



LAKE ICE CORES



<http://education.gsfc.nasa.gov/how>

PURPOSE

- DRILL OR CUT FULL THICKNESS OF LAKE ICE AND CHARACTERIZE THE ICE PROFILE. THEN MAKE THIN SECTIONS TO ANALYZE ICE CRYSTALLINITY AND ORIENTATION

HYPOTHESIS

IS IT POSSIBLE THAT THE ICE CONTAINS INFORMATION ABOUT THE INITIAL FREEZING AND THE CONDITIONS OF ICE GROWTH.

BY ANALYZING THE ICE CRYSTAL STRUCTURE AND THE DETAILS IN THE FULL ICE PROFILE PARTICULARLY THE BUBBLE PATTERNS CAN WE ADDRESS THE HISTORY OF WINTER IN THE ICE RECORD?

MATERIALS

GPS LOCATOR, PENCIL AND PAPER FOR DATA RECORDING,

ICE AUGER, ICE CORE DRILL, CHAIN SAW, ICE CHISEL

BAND SAW, SLEDGE MICROTOME, SLIDE WARMER, GLASS SLIDES, WATER BOTTLE, SINGLE EDGE RAZOR BLADE

LIGHT TABLE, POLARIZER SHEETS



METHODS

- ASSESS LAKE LOCATION FOR SAFETY
- PROCEED TO AUGER A HOLE IN THE ICE IN ORDER TO DETERMINE ICE THICKNESS.
- RECORD ALL LOCATION DATA AND ATMOSPHERIC INFORMATION

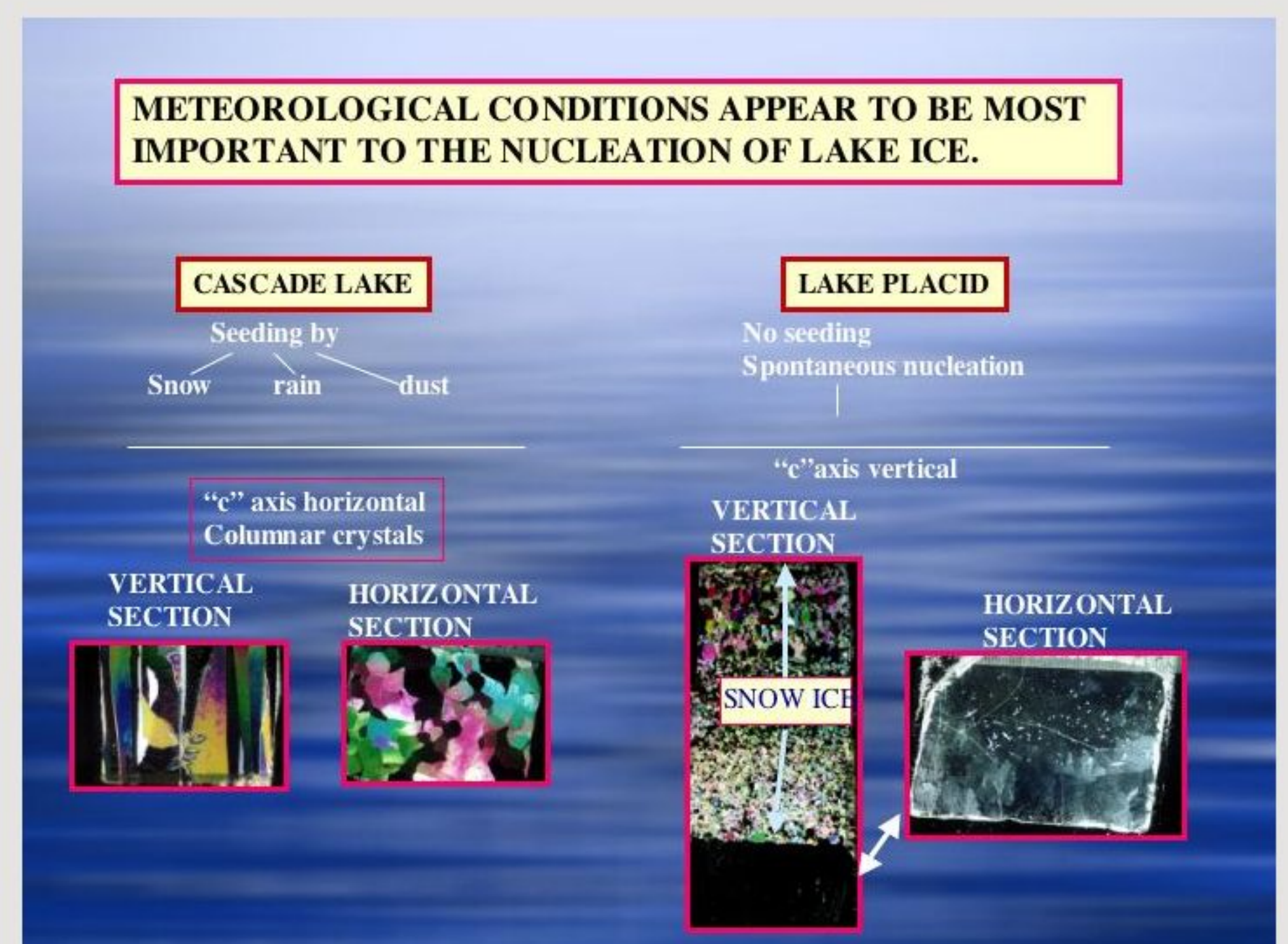
USING ICE CORING DRILL OR THE CHAIN SAW CUT AND EXTRACT THE FULL DEPTH OF THE LAKE ICE.

- EXAMINE THE EXTRACTED ICE .
- DETERMINE THE SNOW COVER, SNOW ICE AND LAKE ICE THICKNESS.
- EXAMINE THE ICE CORE FOR BUBBLE FEATURES ETC.

- FROM THE FULL ICE DEPTH SAMPLING PREPARE VERTICAL AND HORIZONTAL SECTIONS AND
 - THIN sections TO ABOUT 1-2 mm.
 - EXAMINE SECTIONS IN CROSS POLARIZERS ON A LIGHT TABLE



DATA and interpretation



- CHARACTERIZATION OF THE FULL THICKNESS OF THE ICE CORE OR BLOCK AFTER EXTRACTION WILL REVEAL: SNOW, SNOW ICE, ICE THICKNESS AND WILL REVEAL THE DISTRIBUTION AND CHARACTERISTICS OF THE BUBBLE PATTERNS EMBEDDED IN THE ICE.

- THIN SECTION EXAMINATION WILL PROVIDE A 3-DIMENSIONAL CHARACTERIZATION OF ICE CRYSTAL SIZE, SHAPE, AND ORIENTATION.
- THIS INFORMATION CAN THEN BE CORRELATED WITH THE WEATHER DATA