

U.S. Ice Drilling Program
FIELD PROJECT SUPPORT REQUIREMENTS



Please complete this form with as much information as possible. The information collected will be used to determine the scope of IDP's support for your project and will aid in the selection of proper equipment to meet your science goals. Please return completed forms via email to IceDrill@dartmouth.edu.

Date:	November 8, 2024		
Project Name:	Ice Characterization and Calibration		
Project Principal Investigator(s):	Besson		
NSF Solicitation Number:	NSF24-542		
NSF Program being submitted to:	WoU-MMA	NSF Program Manager:	Hans Krimm

Brief Summary of Science Project Purpose: We seek to extract ice cores to make fine-grained permittivity measurements, which will provide detailed information on radio-frequency propagation through polar ice. We hope to resolve current discrepancies between data and calculation and fill in gaps in understanding, necessary for measurements of ultra-high energy neutrino-induced radio signals. We also propose to make measurements, or place limits on borehole closure, which is essential to the long-term operation of radio receiver detectors in Antarctica or Greenland.

Project Objectives Related to Ice Drilling Program (IDP) Support: Measurements of complex permittivity of ice drawn from various depths in the Greenland ice sheet, as well as measurements of antenna permittivity in a borehole with minimal clearance between the antenna and the borehole walls (in which case, the sensitivity to borehole closure, over a multi-year timescale, is maximal)

CONTACT INFORMATION					
The IDP Letter of Support and Scope of Work document will be addressed to the following person.					
Principal Investigator:	Besson		Affiliation:	University of Kansas	
Address Line 1:	KU Dept. of Physics and Astronomy		Address Line 2:	1082 Malott Hall	
City:	Lawrence	State:	KS	Zip Code:	66045
Phone Number:	785-864-4741		E-mail Address:	zedlam@ku.edu	

PROJECT TIMELINE			
Field Season(s) (years):	2026		
Expected Date IDP Personnel Will Leave Home*:	1 July 2026	Expected Date IDP Personnel Will Return Home*:	1 August 2026
* If no IDP Personnel are requested, identify the start and end dates when the IDP equipment will be used in the field.			

FIELD SITE INFORMATION					
Project Location:	Summit Station			Altitude:	3200 m
Mode of Transport to Site(s):	snowmobile	Mode of Transport Between Holes:	snowmobile	Distance Between Holes:	2 km

Expected Site Conditions	Hours of daylight:		24		Hours of direct sunlight:		
	Air Temp (C)	Min:	-20	Max:	0	Wind Speed	<15 m/s

Expected Ice Conditions	Ice Temp (C):	Clean Ice?	Rocky Ice?	Sandy / Silty Ice?	Blue Ice?	Liquid Water present?
	-30C	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>

Drill Shelter / Windscreen required?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If Yes, please describe:
* Layflat Tubing required for bagging cores?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If Yes, please describe:

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* Science Teams are responsible for all processing of the layflat tubing (cutting, stapling, marking, etc.).

EQUIPMENT PREFERENCE

You may visit <http://icedrill.org/equipment> to view the current available drill systems.

Please list and describe any drilling methods that might interfere with your science goals:

Preferred Drill System (if known):

stampfil

CLEANLINESS REQUIREMENTS

Describe any substances prohibited during drill operations (oils, greases, exhaust or carbon-containing lubricants or fluids, etc.):

Describe any drill component sanitization requirements, if applicable:

SAFETY INFORMATION

IDP conducts hazard analyses on all drill systems and equipment in inventory. Appropriate personal protective equipment (PPE) for tasks related to operation of drill equipment will be included with the drill during shipment. Please review the following hazard classes and check any additional hazards that may apply to your project or field site. Please describe these hazards below.

Chemical ☐

Fire ☐

Electrical ☐

Fall ☐

Lifting ☐

Other ☐

Description:

BOREHOLE INFORMATION

Hole No.	Purpose: Access Hole or Core Sample?	Approximate Coordinates of Hole	Depth (m)	Please choose one (mm): Core diameter <input checked="" type="checkbox"/> Hole Diameter <input type="checkbox"/>	Minimum Core Lengths (m)
1	Core Sample	2 km from Summit Station	100	5.5	n/a
2	Core Sample	4 km from Summit Stn.	100	5.5	n/a
	(choose one)				
	(choose one)				
	(choose one)				
	(choose one)				
	(choose one)				
	(choose one)				
	(choose one)				

If more than one hole is required, please estimate the distance between holes: 2 km

CORE QUALITY

Minimum Core Quality required: 4-5

1 - Excellent (Single piece, no breaks)

2 - Good (Two pieces, single break)

3 - Fair (Three pieces, two breaks)

4 - Poor (Four or five pieces)

5 - Very Poor (More than five pieces, rubble)

Other Core Quality Parameters:

(Please describe any other concerns related to core quality including core dog gouges and varying core diameter.)

Since our permittivity measurements will be made on samples as small as 2 cm x 2 cm x 4 cm, preserving meter-scale cores is not a concern for this project.

ADDITIONAL INFORMATION

Describe any other restrictions, complications, or concerns you anticipate with regard to project execution.

