



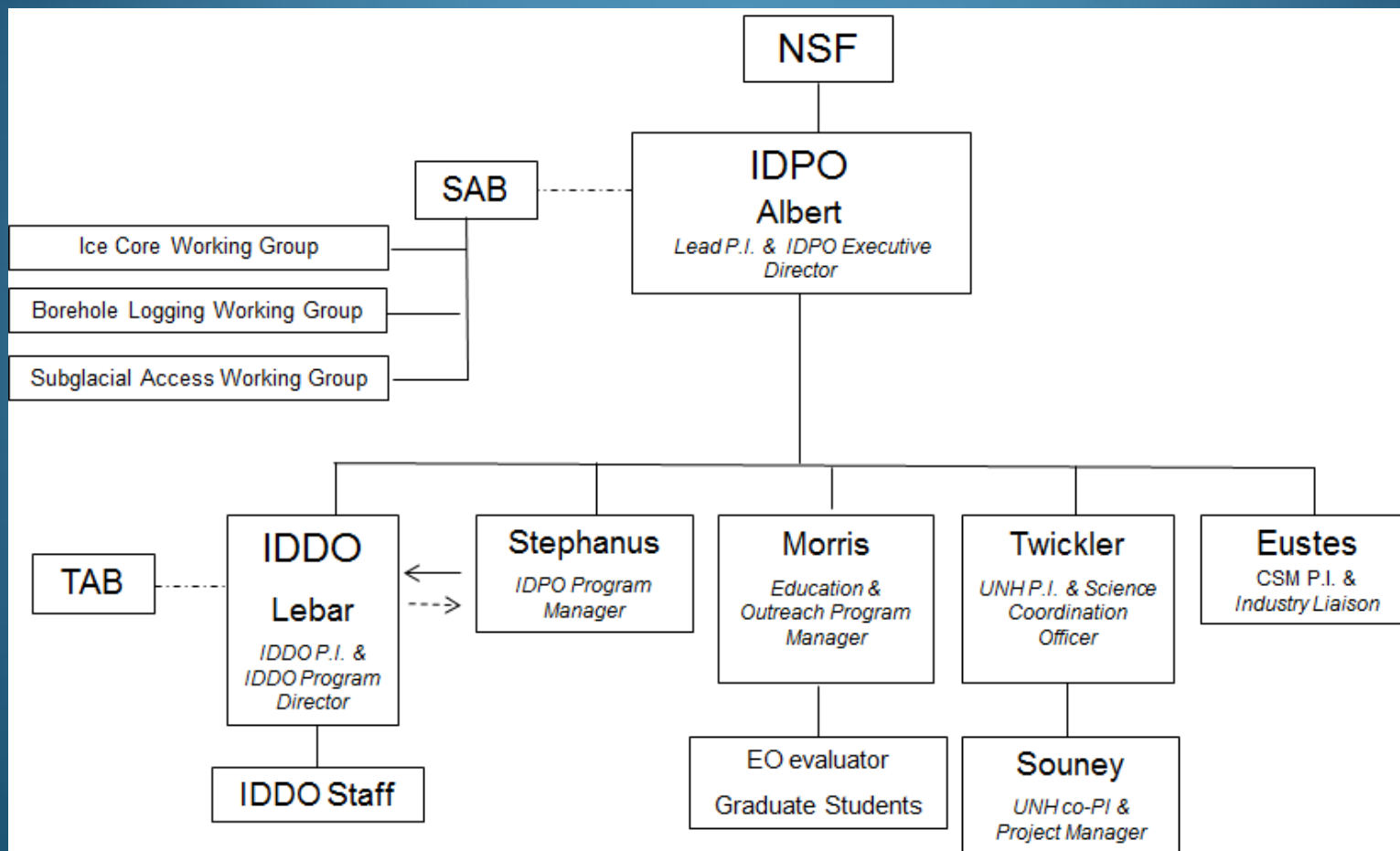
# Ice Drilling Program Office Update

Mary Albert

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



# Ice Drilling Program Office New NSF Cooperative Agreement





# 7<sup>th</sup> International Workshop on Ice Drilling Technology



- September 2013, Sponsored by IDPO-IDDO with IPICS & IGS
- 13 nations represented, 56 papers & 36 posters
- Special volume of Annals of Glaciology in prep
- Banquet surprise: Richard Alley sang tribute to career of Charlie Bentley!

<http://www.icedrill.org/7th-international-workshop-on-ice-drilling-technology>



# Ice Drilling Program Office



IDPO convened 2013 AGU Town Hall:

## Scientific Drilling in the Polar Regions

Participation:

IPICS, IDPO, NICL, RAID, WISSARD, ANDRILL, NSF

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# Ice Drilling Program Office



## IDPO Community Workshop on Ice Coring



UC-Irvine, Irvine, CA, USA  
26-27 February 2014

Outcome: Community identification of future deep and intermediate-depth community ice coring projects, for IDPO-ICWG recommendation to SAB & IDPO for Long Range Science Plan.

[www.icedrill.org/2014-community-workshop-ice-coring](http://www.icedrill.org/2014-community-workshop-ice-coring)

# IDPO Community Workshop on Ice Coring

## **Purpose**

To identify & discuss community ideas for deep or intermediate ice coring sites (for DISC & IDD) in the coming decade

## **Community consensus**

The ICWG will represent the community to recommend locations and years for DISC & IDD drilling to the SAB & IDPO

## **Action**

Results will form the basis of the drilling sites identified in the IDPO Long Range Science Plan.

IDPO will work with NSF program managers and Antarctic & Arctic logistics providers to help plan their out-year resources & budgets.

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# Ice Drilling Program Office



## Science Requirements for New Drills



### Ice Drilling Program Office

Dartmouth – University of New Hampshire

#### DOCUMENT IDENTIFICATION

Title:	SCIENCE REQUIREMENTS: SCALABLE HOT WATER ACCESS DRILL		
Date: 2-21-2014	Revision: Original document		

#### DOCUMENT APPROVAL

Science Community:	Das, Holland, Scambos		
IDPO:	Albert, Twickler		



### Ice Drilling Program Office

Dartmouth – University of New Hampshire

#### DOCUMENT IDENTIFICATION

Title:	SCIENCE REQUIREMENTS: AGILE SUB-ICE GEOLOGICAL DRILL		
Date: 1-13-2014	Revision: 1.0		

#### DOCUMENT APPROVAL

Science Community:	Stone, Putkonen, Brook		
IDPO:	Albert, Twickler		

1. Produce access holes through ice depths between approximately 50 – 1000 m.
2. The drill should be modular, with built-in redundancy, so that one of the modules is used for shallow depths and small diameter holes, and other replicate modules are added for deeper access holes or for larger diameter holes.
3. Diameter of holes needed will vary, with most likely in the 10-30 cm diameter. Small diameter holes can be drilled deeper than large diameter holes (e.g. 10 cm diameter hole could be drilled to 1000 m in 35 hours, while a 30 cm diameter hole could be drilled to 600 m in 35 hours of drilling, for example).
4. Drill should be operable in borehole and/or ambient temperatures down to -30 C.
5. The drill should be agile on site, in order to drill multiple holes within 500 m of emplacement, possibly moved around by skidoos.
6. Setup time for the drill on site should be within 48 hours.
7. The design should include the ability to maintain a 30 cm diameter, 600 m deep hole and keep it open for 8 hours after initial drilling.
8. The drill should be able to be transported by helicopter sling load, Twin Otter, Basler or light ground traverse.

1. Produce 700 m borehole to base of ice with drilling and retrieval of 10 m of bedrock core and / or unconsolidated frozen sediment core.
2. Ice drilling will include the possibility that the ice is entrained with rocks.
3. Ice drilling will be to dry, frozen-bed conditions, and will not be done in areas where there is subglacial water.
4. Retrieve several short ice cores (~50 cm long) at up to 700 m depth.
5. Ice drilling may be in ice that is within 2.0 C of the pressure melting point.
6. Required ability to drill at ice borehole temperatures as low as -40 C, and surface temperatures as low as -30 C.
7. Retrieve 10 m of bedrock cores of maximum 33 mm (1.3") diameter beneath the ice sheet.
8. Maximum site altitude for the design should be 2,500 m.
9. Maximum time at a site, including set up and core retrieval, should be 6 days.
8. Stand-alone capability is needed for operation at small field camps at remote sites.
10. Minimal staff (4) for drilling operations in the field; other field camp staff in support of drilling operations to be provided separately.
11. Drilling fluid or a fluid "system" (to be determined) will be immiscible with water.

<http://www.icedrill.org/equipment/development.shtml>





# Ice Drilling Program Office



# Integrated Science & Technology Planning



We support ANY NSF science that requires ice cores or holes; not just GEO-PLR!

Science planning drives drill tech planning, development, and use.

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