

South Pole Logistics

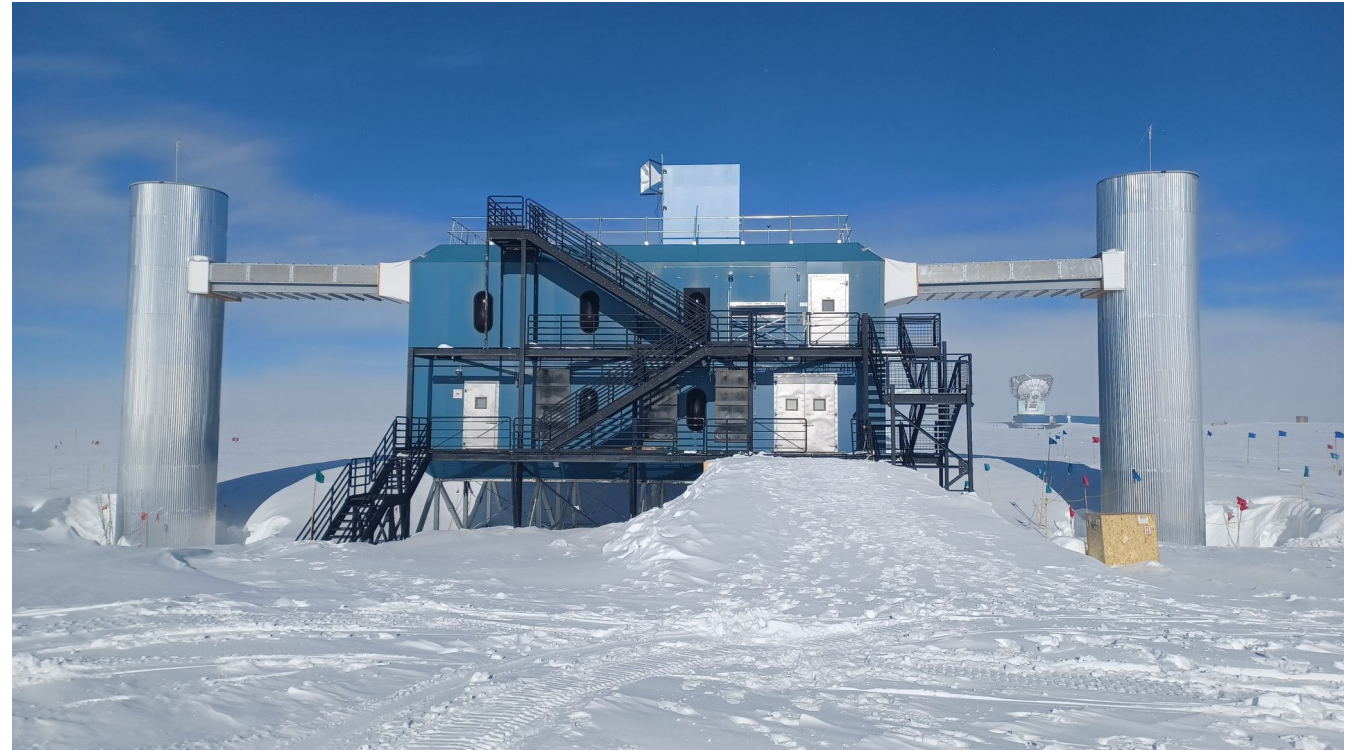
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Detector Operations Manager

NSF Mid-Term Review
29 April 2024



Outline

- Coordination with ASC
- Post-COVID
- Personnel
- Cargo
- 2024-25 planning



Season Planning with ASC

- Sheryl Seagraves, Paul Sullivan, Leah Street, Tim Ager, Bill Coughran
- 3-4 meetings a year
- Key in-person meeting to discuss plans for the upcoming season
- A lot of communication after SIP submission to iron out the details
 - Cargo tracking updates
 - PQ status

Challenges of Post-COVID On-site Support

- On-site support is great with what's available
- Personnel support sometimes limited or none
 - Carpenters, electricians, heavy equipment operators, etc.
- Heavy equipment support sometimes limited or none
 - Parts for maintenance delayed, limited mechanics on-site, etc.



Personnel – typical scheduling

	November				December				January			
	wk-1	wk-2	wk-3	wk-4	wk-1	wk-2	wk-3	wk-4	wk-1	wk-2	wk-3	wk-4
Winter Over												
Winter Over												
SME												
helper												
SME												
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SME												
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Operational Notice

- 9 beds
- 12 deployments

The “Flight Gap”

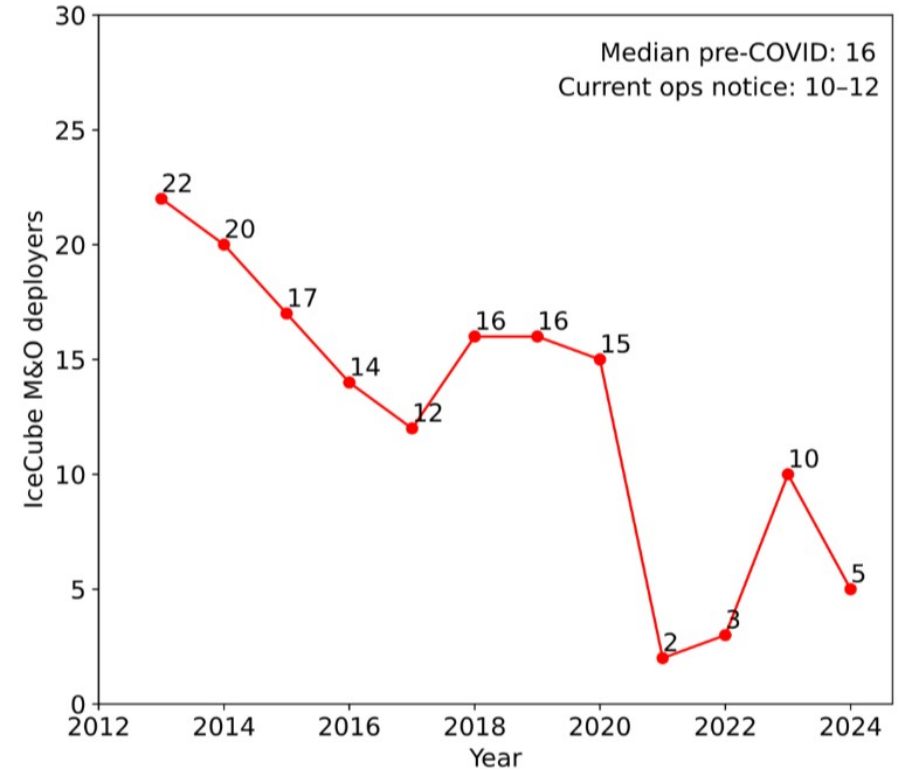
- No C-17s between mid-Dec to late-Jan
- More pressure on the C-130s

	November				December				January			
	wk-1	wk-2	wk-3	wk-4	wk-1	wk-2	wk-3	wk-4	wk-1	wk-2	wk-3	wk-4
Winter Over												
Winter Over												
SME												
SME												
SME												

With so few deployers, the majority need to be SMEs.
 SMEs have other northern responsibilities and can't deploy > 5-6 weeks.

Personnel

- Population limited since COVID
- Limited personnel rotations is challenging
 - Subject matter experts can't be away from Northern responsibilities for 2-3 months
 - Fewer collaborators getting the experience
 - Losing opportunity to train the next generation
 - Limits capability to support new science (ARA, IceACT, Surface Array, etc.)



Cargo

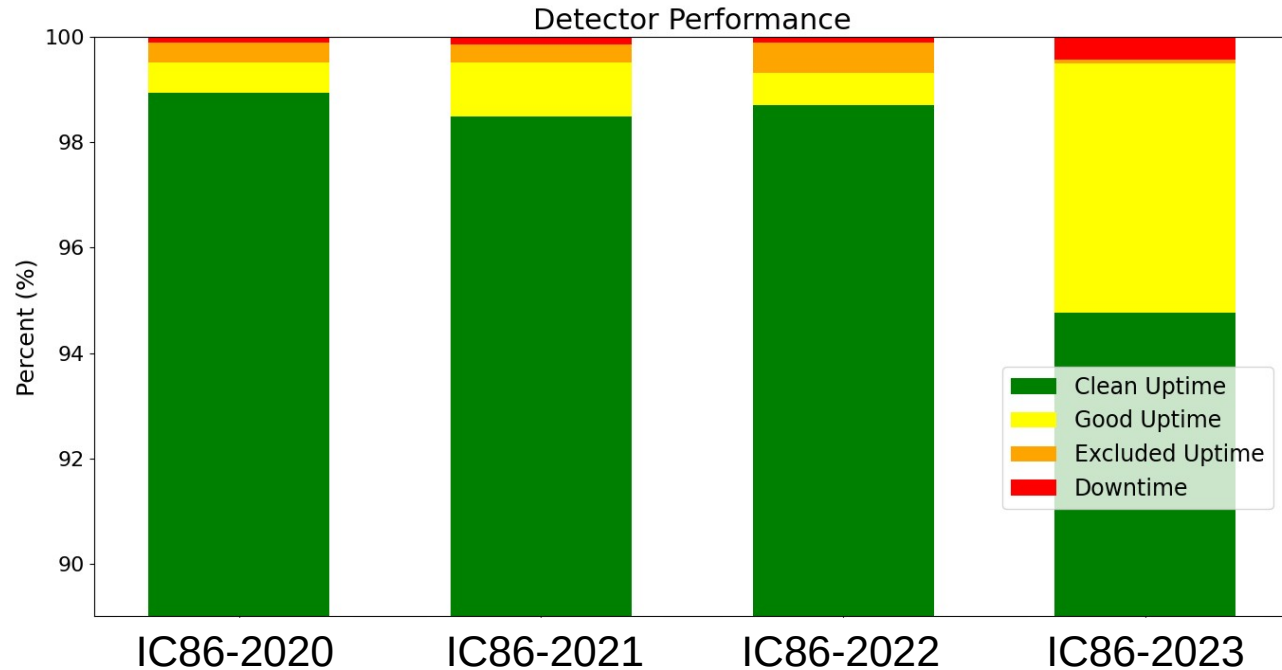
- Especially challenging this season



Description	ROS	Delivered	Delay (days)
Power supply 1	11/11/23	11/24/23	13
Power supply 2	11/11/23	12/20/23	39
Office lift	11/11/23	12/20/23	39
IceACT	11/25/23	12/07/23	12
Wind turbine	11/18/23	12/28/23	40
UPS 1	11/11/23	01/28/24	78
UPS 2	11/11/23	01/28/24	78
UPS 3	11/11/23	01/28/24	78
UPS 4	11/11/23	01/28/24	78
UPS 5	11/11/23	01/28/24	78
UPS 6	11/11/23	12/20/23	39
UPS 7	11/11/23	01/28/24	78

All UPSes hand-carried to the server room because the crane was broken and parts were delayed. Then no crane operator on-site.

Impact of the UPS delay



The lack of experts leading the UPS replacements has caused:

- significantly degraded clean uptime
- additional hardware failures
- full detector down for an hour

	<u>January</u>	<u>February</u>
Clean Uptime:	99.20 %	89.89 %
Good Uptime:	0.64 %	9.65 %

2023-24 Field Season Activities

The Winterovers now tasked to complete these activities.

Maintenance activity	Status for 23-24	Primary constraints
ICL networking	Prioritized, complete	
Uninterruptible Power Supply replacement	Prioritized, incomplete	cargo delivery
DAQ and Upgrade support	Prioritized, complete	
ICL prototype wind turbine upgrade	complete	
Air Cherenkov telescope maintenance / upgrade	Scaled back, incomplete	population
ICL cable tower Upgrade support	Prioritized, complete	
Additional surface array station installations	deferred	population, cargo capacity, contractor support
Prototype solar panel installation	deferred	population, cargo capacity
Askaryan radio array maintenance	deferred	population

2024-25 Field Season Planning

Core M&O

- Power infrastructure upgrade
- Firewall lifecycle replacement
- New workstations for B2 and ICL
- Data archival hard drives
- Dispose of old UPSes and batteries

Upgrade Integration

- ICL Upgrade electronics installation and commissioning
- Support surface cable installation
- Support Upgrade DOM testing
- Two 50A receptacles for Rack-14

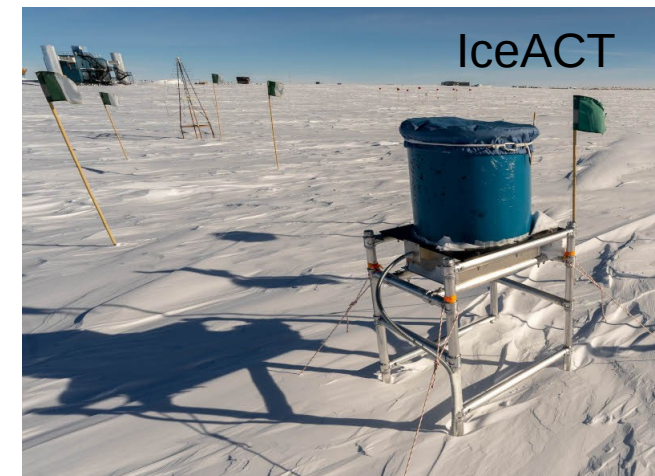
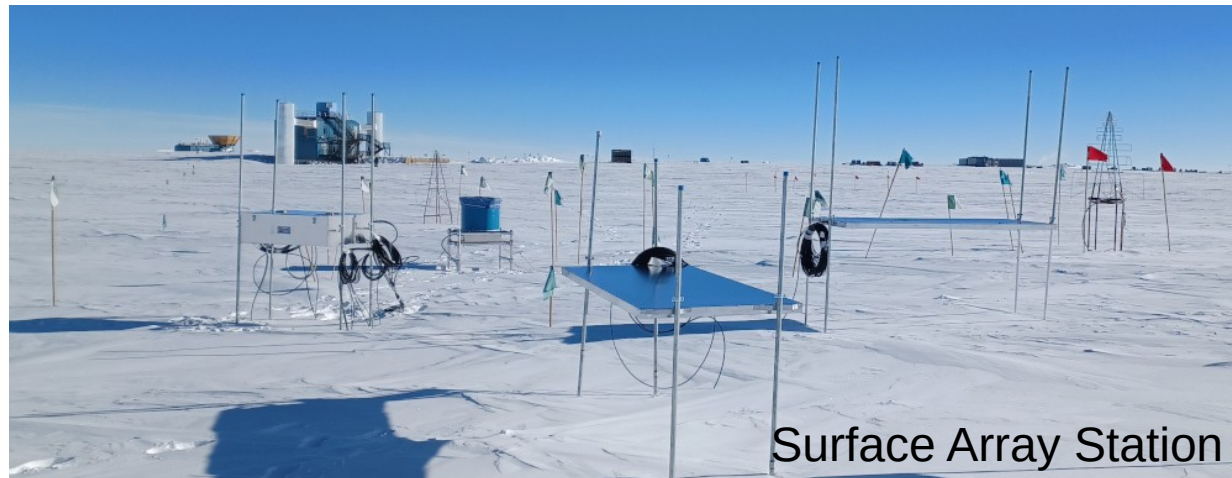
U47	White Rabbit grandmaster
U46	
U45	DOM power supply 1
U44	DOM power supply 2
U43	DOM power supply 3
U42	DOM power supply 4
U41	DOM power supply 5
U40	DOM power supply 6
U39	DOM power supply 7
U38	PDU 1 / switch 1 front/back
U37	PDU 2 / switch 2 front/back
U36	
U35	
U34	
U33	fieldhub87
U32	
U31	
U30	fieldhub88
U29	
U28	
U27	fieldhub89
U26	
U25	
U24	fieldhub90
U23	
U22	
U21	fieldhub91
U20	
U19	
U18	fieldhub92
U17	
U16	
U15	
U14	fieldhub93
U13	
U12	
U11	
U10	UPS, 7.2kW non-redundant
U9	
U8	
U7	
U6	
U5	
U4	UPS, 7.2kW non-redundant
U3	
U2	
U1	

Rack-14



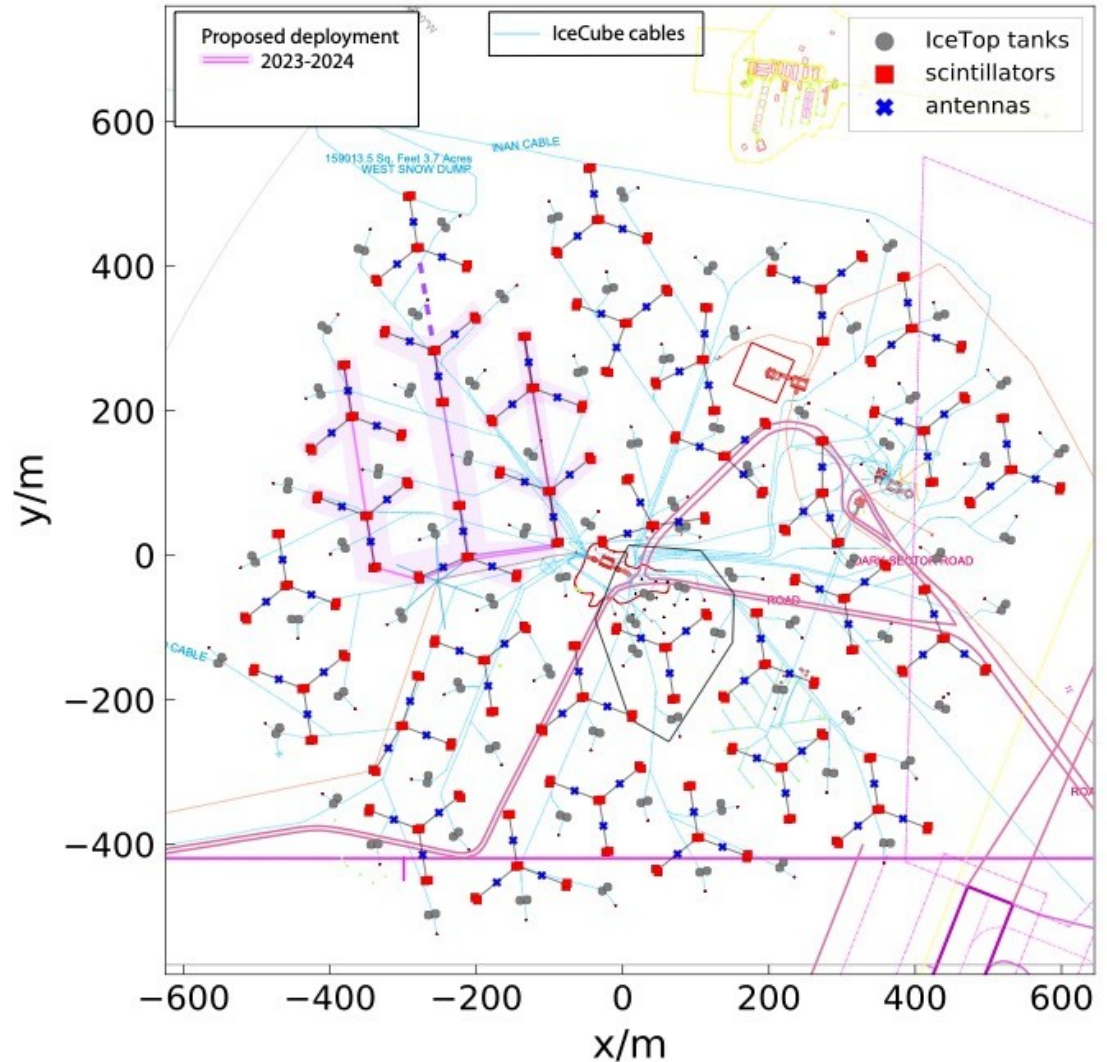
Supporting New Science

- ARA DAQ maintenance (deferred from 2023-24)
- IceACT upgrade (deferred from 2023-24)
- SES solar installation (deferred from 2023-24)
- Surface array station antenna raise
- Deploy more surface array stations



Surface Array

- Successful prototype station
- Construction previously limited by COVID, available logistics support, population limitations, etc.
- Detectors produced for 12 stations.
- 2023-24 deployments deferred. Propose resuming deployments for 2024-25.
- Goal: compact sub-array deployed before Upgrade drilling season.
 - can partially achieve most goals of the full surface array.



Summary

- Keeping up with critical maintenance but not sustainable long-term
- Personnel rotations are key:
 - supporting new science
 - training the next generation