



# South Pole Ice Core Update

## IDPO Science Advisory Board Meeting

### April 22, 2014

**SOUTH  
POLE**

1500 meter

**ICE  
CORE**



Chief Scientist: Dr. Eric Saltzman, UC-Irvine

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



# DRILL SITE SELECTED

- Drill site selected and approved by NSF & ASC
  - Approximately 2.7 km from Elevated Station to drill site
  - ~200 m perpendicular off road to ARA Wind Turbine 3 Test Bed
  - 89° 59' 20.168" S, 98° 9' 34.528" W (N 48800.00, E 42600.00 )
- Region surveyed (100 m x 100 m) with GPR in November 2013
  - no obvious disturbances in the area
- Significant data on depth-age, temperature, ice thickness, accumulation rate and internal layers analyzed
- Layers appear well-behaved in upper 1500m. Supported by depth-age, T data.
  - Some disturbances below, though large-scale flow direction not known



Amundsen-Scott South Pole Station  
COSMO Sky-Med RADAR image  
July 6, 2012

D A R K  
S E C T O R

C L E A N  
A I R  
S E C T O R

Dark Sector  
Laboratory

IceCube  
Laboratory

MAPO

NGO Camping &  
Aircraft Parking

Elevated Station

Atmospheric Research Observatory (ARO)

**ROUGH LOCATION  
OF DRILL SITE**

Fuel Arches  
(subsurface)

OPERATIONS  
ZONE

S K I W A Y

Vehicle trail  
to SPRESSO

Vehicle supported  
oversnow approach

D O W N W I N D

Q U I E T  
S E C T O R

S E C T O R

# 2013-14 COMPLETED ACTIVITIES

## Site Work

- 100 m x 100 m GPR survey centered on selected drill located
- “Road” compacted for travel from station
- Camp structure foundations compacted

## Cargo

- ESTISOL 140 purchased, shipped from Europe to CHCH to MCM
- Ice core boxes and tubes staged in MCM



# 2014-15 FIELD PLAN

- 10-person science and drill team, 24/6 ops, 3 shifts of 3 people
- 8-10 week field season (exact dates TBD; ~Dec thru Jan)
- Crew will reside at Station, lunch at Drill Site
- < 3km commute from Station to Drill Site
- Science Leaders - Murat Aydin/TJ Fudge (split season)
- Science crew: Kimberly Casey (Goddard)  
Melinda Nicewonger (UC-Irvine)
- Lead Driller - Tanner Kuhl
- Rest of drill crew TBD (although Greenland drillers selected)
- Excavate drill & core storage trench, install drill & overlying WxPORT tent
- Drill to 700 m depth
  - ✓ dry drill 0-135 m; ream to 125 m; set casing; wet drill 135-700 m
  - ✓ ship to NICL 0-550 m, winter-over brittle ice (~550-700 m depth)
  - ✓ 3 week processing at NICL



# 2015-16 FIELD PLAN

- 10-person science and drill team, 24/6 work schedule, 3 shifts of 3 people
- 8-10 week field season (exact dates TBD; ~Dec thru Jan)
- Crew will reside at Station, lunch at Drill Site
- < 3km commute from Station to Drill Site
- Science Leaders - Murat Aydin/TJ Fudge (split season)
- **Science crew: To be determined**
- Lead Driller - Tanner Kuhl
- Rest of drill crew TBD (hopefully returnees from 2014-15)
- Drill 700-1500 m depth
  - ✓ ship to NICL ~550-700 m and ~1250-1500 m
  - ✓ winter-over newly drilled brittle ice (~700-1250 m depth)
  - ✓ dismantle drill and WxPORT, retrograde to IDDO
  - ✓ 3 week processing at NICL



# 2016-17 FIELD PLAN

## Current Plan

- Ship remaining core to NICL (~700-1250 m depth)
- 4 week processing at NICL
- Camp structure foundations compacted

## Back-Up Plan

- Complete drilling
- Ship all core to NICL
- Ship drill and WxPORT to IDDO



# PROPOSALS TO ANALYZE THE ICE CORE

- Currently, only the collection of the ice core is funded

*Collaborative Research: A 1500 m Ice Core from South Pole*

PIs: Saltzman, Aydin, Steig, Twickler, Souney

- Scientific Steering Committee (SSC)
  - Saltzman, Steig, Neumann and Aydin
  - 2014 NSF Antarctic Sciences Solicitation
    - *Letter of Support* provided to 12 proposals interested in analyzing the ice core

Proposed measurements: evaluated for ice availability by the SSC prior to the submission of science proposals!!

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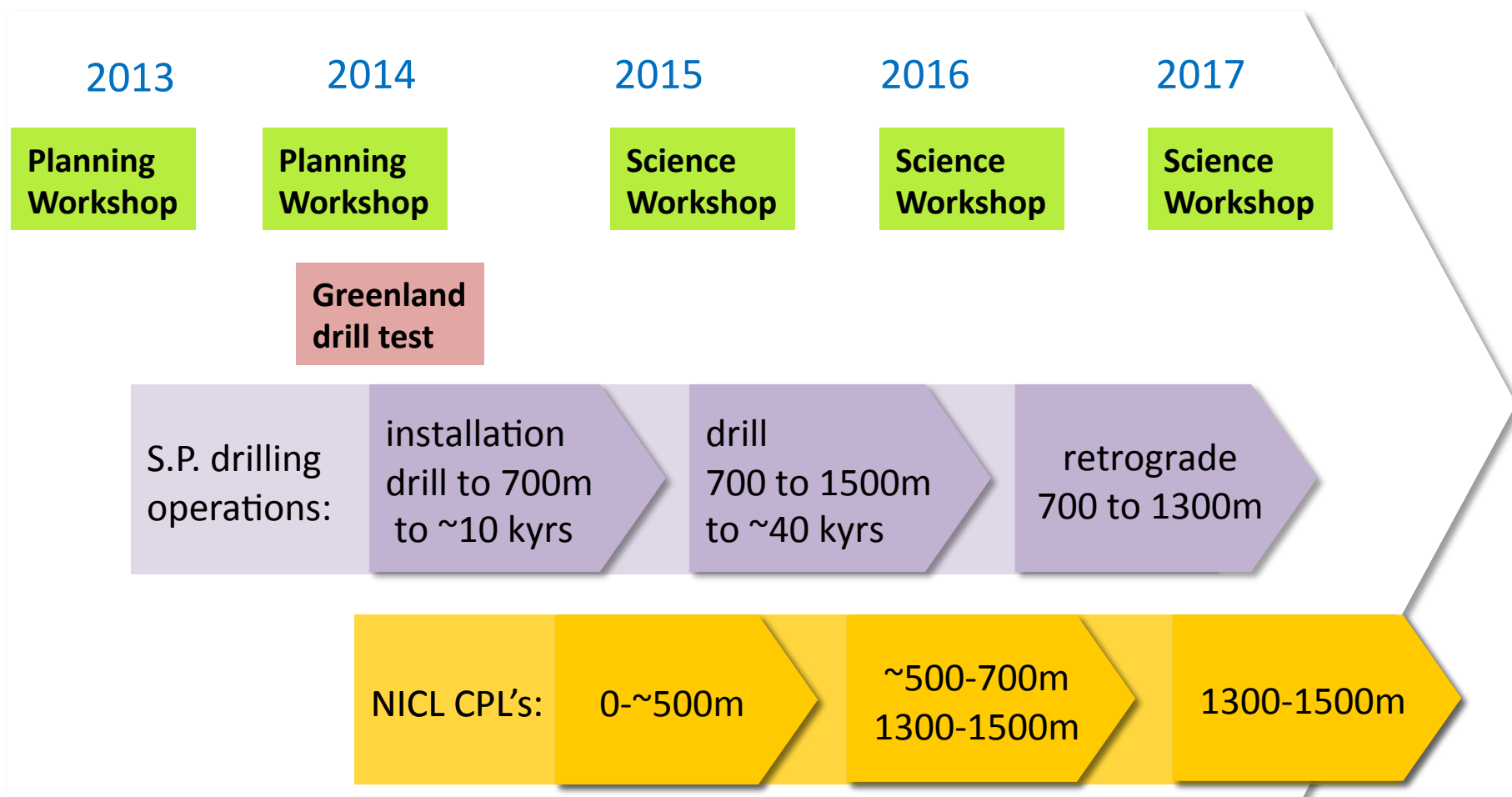
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# QUESTIONS?



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