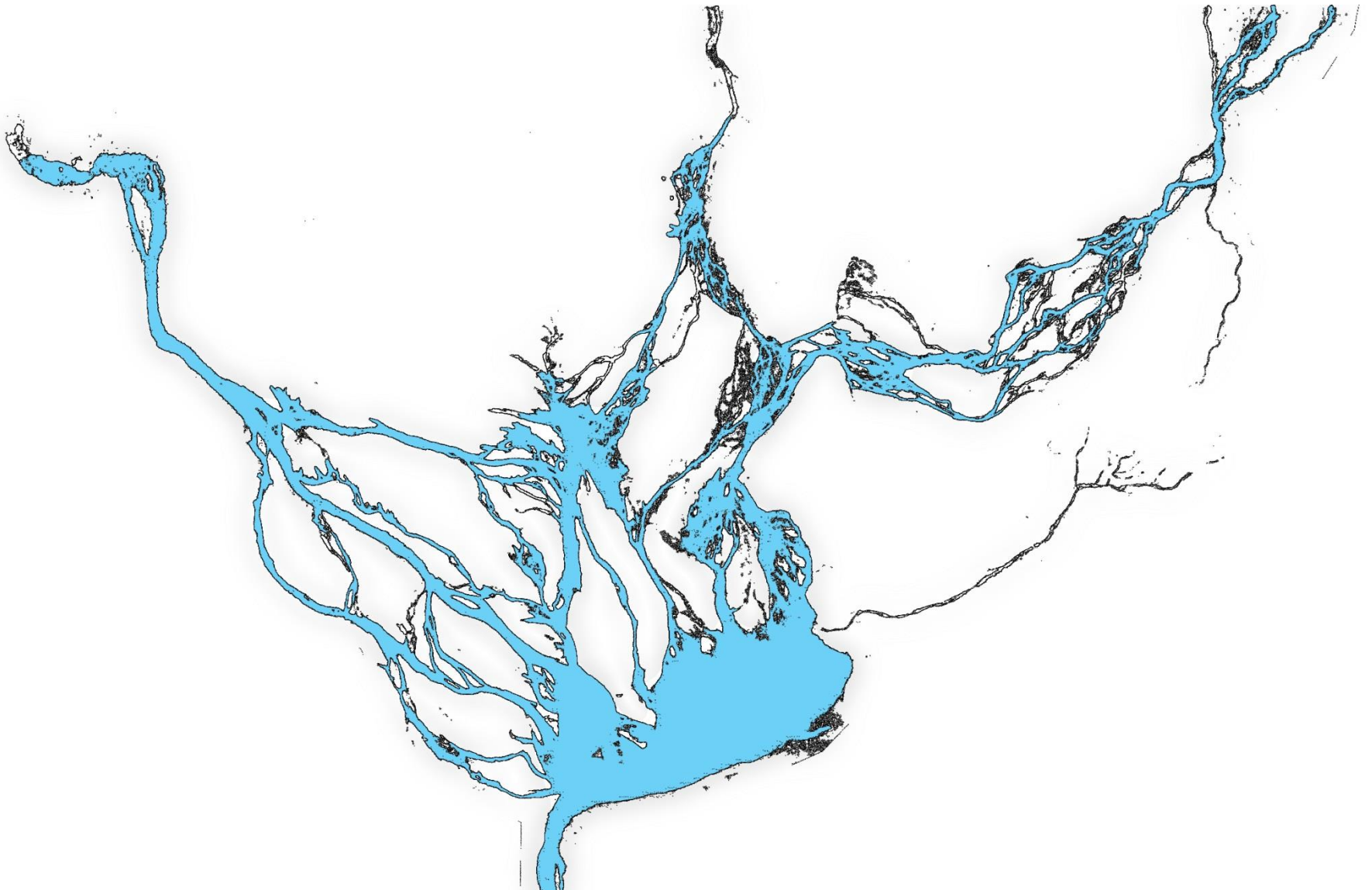
Google Earth

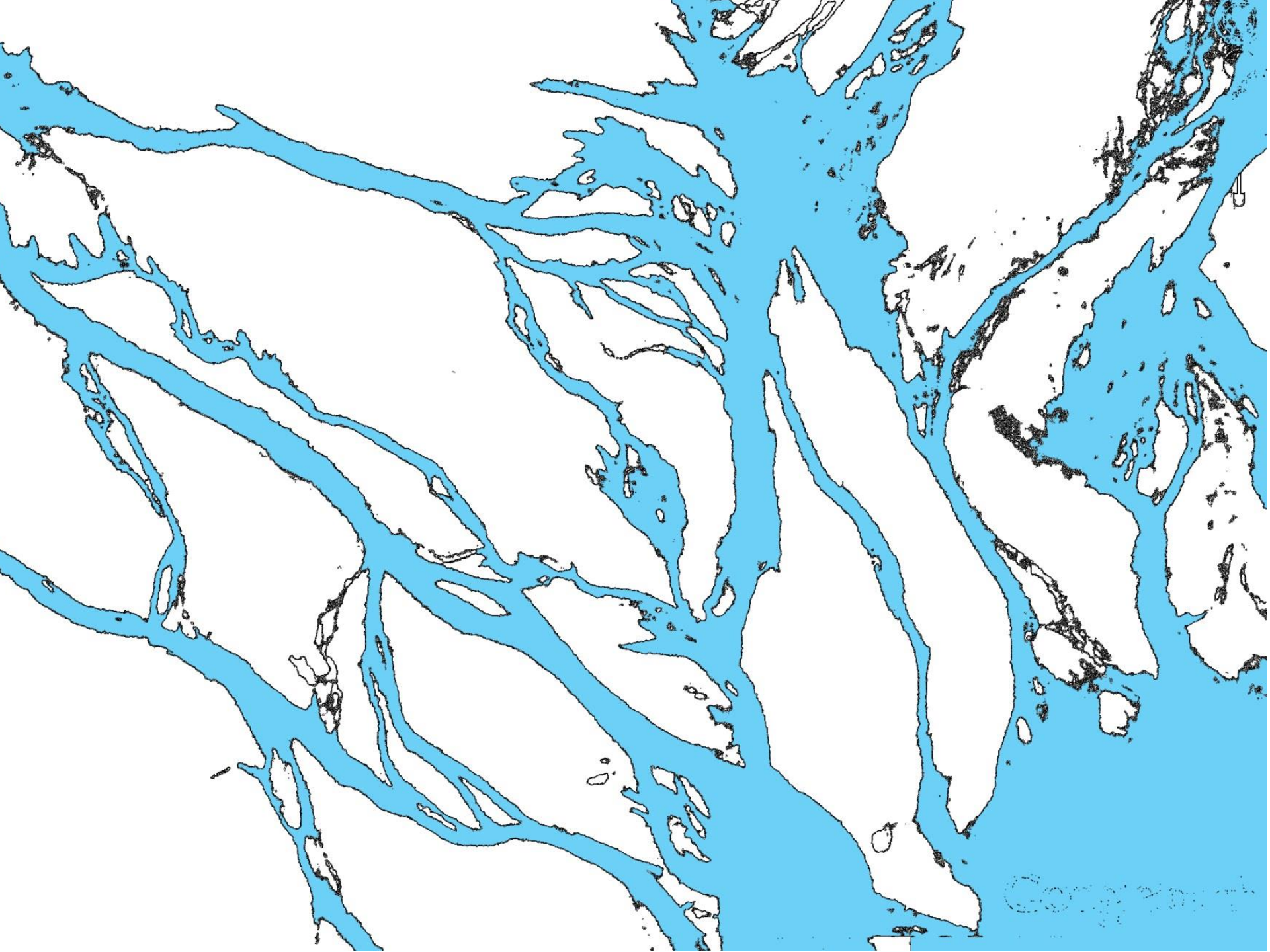
Imagery Date: 2/5/2014 50°01'25.80" N 71°02'11.22" E alt: 31 ft eye alt: 15522 ft

# Satellite image



# Processed image





... - . - - - . -

# Heard Island 2016