

HRVOJE TKALČIĆ

RESEARCH SCHOOL OF EARTH SCIENCES
THE AUSTRALIAN NATIONAL UNIVERSITY

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ACADEMIC QUALIFICATIONS

- 1997/01-2001/12 *Ph.D. in Geophysics*, December 2001
Thesis topic: Study of deep Earth structure using body waves
Research Advisor: Professor Barbara Romanowicz
UNIVERSITY OF CALIFORNIA AT BERKELEY BERKELEY, CA, USA
- 1989/09-1996/12 *Diploma of Engineering in Physics (~M.Sc. Physics)*, December 1996
Specialty in Geophysics with Meteorology
Faculty of Science / Geophysical Institute A. Mohorovičić
UNIVERSITY OF ZAGREB ZAGREB, CROATIA

ACADEMIC EMPLOYMENT HISTORY

- 2021/04-present *Head of Geophysics area, 1/3 of RSES*
- 2019/01-present *Professor (ANU E1)*
- 2007/07-present *Director of Warramunga Seismic and Infrasound Facility (WRA)*
- 2017/01-2021/04 *Head of Seismology and Mathematical Geophysics group, RSES*
- 2013/04-2018/12 *Associate Professor (ANU D)*
- 2007/01-2013/04 *Fellow in Seismology (ANU C)*
THE AUSTRALIAN NATIONAL UNIVERSITY CANBERRA, AUSTRALIA
Research School of Earth Sciences
- 2006/01-2007/01 *Research Geophysicist (permanent appointment)*
MULTIMAX, INC. EMERYVILLE, CA, USA
Geophysics Group
- 2003/02-2006/01 *Postdoctoral Research Staff Member*
LAWRENCE LIVERMORE NATIONAL LABORATORY LIVERMORE, CA, USA
Earth Science Division / Seismology Group
- 2002/04-2003/02 *Postdoctoral Research Fellow*
UNIVERSITY OF CALIFORNIA SAN DIEGO LA JOLLA, CA, USA
Institute of Geophysics and Planetary Physics / SCRIPPS
- 2001/12-2002/04 *Postdoctoral Research Fellow*
UNIVERSITY OF CALIFORNIA AT BERKELEY BERKELEY, CA, USA
Seismological Laboratory / Department of Earth and Planetary Science

ACADEMIC HONOURS

- 2023 Selected Distinguished Scientist of the *Chinese Academy of Sciences* President's International Fellowship Initiative
- 2022 Vice Chancellor Award for Excellence in Education for Excellence in Supervision, *The Australian National University*
- 2022 Price Medal, *Royal Astronomical Society*, London, UK
Citation: "For his breakthrough work in understanding the architecture of the seismic correlation wavefield and using his findings to provide the first unambiguous observational evidence that the Earth's inner core is solid."
- 2021 Dean's Commendation for Excellence in Education for Excellence in Supervision, *College of Science, The Australian National University*
- 2020 Elected Fellow of the *American Geophysical Union*
Citation: "For groundbreaking discoveries on Earth's inner core and development of innovative geophysics methods to study seismic structures and sources."
- 2016 Excellence in Research Award by *AuScope* (inaugural)
- 2013 Offer of tenured faculty position in planetary seismology at *School of Earth and Space Exploration, Arizona State University*
- 2010/11 Fellow of the *Japan Society for the Promotion of Science (JSPS)*; Invitation Fellowship for lecturing and research in Japan
- 2002 Outstanding Student Paper Award by the *American Geophysical Union* (Tectonophysics Section)
- 1997 The *Perry Byerly* Graduate Fellowship in Seismology, *UC Berkeley*
- 1987-1991 Government scholarship in Physics for outstanding natural sciences students (former Yugoslavia and Croatia)

PROFESSIONAL SOCIETY MEMBERSHIPS

- 1997-present Member of American Geophysical Union
- 2006-present Member of Seismological Society of America
- 2021-present Fellow of the Royal Astronomical Society

EXTERNAL BOARDS / COMMITTEES / CONSULTANCIES

- 2023-2026 International Association of Seismology and Physics of the Earth's Interior (IASPEI) Executive Committee – nominee in the slate
- 2022-2024 American Geophysical Union Fellows Committee – Seismology Section
- 2020-present College of Assessors – New Zealand Ministry of Business/Innovation/Employment
- 2018-2021 College of Experts – Australian Research Council
- 2009-2021 ANU PhB Examiners Committee; Convenor for Earth & Marine Sciences
- 2019-2020 Keiiti Aki Early Career Award Committee - Chair (American Geophysical Union)

2018-2019	Keiiti Aki Early Career Award Committee Member (American Geophysical Union)
2018-2019	Panel of Specialists consultancy service provider for Geoscience Australia
2015-2019	Study of Earth's Deep Interior (SEDI/IUGG) - Executive Committee
2017-present	Scientific Reports (Nature Publishing Group) - Editorial Board
2014-present	Physics of Earth and Planetary Interiors - Editorial Board
2010	Member of AAS <i>Theo Murphy High Flyers Think Tank</i> on “Searching the Deep Earth: The Future of Australian Resource Discovery and Utilisation”

INVITED KEYNOTE LECTURES, TALKS AND SEMINARS

i) Invited Keynote, Special and Public Lectures, Talks at Conferences

- (1) **Tkalčić, H.**, A new journey to the Earth's inner core: a planet within the planet, *KEYNOTE LECTURE, General Assembly of the European Seismological Commission and Earthquake Engineering*, Bucharest, Romania, 2022.
- (2) **Tkalčić, H.**, A new journey to the Earth's inner core with the correlation wavefield, *INVITED LECTURE, International Symposium, Frontier of understanding Earth's interior and dynamics*, Tohoku University, Sendai City, Japan, 2022.
- (3) **Tkalčić, H.**, The Earth's inner core revealed by seismic and correlation wavefield, *KEYNOTE LECTURE, Study of the Deep Earth's Interior (SEDI) Meeting*, Zürich, Switzerland, 2022.
- (4) **Tkalčić, H.**, The Earth's correlation wavefield: Rise of the new paradigm and recent advances, *LUNCHTIME SPECIAL LECTURE, Japan Geosciences Union Meeting*, Yokohama, Japan, 2021.
- (5) **Tkalčić, H.**, The Earth's inner core, *KEYNOTE LECTURE, Study of the Deep Earth's Interior (SEDI) Meeting*, Taipei, Taiwan, 2020. *Postponed due to Covid to 2022.*
- (6) **Tkalčić, H.** The Earth's correlation wavefield, *INVITED TALK, Asia Oceania Geosciences Society (AOGS)*, Gangwon-do, Korea, 2020. *Postponed due to Covid.*
- (7) **Tkalčić, H.**, A new journey to the centre of the Earth: Insights into the Earth's centre from the detection of J waves, *PUBLIC LECTURE, Australian Institute of Physics*, Hobart TAS, 2019.
- (8) **Tkalčić, H.**, Earth's center revealed by extraction of the deep earth seismic phases from global correlation wavefield, *INVITED TALK, Eos Trans. American Geophysical Union (AGU), Fall Meet. Suppl.*, Abstract S11A-05, Washington, DC, 2018.
- (9) **Tkalčić, H.** and T-S. Pham, New constraints on the Earth's core from global correlation wavefield, *INVITED TALK, European Geosciences Union (EGU)*, Vienna, 2018.
- (10) **Tkalčić, H.**, The Earth's inner core revealed by observational seismology, *KEYNOTE LECTURE, Core–Mantle Evolution General Meeting*, Matsuyama, Japan, 2018.
- (11) **Tkalčić, H.**, From the crust to the core using recent advances in global seismology, global interferometry and mathematical geophysics, *KEYNOTE LECTURE, Lithospheric Workshop*, Perth WA, 2017.
- (12) **Tkalčić, H.**, The inner core 2.0, *KEYNOTE LECTURE, Gordon Research Conference*, South Hadley, MA, USA, 2017.

- (13) **Tkalčić, H.**, A review of seismology of the inner core, *INVITED TALK, European Geosciences Union*, Vienna, 2016.
- (14) **Tkalčić, H.**, Complex inner core of the Earth, *INVITED TALK, Eos Trans. American Geophysical Union*, Fall Meet. Suppl., Abstract DI42A-01, San Francisco, USA, 2015.
- (15) **Tkalčić, H.**, The Earth's inner core – the last frontier of global seismology, *KEYNOTE LECTURE, Study of the Deep Earth's Interior (SEDI) Meeting*, Kanagawa, Japan, 2014.
- (16) **Tkalčić, H.**, Young, M., Bodin, T. and Sambridge, M., Seismological observation of shuffling rotational dynamics of the Earth's inner core, *INVITED TALK, East-West Asymmetry of Inner Core and Rotational Dynamics Conference*, Wuhan, China, 2012.
- (17) **Tkalčić, H.**, The Inner Core of the Earth From a Seismological Perspective, *INVITED TALK, Union Session, IUGG General Assembly*, Melbourne, Australia, 2011.
- (18) **Tkalčić, H.**, The Earth's Core: Seismological Perspective, *KEYNOTE LECTURE, From Core to Crust: Towards an Integrated Vision of Earth's Interior*, International Centre for Theoretical Physics, Trieste, Italy, 2009.
- (19) **Tkalčić, H.**, V.F. Cormier and B.L.N. Kennett, Inner core boundary properties from PcP and PKiKP waves, *INVITED TALK, IASPEI General Assembly*, Capetown, South Africa, 2009.
- (20) **Tkalčić, H.**, D. Dreger, G. Foulger, B. Julian and A. Fichtner, A Seismological Portrait of the Anomalous 1996 Bardarbunga Volcano, Iceland, Earthquake, *INVITED TALK, Eos Trans. American Geophysical Union*, 90(52), Fall Meet. Suppl., Abstract S21B-1710, San Francisco, USA, 2009.

ii) Further financial support to travel and attend international meetings

- 2022 General Assembly of the European Seismological Commission and Earthquake Engineering, full travel/accommodation grant, Bucharest, Romania.
- 2022 International Symposium, Frontier of understanding Earth's interior and dynamics, full travel/accommodation grant, Tohoku, Japan.
- 2018 Core–Mantle Evolution General Meeting full travel/accommodation grant, Matsuyama, Japan.
- 2016 AuScope Travel Bursary Award (Value: A\$ 10,000)
- 2013 IRIS (Incorporated Research Institutions for Seismology) full travel/accommodation grant as Faculty in Advanced Studies Institute on Seismological Research, Kuwait City, Kuwait
- 2011 IRIS travel grant to the data/metadata workshop in Bangkok, Thailand
- 2010 Japan Society for promotion of science travel award to tour Japan's universities
- 2007 IRIS travel grant to the data/metadata workshop in Kuala Lumpur, Malaysia
- 2004 NSF scholarship support to the 1. MYRES workshop at UCSD, La Jolla
- 2003 IRIS scholarship support to the Annual IRIS Workshop in Yosemite
- 2001 IASPEI award, supporting participation in the IAGA/IASPEI Joint Assembly Hanoi, Vietnam, August 18-30, 2001
- 2000 NSF grant, supporting participation in the Fifth Workshop on "3-D Modeling of Seismic Waves Generation, Propagation and Their Inversion" Trieste, Italy

2000 IRIS scholarship support to the Annual IRIS Workshop in Samoset, Maine

iii) Invited Seminars at National and International Institutions

- 2022 University of Cambridge, UK.
- 2022 Ruđer Bošković Institute, Croatia.
- 2021 ETH Zürich, Institute of Geophysics, Switzerland.
- 2021 Kinematics, Inc., USA. *Postponed*.
- 2021 Yale University, USA.
- 2019 Academia Sinica, Taipei, Taiwan.
- 2019 National Taiwan Normal University, Taipei, Taiwan.
- 2019 Australian Institute of Physics, Hobart, Australia.
- 2019 Seoul National University, South Korea.
- 2019 Chungnam University, South Korea.
- 2019 University of Auckland, New Zealand.
- 2019 Victoria University of Wellington, New Zealand.
- 2018 University of Chicago, USA.
- 2018 University of Cambridge, UK.
- 2018 University of Zagreb (Department of Geophysics), Croatia.
- 2018 Seismology and Geology Office (ARSO), Ljubljana, Slovenia.
- 2017 Universidad Complutense de Madrid, Spain.
- 2015 University of Science and Technology, Hanoi, Vietnam.
- 2014 Vietnam Academy of Science and Technology, Institute of Geophysics, Hanoi, Vietnam.
- 2014 Pukyong National University, Busan, South Korea.
- 2013 Arizona State University, AZ, USA.
- 2012 Seoul National University, Seoul, South Korea.
- 2012 Korean Polar Research Institute, Incheon, South Korea.
- 2011 Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Yokosuka, Japan.
- 2011 University of Tokyo, Earthquake Research Institute, Tokyo, Japan.
- 2011 University of Hokkaido, Sapporo, Japan.
- 2011 Disaster Prevention Research Institute, Kyoto, Japan.
- 2011 University of Kyoto, Kyoto, Japan.
- 2011 University of Tohoku, Sendai City, Japan.
- 2011 University of Zagreb, Zagreb, Croatia.
- 2010 Academia Sinica, Taipei, Taiwan.
- 2010 National Taiwan University, Taipei, Taiwan.
- 2009 National Research Institute for Earth Science & Disaster Prevention (NIED), Tsukuba, Japan.
- 2009 University of Tokyo, Earthquake Research Institute, Tokyo, Japan.
- 2009 Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Yokosuka, Japan.
- 2009 Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy.
- 2009 University of Melbourne, Melbourne, Australia.
- 2009 University of Zagreb, Zagreb, Croatia.
- 2008 University of Belgrade, Belgrade, Serbia.
- 2008 University of Zagreb, Zagreb, Croatia.
- 2006 The Australian National University, Canberra, Australia.
- 2006 University of Puerto Rico, Mayaguez, PR, USA.

- 2005 California Institute of Technology (Caltech), Pasadena, CA, USA.
- 2005 University of California Santa Cruz, Santa Cruz, CA, USA.
- 2005 Multimax, Washington DC, USA.
- 2005 3DGeo, Santa Clara, CA, USA.
- 2005 University of Nevada Reno, NV, USA.
- 2004 Institut de Physique du Globe de Paris, Paris, France.
- 2004 University of California at Berkeley, Berkeley, CA, USA .
- 2002 University of California San Diego, La Jolla, CA, USA.
- 2002 California Institute of Technology (Caltech), Pasadena, CA, USA.
- 2002 Lawrence Livermore National Laboratory, CA, USA.
- 2001 University of Zagreb, Zagreb, Croatia.
- 2001 Seismology and Geology Office (ARSO), Ljubljana, Slovenia.
- 2001 University of Trieste, Trieste, Italy.
- 1999 University of Zagreb, Zagreb, Croatia.

TEACHING

- 2021-present Lecturer (and course coordinator) for “Research Methods for Earth Sciences” EMSC4017/8017 at ANU (6 units)
- 2007-present Lecturer (and course coordinator since 2010) for “Physics of the Earth” PHYS3070 at ANU (6 units; lecturing 50% of the course)
- 2007-present Lecturer for ASC and ASE (6 units and add-ons); a complete list of students provided under “Supervised students” section
- 2017-2020 Lecturer for Masters level Advanced Earth physics EMSC 8019 at ANU (6 units; lecturing 33% of the course)
- 2017 Lecturer for EMSC3050 at ANU (Special Topics; 6 units)
- 2007-2010 Lecturer for EMSC8002 at ANU (Master level seismology; 6 units; 2/12 weeks)
- 2009-2010 Participating lecturer for EMSC2018 at ANU (undergraduate level geophysics; 6 units; 2/12 weeks)
- 2001 Teaching Assistant for "Introduction to Geology", an undergraduate field trip course at the UC Berkeley Department of Earth and Planetary Science
- 2000 Principal Graduate Student Instructor for the course "Planets" ASTRO/GEO 12 at the UC Berkeley (~500 students) offered by the Astronomy and Earth and Planetary Science Departments
- 1998-1999 Teaching Assistant for "Introduction to Geology" undergraduate field trips at UC Berkeley offered by the Department of Geology and Geophysics
- 1998 Spoke at the orientation and teaching conference for international student instructors, sponsored by GSI Teaching and Resource Center at UC Berkeley
- 1997 Teaching Assistant for the undergraduate course "Earthquakes" offered by the UC Berkeley Department of Geology and Geophysics

1995-1996 Taught physics at "Center Vinko Bek", High School for the Blind in Zagreb, Croatia

ENGAGEMENT AND IMPACT

My engagement outside academia is twofold:

1) through nuclear non-proliferation research funded by the US DoE/DoD Air Force Research Lab (and the Space Vehicles Directorate). It has been possible to engage with this type of research because seismology is one of the core competencies of nuclear non-proliferation efforts. The topics of interest in seismology are i) Seismic source physics, ii) Discrimination and yield estimation, iii) Attenuation and full-waveform Earth models, iv) Velocity Earth models, v) Location and discrimination ground truth and vi) Automated data processing and interactive analysis.

2) through my commitment to managing the operation and maintenance of the Warramunga Seismic and Infrasound facility in the Northern Territory. The primary purpose of Warramunga is nuclear test monitoring. Australia is among the countries that ratified the Comprehensive Test Ban Treaty (CTBT) in 1998 and, as one of the member countries, is obliged to operate and maintain monitoring facilities. Warramunga is the primary station, hosting both seismic and infrasound arrays.

GRANT/FELLOWSHIP FUNDING

i) Competitive (total as chief investigator only > AUD\$ 12.0M)

2022-2024	“A new journey to the Earth’s inner core: a planet within the planet” (lead chief investigator); Australian Research Council Discovery Proposal <i>DP220102815</i>
2020-2022	“Probing the Australian-Pacific plate boundary: Macquarie Ridge in 3-D” (lead chief investigator); Australian Research Council Discovery Proposal <i>DP200101854</i>
2020-2022	“Towards improved understanding of seismic moment tensor: Utilizing high-resolution Earth model with accompanying uncertainty within hierarchical Bayesian inversion” (lead chief investigator); US Air Force Research Lab (DoD/AFRL)
2020-2021	“Rapid deployment seismic recorders for interdisciplinary Antarctic research” (co-CI with CI A. Reading); Australian Research Council LIEF Proposal <i>LE200100086</i>
2021-2022	“Macquarie Ridge Complex in 3D - recovery” (lead chief investigator/chief scientist on the ship); Marine National Facility granted the ship time on RV Tangaroa
2020-2021	“Macquarie Ridge Complex in 3D” (lead chief investigator/deputy chief scientist on the ship); Marine National Facility granted the ship time on RV Investigator
2014-2018	“Rapid determination of earthquake sources in Australia” (lead chief investigator); Australian Research Council Discovery Proposal <i>DP140102533</i>
2013-2017	“Craton modification and growth: The east Albany-Fraser Orogen in 3-D” (lead chief investigator); Australian Research Council Linkage Proposal <i>LP130100413</i>
2013-2016	“Multi-array, multi-frequency probing of the Earth’s heterogeneity” (lead chief investigator); Australian Research Council Discovery Proposal <i>DP130101473</i>
2013-2017	“Improved Earth structure in Northeast Asia and seismic moment tensor inversion using Bayesian partition modeling” (lead chief investigator); US Air Force Research

- Lab (DoD/AFRL) and the Department of Energy's National Nuclear Security Administration (DOE/NNSA)
- 2009-2011 "Seismic tomography using signal and noise: A new window into deep Earth" (co-CI with CI N. Rawlinson); Australian Research Council Discovery Proposal
- 2009 "HZZ - Croatian Agency for Science" Travel Grant to support a collaborative research with Croatian scientists and visit of J. Stipčević to the ANU
- 2007-2011 "Seismicity of Croatia" (external collaborator with CI M. Herak); Government of Croatia
- 2006-2009 "Lithospheric structure and regional moment tensor inversion in the Middle East" (**lead chief investigator**); US Air Force Research Lab (DoD/AFRL), the Army Space and Missile Def. Command (DoD/SMDC) and DOE/NNSA
- 2004 "Study of the centermost inner core using seismology" Feasibility Study proposal funded by the Laboratory Directed Research and Development program at LLNL (**lead chief investigator**); The LDRD Feasibility Study is competitive and prestigious internal funding, awarded in a programmatic-focused National Lab environment to support fundamental research.

ii) Other funding Based on Project Proposals (total > AUD\$ 11.0M)

- 2023 Budget for Sixteenth Contract Year for International Monitoring System (IMS) Primary Seismic Station PS02 and IMS Infrasound Station IS07 in Warramunga, Australia (Amendment No. 12); (**lead budget proposal, negotiation and overall contract management**); Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization;
- 2022 Budget for Sixteenth Contract Year for International Monitoring System (IMS) Primary Seismic Station PS02 and IMS Infrasound Station IS07 in Warramunga, Australia (Amendment No. 11); (**lead budget proposal, negotiation and overall contract management**); Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization;
- 2021 Budget for Sixteenth Contract Year for International Monitoring System (IMS) Primary Seismic Station PS02 and IMS Infrasound Station IS07 in Warramunga, Australia (Amendment No. 11); (**lead budget proposal, negotiation and overall contract management**); Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization;
- 2020 Budget for Fifteenth Contract Year for International Monitoring System (IMS) Primary Seismic Station PS02 and IMS Infrasound Station IS07 in Warramunga, Australia (Amendment No. 11); (**lead budget proposal, negotiation and overall contract management**); Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization;
- 2019 Budget for Fourteenth Contract Year for International Monitoring System (IMS) Primary Seismic Station PS02 and IMS Infrasound Station IS07 in Warramunga, Australia (Amendment No. 11); (**lead budget proposal, negotiation and overall**

- contract management**); Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization;
- 2018 Budget for Thirteenth Contract Year for International Monitoring System (IMS) Primary Seismic Station PS02 and IMS Infrasound Station IS07 in Warramunga, Australia (Amendment No. 11); (**lead budget proposal, negotiation and overall contract management**); Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization;
- 2018-2020 Dynamic topography of the North Atlantic region; New insights from passive seismic imaging; (**lead grant holder; PhD funding for Ms Anna Makushkina**); Independent Research Fund Denmark | Natural Sciences;
- 2016 3D Green's functions for the Australasian region for the estimation of the seismic source parameters; (**lead chief investigator**); Geoscience Australia
- 2013-2017 Budget for the Tenth Contract Year for International Monitoring System (IMS) Primary Seismic Station PS02 and IMS Infrasound Station IS07 in Warramunga, Australia (Amendment No. 10 and four budget extensions); (**lead budget proposal, negotiation and overall contract management**); Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization;
- 2012 Budget for Tenth Contract Year for International Monitoring System (IMS) Primary Seismic Station PS02 and IMS Infrasound Station IS07 in Warramunga, Australia (Amendment No. 9); (**lead budget proposal, negotiation and overall contract management**); Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization;
- 2011 Budget for Ninth Contract Year for International Monitoring System (IMS) Primary Seismic Station PS02 and IMS Infrasound Station IS07 in Warramunga, Australia (Amendment No. 8); (**lead budget proposal, negotiation and overall contract management**); Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization;
- 2011 Secured 50% EFT for a senior technical officer (initial duration 15 months) from the Australian National Data Service Project DC7A "ANU-ANDS Data Capture – Earth Sciences" (prepared by Moncur et al.)
- 2010 Budget for Eight Contract Year for International Monitoring System (IMS) Primary Seismic Station PS02 and IMS Infrasound Station IS07 in Warramunga, Australia (Amendment No. 7); (**lead budget proposal, negotiation and overall contract management**); Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization;
- 2009 Budget for Seventh Contract Year for International Monitoring System (IMS) Primary Seismic Station PS02 and IMS Infrasound Station IS07 in Warramunga, Australia (Amendment No. 6); (**lead budget proposal, negotiation and overall contract management**); Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization;

- 2008 Budget for Sixth Contract Year for International Monitoring System (IMS) Primary Seismic Station PS02 and IMS Infrasound Station IS07 in Warramunga, Australia (Amendment No. 5); (Kennett and Tkalčić – a transition year to **overall contract management**) Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization;
- 2008 ANU Vice Chancellor Travel Grant to host outstanding scientists (proposal writer for hosting Professor Vernon Cormier from the USA);
- 2007 Computing Green's functions for the Australasian region for the estimation of the seismic source parameters; (**lead chief investigator**), Geoscience Australia.

SERVICE TO THE SCHOOL, COLLEGE OR UNIVERSITY (FROM 2007)

- 2021-present Head of *Geophysics* (one of three cognitive areas, comprising 1/3 of RSES)
- 2007-present Director of *Warramunga Seismic and Infrasonic Array Facility* (WRA), NT, Australia, operated on behalf of the Australian Government and United Nations
- 2019-present RSES Research Portfolio Committee member
- 2021/2022 RSES School Executive
- 2017-2021 Head of *Seismology and Mathematical Geophysics*
- 2009-2021 ANU *Bachelor of Philosophy Degree* coordinator for Earth and Marine Sciences
- 2009-2021 ANU PhB Examiners Committee
- 2017-2018 RSES Experience Portfolio Committee member
- 2007-2017 Coordinator of seismic data management (processing, archiving and acquisition) in Seismology and Mathematical Geophysics Group, superseded by AusPass
- 2010-2013 ANU seismic recorder development steering committee
- 2010-2011 RSES HDR (international PhD applications) committee
- 2007-present Chair/member of RSES appointment committees for academic and technical staff
- 2007-present Participated in ten field campaigns in remote areas of Australia and the Southern Ocean (Tasmania, Western Australia, South Australia, Northern Territory, New South Wales, Macquarie Ridge Complex) funded by ARC/AuScope/MNF with the goal of understanding dynamics and evolution of the Australian continent and plate.

SERVICE TO THE DISCIPLINE

- Proposal evaluator for US *National Science Foundation* Geophysics Program (NSF)
- Proposal evaluator for *Australian Research Council* (ARC)
- Proposal evaluator for Ministry of Business, Innovation & Employment (MBIE; NZ)
- Proposal evaluator for “*Agence Nationale de la Recherche*” (ANR; France)
- Proposal evaluator for “*Deutsche Forschungsgemeinschaft*” (DFG; Germany)
- Proposal evaluator for *European Research Council* (ERC)
- Peer referee for *Cambridge University Press* (book proposals)

- 2022-2024 American Geophysical Union Fellows Committee – Seismology Section
- 2021 AGU Special Session Convenor on "Frontiers in Earth's Correlation Wavefield"
- 2017-present Scientific Reports (Nature Publishing Group) - Editorial Board
- 2018-2019 Keiiti Aki Young Scientist Award Committee (American Geophysical Union)
- 2015-2019 Study of the Earth's Deep Interior (SEDI/IUGG) - Executive Committee
- 2014- present Physics of Earth and Planetary Interiors - Editorial Board
- 2017 AGU Special Session Chair on "Earthquake source physics"
- 2017 International Association of Geodesy-International Association of Seismology and Physics of the Earth's Interior Convenor (IAG-IASPEI) (Kobe; by invitation)
- 2016 AGU Special Session Chair on "Earth's core"
- 2016 Study of the Earth's Deep Interior (SEDI) Discussion leader (Nantes; by invitation)
- 2014 American Geophysical Union (AGU) Council Secretary Candidate - Study of the Earth's Deep Interior focus group
- 2014 AGU Special Session Chair on "Structure and evolution of cratons"
- 2014 AGU Special Session Chair on "Seismic multi-arrays"
- 2013 Faculty instructor - Advanced Studies Institute on Seismological Research Course sponsored by IRIS International Development Seismology, Kuwait City, Kuwait
- 2012 AGU Council Secretary Candidate - Study of the Earth's Deep Interior focus group
- 2011-present Incorporated Research Institutions for Seismology (IRIS) Internship Program host (NSF funded research experience for undergraduates)
- 2010 Member of AAS *Theo Murphy High Flyers Think Tank* on "Searching the Deep Earth: The Future of Australian Resource Discovery and Utilisation"
- 2010 AGU Special Session Chair on the Earth's core (by invitation)
- 2009 AGU Special Session Chair on the Mohorovičić's discontinuity beneath Europe
- 2008 AGU Special Session Chair on the Earth's core (by invitation)
- 2007-present IRIS Foreign Affiliate Representative for the Australian National University
- 2004-present AGU Outstanding Student Paper Award evaluator
- 2004 AGU Special Session Chair on the Earth's core (by invitation)
- 2003 AGU Special Session co-chair on the Deep Earth
- 1999 AGU Special Session co-chair on the Earth's lowermost mantle
- 1999- Peer referee for Science, Science Advances, Nature group of journals, Earth and Planetary Science Letters, Geophysical Research Letters, Journal of Geophysical Research - Solid Earth, Geophysical Journal International, Physics of the Earth and Planetary Interiors, Journal of Geophysics and Engineering, J. Asian Earth Sciences.
- 1997- Guest in a number of radio talk shows and other media on scientific research

OUTREACH, COLLEGIALITY AND COLLABORATION

- 2022 Published a popular science book: “Earthquakes – Giants that sometimes wake up”, originally published in Croatian language and accompanied by numerous appearances and interviews for TV, radio and newspaper articles. The book was selected by the Croatian Ministry of Culture to represent Croatian non-fiction at the *Frankfurter Buchmesse*, the most significant annual book fair in Europe.
- 2021 Participated in meriSTEM flipped learning courses with three educational videos
- 2018-present Registered with ACT Science Mentors Program (ACT Education Directorate)
- 2016-2018 Registered with STEM Professionals in School (CSIRO)

I have given talks and led tours of various groups of students and visitors to the Seismological Laboratory at UC Berkeley during my graduate student days, and to the Seismology and Mathematical Geophysics facilities at RSES; I have responded to TV crews, radio and newspapers regarding earthquakes and seismology in general. I have given many of interviews related to my research and discoveries to international media such as BBC World News, ABC News, Science Daily, CNN, Newsweek, Croatian Radio-Television, Canberra Times, San Francisco Chronicle, Sydney Herald, Croatian Daily Newspapers. I have also given many of interviews for the Australian TV channels (e.g. ABC, Channel 9) and radio (e.g. ABC, SBS, Diffusion Science radio, SpaceTime) on global seismology, the role of the Warramunga Seismic and Infrasound facility in the world’s peace, and on nuclear non-proliferation in more general terms.

Apart from collaboration with researchers from the ANU and other Australian universities, I collaborate internationally with researchers from Europe (UK, France, Spain, Croatia, Sweden), Asia (Japan, Korea, China), the United States and Canada. My research is multi-disciplinary, which results in collaboration across the fields of seismology, geodynamics, mineral physics, geochemistry, tectonics, marine geophysics and mathematical geophysics. I demonstrate my mentoring and growing of junior staff by regularly utilising my international connections to help advance the career opportunities of the early career researchers and students I supervise.

I strongly support women and diverse socio-economic background researchers in Science, Technology, Engineering and Mathematics (STEM), which is visible through the number of women PhD students I supervise to completion.

SUPERVISED STUDENTS AND STAFF AT ANU (SINCE 2007)

i) PhD students, Principal supervisor (Chair of supervisory panel)

- 2020- Jinyin Hu (m; from China)
- 2020- Abhay Pandey (m; from India)
- 2018- Thuany Patricia Costa de Lima (f; from Brazil)
- 2018- Sheng Wang (m; from China)
- 2017- Anya Makushkina (f; from Russia)
- 2016-2020 Son Thanh Pham (m; from Vietnam)
- 2014-2021 Joanne Stephenson (f; from UK)
- 2013- Nita Sebastien (f; from India)
- 2013-2017 Tanja Pejić (f; now seismologist at Geoscience Australia; from Croatia)
- 2012-2017 Marija Mustać (f; now postdoc at the University of Zagreb; from Croatia)

2011-2015 Surya Pachhai (m; now postdoc at the UC San Diego/SCRIPPS; from Nepal)
 2010-2014 Mallory Young (f; now geophysicist in Perth; from USA)

ii) PhD students, visiting PhD students and advisor on advisory board

2021- Haoran Du (m; ANU)
 2018- Lynette Chen (f; ANU)
 2017-2019 Xueyi Shang (m; Central South University, China)
 2017-2021 Yuwei Li (f; ANU)
 2016-2017 Anna Makushkina (f; University of Copenhagen, Denmark)
 2014-2018 Rhys Hawkins (m; ANU)
 2014-2017 Tae-Gyu Yee (m; Seoul National University, South Korea)
 2013-2016 Ingo L. Stotz Canales (m; ANU)
 2013 Qian Wang (f; Beijing University of Aeronautics & Astronautics, China)
 2012-2016 Roberto Benavente (m; ANU)
 2009-2013 Josip Stipčević (m; University of Zagreb, Croatia)
 2008-2011 Thomas Bodin (m; ANU)

iii) Postdoctoral Fellows

2023- Dr Zhi Wei
 2022- Dr Sheng Wang
 2020-2023 Dr Xiaolong Ma
 2020-2023 Dr Thanh Son Phạm (now ARC DECRA Fellow)
 2018-2019 Dr Sima Mousavi (now researcher at the Australian National University)
 2017-2018 Dr Marija Mustać (now researcher at University of Zagreb)
 2014-2019 Dr Babak Hejrani (now researcher at Geoscience Australia)
 2014-2017 Dr Seongryong Kim (now Assistant professor at Korea University)
 2013-2015 Dr Josip Stipčević (now Assistant Professor at University of Zagreb)
 2013-2016 Dr Christian Sippl (now researcher at Czech Academy of Sciences)

iv) Honours and undergraduate students

2014-2015 Jack Muir (**ANU Physics Medal; The Monash Medal; Marie Skłodowska-Curie Fellowship**, three first-authored papers; now at University of Oxford)
 2009-2010 Myall Hingee (first-authored paper in Geophys. J. Int.)
 2009 Eddie Leask (first-authored IUGG poster presentation)
 2009 Steven Petkovski (first-authored AGU poster presentation)

v) PhB (Philosophy Bachelor degree at ANU) and visiting research students

2022 Ammu Sanjayan (student intern from University of Kerala, India)
 2022 Vishnupriya Pradeep (student intern from National Institute of Oceanography, India)
 2020 Xulu Lin (ANU physics student; special topics)
 2019 Karandeep Gill (PhB; ASC project)
 2018 Maddison Wait (PhB; ASC project)
 2018 Yepin (Eva) Zhang (visiting student from Canada; special topics)
 2017 Claire Richardson (USA IRIS-funded student intern; now PhD at Arizona State)
 2016 Thuany Patricia de Lima (student intern from Univ. Fed. Rio Grande do Norte)

2015	Alex Burky (USA IRIS-funded student inter; now PhD at Princeton)
2014	Lynette Chen (PhB; ASC project and academic advisor; The Crawford Prize)
2014	Mirabella Wawn (ANU engineering student)
2013	Jane Lin (PhB; ASC project; ANU Astronomy Medal)
2012	Archana Yagadisan (student intern from IIT Roorkee, India)
2012/2013	Debjani Bhowmick (student intern from Indian School of Mines, India)
2012	Yunfan Zhang (student intern from Princeton University, now PhD at Berkeley)
2012	Dulcie Aileen Head (USA IRIS-funded student intern, now PhD at Stanford)
2011-2012	Don McKinnon (PhB; ASC project and ANU summer intern)
2011	Richard Skelton (PhB; ASC project)
2011	Aleksandra Denisenko (Siberian Research Institute funded visiting student)
2011	HongAn Le (PhB; ASC project)
2011	Caroline Bartlett (USA IRIS-funded student intern)
2010	Yan Zhao (PhB; ASC project)
2010-2011	Silvie Ngo (ANU student; co-authored paper in Nature Geoscience)
2010	Madlazim Madlazim (AusAid funded intern)
2009	Myall Hingee (PhB; ASC project; first-authored paper in Geophys. J. Int.)
2009	Daniel Leykam (PhB; ASC project; first-authored paper in Geophys. J. Int.)
2009	Amarjeet Kumar (student intern from IIT Kharagpur; co-authored publication)
2009	Alon Arad (ANU summer intern)
2008	Jessica Huspedth (PhB; ASC project)

vi) M.Sc. students

2022-2023	Zhihan Liu (m; China; cosupervised with Dr Ma)
2022-2023	Jiarun Zhou (m; China; cosupervised with Dr Phạm)
2018-2019	Angelina Egorova (f; Russia; cosupervised with Dr Tauzin)

vii) Casual work students (computer science and mathematics)

2019-2020	Sharmin Shamsalsadati
2014-2015	Richard Ren
2009-2011	Cong Phuoc Huynh
2009-2011	Yuan Fang
2008-2011	Debdeep Banerjee
2007-2009	Jason Li

viii) Academic and Technical Staff

2022-	Paul Hyde Kaduru (WRA)
2021-	Prof Meghan Miller (ARC Future Fellow)
2021-	Prof Malcolm Sambridge
2021-	Prof Louis Moresi
2021-	A/Prof Rhodri Davies
2017-	Dr Caroline Eakin (ARC DECRA Fellow)
2017-	Joel Tatapudi (WRA)
2017-2018	A/Prof Meghan Miller
2017-2020	Dr Lauren Waszek (ARC DECRA Fellow)

2017-2021	Dr Michelle Salmon
2017-2019	Dr Sima Mousavi
2017-2018	Dr Rhodri Davies (ARC Future Fellow)
2017-2018	Dr Benoît Tauzin (Marie Skłodowska- Currie Fellow)
2017-2018	A/Prof Meghan Miller
2014-2016	James Khattiyakul (WRA)
2014-2017	Sam Rayapaty (WRA)
2012-2014	Anthony Percival (WRA)
2012-2013	Lobo Fraser (WRA)
2009-2014	Dr Cristo Tarlowski
2009-2010	Dr Pierre Arroucau
2007-2011	Scott Savage (WRA)
2007-2017	Armando Arcidiaco

PUBLICATIONS

(** Collaboration with undergraduate student advisee)

(* Collaboration with graduate student advisee)

ACADEMIC BOOKS

Tkalčić, H., The Earth's Inner Core Revealed by Observational Seismology, Cambridge University Press, Cambridge, UK, [doi.org.10.1017/9781139583954](https://doi.org/10.1017/9781139583954), 2017.

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113. *Dofal, A., L. Michon, F. Fontaine, G. Barruol, and **H. Tkalčić**, Imaging magma underplating around the Reunion hotspot track with receiver functions, *in revision*, 2022.
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105. Muir, S., Tanaka, S. and **H. Tkalčić**, Long-wavelength topography and multi-scale velocity heterogeneity at the core-mantle boundary, *Geophys. Res. Lett.*, 49, 7, e2022GL099943, doi.org/10.1029/2022GL099943, 2022. (IF:4.72)
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PUBLICATION CONTEXT AND CONTRIBUTION

New scientific results are disseminated in global seismology through international peer-reviewed journals, book chapters, and invited keynote lectures or conference talks. Most publications result from teamwork among two to five co-authors, but occasionally there are single-authored publications and more than five co-authors. Research empire-type of publications with a large number of co-authors where some co-authors do not contribute substantially to the manuscript is highly uncommon in our community and transparent. In our field, it is recognised that the first authors made the most substantial contributions, although when the first author is a PhD or an undergraduate student, there is a significant contribution from the PhD supervisor. PhD supervisor's contribution comes in many forms: from providing intellectual rigour, sharing and discussing main ideas, mentoring students both generally and specifically through provision of background knowledge and software, to working on the main manuscript, figures, presenting and promoting the work at conferences. The PhD supervisor ideally shares the best ideas with students to help drive their research productivity. This can be evidenced by the number of publications led by PhD and undergraduate students.

Another measure of performance is the received number of citations compared to those of academic peers within the same field of research. Note that it is not straightforward to make relative comparisons with other fields of study due to the fairly small size of our (intensely competitive) community and the exclusivity of research. For example, it is possible to consider research on the Earth's inner core. There are perhaps only a dozen universities worldwide with a seismologist who studies the inner core; hence a relatively small number of citations for some papers does not represent a measure of quality but instead reflects on the size of the community. Whereas research in another field of seismology (e.g. megathrust earthquakes or earthquake and tsunami characterisation) or other fields of geosciences such as climate change or palaeomagnetism attract more than a hundred citations easily in several years, breakthrough work on the Earth's core rarely attracts more than 50-100 citations over many years. Most of them come from researchers from magnetohydrodynamics, geomagnetism, geodesy or astronomy, which attests to the interdisciplinary relevance of this research despite the community's small size.

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RSES/ANU

Performance model: Top score out of all 66 academic staff for 2019/2020, when the data were released to RSES academics for the first time; the performance score is based on the summary of the following performance categories: h-index/years after PhD, Citations within last 5 years, Funding (Higher Education Research Data Collection), Teaching Load and PhD supervision.

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Citations: 3784; h-Index: 34; i10-index: 77 (accessed on 05/12/22)

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