



Digitization of Marine & Lacustrine Records of Climate Change

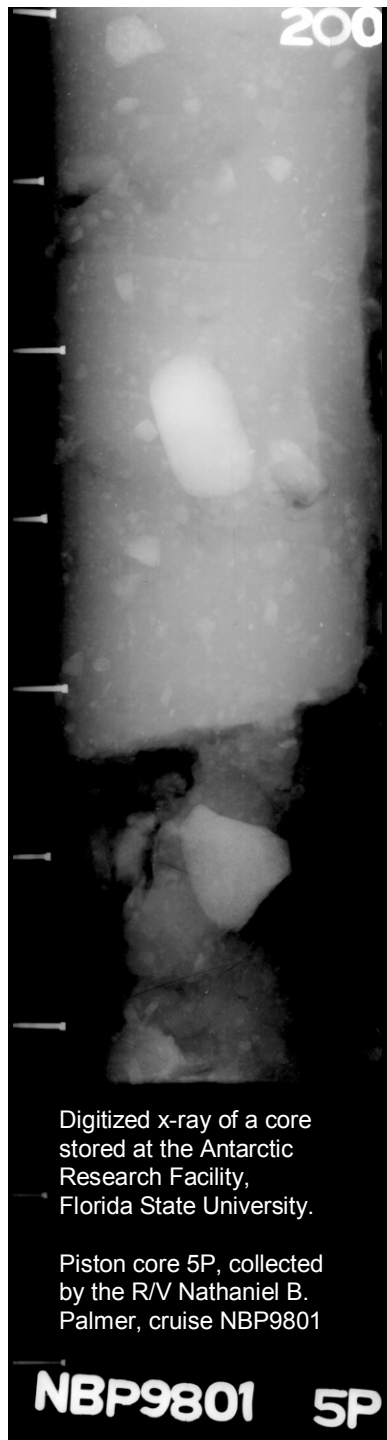
Climate Database Modernization Program ([CDMP](#)) Project L-19

National Oceanic & Atmospheric Administration ([NOAA](#))
NOAA Satellite & Information Service ([NESDIS](#))
National Geophysical Data Center ([NGDC](#))

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303-497-6339

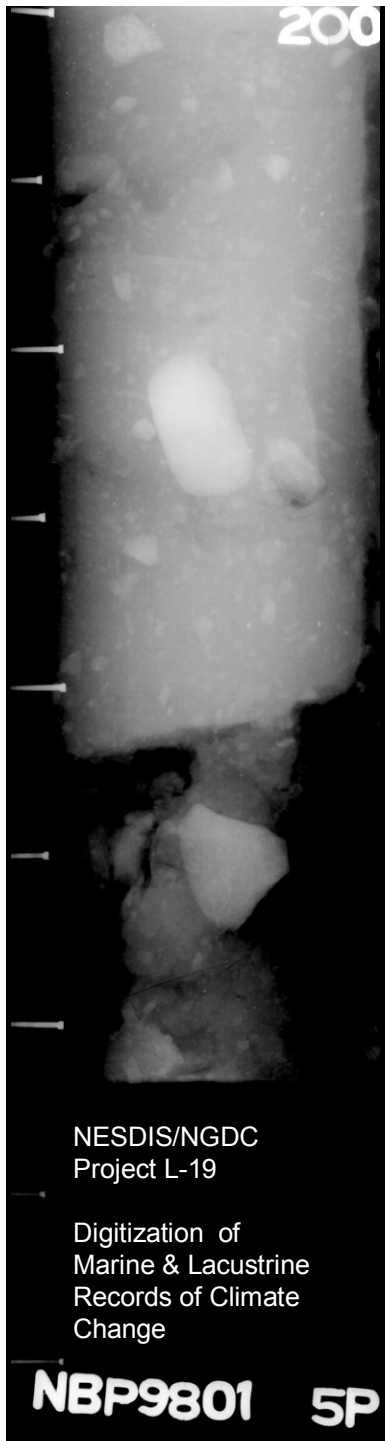
<http://www.ngdc.noaa.gov/mgg/curator/>



Digitized x-ray of a core
stored at the Antarctic
Research Facility,
Florida State University.

Piston core 5P, collected
by the R/V Nathaniel B.
Palmer, cruise NBP9801

NBP9801 5P



L-19 Participating Institutions:

- Antarctic Research Facility, Florida State University (ARFFSU)
- College of Oceanic & Atmospheric Sciences, Oregon State University
- Graduate School of Oceanography, University of Rhode Island (URI)
- Lamont-Doherty Earth Observatory, Columbia University (LDEO)
- National Lacustrine Core Repository, University of Michigan (LacCore)
- Scripps Institution of Oceanography University of California, San Diego (SIO)
- Woods Hole Oceanographic Institution (WHOI)

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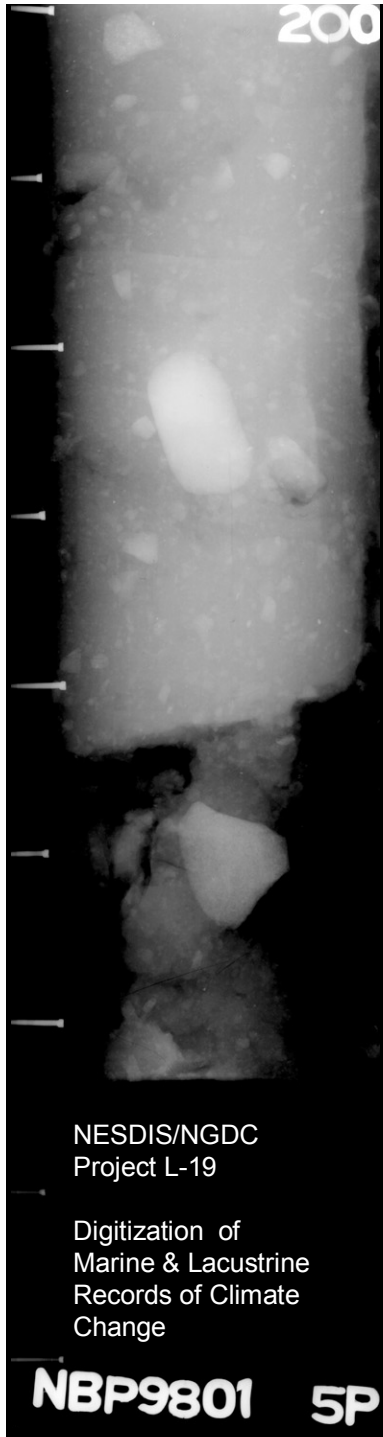
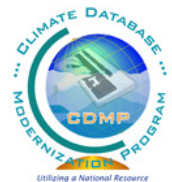


How this task contributes to modernization and utilization of a climate database:

Sea floor & Lakebed sediments provide a valuable record of Climate Change

- ▶ The length, continuity, and time-resolution of data available from selected sediment cores is a unique resource for global change research
- ▶ Finely varved sediments from areas of rapid deposition provide a high-resolution record of past climates
- ▶ Volcanic ash layers contribute to climate studies on relatively short timescales
- ▶ Sediments from oceans & lakes identify regional controls on the magnitude of climate change, and extend the record of climate change beyond ice core drilling data

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Task description:

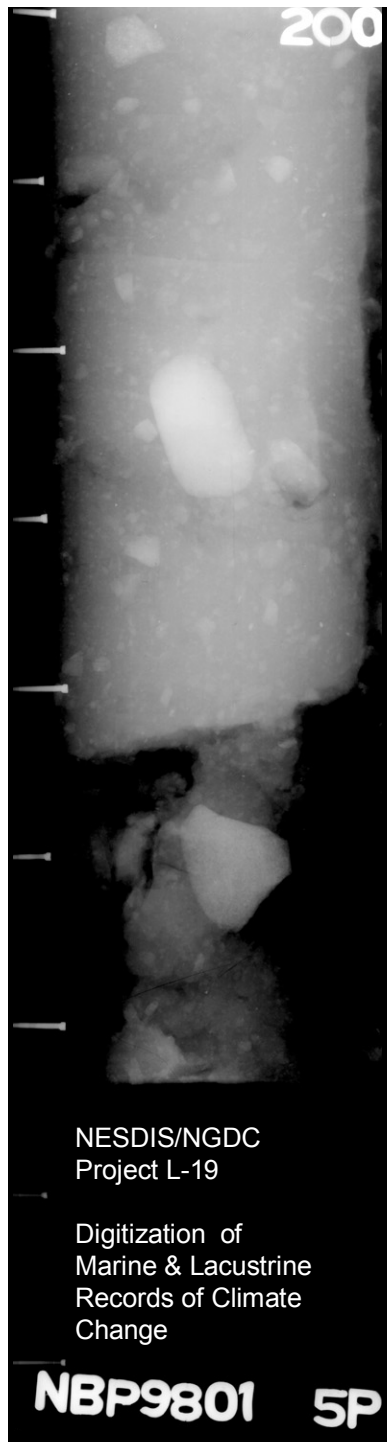
A multi-year project to digitize images & written descriptions of cores from multiple institutions

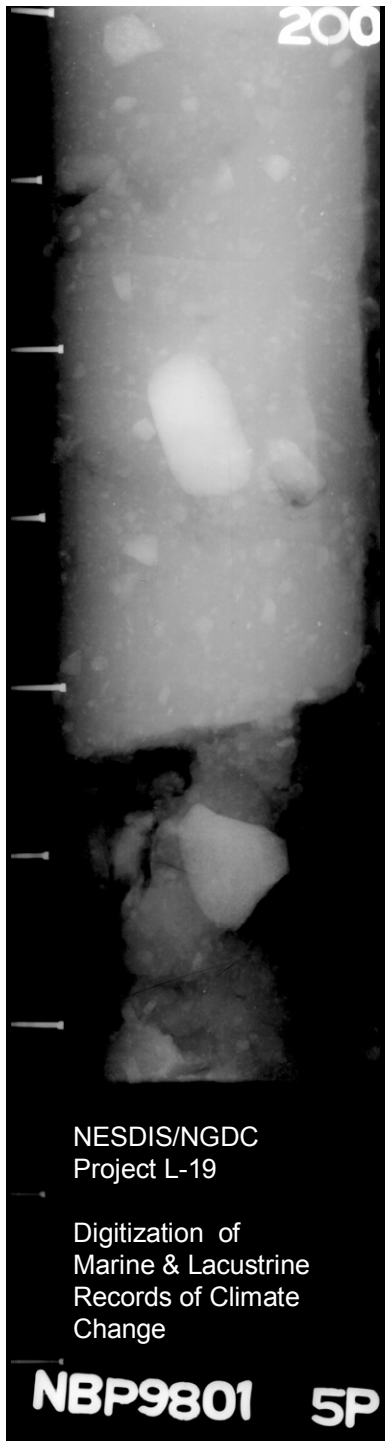
1. Scan photographs, X-rays & paper documents

- color photographs
- grayscale photographs
- core x-rays
- paper documents

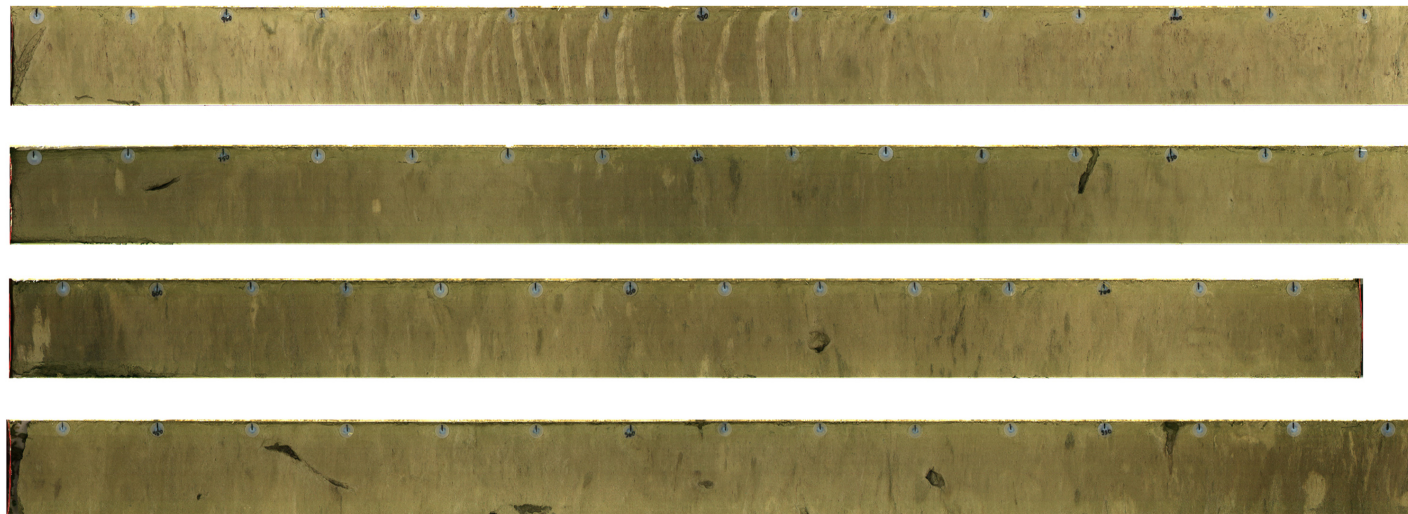
2. Key-enter data from written descriptions

<http://www.ngdc.noaa.gov/mgg/curator/>





Task description: Scan color core photographs



4"x 5" negatives
8"x10" printed photos

Sources:

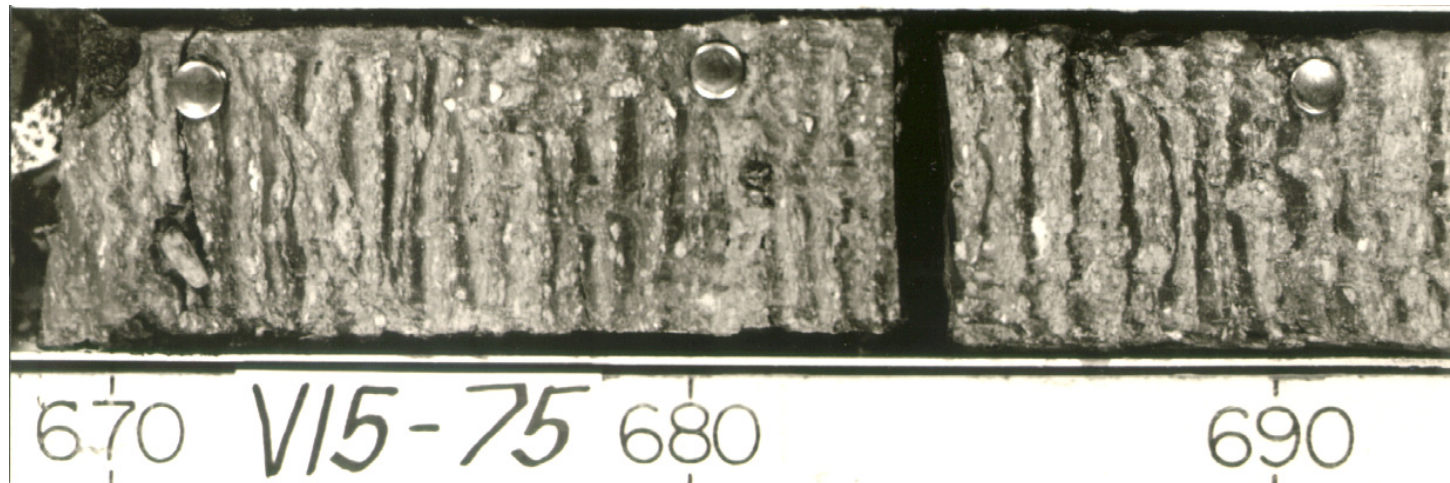
Oregon State University (OSU)
Lamont-Doherty Earth Observatory (LDEO)
National Lacustrine Core Repository (LacCore)
Woods Hole Oceanographic Institution (WHOI)

<http://www.ngdc.noaa.gov/mgg/curator/>





Task description: Scan grayscale core photos



8.5"x 11" printed photos
8"x20" negatives

Sources:

Lamont-Doherty Earth Observatory (LDEO)
Scripps Institution of Oceanography (SIO)
Wood Hole Oceanographic Institution (WHOI)
National Lacustrine Core Repository (LacCore)

<http://www.ngdc.noaa.gov/mgg/curator/>

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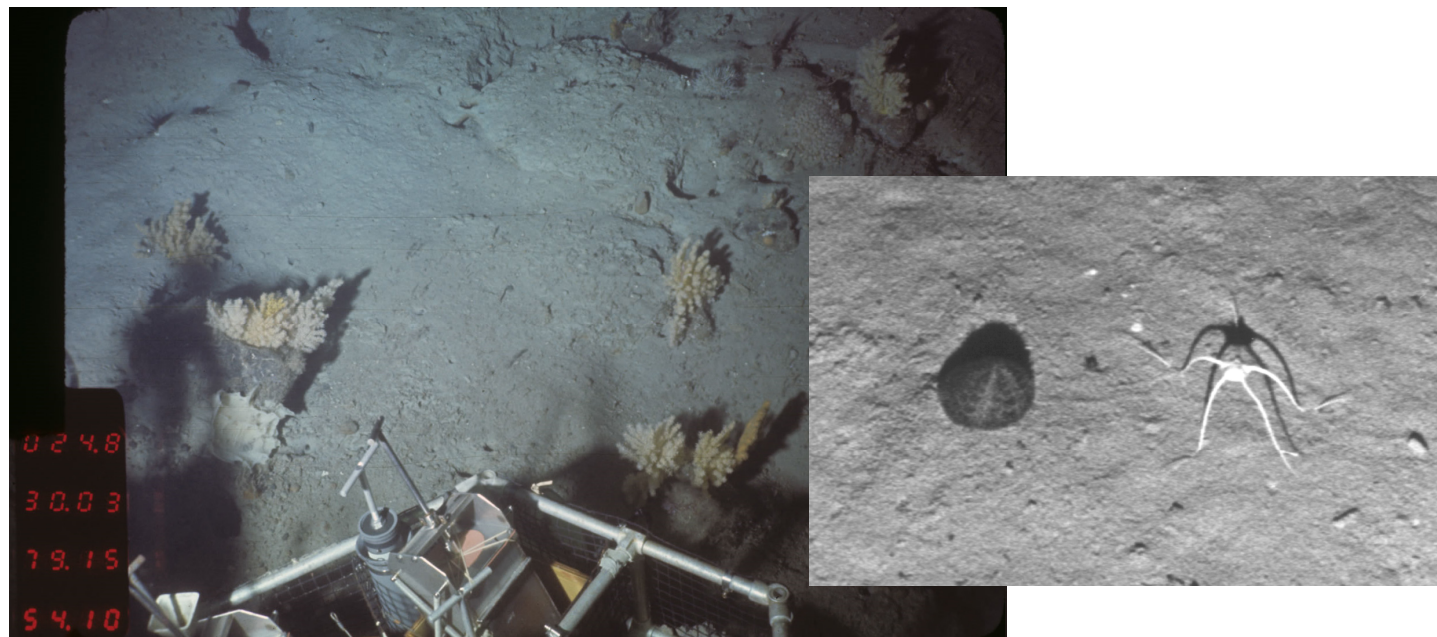
Digitization of
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Change

NBP9801 5P





Task description: Scan seabed photos



35mm color negs, 5"x7" & 8"x10" printed grayscale photos

Sources:

Antarctic Research Facility, Florida State Univ. (ARFFSU)
Lamont-Doherty Earth Observatory (LDEO)

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Task description: Scan core X-rays

Digitized x-ray of a core stored at the Antarctic Research Facility, Florida State University.

Piston core 5P, collected by the R/V Nathaniel B. Palmer, cruise NBP9801

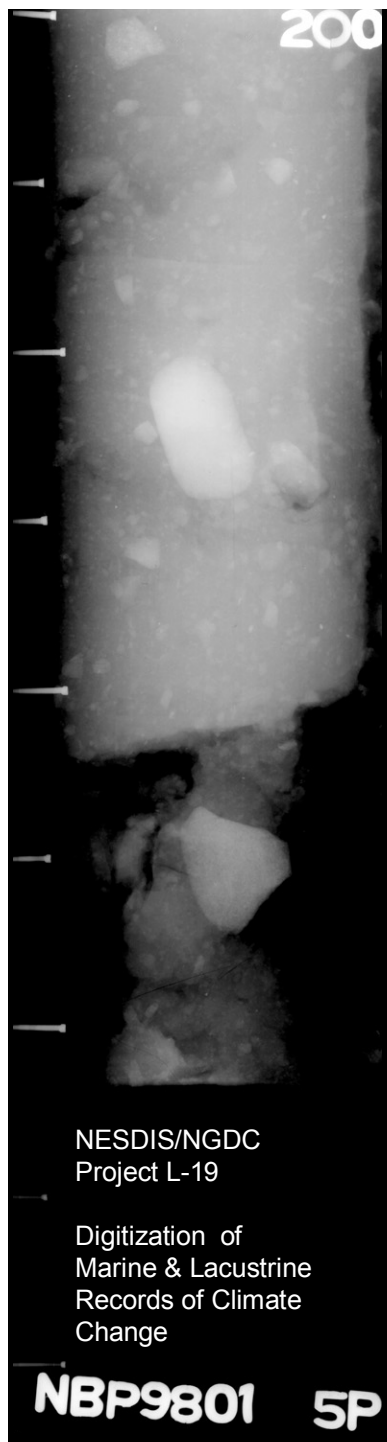


18"x 5", 20"x4", 17"x14" film negatives

Sources:

**Antarctic Research Facility, Florida State Univ (ARFFSU)
Oregon State University (OSU)**

<http://www.ngdc.noaa.gov/mgg/curator/>



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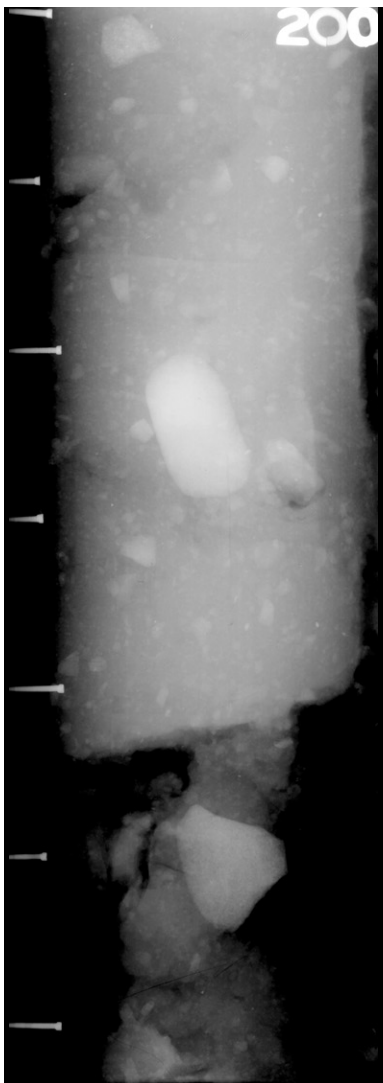
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Task description: Key-enter descriptive data



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CORE LOG

CORE ID ME0005A-23JC

SECTION 1 of 13

Lat. 0° 1.30' N

Long. 86° 27.79' W

Water Depth 2945M

Interval (cm)	Color	biogenous mat.													Remarks		
		contact	sharp grad.	mottled	foram	calc. nanno	rad.	diatom	spicules	plant frag.	mol. shell	ostracod	grain size	clay		structure	
0-10	2.5Y3/2	X													X	X	Date Open & Desc. <u>5/28/2000</u> Interval Depth <u>0-134cm</u>
10-20	ss				C	A											soft core; In ARCH, tube not filled from 0-20cm
20-30	5Y6/2				A												Very dark grayish brown (2.5Y3/2) surface layer entrained down side of core to 15cm
30-40																	
40-50																	
50-60	5Y6/1														X	X	0-6cm Very dark grayish brown (2.5Y3/2) silty clay
60-70																	
70-80																	
80-90	5Y3/2																6-51cm Light olive gray (5Y6/2) silty clay, faintly mottled. Crack at 20cm
90-100	ss				C	A	X	A	A								51-75cm Light gray (5Y6/1) silty clay, faintly mottled
100-110																	
110-120																	
120-130																	75-134cm Dominant color dark olive gray (5Y3/2) silty clay mottled with light gray (5Y6/1). A few laminations occur between 80-100cm.
130-140																	
140-150																	
150-160																	ss 20, 100cm silicoflagellates present

Sources:

Oregon State University (OSU)
National Lacustrine Core Repository (LacCore)
University of Rhode Island (URI)

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Task description: Specifications

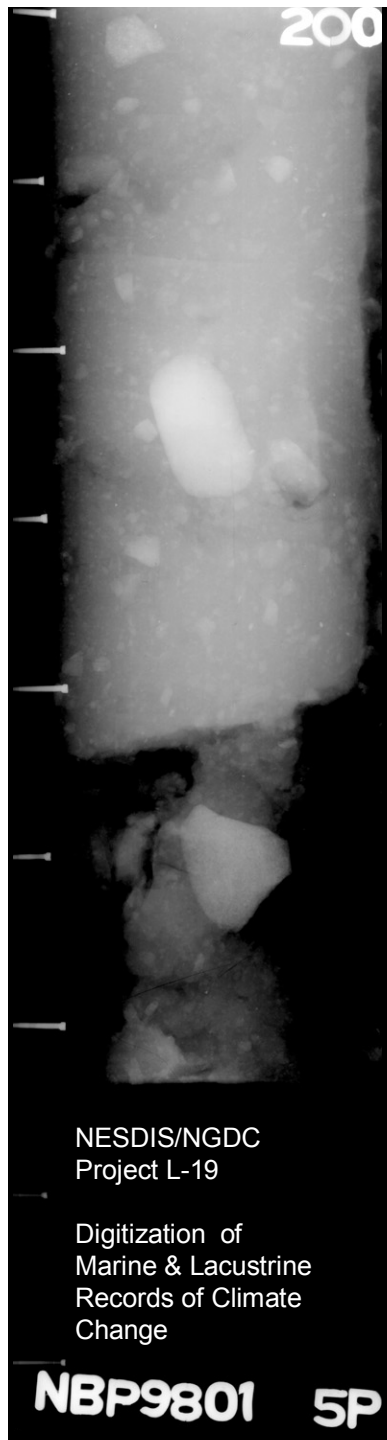
1. Scanning output

- Unedited .TIFF, version 5.0 or 6.0 headers
- lossless LZW-compression
- 600dpi+ optical resolution sized to print full-scale (35mm originals sized to print 600dpi+ at 8.5x11 inches)
- PDF images of written descriptions

2. Key-entry output

- Entered twice, compared, resolved by contractor
- 99.5% accuracy rate required
- Entry form provided by NGDC

<http://www.ngdc.noaa.gov/mgg/curator/>





L-19 Accomplishments 2005-2009

Materials digitized through October 2009

Scanning:	Items	FSU	LacCore	LDEO	OSU	SIO		WHOI	NGDC
Core Photos (b&w printed)	27,065			x					
Data Sheets scanned (PDF)	23,920				x	x			x
Seabed Photos (color film)	18,520			x					
Seabed Photos (b&w printed)	16,094	x		x					x
Core X-rays (b&w film)	9,055	x			x				
Core Photos (b&w film)	3,738		x		x	x		x	
Core Photos (color printed)	1,398	x		x					
Core Photos (color film)	472		x		x	x		x	
Key-entry:	Pages		LacCore		OSU		URI		NGDC
Data Sheets key-entered (AI+Excel)	10,468		x		x		x		x
Other:	Pages		LacCore						
Core Photos added to Logs	420		x						

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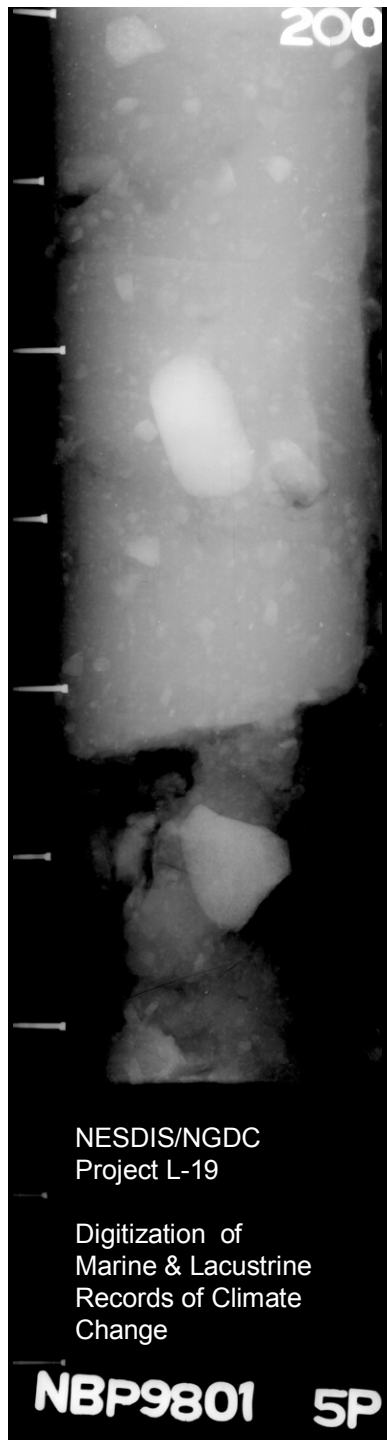


L-19 Accomplishments 2005-2009

Materials digitized through 2009

- ▶ All analog core photographs: LacCore, LDEO, OSU, SIO, & WHOI
- ▶ All analog core x-rays: ARFFSU & OSU
- ▶ All core logging data: LacCore, OSU, SIO, & URI
- ▶ All analog seabed photographs: ARFFSU & LDEO

<http://www.ngdc.noaa.gov/mgg/curator/>



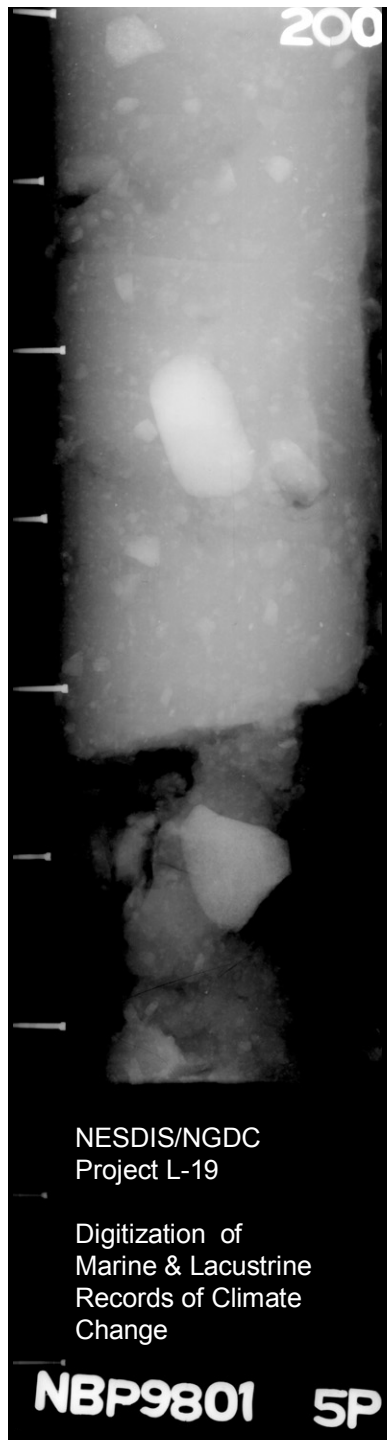
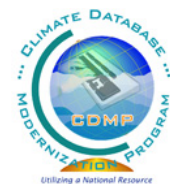


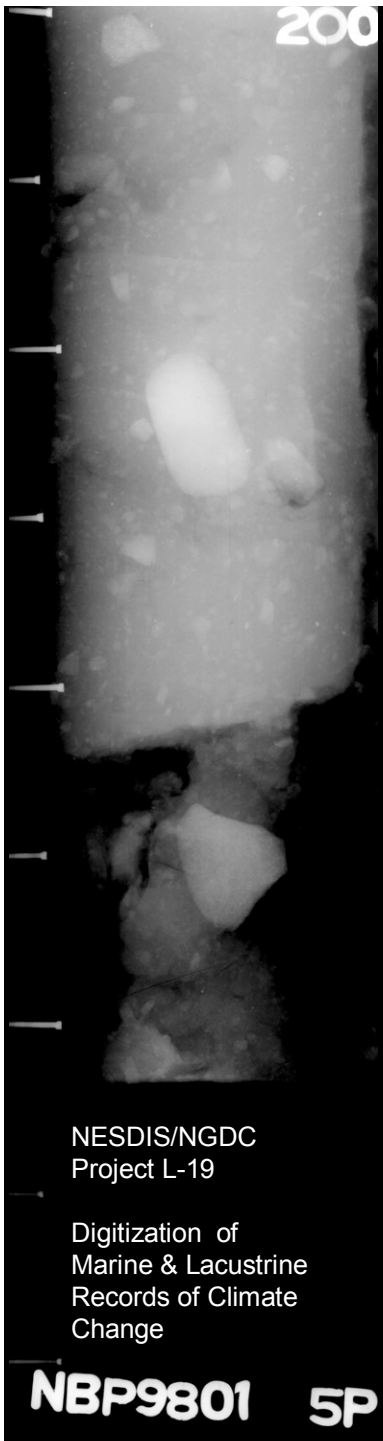
L-19 Accomplishments 2005-2009

What impact does L-19 have on Climate Change research?

- ▶ Researchers can now browse descriptions and photographs of cores online to determine whether to request core material for further research.
- ▶ Originals of irreplaceable core x-rays are no longer sent out to researchers, where they may be lost or damaged.
- ▶ Photographs and descriptions are available for digital analysis.
- ▶ All of these “treasures at risk”, collected at great expense and irreplaceable, are now safeguarded for future generations in the NOAA long-term archive at NGDC.

<http://www.ngdc.noaa.gov/mgg/curator/>





L-19 digitized data & images online



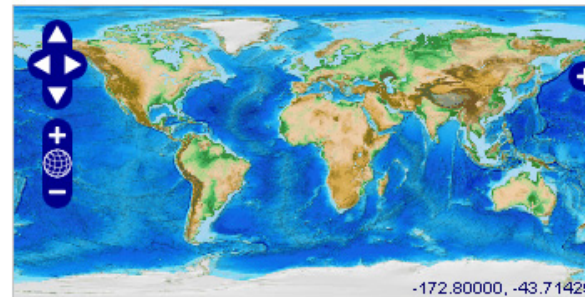
The Index to Marine & Lacustrine Geological Samples



Please choose one or more criteria, then click "Search Samples"

left: right

Enter limits above, or set to visible area of map.
 Map: shift-click-drag zooms; click-drag moves.
 Refine limits manually using boxes.
 Reset limits by clicking world icon.



Repository:
 Alfred-Wegener-Institute for Polar and Marine Research
 Antarctic Research Facility, Florida State University
 Bedford Institute of Oceanography

Ship:
 A.E. Verrill
 Abel J.
 Acona

Lake:
 Bear Lake
 Big Lake
 Derby Lake

Cruise: [view alphabetical cruise list](#)
 (enter 1st few letters)

Sampling device:
 core
 core, box
 core, camera mounted

Date:
 yyyyymmdd:
 (199 selects all 1990s)

Water depth(m): to (0 to 5 selects depths less than 6m)

<http://www.ngdc.noaa.gov/mgg/curator/>

some data under moratorium/only available via the participating institution

