



**Proposal for the establishment of a
Coordinating Committee of the
International Lithosphere Program (ILP) for 2020-2024**

Global Geo Transects (GGT)

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I. Introduction

The Global Geo Transects programme will initiate and coordinate a series of projects aimed at providing integrated geoscientific interpretation in corridors along strategically selected profiles.

The anticipated outcome will be a series of published fully interdisciplinary geotransects based on the research dissemination of a series of research projects long each transect.

II. Objective

Guided by deep seismic reflection technology and adopting multi-disciplinary approaches, this transcontinental, continental-oceanic, ultra-long and high-resolution scientific programme will focus on comprehensive research along a series of geoscience transects. The aims of the programme are to reveal the deep structure of the lithosphere, recognize the deep processes of plate movement and their control and influence on the surface system, explore energy and mineral resources at depth, and provide insight into geoscience frontier issues, such as the mechanism of natural disasters and their inner dynamics.

The objective of the programme is to improve the knowledge of lithospheric structure and the processes that created them along selected profiles by carrying out truly interdisciplinary geoscientific interpretation of the selected areas. The activities will be centred around new acquisition and interpretation of deep seismic and seismological data. The seismic interpretation will be integrated with interpretation of a broad suite of complementary

geoscientific data, including, but not restricted to, other geophysical data, such as magnetic, gravity, geoelectrical and magnetotelluric, and heat flow data, petrological and geochemical data, together with tectonic and structural information. The field programmes will apply state-of-the-art methods and will build on new developments of methodology and technology.

The programme will contribute to all ILP themes: Geoscience of Global Change, Contemporary Dynamics and Deep Processes, Continental Lithosphere and Oceanic Lithosphere. The programme will provide training of early career scientists in field methodology, data processing and analysis, integrated interpretation.

III. Cooperation

This trans-continental-oceanic programme across plates will implement multi-disciplinary research by integrating geophysics, geology and geochemistry. It will combine the technologies of seismic reflection profiling, broad band seismology, magnetotellurics (MT) and scientific drilling. The programme will make use of existing data, which will be supplemented by new data acquisition in order to provide integrated geoscientific interpretation of a series of ultra-long transects (Figure 1).

Key Lithosphere Transects

The programme will include two key transects for the integrated programme:

(1) The Eurasia - Atlantic - North American geoscience transect and corridor (A-F transect in Figure 1, about 20,000km). This global transect stretches across the Eurasian and North American plates, including the Atlantic Ocean. The transect crosses a number of significant geological borders and critical belts, such as Western Pacific Trench-arc-basin System, Baikal Rift, Siberian Craton, West Siberian Basin, Ural orogen, which marks the Palaeozoic collision belt between the European and Asian plates, the East European Craton, the Variscan orogenic belt, the Atlantic passive continental margins, Iceland and the mid-oceanic ridge, the Caledonian Appalachian Orogen, the North American Craton, the Mesozoic Cordillera orogenic belt, The Basin and Range system, San Andreas Fault system and the Eastern Pacific oceanic ridge.

The A-F transect will reveal the structure and composition of the global continental-oceanic lithosphere, provide basis for deep understanding of significant geoscience subjects, including kinematic and dynamic mechanisms of plates, interaction between different lithospheric layers, circulation of energy and matters, as well as control and influence of deep processes on the surface system.

(2) The India-Tibetan Plateau-Baikal-Siberia geoscience transect (G-H transect in Figure 1, about 8,000km). This transect stretches across the Indian Subcontinent (Gondwana), Himalaya mountain belt, Qinghai-Tibet plateau, Central Asian Orogenic Belt (CAOB), Baikal Rift, Siberian craton and the Chukchi orogenic belt. This transect includes the lithosphere structure, compositions and deep processes of some of the world's most active plate collision belts and continental highly-deforming zones; it will deepen our understanding on the mechanisms of the plate convergence between the Indian and Asian plates and the continental growth of the two plates; it will reveal the deep processes that bring about plateau uplift movements and topographic changes and demonstrate their climatic and environmental influence.

A wealth of data already exists along both key profiles, and GGT will initiate joint projects for interpretation of existing and new data between key stakeholders, as well as coordinate the formation of consortia to carry out complementary data acquisition as required.

A key task for GGT will be to synthesize the wealth of new information that will be gathered through the individual projects and to integrate this information in the form of comprehensive transects.

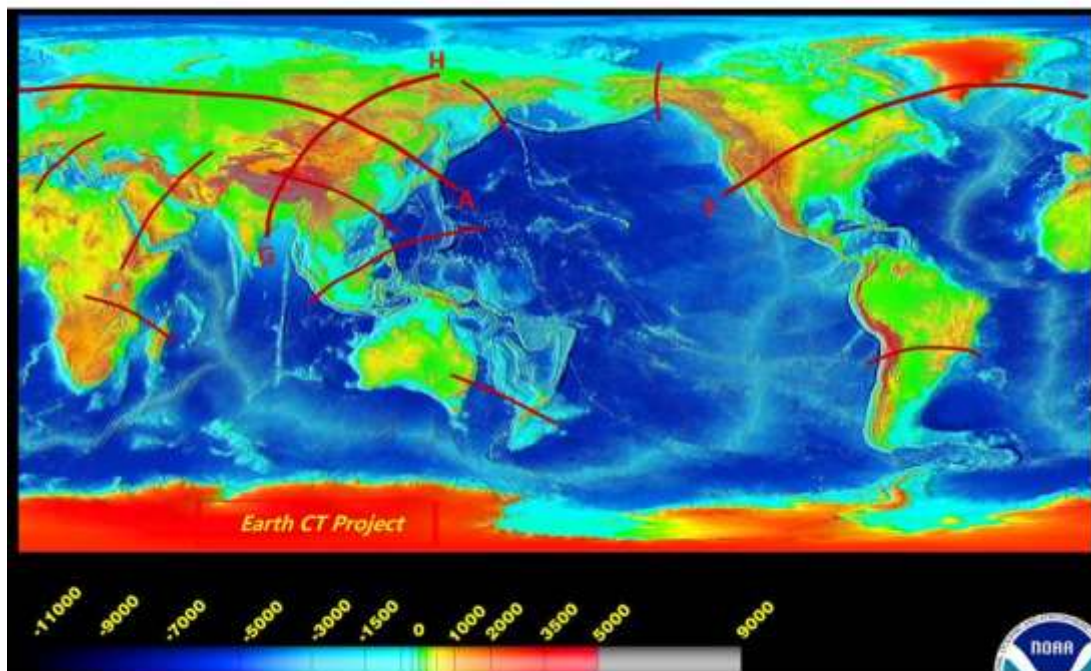


Figure 1. Sketch of key profiles to be covered by the GGT programme.

2) Lithosphere transects in selected critical zones

This part includes a number of transects in critical active regions, which will be selected through the course of the programme. Examples may include the orogenic belt between the Asian/Arabic and African plates, the Tethyan collision zone between the Eurasian plate and the Arabian/Indian plates, the Red River aulacogen, the East African Great Rift Valley, and the western Pacific border: Kamchatka-Sea of Okhotsk-Western Pacific continental border, Philippine Sea-Taiwan Island arc-continental border of Southern China-Yangtze craton-east border of Qinghai-Tibet Plateau, Australia-Tasman Sea-New Zealand Island arc, and the eastern Pacific border from Alaska to the Andes (cf. Fig. 1).

The geo-transects will reveal the typical structure and composition of global lithosphere, interaction between oceanic and continental lithospheres, and different manifestations of plate convergence; mass movement and energy exchange of lithosphere, deep dynamic processes of lithospheric cycle, plate movements and formation of mountains, basins, mines and hazards etc.

The shown profiles illustrate potential study regions. Detailed selection of study regions will be made during the planned workshops of GGT.

2. Components of the integrated geo-transects

(1) Comprehensive deep geophysical data acquisition and interpretation centred around seismic profiling, including deep reflection seismic profiling, refraction seismic profiling, magnetotelluric profiling, and broadband seismic data acquisition. This will allow imaging of the whole lithosphere at the obtainable resolution.

(2) Other geoscience surveying in corridors of ca. 200 km width around the geo-transects, including geological / tectonic structure interpretation for identification of main tectonic units and defining key geological boundaries and area, geochemistry and petrology for the composition and age of the lithosphere, and use of scientific drilling in key critical zones.

The new geo-transects build on the successful geo-transect programme of ILP in the 90'ies, and will benefit from the new knowledge of integration of methods obtained by programmes such as European GeoTraverse (EGT), Lithoprobe, EUROPROBE, TopoEurope, EarthScope etc.

3. Organisation and fund raising

This ILP programme will primarily initiate and coordinate activities in dedicated projects. The CC will bring participants together and through workshops and symposia define key scientific objectives to be addressed by the projects. All workshops will be open to all interested scientists.

(1) An initial open workshop will be held in autumn 2020 in connection with the upcoming Deep2020 meeting in Beijing, organised by SinoProbeII. Here the key targets and regions will be discussed regarding scientific importance in the framework of potential funding of the projects.

(2) An initial discussion was held during the DEEP2018 meeting in Beijing with about 35 participants that included representatives of SinoProbe, IUGS, IRIS, ILP, and ICDP, representatives of past large-scale programs including European GeoTraverse, COCORP, INDEPTH, LITHOPROBE, and EUROPROBE, as well as scientists from universities and research institutions worldwide. The participants all expressed positive interest in the initiative.

(3) During visits by DONG Shuwen, VSEGEI in Russia, GFZ-Potsdam in Germany and NSF in the US have expressed positive interest in the proposed programme. These institutions, together with the SinoProbeII programme (China), represent key players for obtaining access to existing data and for securing funding for new field campaigns.

(4) A series of workshops will be held for discussion of activities in the various corridors in subsequent years in order to form consortia and to integrate the research activities around the various study subjects.

Planning is well advanced for the geo-transect across the Eurasian continent, based on existing data. SinoProbeII and VSEGEI have expressed their intentions of carrying out new seismic data acquisition in order to obtain full coverage along the profile. Initial discussions around the coverage across North America leaves reason for optimism.

It is envisaged that up-to 30,000 km of deep seismic profiles will be acquired during the coming ten years.

(5) Given the degree of interdisciplinarity and the global scale in the GGT, we envisage close collaboration with most ILP Task Forces and Coordinating committees. The perspectives of this programme are very broad, ranging from basic geosciences to exploration research of importance for mineral, hydrocarbon and geothermal exploration.

IV. Outreach

GGT will be responsible for compiling the new information and interpretations from the various projects into global geo-transects, and for securing proper disseminations of the results in the form of comprehensive transects that include the whole suite of geoscience information available. The Transcontinental profile by Lithoprobe may serve as a type example of the final presentations that will result from this initiative.

V. Key partners within this planned task force

Participants in the Global Geoscience Transects Coordinating Committee

Name	Nation	Affiliation
Michael Dentith	Australia	University of Western Australia
Ronald Clowes	Canada	University of British Columbia
Katherine Boggs	Canada	Mount Royal University
Dong Shuwen	China	SinoProbe of CAGS and University of Nanjing
Timothy Kusky	China	China University of Geosciences (Wu Han)
Hans Thybo	Denmark	Istanbul Technical University
Yuan Xiaohui	Germany	German Research Centre for Geosciences GFZ
Michael Weber	Germany	German Research Centre for Geosciences GFZ
Shuichi Kodaira	Japan	JAMSTEC
Evgeniia Milshtein	Russian Federation	VSEGEI
Irina Artemieva	Denmark	Stanford University
Durrheim John Raymond	South Africa	University of the Witwatersrand

GAO Rui	China	China Academy of geological Sciences
Carbonell Ramon	Spain	CSIC ICTJA Spanish Research Council
Larry Brown	United States	Cornell University
Li Yaoguo	United States	Colorado School of Mines
Liu Mian	United States	University of Missouri
Yan Guangsheng	China	Chinese Academy of Geological Sciences
Yao Yupeng	China	China National Nature Science Foundation
Robert Woodward	United States	IRIS
Jeffrey Freymueller	United States	University of Alaska Fairbanks
Alexey Shulgin	Norway	CEED, University of Oslo
Simon Klemperer	United States	Stanford University
Walter Mooney	United States	US Geological Survey
TIAN Xiaobo	China	China Academy of Sciences
Oleg Petrov	Russian Federation	VSEGEI - Russian Geological Survey
Jim Mechie	Germany	GFZ-Potsdam
Anatoly Nikishin	Russian Federation	Lomonosov University, Moscow
XIA Bing	China	China Academy of Sciences
Abdolreza Ghods	Iran	Zanjan University
Vahid Teknik	Turkey	Istanbul Technical University
LIANG Xiaofeng	China	China Academy of Sciences
Wang Gaochun	China	China Academy of Sciences
Hiroshi Sato	Japan	University of Tokyo

Charlotte Krawczyk	Germany	GFZ-Potsdam
Alireza Malemir	Sweden	Uppsala University
Alan Levander	USA	Rice University
Michael Behm	USA	Oklahoma University

Curriculum Vitae

Professor, Dr. DONG Shuwen

Current Positions:

Professor at Nanjing University

Honorary Director of SinoProbe of Chinese Academy of Geological Sciences (CAGS)

Contact: e-mail: swdong@cags.ac.cn

Education & professional experience

Education:

1981: Chinese Academy of Geological Sciences, Geology and Geomechanics, M.S.

1988: Chinese Academy of Geological Sciences, Tectonics, PhD.

1989: Visting Scholar in Bruchwarge Tech. University, Germany.

Current and most recent positions held:

1999-2016: Professor, Chinese Academy of Geological Science

1998-1999: Professor and Director-General, Institute of Geomechanics, CAGS

1995-1997: Deputy Director, Nanjing Institute of Geology and Mineral Resources, CAGS

1989-1994: Senior Geologist, Institute of Geology, Anhui Province

Academic awards and honours (selected):

2010: Award of National Field Investigation

2011: Academician of the Erfut Academy of Germany

2012: First Class Award of Scientific and Technology on Land and Resources of China

2013: Honorary Fellow of Geological Society of America

2016: The Russian Federation, Friendship Award

2016: Second Class Award of national Scientific and Technology of China

Vice President, Chinese Academy of Geological Science

Responsibilities

Management experience

PI (2008-present), SINOPROBE - Chinese National Programme in Geosciences (funding ca 40 bln. yuan); PI of numerous geophysical and geological programs in China

International relations

Treasurer, International Union of Geological Sciences (2012-2016)

Member of Scientific Board of International Geosciences Program (IGCP) 2004-2010

Secretary General of China National Committee for IGCP (since 1999)

Foreign Affiliate of the Incorporated Research Institutions for Seismology (IRIS, since 2005)

Scientific focus areas: Geology, tectonics, seismology

5 recent key publications by the proponent relating to the proposed TF/CC

Publication metrics: publications listed on Web of Science (WoS): 89; total number >200; Citations (WoS): 4079 citations; h-index = 31; 2 papers in the *Nature* Group journals

- Dong, S.W., Zhang, Y.Q., Gao, R., Su, J.B., Liu, M., Li, J.H., 2015a. A possible buried Paleoproterozoic collisional orogen beneath central South China: Evidence from seismic-reflection profiling. *Precambrian Research* 264, 1-10 10.1016/j.precamres.2015.04.003.
- Dong, S.W., Zhang, Y.Q., Zhang, F.Q., Cui, J.J., Chen, X.H., Zhang, S.H., Miao, L.C., Li, J.H., Shi, W., Li, Z.H., Huang, S.Q., Li, H.L., 2015b. Late Jurassic-Early Cretaceous continental convergence and intracontinental orogenesis in East Asia: A synthesis of the Yanshan Revolution. *Journal of Asian Earth Sciences* 114, 750-770 10.1016/j.jseaes.2015.08.011.
- Li, J.H., Zhang, Y.Q., Dong, S.W., Johnston, S.T., 2014. Cretaceous tectonic evolution of South China: A preliminary synthesis. *Earth-Science Reviews* 134, 98-136 10.1016/j.earscirev.2014.03.008.
- Li, Y., Dong, S.W., Zhang, Y.Q., Li, J.H., Su, J.B., Han, B.F., 2016. Episodic Mesozoic constructional events of central South China: constraints from lines of evidence of superimposed folds, fault kinematic analysis, and magma geochronology. *International Geology Review* 58, 1076-1107 10.1080/00206814.2016.1146999.
- Lu, Q.T., Liu, Z.D., Dong, S.W., Yan, J.Y., Zhang, Y.Q., 2015. The nature of Yangtze River deep fault zone: Evidence from deep seismic data. *Chinese Journal of Geophysics-Chinese Edition* 58, 4344-4359 10.6038/cjg20151202.

Curriculum Vitae

Professor Dr. Hans Thybo

Current Positions:

Professor at Eurasia Institute of Geosciences, Istanbul Technical University
Professor at Centre for Earth Evolution and Dynamics, University of Oslo
Professor at School of Earth Sciences, China University of Geosciences, Wuhan

Contact: e-mail: thybo@geo.uio.no, phone: +45 9388 2452

Education & professional experience

Education:

1987: PhD in Geology, Aarhus University (AU),
1982: M.Sc. in Geophysics, AU
1979: B.Sc. in Mathematics and Physics, AU.

Employment career:

1981: Technische Hogeschool Delft, The Netherlands.
1986: University of Bergen Grant from Nordic Council of Ministers
1986-2001: Ass. Professor in Geophysics, Geological Institute, University of Copenhagen.
1994: Visiting professor at Stanford University, California.
2001-2017: Professor of Geophysics, Geological Institute, University of Copenhagen
2016-: Professor, Centre for Earth Evolution and Dynamics, University of Oslo
2017-: Professor, Eurasia Institute of Earth Sciences, Istanbul Technical University
2019- : Professor, China University of Geosciences, Wuhan

Leading positions:

1988 -2015: Head of Geophysical Laboratory, Geological Institute, KU (GI)
1991- 2004. Head of Computer Department,
1998 -2006: Centre leader, Carlsberg Foundation
1998 -2007: Institute council, GI
2004 -2008: Head of “Centre for Integrated Geophysical Research”
2004 -2008: Institute Chair; Deputy Institute Leader (2001-2004)
2012-2016: Head of DanSeis, Danish National Seismological Infrastructure.

Professional recognition

1998: *Academician* Royal Danish Academy of Sciences and Letters (RDASL)
2003-2010: *Member of the presidium* of RDASL
2004-2008: Swedish Geo-Research Council (NT-C)
2004: *Elected Fellow*, Royal Astronomical Society, London
2004-2008: *External council member*, Science Faculty, University of Oslo
2004: *Academician* Academia Europaea
2006-2017: Danish representative to ICSU (International Committee of Scientific Unions)
2010: *Academician* Norwegian Academy of Sciences and Letters
2011-2017: *Vicepresident* of Royal Danish Academy of Sciences and Letters

2012: *Academician* Danish Academy of Natural Sciences
 2013-2017: *Overseas Expert* for Chinese Academy of Sciences (CAS)
 2014-: *Member of the board* of Danish Academy of Natural Sciences
 2014: *Elected Fellow* of Geological Society of America
 2014-2016: *President*, European Geosciences Union (2013 & 2017 *Vicepresident*)
 2015-2017 *President-elect*, International Lithosphere Program (ILP)
 2016-: *Honorary Editor* of Tectonophysics
 2017-: *President* International Lithosphere Program (ILP)
 2018: *1000 Talents' Award*, China

Responsibilities

Editorial Boards:

1996-: Guest editor of 10 special issues of scientific journals and one book
 2000-2016: Editor in Chief, Tectonophysics
 Associate Editor of 7 journals

Selected International and national committees:

1990-1998: Secretary, Danish ILP committee (International Lithosphere Programme)
 1998-2008: Chair, Danish ILP committee
 2000-2002: President (seismology) for European Geophysical Society
 2002: Founding member, European Geosciences Union (EGU)
 2002-2007: President (seismology) for the EGU
 2004-2008: Executive board, science committee, Int. Geological Congress 2008
 2004 -: Proponent of the pan-European geoscience programme, EuroArray, which led to the pan-European EPOS programme
 2005 -: Co-proponent of TopoEurope, an ESF-Eurocores project.
 2006-2017: Chair, Danish ICSU committee
 2007-2012: General Secretary of European Geosciences Union (EGU).
 2007-2013: Member of the Danish Research Council for Natural Sciences (FNU)
 2009-2014: Scientific Advisory Board for International Continental Drilling Programme
 2010-2016: Council member of European Plate Observatory System (EPOS)
 2010-: Board of International Lithosphere programme (ILP)
 2012-2016: Panel member, GeoPRISMS for NSF, USA
 2013-: Panel member, Albert Einstein Award from World Cultural Council
 2014-: Panel member FCT Research Council, Portugal
 2017-: Swedish Geo-Research Council (NT-C)
 2018-: Chair, Panel on Stimulus of Human resources, FCT Portugal
 2018-: Chair, Panel on Evaluation of Research Centres, FCT Portugal

PI and co-PI of ca. 60 international scientific geophysical projects since 1989:

Including EGT-subprojects, BABEL, KRISP90 and 94, TTZ Baltic Sea, EUROBRIDGE, MONA LISA (Initiator), POLONAISE (Initiator), DOBREI and II, LARSEII, Celebration'2000, Altay-Sayan, BASE and BEST (Baikal Rift, Initiator), ESTRID (Initiator), leader of acquisition of a comprehensive database of potential fields in Europe, PACE, Alps'2002, Scanlips, EAGLE (Ethiopia rift), EuroArray (Initiator), leading proponent of TopoEurope, MAGNUS, MAGNUS-REX, TopoGreenland (initiator), ScanArray, Silverroad16, Basic17. Expedition leader to Siberia, East Africa and the ice cap in Greenland. Collaboration with researchers from more than 100 leading research institutions on geophysical projects on most continents.

Research:

Research in Geologically Applied Geophysics, including integrated geophysical and geological-tectonic interpretation, tectonophysics, theoretical seismology, and all aspects of applied seismics: data acquisition, processing, and interpretation.

Funding amounts to ca. 135 mill. DKK since 1992, primarily from: Danish Research Council of Sciences (FNU and SNF), Danish Research Agency, Carlsbergfondet, EU (projects and Marie Curie), NATO, EFP, as well as from the geophysical/geological industry: Phillips Petroleum, Mærsk Oil and Gas, DONG, BEB Erdöl und Gas. These grants have e.g. allowed financing long- and short-term stays of ca. 60 junior and senior researchers at University of Copenhagen.

Outreach

My research has been described in more than 50 articles in Danish newspapers, in four TV programmes, three radio programmes as well as a series of TV and radio news with interviews.

Scientific assessment:

Member of assessment committees for 26 positions as Professor, 34 Ass. Professor positions, one Dr.Scient thesis and 15 PhD theses. Supervisor for 18 Assistant Professors and postdocs, 32 PhD. students, 80 M.Sc. theses and 49 B.Sc. theses. Reviewer for a range of scientific journals as well as for research councils in UK, Canada, Germany, Austria, France, Norway, Russia, Spain, Ireland, and Netherlands; panel member in Denmark, Sweden, USA, France, Portugal and Canada.

5 recent key publications by the proponent relating to the proposed TF/CC**Research results:**

232 scientific articles, 10 special issues of scientific journals. Editor-in-Chief for ca. 180 volumes of Tectonophysics.

ISI: >7000 citations to 198 pub. (36 cit./pub.), H=51, a=H/#active years= 1.6

Google Scholar: >10,000 citations, H=58, i10-index=175, a=H/#active years= 1.8,

ORCID: 0000-0002-3945-8065

Thybo, H. and Perchuc, E., 1997. The seismic 8° Discontinuity and Partial Melting in Continental Mantle. *Science* 275, 1626-1629

Thybo, H., 2006. The heterogeneous upper mantle low velocity zone. *Tectonophysics* 416, 53-79.

H. Thybo, and C.A. Nielsen, 2009, Magma-compensated crustal thinning in continental rift zones. *Nature*, doi:10.1038/nature07688.

Thybo, H. & Artemieva, I. M., 2013, Moho and magmatic underplating in continental lithosphere. *Tectonophysics*, doi:10.1016/j.tecto.2013.1005.1032.

Thybo, H., Youssof, M. & Artemieva, I. M., 2019, Southern Africa crustal anisotropy reveals coupled crust-mantle evolution for over 2 billion years. *Nature Communications*, doi: 10.1038/s41467-019-13267-2

Curriculum Vitae

Professor, Dr. Larry Douglas Brown

Current Positions:

Sidney Kaufman Professor in Geophysics, Cornell

Contact: e-mail: ldb7@cornell.edu, phone: [607/738-1792](tel:6077381792)

Education & professional experience

Education:

1973: B.S. in physics from the Georgia Institute of Technology

1976: Ph.D. in geological sciences from Cornell.

Appointments

2014-present Director of Undergraduate Studies, Science of Earth Systems, Cornell

2008-2014 Chair, Department of Earth and Atmospheric Sciences

2004-2008 Director, Institute for the Study of the Continents (INSTOC)

2001-2008 Professor, Archaeology Program, Cornell University

1992-2003 Director of Graduate Studies, Field of Geological Sciences, Cornell

1991 Guest Professor, Chiba University, Japan

1989-present Professor, Cornell University

1988 Visiting Scientist, BMR (now AGSO), Canberra, Australia

1987 Visiting Scientist, University of Lausanne, Switzerland

1983-1989 Associate Professor, Cornell University

1983 Guest Professor, Kiel University, Germany (3 mos)

1977-1983 Assistant Professor, Cornell University

1976-1977 Postdoctoral Research Associate, Cornell University

Academic awards and honours:

2001 Friendship Award, State Administration of Foreign Experts of the People's Republic of China

1981 ARCO Outstanding Junior Faculty Award

1980 Geological Society of America Fellow

Responsibilities

Professional Activities

2004- 2007 Executive Committee: IGCP 474 (Images of the Earth's Crust – "Inner" Space, the Continents and their Margins)

2003-2012 U.S. National Committee for the International Union of Geodesy and Geophysics

2000-2005 Editorial Steering Committee, Gondwana Research

2001-2008 Co-Chairman: International Lithosphere Program, Subcommittee on Lithospheric Evolution of Gondwana East from International Deep Surveys (LEGENDS)

2000-present Editorial Committee, Acta Geologica Sinica

- 1998-2008 Co-Chairman, International Lithosphere Program Committee on International Lithospheric Surveys (COILS)
1999-2001 Multidisciplinary Assessment Committee, Canada Foundation for Innovation (2001)

Scientific focus areas: geophysics; seismology; ground penetrating radar; geotectonics.

Research areas:

Brown's primary research interest is the application of multichannel seismic reflection methods to the exploration of the continental lithosphere. Current research includes deep seismic investigations in China (especially Tibet), Mongolia, Taiwan, the Andes, and the Caribbean (Montserrat), the application of seismic interferometry to seismic body waves, imaging of crustal structure using microearthquakes and 4D seismic monitoring of deep tectonic processes. Brown's recent interests also include application of ground penetrating radar to archaeology, geotechnical evaluations and volcano stratigraphy.

Extensive experience with international collaborative projects and programmes, including e.g.:

1976-1992: Research scientist and Principal Investigator for the COCORP (Consortium for Continental Reflection Profiling) program.

Brown established the COILS and LEGENDS committees of the International Lithosphere Program (ILP) and initiated the IGCP 474 working group, as well as developed the ELLIPSE database, which provides online access to deep seismic data for use by all geoscientists.

1992-2014: Initiator and Co-Leader of Project INDEPTH (International DEep Profiling of Tibet and the Himalayas).

1994-6: Initiator and Co-Leader with Prof. Jim Knapp, now at U. South Carolina) of Project URSEIS.

2004-2011: Co-leader of Project TAIGER (TAIwan Geodynamics ExpeRiment), a multidisciplinary effort to delineate deep structure beneath Taiwan.

2005-2009: Project SEA-CALIPSO. In an effort to test the feasibility of using oil field monitoring technologies to investigate the deep dynamics of active magma systems.

2015-present: The Himalayan Seismogenic Zone. The Mw 7.8 Gorkha, Nepal, earthquake

2016-present: Imaging magma using reflection techniques with natural sources.

2018-present: New collaborations with the SINOPROBE initiative in China to carry out deep seismic reflection profiles in Mongolia and with INDEPTH colleagues to probe the magmatic geothermal system in the Yangbajain graben in southern Tibet.

5 recent key publications by the proponent relating to the proposed TF/CC

Publication metrics: publications listed on Web of Science (WoS): 119;
Citations (WoS): 5086 citations; h-index = 38; 4 papers in *Science*

Karplus, M S, S.L. Klemperer, W. Zhao, R. Kind, Z. Wu, J. Mechie, D. Shi, L. D. Brown, C. Chen, H. Su, G. Xue, E. Sandvol, J. Ni. F. J. Tilmann, and Y. J. Chen, 2019. Receiver-function imaging of the lithosphere at the Kunlun-Qaidam boundary, Northeast Tibet, *Tectonophysics*, 759, 30-43.

Kim, D. K.M. Keranen, G.A. Abers, and L.D. Brown, 2018, Enhanced resolution of the subducting plate interface in central Alaska from autocorrelation of local earthquake coda, *J. Geophys. Res.*,124, <https://doi.org/10.1029/2018JB016167>.

Brown, L.D., Zhao, W.J., Nelson, D.K., Hauck, M., Alsdorf, D., Ross, A., Cogan, M., Clark, M., Liu, X.W., Che, J.K., 1996. Bright spots, structure, and magmatism in southern Tibet from INDEPTH seismic reflection profiling. *Science* 274, 1688-1690
[10.1126/science.274.5293.1688](https://doi.org/10.1126/science.274.5293.1688).

Brown, Larry Douglas. 2013. "From layer cake to complexity: 50 years of geophysical investigations of the earth." *Geological Society of America. Special Paper 500: The Web of Geological Sciences: Advances, Impacts, and Interactions*, edited by P. Bickford, 233-258.

Brown, L. D., A. Kroener, C. Powell, B. Windley, and M. Kanao, 2001, Deep seismic exploration of East Gondwana; the LEGENDS initiative: *Gondwana Research*, 4, 846-850.