# On the CyberInfrastructure Needs
# of the U.S. Core and Sample Repositories

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# Repositories Represented in DESC

- **Oregon State University (OSU) Marine Geology Repository**
  - NSF-sponsored through OCE Facilities
  - 2 Directors (unsalaried), 1.5 Curator, 0.5 Data Manager
- **University of Columbia Lamont-Doherty Core Repository**
  - NSF-sponsored through OCE Facilities
  - 1 Director (unsalaried), 1 Curator, 1 Technician
- **University of Minnesota LACCORE: National Lacustrine Core Facility**
  - NSF-sponsored through EAR Instrument & Facilities
  - 1 Director, 12 Full-time and 13 Part-time Technicians

# What Do These Repositories Do

- **Archive Cores Under Refrigeration, Freezing or Dry Collected around the Globe by U.S. scientists**
  - From the World's Oceans and Seas
  - From Lakes, Rivers and Deltas
- **Archive Various Other Samples**
  - From Dredging
  - From Deep Submersible Diving
  - From Plankton Tows
  - From Coral Reefs
  - Water Samples, Mn-crusts, etc.
- **Fulfilling Sample Requests From Scientists From the U.S. and All over the World**

# What They Don't Do

- **Full Archival of data in National Data Repositories**
- **Processing and interpreting of data**
- **Providing online database services**

# Histories and Backgrounds

- **OSU Marine Geology Repository**
  - Started in 1971 to support the active program in Marine Geology at OSU
  - Closely related to the OSU Coring Facility that goes out to help PI's collect cores from Research Vessels
- **Lamont-Doherty Core Repository**
  - Started in 1949 to support Maurice Ewing's "A core a day" program
- **LACCORE: National Lacustrine Core Facility**
  - Started in 2000 to support interdisciplinary research in lakes with the goal of reconstructing paleorecords
  - Extensive array of field systems for collecting lake cores

# Core and Sample Holdings

- **OSU Marine Geology Repository**
  - 6,094 sediment cores totaling 15,952 m of core
  - 10,025 rock samples from 545 dredges
  - 2,200 deep-sea manganese nodules, 1,627 sediment trap samples, 693 plankton tow samples, etc.
- **Lamont-Doherty Core Repository**
  - 72,000 meters of sediment core including coral reefs
  - 4,000 samples from dredges
- **LACCORE: National Lacustrine Core Facility**
  - ~20,000 meters of terrestrial core samples
  - Cores from lacustrine, estuary, lagoon, peatlands, fluvial systems, soils, permafrost, ICDP, etc.

# Sample Redistribution

- **OSU Marine Geology Repository**
  - Average 9,000 samples per year to 30 researchers
  - In the past 3-year a total of 27,767 sediment core, sediment trap, and rock samples were distributed to 87 investigators at 53 institutions in 13 countries of which 29 were either students or post-docs
- **Lamont-Doherty Core Repository**
  - Average 3,000 samples per year to 30 researchers
- **LACCORE: National Lacustrine Core Facility**
  - Users request samples, which we currently provide through technician support or by hosting visits by the users to do the sampling themselves. Occasionally we loan cores or core halves for well-defined projects.

# Who We Serve

- **Scientists, students, post-docs**
- **From both the U.S. and international**
- **PI᾽s setting up sample collection expeditions, either at sea or on land**
- **Our repositories are heavily used for outreach, using cores in our undergraduate/graduate courses, but also we have middle/high-school classes touring our facilities**
- **Government agency personnel (federal/state/local)**
- **A limited number of industry/commercial clients**

# Additional Services

- **Core linescan images (TIFF, BMP, JPEG)**
- **Multisensor core logger data (Natural Gamma Ray, Magnetic Susceptibility)**
- **Core X-radiographic images, CT scans and X-ray computed tomography**
- **Coulometry, grain size determinations**
- **Smear and thin section slide data**
- **XRF and electron microprobe data**
- **Visual core and rock descriptions**
- **Pulling together metadata files**

# CyberInfrastructure Needs

- **DESC will be <u>crucial</u> to manage our large holdings and the ongoing large amount of sample requests**

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- **<u>Barcoding Capabilities</u> based on QR codes holding the <u>IGSN</u> as key information**

- **<u>Tablet Support</u> for viewing item information based on QR code or IGSN (everywhere in our facilities)**

- **<u>Tracking</u> of items moved <u>Inside</u> repository**

- **<u>Tracking</u> subsamples sent <u>Outside</u> repository**

- **<u>Efficient Ingestion</u> of metadata and data sets and images for (new) projects**

- **Automated <u>Registration</u> of IGSNs and <u>Transfer</u> to NGDC IMLGS**

# CyberInfrastructure Needs

- **Export Capabilities to other databases**
- **Export to Excel tables or other standard formats**
- **Offline Data Entry at sea or in the field**
- **DESC should respect Data Moratoriums (typically 2 years, if collected with NSF grants)**
- **Automated Release to public at close of moratorium**
- **Secure and Login-based data serving for project scientists**
- **Flexible Search and Access for users to view public archive (view by location name, type, bounding region) and associated data**
- **Flexible Sample Request Submission**

# CyberInfrastructure Needs

- **Possibility to <u>Display</u> stored datasets and images hosted on other servers**

- **Connections with <u>Standard Visualization Tools</u> such as Corelyzer, Correlator, PSICAT, CoreRef, GMT, GeoMapApp**

- **Sampling database should be <u>Easily Accessible</u> by researchers to submit requests and easily and/or <u>Automatically Updated</u> by repository (personnel) to reflect samples sent to the researchers**

- **Way of entering <u>Historical</u> sampling information**