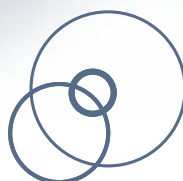
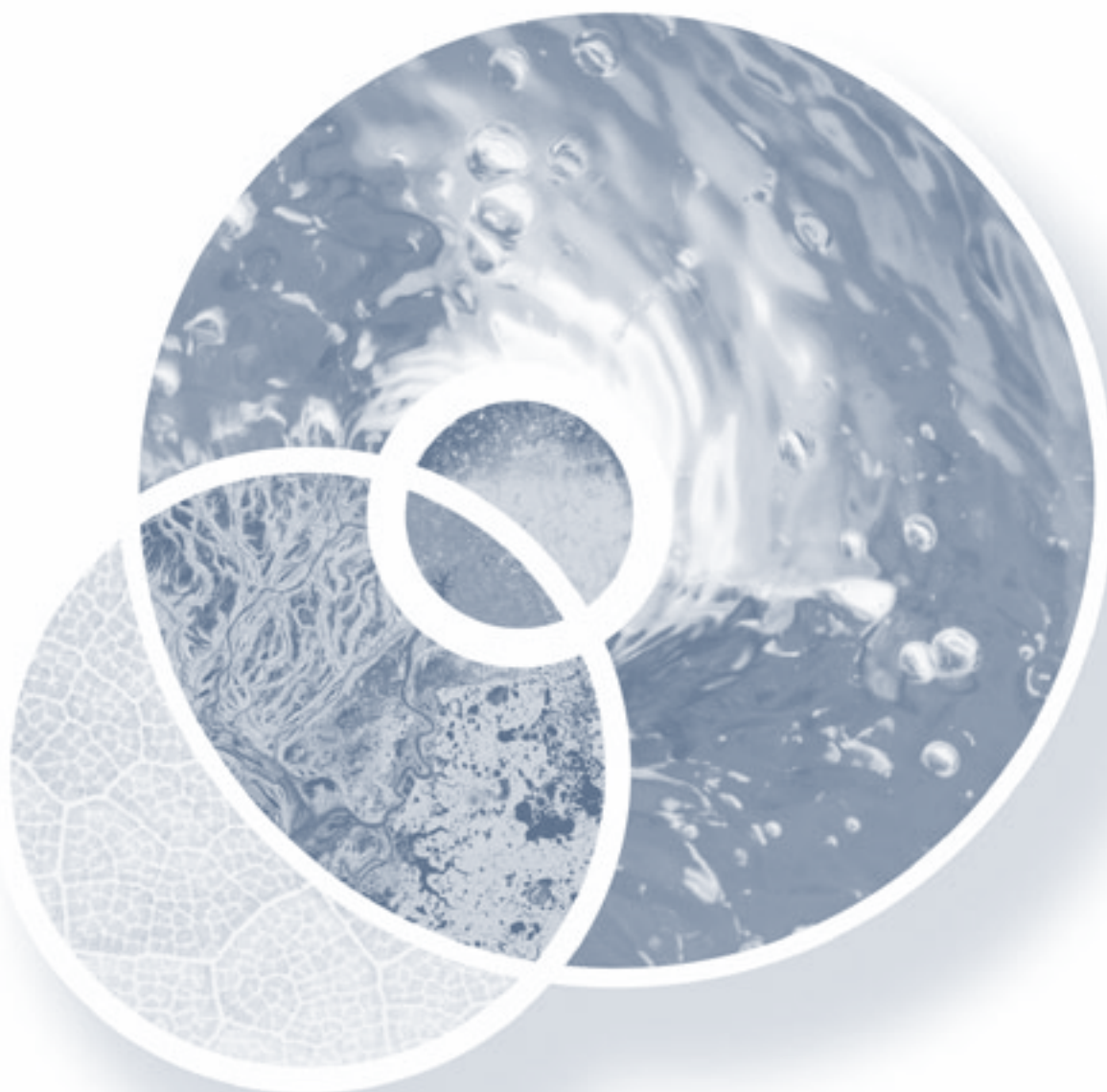


SECRET EARTH

OPEN HOUSE

SATURDAY, OCTOBER 1, 2005 PROGRAM



LAMONT-DOHERTY
EARTH OBSERVATORY

THE EARTH INSTITUTE AT COLUMBIA UNIVERSITY

www.ldeo.columbia.edu

Lamont-Doherty Earth Observatory Located on a 157-acre campus on the Hudson River, the Lamont-Doherty Earth Observatory (LDEO) is the only research center in the world examining the planet from its core to its outermost atmosphere, across every continent and every ocean. From global climate change to earthquakes, volcanoes, shrinking natural resources, environmental hazards and beyond, LDEO scientists continue to provide the basic knowledge of Earth systems that must inform the wise stewardship of our planet. LDEO's annual open house is an exciting opportunity for adults and children of every age to learn about the Earth in fun and engaging ways.

Bus from Morningside Heights

Buses depart for the LDEO campus in Palisades, NY from 118th Street and Amsterdam Avenue at 9:30, 10:00, 11:00, and 11:30 a.m. Buses return to 118th Street and Amsterdam Avenue from LDEO at 2:00, 2:30, 3:30, and 4:00 p.m.

Shuttle Bus from IBM Conference Center, Route 9W

People arriving in cars or vans should park at the IBM Conference Center on Route 9W just north of the LDEO campus. Shuttle buses run continuously from 10:00 a.m. to 4:00 p.m., and arrive to and depart from the Geoscience Building at LDEO. Persons with special needs or questions should contact the LDEO Development Office at (845) 365-8634.

Parking is complimentary thanks to the generous support of the IBM Dolce Conference Center.

LDEO Alumni Information

All LDEO faculty, staff and student alumni are invited to a special hospitality suite in the Lamont Hall Seminar Room, open from 10:00 a.m. until 3:00 p.m.

FOR THEIR SAFETY, PLEASE NOTE THAT IT IS ESSENTIAL THAT CHILDREN BE SUPERVISED AT ALL TIMES.

LEGEND



Children's Activities



High School Activities

TENT 1: WELCOME TENT

Receive Open House programs and campus maps here. Also at this tent:

Walking Tours

Sign up for walking tours of the LDEO campus. The 45-minute tours, limited to groups of 20 people each, depart from the front of Geoscience at 10:30 a.m., 11:30 a.m., 2:00 p.m. and 3:00 p.m.

Dendro Hike: The History of Eastern U.S. Tree-Ring Analysis

The hike introduces you to our outdoor laboratory—the forest—and shows how we use trees to study environmental history. It is approximately one hour in length and requires shoes appropriate for the woods. Limited to groups of 15, the tour departs from the parking lot of the Geochemistry Building at 10:30 a.m., 11:30 a.m., 12:30 p.m., 1:30 p.m. and 2:30 p.m.

Become an Earth Observer!

Become an Earth Observer by exploring LDEO's exhibit tents and answering questions on our earth science quiz. Complete your quiz and come back to the Welcome Tent for a special prize!



GEOSCIENCE BUILDING

Lobby: LDEO Gift Shop

Purchase LDEO t-shirts, baseball caps, knapsacks, mugs and more!

Room 204: Center for International Earth Science Information Network (CIESIN)

CIESIN, part of the Earth Institute at Columbia University, addresses the impacts of human activities and institutional arrangements on the environment, and in turn, the ways in which environmental change affects human health and welfare.

Visit <http://www.ciesin.columbia.edu>

TENT 2: CORE REPOSITORY/HUDSON RIVER RESEARCH

BIOLOGY & PALEO ENVIRONMENT AND MARINE GEOLOGY & GEOPHYSICS DIVISIONS

Deep Sea Sediments

LDEO's Deep Sea Sample Repository stores sediment cores from every major ocean and sea around the world. Examine the sediment and learn the stories these cores have to tell.

Visit http://www.ldeo.columbia.edu/res/fac/CORE_REPOSITORY/RHP1.html



Hudson River Research

Explore highlights of LDEO's ongoing research on the Hudson River. What is an estuary and what makes it so important? Learn about sediments eroding and depositing in the River. Kids analyze a sediment core. Visit <http://www.ldeo.columbia.edu/res/pi/Hudson/>

Hudson Marsh

Use microscopes to look at seeds and pollen, complete a plant puzzle, and see glacial clay.

Coral skeletons

Come and see how tropical corals can tell us about droughts and river floods in the past.



TENT 3: SEISMOLOGY, GEOLOGY & TECTONOPHYSICS DIVISIONS

Visit <http://www.ldeo.columbia.edu/res/div/sgt/>

Build an Earthquake-Resistant House!

Junior Engineers: Can you build a house strong enough to survive an earthquake? You will be given materials to build an "earthquake-resistant" house and the one that survives an "earthquake" wins!

The Verrazano Bridge Project

Learn about what happens to the Verrazano Narrows Bridge before, during and after the 2004 NY Marathon from GPS and accelerometer monitoring.

LDEO Seismology in the Field

This display presents results from CANOE (Canadian Northwest Experiment), the deployment of nearly 60 seismometers spanning 1,200 miles of northwestern Canada that records distant earthquakes.

Hudson River History

Learn how the Hudson River has changed and how climate has been changing in New York City for the last 7,000 years.

Rockland County Rainfall and Drought

An analysis of the historical rainfall record reveals that drought emergencies in Rockland County relate as much to increasing population and demand for water as they do to deficient rainfall.

Make Your Own Earthquake

With the use of a portable seismograph, visitors can see ground movements generated by their motion.

SEISMOLOGY BUILDING

LECTURES AND DEMONSTRATIONS BY SCIENTISTS

Seminar Room, 2nd floor:

- 11:00 a.m. *Earthquakes in the Stable Continental Regions: Earthquakes in Eastern North America* with Won-Yung Kim
- 1:00 p.m. *World Disaster Hotspots* with Arthur Lerner-Lam
- 2:30 p.m. *Geodynamics for All: The Conversation Between the Inside and the Outside of the Earth* with Ben Holtzman

Room 201: Lamont-Doherty Cooperative Seismographic Network

See a demonstration of the modern, real-time seismographic network for the East Coast. Learn about earthquakes in the Northeastern U.S. and view the LCSN web page (<http://www.LDEO.columbia.edu/LCSN>) for images of recent earthquake activity. (Group size is limited.)

Room 214: Rock Touching Room

Touch and examine rocks and minerals from around the world.

TENT 4: MARINE BIOLOGY

BIOLOGY AND PALEO ENVIRONMENT DIVISION

The Aquatic Food Web

Learn about the connections between aquatic organisms and the importance of plankton. See aquatic organisms under the microscope. Build your own plankton net.

TENT 5: FOOD TENT

TENT 6: GEOCHEMISTRY

Visit <http://www.ldeo.columbia.edu/res/div/gc/index.html>

Groundwater Flow and Transport

LDEO scientists study how water and pollutants move in the ground. Visitors may explore the interactive sandtanks, developed in collaboration with NYC teachers. For more information, visit <http://research.radlab.columbia.edu/emsil/edout>.

The Solid Earth Cycle

In the last half-century earth scientists have related dynamic processes, such as volcanic eruptions and earthquakes, to the motions of large tectonic plates on Earth's surface. Rocks bear witness to this cycle, recording the birth of new ocean floor, volcanoes and mountain ranges, as well as their destruction. Come see and touch these rocks for yourself.

Carbon Cycle Research

Learn about changes in the global carbon cycle in the past, the present and the future. Investigate the effects of human activities on the carbon cycle. See how much CO₂ (carbon dioxide) you contribute by breathing, how plants affect CO₂ and how CO₂ sequestration can help reduce global warming in the future.

Stump the Geologist!

Bring your rocks and minerals to be identified and analyzed by Mr. Wizard.

GEOCHEMISTRY BUILDING

Tour the clean lab where trace elements are separated from rock samples under ultra-clean conditions, and then onto the mass spectrometer lab, where isotope ratios are measured on samples as small as a billionth of a gram. LDEO staff will demonstrate the uses of mass spectrometry in the earth sciences to determine ages of samples, to trace geological processes, and to investigate the history of our planet. (Group size is limited.)

Room 6: Clean Chemistry Lab

Room 18: Mass Spectrometer Lab

TENT 7: OCEAN AND CLIMATE PHYSICS

Visit <http://www.ldeo.columbia.edu/res/div/ocp/index.shtml>

Climate Phenomena

Investigate the physics of climate phenomena in the atmosphere and oceans, and how changes affect the environment. View tank experiments modeling some of the amazing processes found in oceans and the atmosphere.



Tsunami Tank

A hands-on children's tank experiment to visualize the coastal amplification of tsunami waves.

Salt Water Tasting Contest

Collect water from an oceanographic water sampler, test your taste buds and see how you fare against modern oceanographic instruments in the Saltwater Tasting Contest.

Oceanographic Equipment Display

View a display of sea-going instruments used to sample the world's oceans.

OCEANOGRAPHY BUILDING

LECTURES AND DEMONSTRATIONS BY SCIENTISTS

Room 104

- 11:00 a.m. *The Katabatic Winds of Antarctica* with Xiaojun Yuan
1:00 p.m. *Water Flows Uphill* with Andreas Thurnherr
2:30 p.m. *The Fate of Arctic Sea Ice* with Bruno Tremblay

Room 105: Movies and Climate: Kids Corner

A selection of short movies on a range of topics, from research cruises to Antarctica, provide impressions of the landscape, work on board the ship, and the amazing ice. Research the climate with interactive activities for children. (Group size is limited.)

http://ocp.ldeo.columbia.edu/open_house

MARINE GEOLOGY AND GEOPHYSICS DIVISION LECTURES AND DEMONSTRATIONS BY SCIENTISTS

Room 108

- 1:00 p.m. *On the Track of the Deluge Comet* with Dallas Abbott

TENT 8: CICAR

The Cooperative Institute for Climate Applications and Research (CICAR) is a partnership between the National Oceanic and Atmospheric Administration and Columbia University. Learn how scientists from the Earth Institute's Lamont-Doherty Earth Observatory and NOAA's Office of Oceanic and Atmospheric Research (OAR) collaborate to advance climate research, education and outreach.

Visit <http://www.ldeo.columbia.edu/cicar/>

TENT 9: INTERNATIONAL RESEARCH INSTITUTE FOR CLIMATE AND SOCIETY/ TROPICAL AGRICULTURE PROGRAM

Visit <http://iri.ldeo.columbia.edu/>

Learn about the latest climate forecast for the upcoming season. Find out how the El Niño/Southern Oscillation phenomenon affects the climate around the world. Follow IRI researchers around the world through the photographs they have taken during their travels. And, kids, become an "Apprentice Meteorologist" and test your skills drawing your own weather map and making a forecast.

Talks in the IRI tent:

- 11:00 a.m. *Hurricanes, Typhoons and Climate* with Suzana Camargo
1:00 p.m. *Seasonal Climate Forecasting* with Tony Barnston
2:00 p.m. *Climate: Weather or Not?* with Arthur Greene

TENT 10: MARINE OPERATIONS/ MARINE GEOLOGY & GEOPHYSICS DIVISION

MARINE OPERATIONS

The next 50 years of Excellence in Research at Sea: LDEO begins Conversion and Operation of NSF's newest Research Vessel.

Visit <http://www.ldeo.columbia.edu/res/fac/oma/>

MARINE GEOLOGY AND GEOPHYSICS

Visit <http://www.ldeo.columbia.edu/res/div/mgg/>

Lake Vostok, Antarctica

Buried under 2.5 miles of ice in the heart of the Antarctic continent lies Lake Vostok, one of the world's largest freshwater lakes. LDEO is using radar data and GPS measurements to understand the dynamics of the water exchange system of the lake.

Visit http://www.earth2class.org/k12/w8_s2005/index.php

GeoMapApp/Looking at Maps from the Ocean Floor

GeoMapApp is a data exploration and visualization tool—an integrated mapping application developed at Lamont. See how this tool provides unique visualization opportunities. Visit www.geomapapp.org

"Finding Your Way" - Latitude? Longitude? GPS? Compass?

Join Lamont scientists, Girl Scouts of America, and the Lower East Side Girls Club as they explore ways to find their way around campus, including using a GPS. Collect a campus map from the girls at the welcome tent to participate as you visit all the Open House events.

TENT 11: ACADEMIC RESOURCES

Department of Earth and Environmental Sciences

Talk with representatives from the Department of Earth and Environmental Sciences to learn about pursuing a degree or an internship program in the earth sciences at Columbia University. High school students who would like advice about how to best take advantage of Open House should come here. Visit <http://eesc.columbia.edu/>

Earth2Class

"E2C" is a unique professional development program designed to improve the knowledge, teaching and technology skills of middle and high school science educators. The E2C Team provides theme-related content information, curriculum activities, technology integration and educational resources.

Visit http://www.earth2class.org/k12/w8_s2005/index.php

Digital Library for Earth Science Education (DLESE)

Preview DLESE—an essential tool for any science teacher. Online tour provided. Visit www.ldeo.columbia.edu/edu/DLESE/

Barnard College

Learn about Barnard College's undergraduate major in Environmental Sciences. Visit <http://www.barnard.edu/envsci/>

E3B/Center for Environmental Research and Conservation (CERC)

Speak with representatives of the Department of Ecology, Environment and Evolutionary Biology and the Center for Environmental Research and Conservation (CERC) about the environmental biology major and the CERC undergraduate program.

Earth Institute's Office of Educational Programs

Find out about the University's Environmental Science and Policy master's degree program integrating environmental science with policy analysis and management principles.





TREE RING LABORATORY

BIOLOGY AND PALEO ENVIRONMENT DIVISION

Dendrochronology is the science of analyzing annual growth rings of old trees to learn about past environmental changes. There are many applications of tree-ring analysis that assist scientists in myriad disciplines, including climatology (e.g., El Niño, droughts, and global warming), earthquake history, archaeology, forestry, fire, history, art history and even law. View tree core collections from around the world and discover the many ways in which tree ring scientists gather, interpret and use tree ring information to unfold history.

Visit <http://www.ldeo.columbia.edu/res/fac/trl/>



TENT 12: BATHTUB SCIENCE

Feel how a bathtub full of cornstarch and water can be used to understand the dynamics of the solid Earth.

TENT 13: BOREHOLE RESEARCH GROUP

MARINE GEOLOGY AND GEOPHYSICS DIVISION

Discover the world of downhole logging, where scientists unlock the mysteries of our planet by deploying an assortment of geophysical tools in holes drilled deep into Earth's crust.

Visit <http://www.ldeo.columbia.edu/BRG/>



TENT 14: DINOSAURS

BIOLOGY AND PALEO ENVIRONMENT DIVISION

Dinosaurs once ruled the very ground that LDEO occupies today. Examine the beginning of the age of dinosaurs in New York, New Jersey and Pennsylvania through the research of a LDEO paleo-biologist. Visitors will see local fossils from 200 million years ago, including those of dinosaurs and their contemporaries, and exhibits describing the unique geological setting and history of our region.



TENT 15: LDEO CHILD DEVELOPMENT CENTER

Hands-on activities for young children and information about on-site childcare in Bright Horizons daycare center.

MONELL BUILDING, MONELL AUDITORIUM

EARTH SCIENCE LECTURES

Monell Building, Monell Auditorium

11:00 – 11:30 a.m.

Earth Science and Disasters: The Indian Ocean Tsunami and Hurricane Katrina: What Have We learned?

Dr. Klaus Jacob
Senior Research Scientist
Lamont-Doherty Earth Observatory

11:45 a.m. – 12:15 p.m.

The Earth Institute and Climate Change

Dr. Jeffrey D. Sachs
Director
The Earth Institute at Columbia University

12:30 – 1:00 p.m.

Understanding the Global Warming Forecast: Our Past and Future Climate

Dr. Peter deMenocal
Associate Professor
Lamont-Doherty Earth Observatory

1:15 – 1:45 p.m.

Verrazano Narrows Bridge Before, During and After the 2004 NY Marathon from GPS and Accelerometer Monitoring

Dr. Mikhail G. Kogan
Doherty Research Scientist
Lamont-Doherty Earth Observatory

2:00 – 3:00 p.m.

Columbia University Undergraduate Admissions Information Session for High School Students

Jessica Marinaccio
Director of Undergraduate Admissions
Columbia University

3:15 – 3:45 p.m.

Illuminating the Floor of the Hudson River

Dr. William Ryan
Doherty Senior Scholar
Lamont-Doherty Earth Observatory

Monell Upper Lobby: Undergraduate Admissions

Staff members from the Columbia University Office of Undergraduate Admissions will be available from 12 p.m. to 4 p.m. in the Monell Auditorium Lobby to answer questions about the admissions process, financial aid, and undergraduate opportunities in the sciences. Current Columbia University students will also be present from 12 p.m. to 2 p.m. to display and discuss their own personal research.

12:00 – 2:00 p.m.

Columbia University Rabi Scholars and Department of Earth and Environmental Science students will showcase their latest research.

UNDERWRITTEN IN PART BY OUR GENEROUS SPONSORS:



KONGSBERG



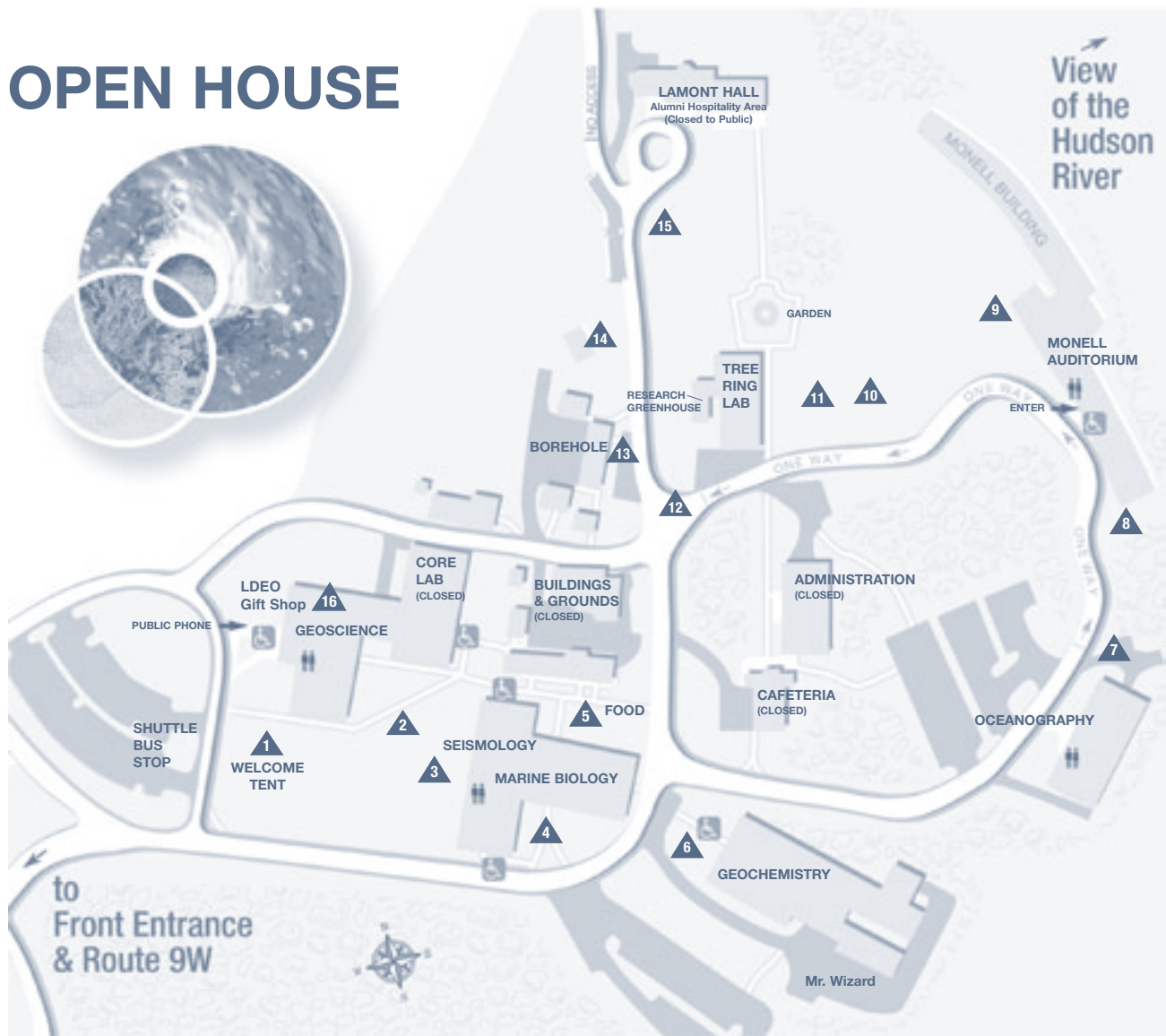
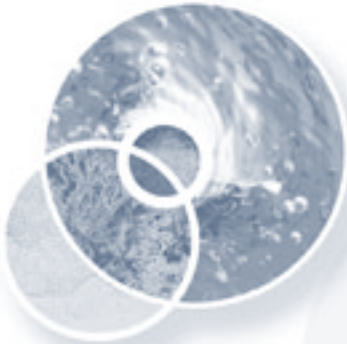
Orange & Rockland





The Ergonomic GROUP



OPEN HOUSE



▲ Tents	 Restrooms	 Handicapped Access
<h1 style="writing-mode: vertical-rl; transform: rotate(180deg);">Tents</h1>	<ul style="list-style-type: none"> ▲ 1 Welcome Tent ▲ 2 Core Repository/Hudson River Research ▲ 3 Seismology, Geology & Tectonophysics ▲ 4 Marine Biology ▲ 5 Food Tent ▲ 6 Geochemistry ▲ 7 Ocean & Climate Physics ▲ 8 CICAR 	<ul style="list-style-type: none"> ▲ 9 IRI ▲ 10 Marine Operations/MG&G ▲ 11 Academic Resources ▲ 12 Bathtub Science ▲ 13 Borehole Group ▲ 14 Dinosaurs ▲ 15 LDEO Childhood Development Center ▲ 16 LDEO Gift Shop

IN THE EVENT OF AN EMERGENCY GO TO ANY LAMONT PHONE AND DIAL 555. STATE YOUR EMERGENCY AND YOUR LOCATION.