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GREEN FOUNDATION

History

The Cecil H. and Ida M. Green Institute of Geophysics and Planetary Physics was dedicated in 1964, after a formal decision to develop the Institute in 1960. The original idea for the Institute was hatched in 1959 to "attract able minds away from traditional forms of physics," particularly because new geophysics departments had started to appear in other parts of the United States. At this time there was no UC San Diego, and the Scripps Institution of Oceanography was known as the University of California, La Jolla. The Institute was initially to be focused on planetary physics, with an emphasis on the Earth-Moon system. [Click here](#) to view the complete IGPP timeline from the 1960's to present.



[The Evolution of IGPP](#)

"The Cecil H. and Ida M. Green Institute of Geophysics and Planetary Physics (IGPP)"
Oceanography: v. 16, n. 3/2003. From the *Special Issue - Scripps Centennial edition of Oceanography*: The evolution of IGPP from its inception in 1959, as recalled by directors: Munk, Gilbert, Orcutt, Zumberge and Parker.

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1960 – 1970: The Early Years

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The Munk Laboratory circa 1970

The Institute was initially to be focused on planetary physics, with an emphasis on the Earth-Moon system. In the initial proposal for IGPP on April 15, 1959, Vic Vacquier wrote:

"We thus envision an institute located near the Scripps Institution on the UCLJ campus, which by 1964 might consist of a dozen senior investigators, 25 junior staff, 25 pre-Ph.D. students and 5 post-doctoral fellows."

On April 23, 1959, Walter Munk received a letter from UCLA providing "minor but immediate support for the Institute Program at La Jolla" to help relieve some of the early monetary shortfalls. This support was \$1000 in petty cash and \$2500 for research Assistants. On June 2, 1959, a memo was sent to Roger Revelle (then Director of Scripps) and Louis Slichter (the Director of the State-wide Institute of Geophysics at UCLA) outlining the formal proposal for a La Jolla branch of the Institute of Geophysics, and in July 1959, IGPLJ was established. Initially, all members of IGPP had appointments in existing UC departments, including Scripps Institution of Oceanography, Aerospace & Mechanical Engineering, and Physics.

In January 1960 Walter Munk applied for a grant of \$486,000 from the Max C. Fleischmann Foundation of Nevada to build the initial geophysical laboratory (now the Munk Laboratory)--half the estimated building cost. The rest of the funds were to be raised from the NSF and matched by the Scripps Institution of Oceanography. Despite repeated efforts by Prof. Munk, the application to the Fleischmann Foundation was unsuccessful; however, in his application Walter outlined his vision for the new laboratory:



Early seismometer

"The informal intimacy of the early days is now gone; we have professional administrators and parking problems. I have found these developments very disturbing, yet have become convinced that a modern scientific institution must have a broader base than that of the Scripps Institution during Sverdrup's days. This suggests an experiment: is it possible to combine the advantages of a small, intimate institute with the advantages provided by a modern, well-rounded campus? Could one establish an institute on this campus sufficiently small so that its director can devote most of his time to teaching and research, sufficiently remote to provide peaceful intimacy among its members, yet close enough to a general campus so that students can participate in the research, and staff members have convenient access to shops, library, modern computing facilities, and similar tools of the trade?"

On January 19, 1961, a site to the north of the Scripps Institution of Oceanography was recommended by the Campus Planning Committee as the site for the new laboratory, and on March 28, 1961 Prof. Munk outlined the role of IGPP on the San Diego campus:

"Above all the Institute is to remain relatively small. It is to be housed in an intimate and somewhat separate laboratory so that people with various backgrounds remain in very close contact."

On April 5, 1961, the Committee on Educational Policy approved Prof. Munk's plans for the Institute of Geophysics and Planetary Physics at La Jolla, the estimated cost of which was \$972,000, or \$20.90 per assignable square foot. The redwood building north of Scripps Pier was constructed (which went on to win several design awards), and in 1961 IGPP published its first annual report. A field testing station at Camp Elliot provided space for testing seismic instruments, and negotiations started for the development of a permanent geophysical observatory at Pinyon Flat, two and a half hours from the Institute.

On December 9, 1961, Prof. Munk wrote to his friend, Cecil Green, requesting the establishment of a "Cecil Green Professorship" in Geophysics, and by December 15 Prof. Munk had received notification from the University of California that IGPP be decentralized, effective immediately.



On August 14, 1964, Prof. Munk advised the Systemwide Institute of Geophysics Director and the University of California Chancellor that he had been director of IGPP for five years, and that the initial phase of the formation of the La Jolla Laboratory of IGPP was coming towards an end.

"We are about 80% staffed and adequately housed. Government support towards our research is at a satisfactory and fairly steady level, \$750,000".

The "Barnyard"

W.F Libby (the Director of IGPP UCLA and Systemwide IGPP) recommended to Chancellor York (UC Chancellor) that Prof. Munk remain as Associate Director.

Early academic and research specializations ranged the whole geophysics curriculum, and included Geophysical Inverse Theory, Earthquake Mechanisms, Seismic Geophysics, Geophysical Fluid Dynamics, Plate Tectonics, Time Series Analysis, Theoretical Seismology, and Abyssal Oceanography.

Founding faculty members were:

- George E. Backus (Professor of Geophysics)
- Barry Block (Assoc. Professor of Geophysics)
- Hugh Bradner (Res. Physicist, Professor of Engineering Physics and Geophysics)
- Barry Block (Assoc. Professor of Geophysics)
- James Brune (Professor of Geophysics)
- Edward Bullard (Professor of Geophysics)
- Douglas Caldwell (Asst. Res. Geophysicist, Asst. Professor)
- Florence Dormer (Programmer)
- Carl Eckart (Professor of Geophysics)
- Christopher Garrett (Asst. Res. Geophysicist)
- J. Freeman Gilbert (Professor of Geophysics)
- Richard Haubrich (Professor of Geophysics)
- Ralph Lovberg (Professor of Physics & Res. Physicist)
- Jonathan Berger (Asst. Res. Geophysicist)
- John Miles (Professor of Applied Mechanics & Geophysics)
- Robert Moore (Asst. Professor of Applied Electrophysics, Asst. Res. Geophysicist)
- Walter Munk (Director, La Jolla Laboratories, Professor of Geophysics)
- Robert Parker (Asst. Professor of Geophysics)
- Paul Richards (Asst. Res. Geophysicist)
- Frank Snodgrass (Research Engineer)
- Mark Wimbush (Asst. Res. Geophysicist)
- Max Wyss (Asst. Res. Geophysicist)



The study room



Early OBS deployment

[Download the 1970 Summary of Research Activities](#) [11 MB]

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1970 - 1980: Expansion

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The seventies saw great expansion of research facilities at IGPP, with the development of the [Piñon Flat Observatory \(PFO\)](#). Work at PFO began in 1970, at which time the land was owned by the U.S. Forest Service; it was purchased by the University in 1980 with generous support from [Cecil and Ida Green](#). Operation of the observatory is now supported by the National Science Foundation, the U.S. Geological Survey, the Incorporated Research Institutions for Seismology (IRIS), and the Southern California Earthquake Center (SCEC).

The Observatory occupies 160 acres of land in the mountains just south of Palm Springs, and was designed primarily to monitor the movements of the faults upon which earthquakes occur. Utilizing laser technology, the slow build up of strain prior to earthquakes has been continuously recorded since 1971, and the analysis of these records has already significantly improved our views about the way these motions occur. The Observatory is nationally recognized as the most complete and sophisticated in the country. It is a unique facility as (a) it comprises laser strain instrumentation, superconducting gravimeters, as well as more conventional seismic instruments, and (b) it is located adjacent to the most active fault in California (the San Jacinto), and as such offers an ideal setting to test the hypotheses of earthquake prediction.



The Piñon Flat Observatory

[Project IDA \(International Deployment of Accelerometers\)](#) is headquartered at IGPP and is an international program for the deployment of very long period seismometers. Started in 1975 and made possible by the generosity of Ida and Cecil Green, the network is designed as a global antenna to study the long period waves associated with moderate to large earthquakes, free oscillations of the Earth, and Earth and ocean tides. There are currently 36 broadband stations deployed worldwide, which send digital data to a central data bank at IGPP for unpacking and re-formatting. Initially, the long period seismometers were made by adapting LaCoste & Romberg accelerometers, which were upgraded in the early 1990's to three component seismometers from funds provided by Cecil and Ida Green. Project IDA has undergone expansion since its development, but especially after the [IRIS \(Incorporated Research Institutions for Seismology\)](#) was formed in 1984 and IGPP became the IDA/IRIS network operations center.

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1980 - 1990: Diversification

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During the 1980's IGPP continued to grow and diversify under the continued directorship of Freeman Gilbert, and then John Orcutt. In the late 1980's plans were drawn up for the construction of another laboratory, to be built on the side of the hill between the Munk Laboratory and La Jolla Shores Drive. Plans for the new lab were developed by Judith and Walter Munk, and Sharyn and John Orcutt, in liason with a local architect, Fred Liebhardt.



Architect's model of IGPP II - the Revelle Laboratory

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1990 – 2000: New Premises

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1990

George E. Backus elected a foreign member of the French Académie des Sciences.

Jean-Bernard Minster elected a Fellow of the American Geophysical Union.

Jonathan Berger elected a Fellow of the American Geophysical Union.

William Young, POR/IGPP, received the Macelwane Award, American Geophysical Union.

Peter Shearer stacks global seismic data, finding new evidence for a mantle discontinuity at 520-km depth.

New IDA stations established in Alert, Canada; Erimo, Japan; Ala-Archa, Kyrgystan; Sutherland, South Africa.

1991

Establishment of Scripps Orbit and Permanent Array Center (SOPAC) using GPS satellites to study earthquakes, tectonic plate motion and boundary deformation with Yehuda Bock as Principal Investigator.

J. Freeman Gilbert received the 1990 Balzan Prize from the International Balzan Foundation of Milan, Italy.

Kyrgyz array established by Frank Vernon in central Asia.

IGPP becomes a Core Institution in the NSF S&T Center, the Southern California Earthquake Center or SCEC, with Bernard Minster as the representative to the Board of Directors.

Mark Zusberg and others observe the variation of gravity in a submersible to 5-km depth to obtain an accurate measure of the Newtonian gravitational constant.

Walter Munk and Andrew Forbes transmit sound to both the east and west coasts of the U.S. from a source suspended below the U.S. Navy vessel M/V Cory Chouest sailing near Heard Island in the southern Indian Ocean - the Heard shot around the world.

Yehuda Bock elected a Fellow of the International Association of Geodesy.

1992

Walter H. Munk awarded the 1992-1993 Presidential Award of the New York Academy of Sciences.

Walter H. Munk selected 1992 UCSD Alumnus of the Year.

The Permanent GPS Geodetic Array in southern California operated by SOPAC provides the first geodetic determination of coseismic deformation during the June 28 Landers earthquake.

Frank Wyatt and Duncan Agnew measure the coseismic and postseismic strain following the Landers earthquake at the Piñon Flat Observatory.

Guy Masters and Bob Woodward include ScS phases in global mantle tomography.

Establishment of the Acoustic Thermometry of Ocean Climate (ATOC) program to study the effects of global warming with Walter Munk as Principal Investigator.

Ute Herzfeld awarded the President's Prize, International Assn. for Mathematical Geology.

Bradley Werner awarded the Young Investigator Award, Office of Naval Research.

SOPAC becomes a Global Data Center and GPS Orbit Analysis Center for the International GPS Service for Geodynamics (IGS).

IGPP records aftershocks of the Landers earthquake on a portable broadband array and develops an archive of all aftershock data for SCEC.

New IDA stations established in Lovozero and Norilsk, Russia.



Laying the foundations for the new IGPP Revelle Laboratory



Support pillars for the Revelle Lab Building 3000



Construction of Revelle Lab Building 2000

1993

Walter H. Munk elected a member of the Russian Academy of Sciences.

Walter H. Munk received the Presidential Award, New York Academy of Sciences

Walter H. Munk awarded the Vetlesen Prize, Columbia University

Walter H. Munk received the Scientist of the Year Award, ARCS (Achievement Rewards for College Scientists)

Kent, Harding, and Orcutt complete investigation of magma chamber segmentation & upper crustal development along the 9 N segment of the East Pacific Rise.

Completion of four new IGPP buildings known as the "IGPP Revelle Laboratory."

Turkmenistan Alibek Array established by Frank Vernon.

Geophysical Inverse Theory published by Princeton University Press.

New IDA stations established in Alibek, Turkmenistan and Flin Flon, Canada.

1994

John Orcutt received the 1994 Maurice Ewing Medal from the U.S. Navy and the American Geophysical Union for his outstanding marine science research.

J. Freeman Gilbert granted the degree of Doctor honoris causa in Earth Sciences by Utrecht University in the Netherlands.

J. Freeman Gilbert elected Socio Straniero (Foreign Member), Accademia Nazionale Dei Lincei, Italy.

IGPP records aftershocks of the Northridge earthquake on a portable broadband array and develops an archive of all aftershock data for SCEC.

John Miles elected a Fellow of the American Association for the Advancement of Science.

The La Jolla branch of the Institute of Geophysics and Planetary Physics, based at Scripps, was renamed in honor of Cecil and Ida Green. Scripps is now the home of the Cecil H. and Ida M. Green Institute of Geophysics and Planetary Physics.

The IGPP Systemwide Office moved to La Jolla with Bernard Minster as Systemwide Director.

First ocean bottom absolute gravity measurement made by Mark Zumberge.

Laser strainmeter measurements are made on the San Andreas by Frank Wyatt, Duncan Agnew, Mark Zumberge, and Hadley Johnson.

Constable, Parker and O'Brien contradict assertion that magnetic diffusion in Earth's core is required by data this century.

New IDA stations established in Hobart and Tennant Creek, Australia; Monasavu, Fiji; Borgarnes, Iceland; Borovoye, Kazakhstan; Ascension Island; Nilore, Pakistan

1995

Project IDA (International Deployment of Accelerometers) celebrates its 20th Anniversary in 1995 with 32 stations in 17 countries and projections for nearly 50 stations by 1996.

T. Guy Masters elected a Fellow of the American Geophysical Union.

Jason Phipps Morgan awarded the Macelwane Medal, American Geophysical Union.

First successful towed deep-water gravity survey, Mark Zumberge and Jeff Ridgway.

David Sandwell, Walter Smith, John Orcutt and Walter Munk work with Navy to declassify all Geosat altimeter measurements of the Oceans.

First seafloor optical fiber strain measurement off the SIO pier.

First ATOC sound source 50 miles off Half Moon Bay at Pioneer Seamount begins transmissions.

Luciana Astiz, Paul Earle and Peter Shearer make the first three-component global stacks of Global Seismic Network broadband data.

New IDA stations established in Kurchatov, Kazakhstan; Las Juntas, Costa Rica; Mahe, Seychelle Islands; St. Helena Island.

1996

George Backus awarded Docteur Honoris Causa at the Sorbonne, Institut de Physique du Globe, Université de Paris IV.

Walter H. Munk awarded Honorary Doctor of Philosophy, Schools of Science, University of Crete.

Michael Hedlin, Peter Shearer and Paul Earle find strong evidence that small scale elastic heterogeneities are not concentrated in D" but are uniformly distributed throughout the mantle.

Yehuda Bock, Jie Zhang and colleagues using PGGGA data collected between the Landers and Northridge earthquakes report on a region-wide change in displacement rates after the Landers earthquake.

John Orcutt awarded the Secretary of the Navy/Chief of Naval Operations Chair in Oceanography.



Construction of Revelle Lab Building 4000 and the Scripps Crossing bridge



Construction of the Scripps Crossing bridge

Bradley Werner appointed the Office of Naval Research/Scripps Institution of Oceanography Scholar

The Permanent GPS Geodetic Array is integrated with the Southern California Integrated GPS Network (SCIGN) under the umbrella of the Southern California Earthquake Center. Funding is received from NASA and NSF to expand the array to a size of 120 stations, with an ultimate goal of 250 sites.

Richard Salmon named a Fellow of the American Academy of Arts and Sciences.

Rick Salmon elected a Fellow of the American Geophysical Union.

Steve Constable develops a seafloor magnetotelluric method for use in oil exploration and conducts first 100-site commercial survey in the Mediterranean.

Foundations of Geomagnetism published by Cambridge University Press.

New IDA stations established in Mount Kent, Falkland Islands; Azores, Portugal; Ar Rayn, Saudi Arabia; South Georgia Island; Cocos Keeling Island 1988.

Backus develops rigorous inference scheme for incorporating hard quadratic bounds in geophysical inverse problems.

Peter Worcester elected a Fellow of the American Acoustical Society.

Parker and Constable propose grand Gaussian process as a model for geomagnetic secular variation. This work essentially revolutionized the study of secular variation and has been the jumping off point for scores of papers in the field.

Jonathan Berger and his group establish the first US government funded seismic stations in the USSR at Obninsk, Arti, Kislovodsk, Garm, and Irkutsk as part of IDA network. Additional IDA station established in Nana, Peru.

1997

David Sandwell elected a Fellow of the American Geophysical Union.

Cathy Constable receives the Price Medal of the Royal Astronomical Society.

John Orcutt receives the 1997 UCSD Alumnus of the Year Award.

New IDA station established in Kodiak Alaska.

IGPP and Cambridge University conduct the first three-dimensional reflection survey of a mid-ocean ridge (Harding, Kent, Orcutt).

1998

IGPP hosts its 100th Green Scholar, Professor Fredrik Zachariasen.

Parker awarded Gold Medal of the Royal Astronomical Society.

Guy Masters, Gabi Laske, and Freeman Gilbert measure coupling-splitting matrices for Earth's elastic-gravitational free oscillations with the matrix autoregressive method.

Michael Hedlin and John Vidale (UCLA) find evidence for partial melt at the Core-Mantle Boundary.

1999

Walter Munk received the 1999 Kyoto Prize in Basic Science for his lifetime achievements in physical oceanography.

Freeman Gilbert received the 1999 Bowie Medal of the American Geophysical Union for his research achievements in global seismology.

Professors Cathy Constable and Peter Shearer elected Fellows of the American Geophysical Union.

The Puente Hills blind thrust fault beneath Los Angeles was discovered by Peter Shearer and John Shaw.

New IDA stations being established in Sulewesi, Indonesia; Kwajalein, Marshall Islands, and Mbarara, Uganda

IGPP selected to operate a national seafloor seismology facility for the National Science Foundation.

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