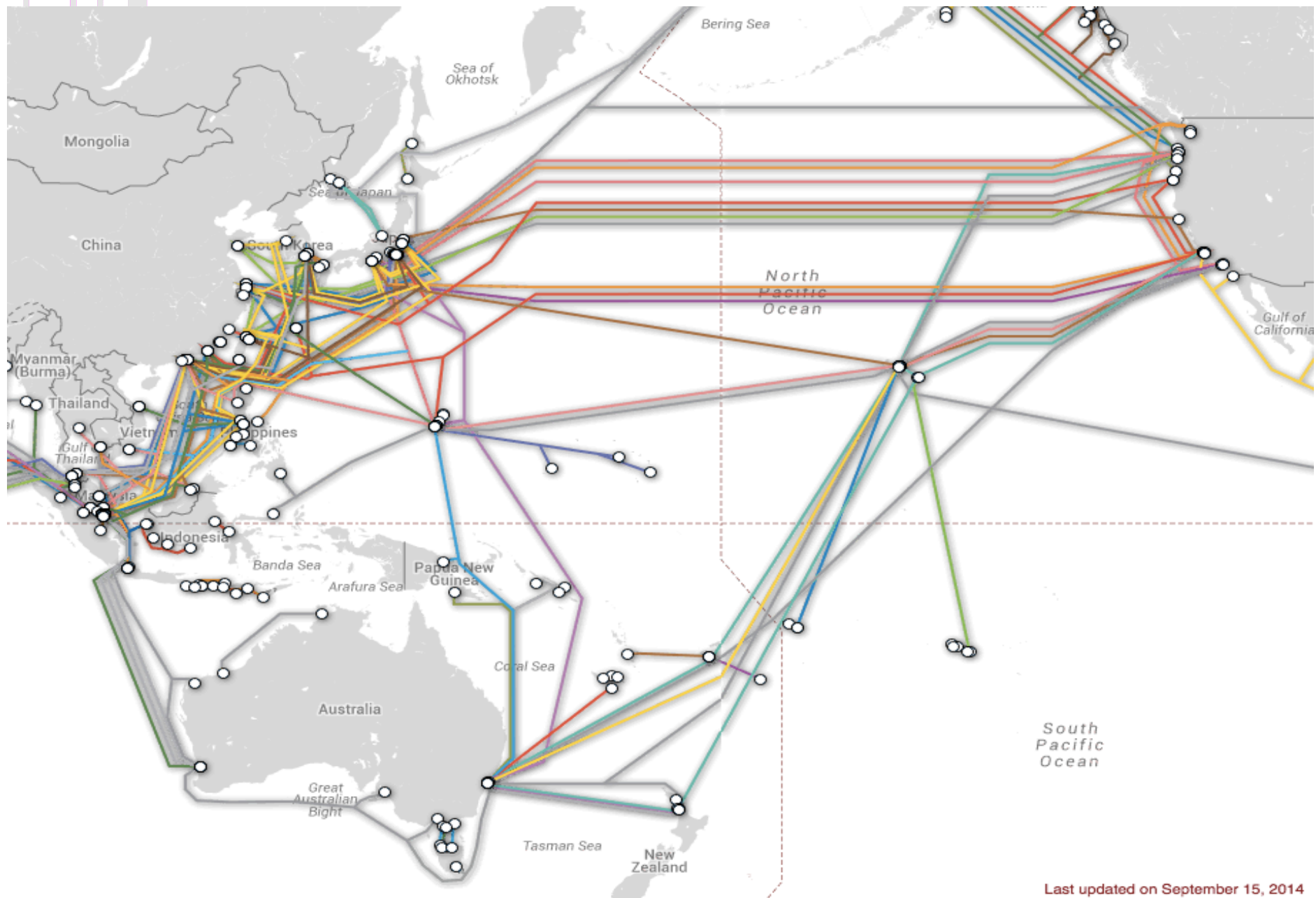
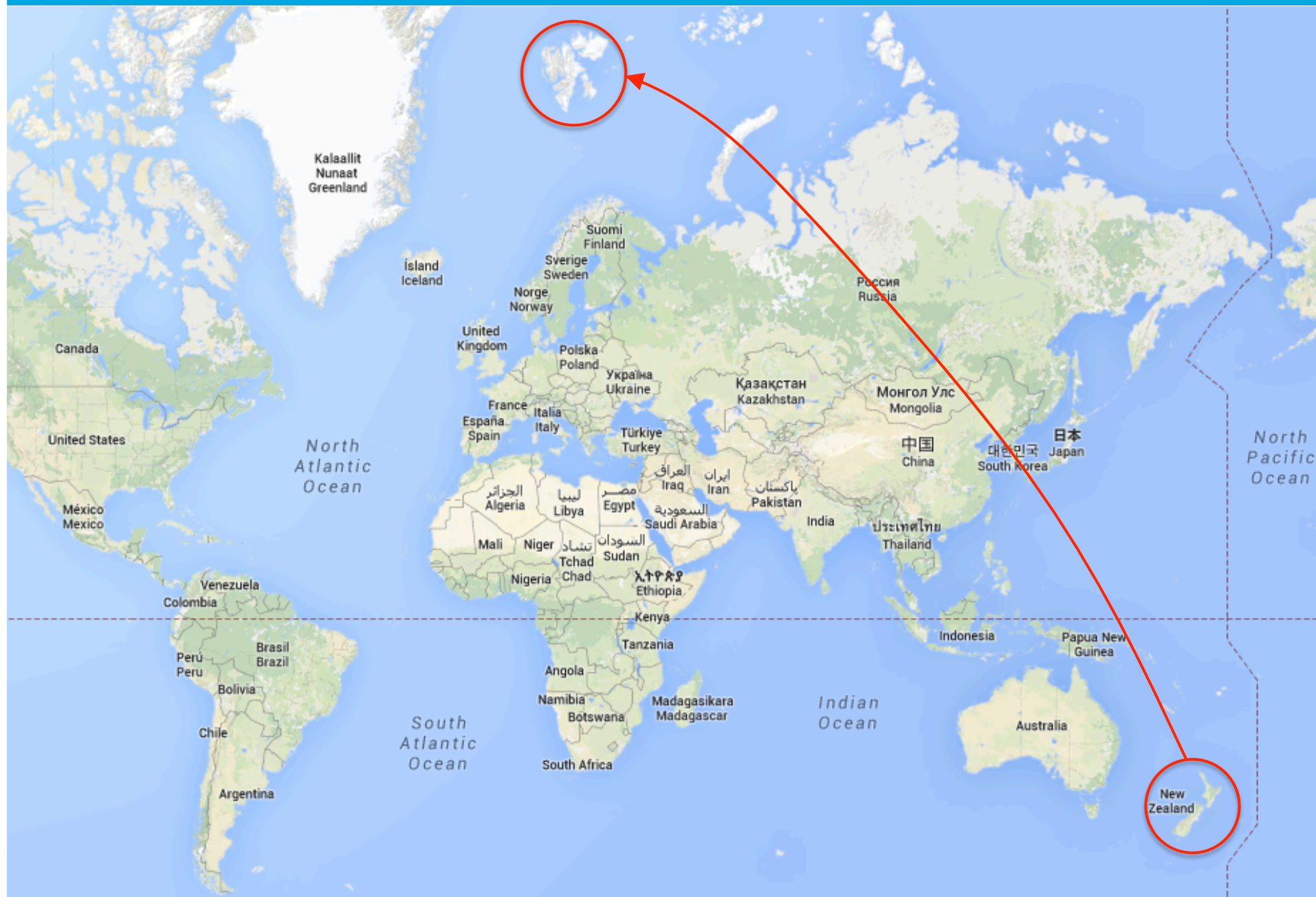


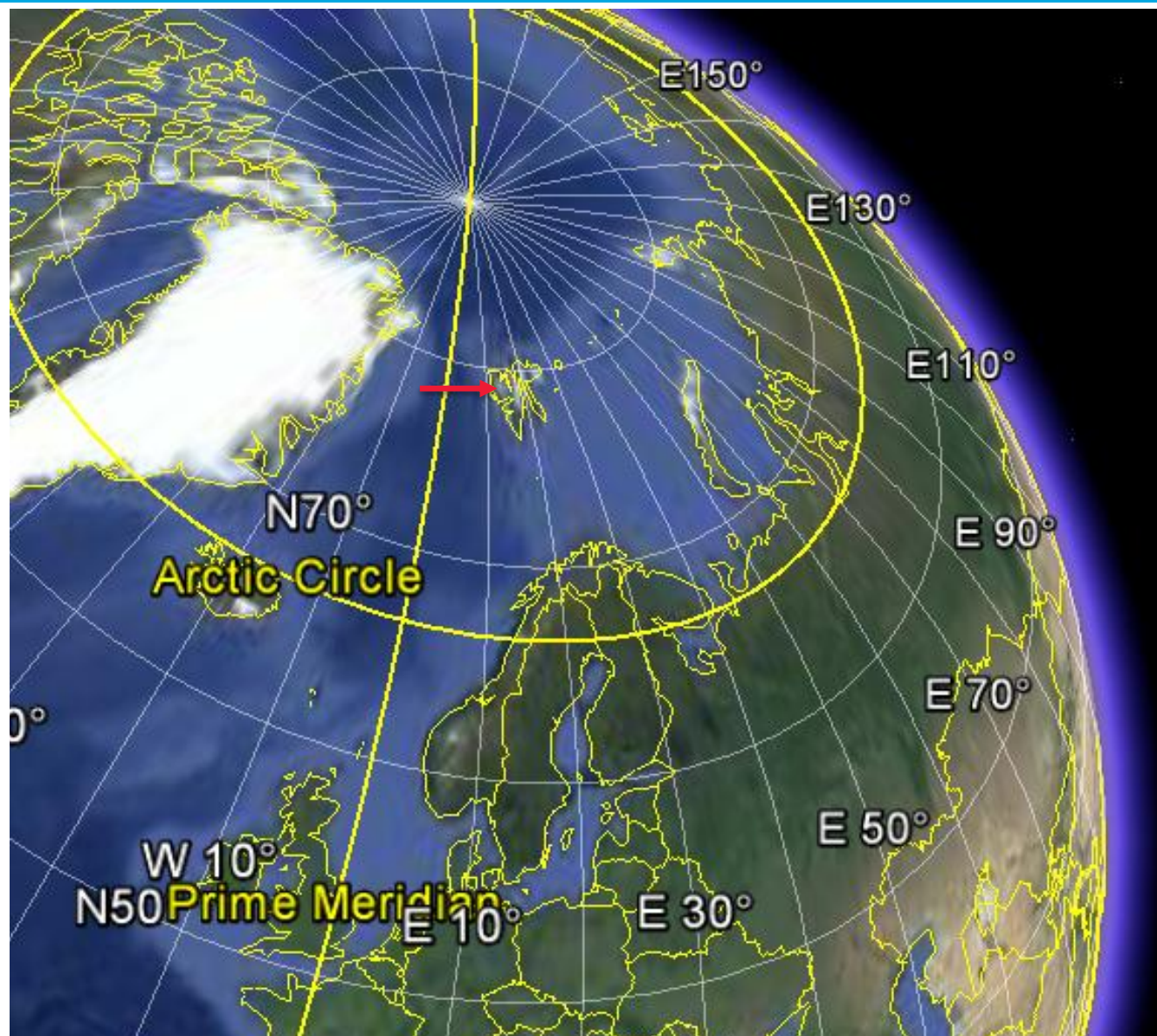
Arctic Fibre

14th Annual Global LambdaGrid Workshop

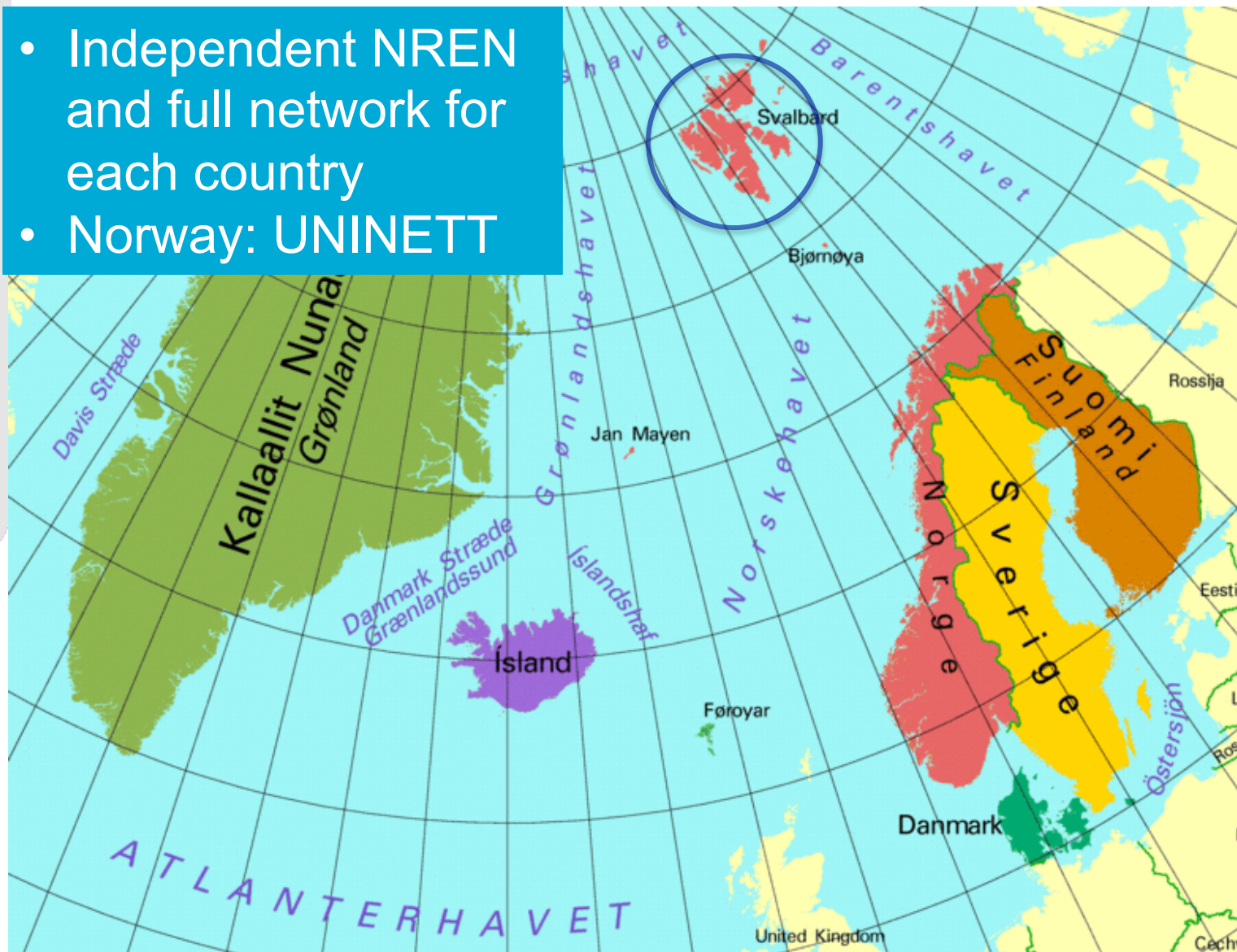


Change of Scene





- Independent NREN and full network for each country
- Norway: UNINETT



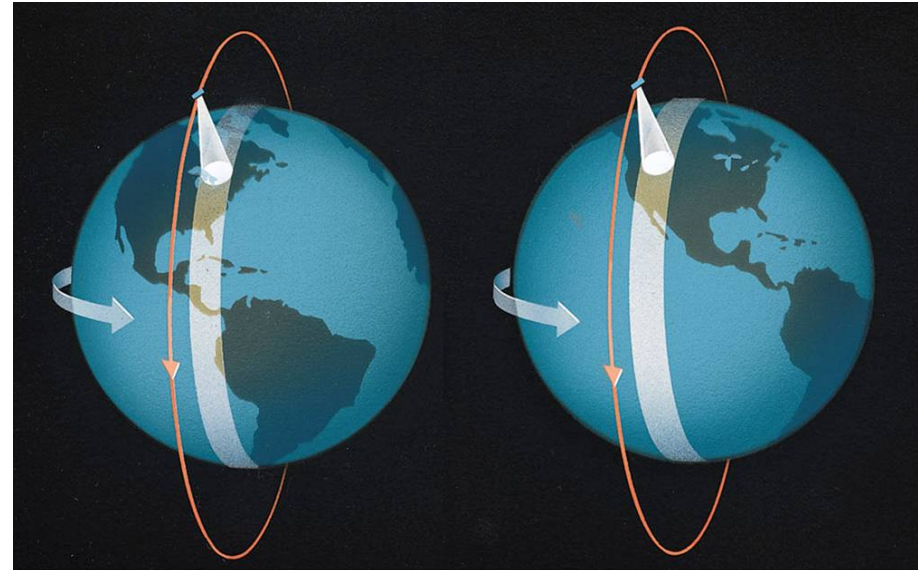
- 74'-81' North
- 61,022 km²
- 2500 Humans
- 3000 Polar Bears
- Activities
 - Coal Mining
 - Research
 - Tourism
- Svalbard Treaty
 - Like Antarctica
 - Governed by Norway
 - Strict environmental regulation
 - Citizens of a signatory can start enterprise
- Daily flights to mainland, facilities of modern society



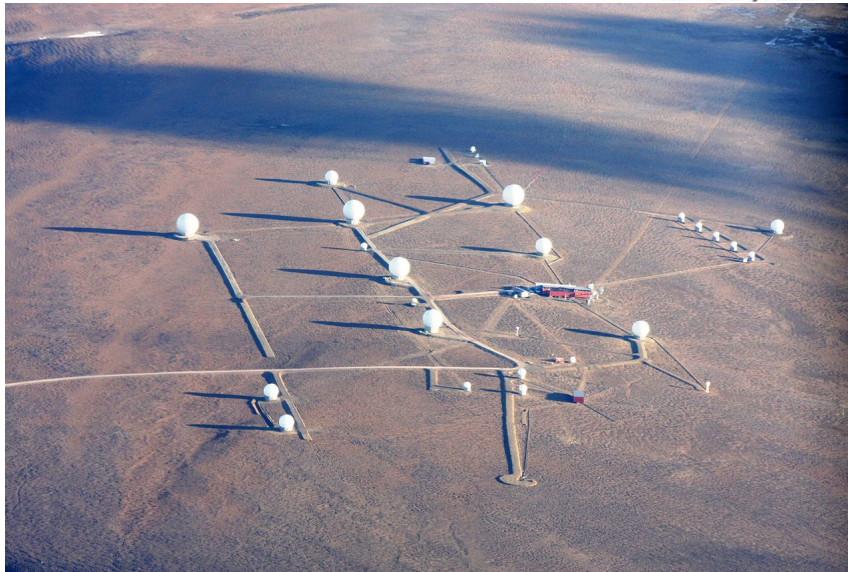
- 78°13' N
 - 1313 km from North Pole
 - 2512 km (north) from Copenhagen
 - Civil polar night 14 Nov – 29 Jan
- Population: 2,060
- University,
hotels,
bars,
shops,
airport,



Low orbit
Cover all earth
surface with a
single satellite

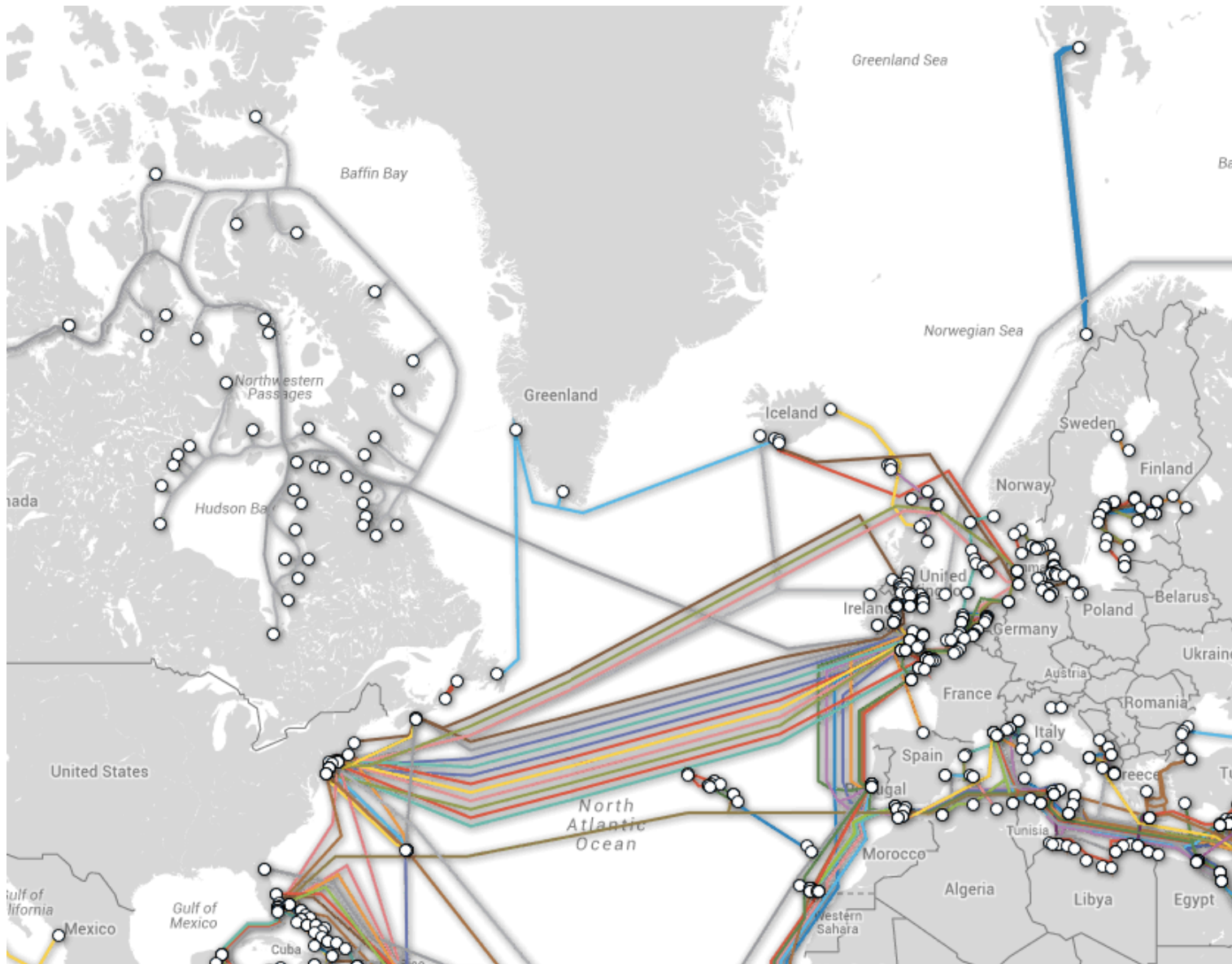


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Need near-
polar downlink
site

NASA @
Longyearbyen





Village dedicated to research – 78°5'N

Name	Nationality	Est	Research
Amundsen–Nobile	Italy	2009	Atmospheric
Arctic	Netherlands	1995	Ecology and others
Arctic Yellow River	China	2004	Environment, glaciology, meteorology, marine ecosyst,, meteorology, space–Earth measurements
British	United Kingdom	1991	Earth and life sciences
Corbel	France		Atmospheric sciences
Dasan	South Korea	2002	Atmospheric chemistry glacial and periglacial geomorphology and hydrology
Dirigibile Italia	Italy	1997	Environment and climate
Himadri	India	2008	Atmospheric sciences, marine ecosyst. & pollution
Japanese	Japan	1990	Atmospheric physics, glaciology, meteorology, oceanography and terrestrial biology
Koldewey	Germany	1991	Atmospheric physics, biology, chemistry, geology.
Marine Laboratory	Norway	2005	Marine biology
Rabot	France	1999	Atmospheric and life sciences
Zeppelin	Norway	1988	Atmospheric

- New telescope, RFS 2018
- Initial requirement 10-20 Gbps (mainly for e-VLBI)





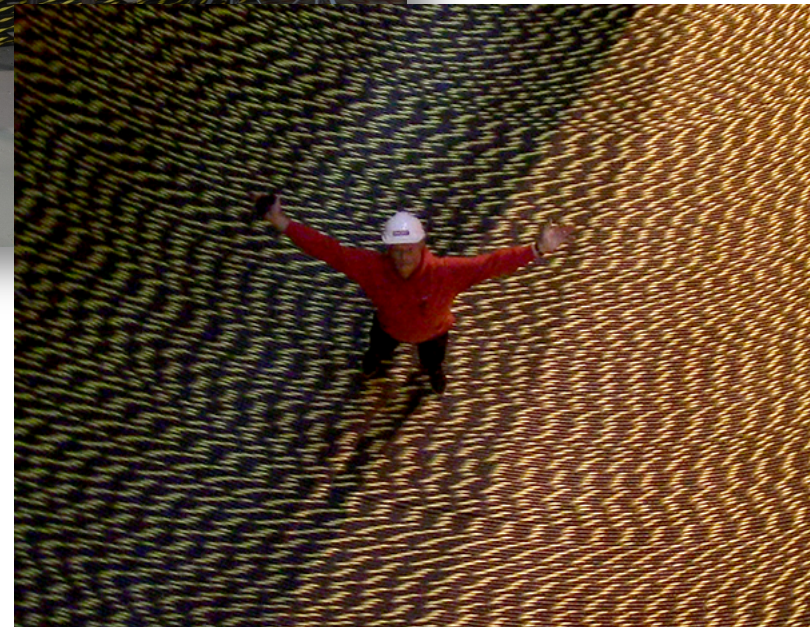
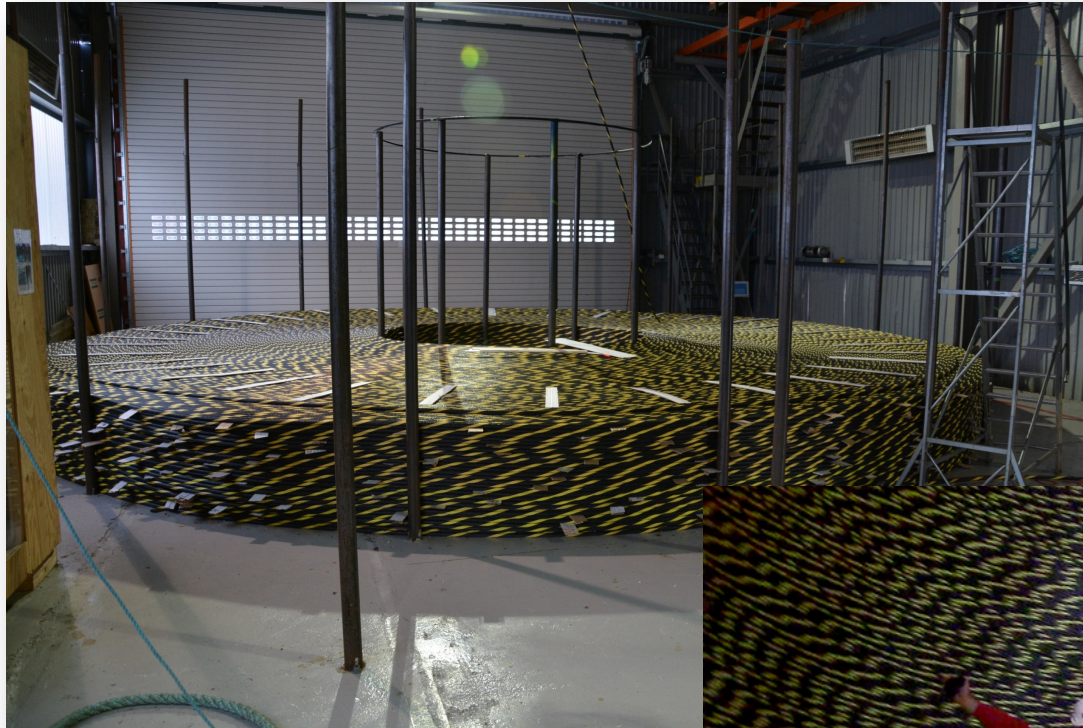
radiolink



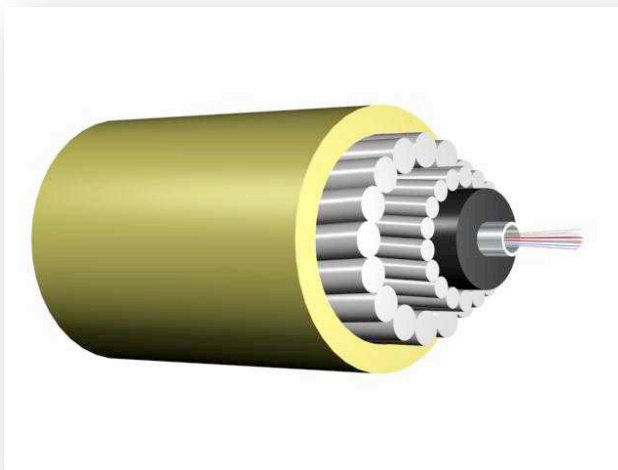
Sjøkabel

ca 270 km





Cable Type	Number of Fibres	Fibre type	Attenuation dB/km @ 1550 nm	Price Per Meter USD
URC-1 DA_2,4/2,4	24	G652D	Fibre no 1-12: 0,190 Fibre no 13-24: 0,20	6.76



Cross Section

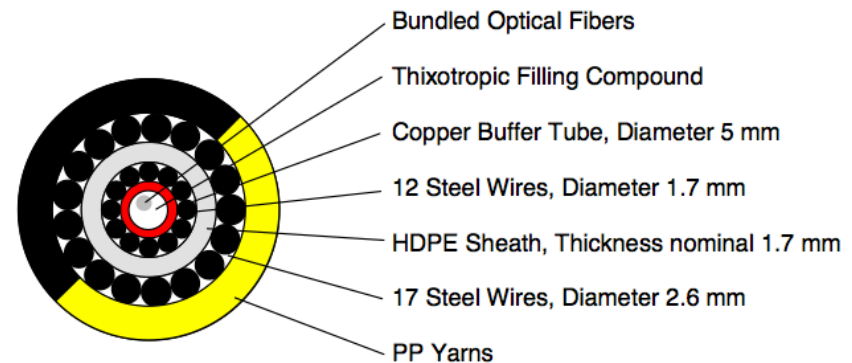
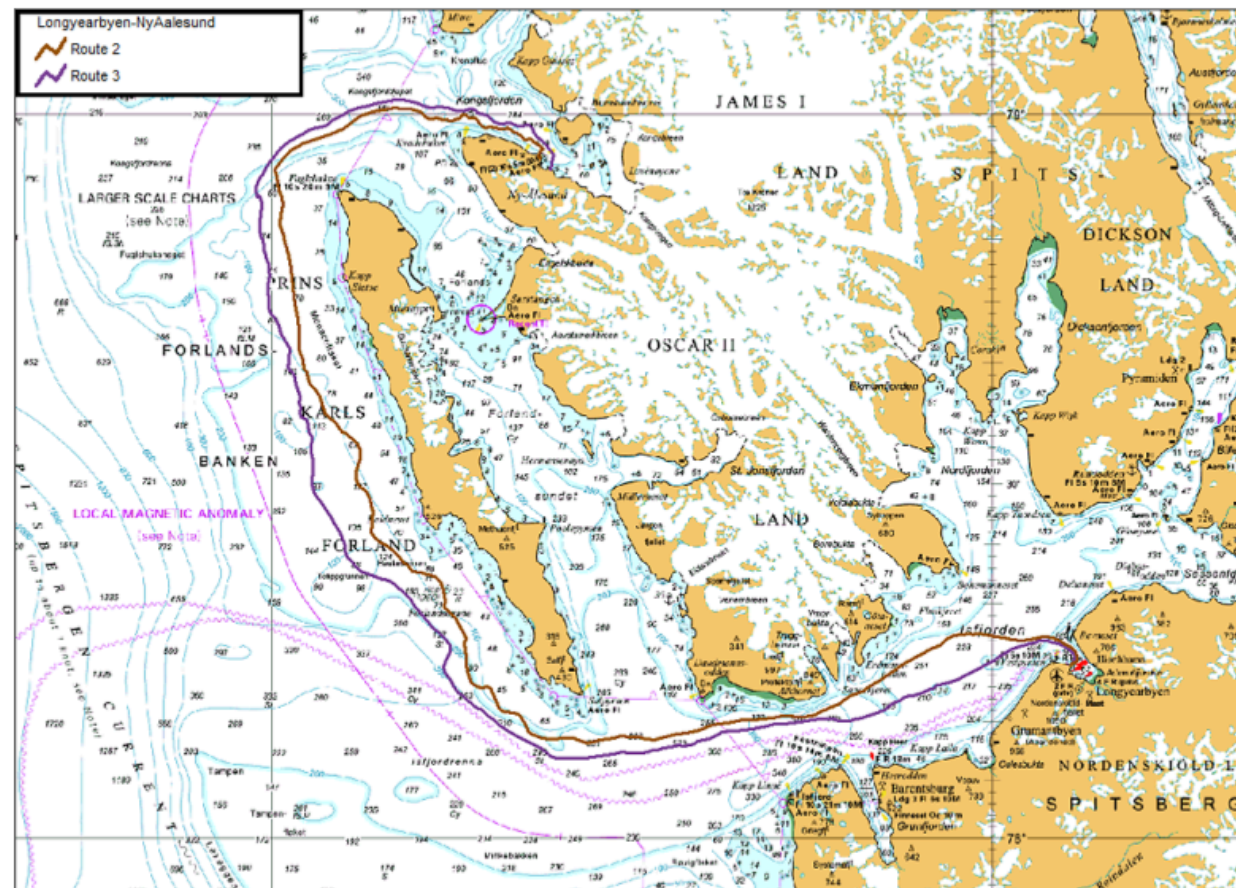
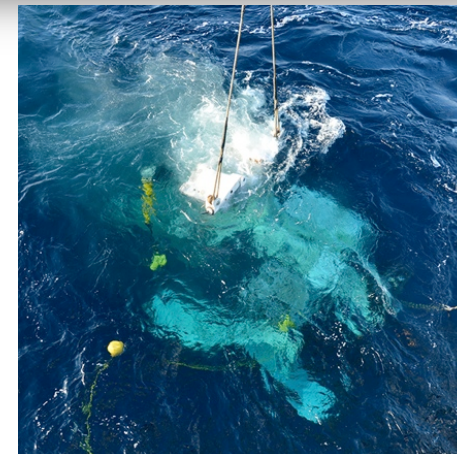


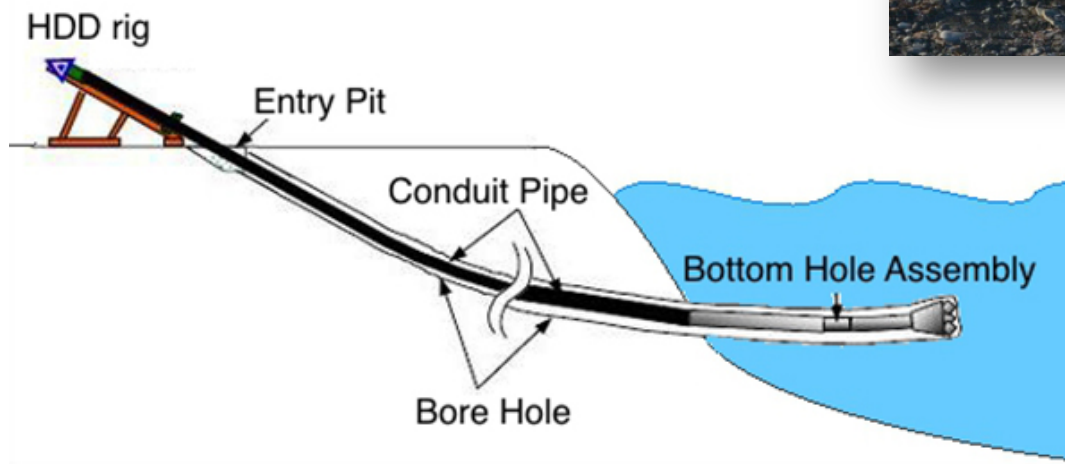
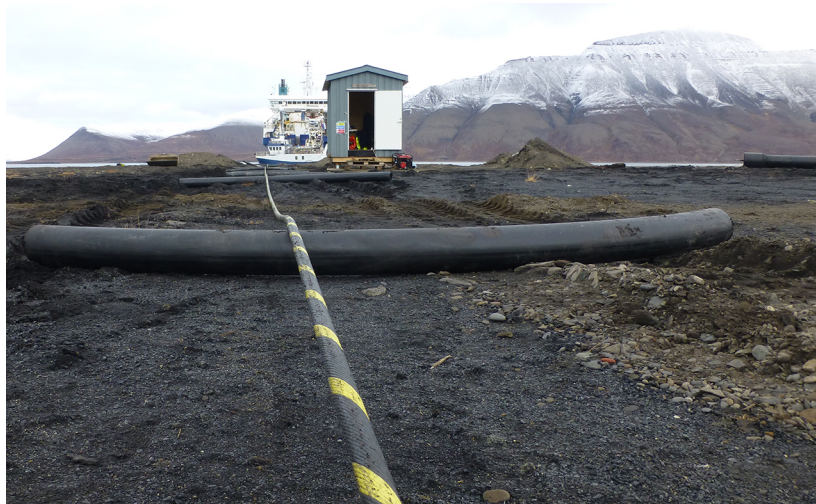
Figure 2-1 Overview of Nyaal cable route survey, Route 2 shown in red



- 2 x 270km sub-sea cable
- RFS December 2014







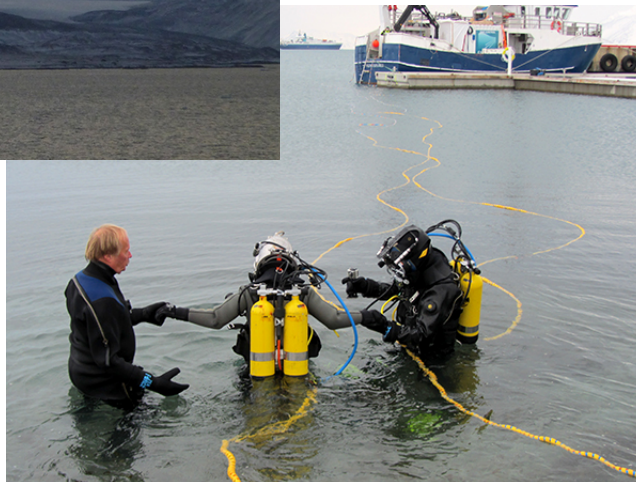
Horizontal Directional Drilling



NORDUnet

Nordic Infrastructure for Research & Education

UNINETT team!



UNINETT

10101 11110
01101 10101
100110 10010
010101010001
1111010101001
11010 0101010
00000 101010
01100 01101

Sjøfberkabel-prosjektet mellom Longyearbyen og Ny-Ålesund

Vi feirer at begge sjøfberkablene nå er installert ved å
dykke med profesjonelt dykkerutstyr i Ny-Ålesund.

Takk til **Fagdykk** for strålende arbeid samt bistand til dette spesielle dykket

Grete Duna



Helge Stranden



Ny-Ålesund, 23.09.2014

- Local fibre Longyearbyen (resilience)
- 2x270km sea cable
- 2.7km sea cable loop at Ny Ålesund
- Amp huts, land facilities
- Testing Oktober – December 2014



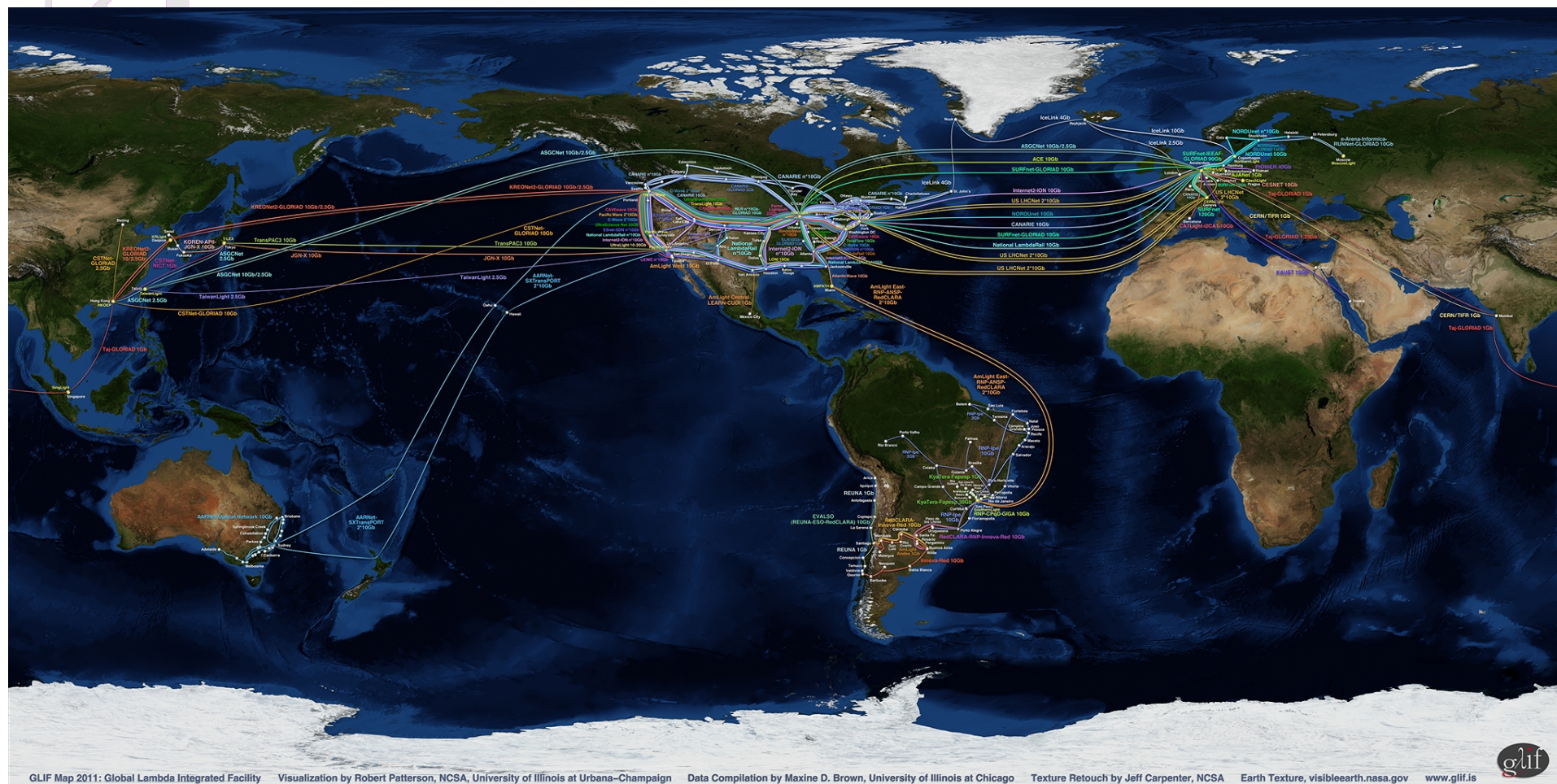
- DWDM deployment
 - in tender
 - RFS April 2015
- IP service upgrades
 - Q1 2015
- Mainland capacity
 - Talks with partners on mainland cable system
 - Short-term capacity upgrades
 - Long-term options incl. alien waves being investigated



- <http://www.uninett.no>
- <http://www.facebook.com/UNINETT>
- Grete Duna:
 - <http://grete.duna.no/blog/>

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GLIF - Everywhere



UNINETT



