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EDUCATION

Ph.D., Geophysics, Institut de Physique du Globe de Paris (IPGP), France, Sept. 2006
Advisors: Alfred Hirn and Mireille Laigle
Title: Seismic Structure of the North Anatolian Fault within the Sea of Marmara, Turkey

M.S., Geophysics, Institut de Physique du Globe de Paris, France, 2002 (with high honors)

B.Sc., Geophysics, University of Rennes I, France, 2001 (with honors)

APPOINTMENTS

Jul. 2018– present	Lamont Associate Research Professor – Lamont-Doherty Earth Observatory Columbia University, NY
Mar. 2014 – Jun. 2018	Lamont Assistant Research Professor – Lamont-Doherty Earth Observatory Columbia University, NY
Jan. 2015 – present	Chief Scientist for LDEO's Office of Marine Operations
Feb. 2016 – Mar. 2016	Visiting Professor at the Institut de Physique du Globe de Paris (IPGP), France
Sept. 2011– Feb. 2014	Associate Research Scientist – Lamont-Doherty Earth Observatory – Columbia University, NY
Sept. 2010 – Aug. 2011	ATER: Teaching fellowship, Collège de France, Aix-en-Provence, France
June 2009 – Aug. 2010	Postdoctoral Researcher - Institut de Physique du Globe de Paris (IPGP), France
June 2007 – May 2009	Postdoctoral Researcher - Institute of Earth Sciences 'Jaume Almera' (CSIC), Spain
Oct. 2006 – May 2007	Postdoctoral Researcher - Institut de Physique du Globe de Paris (IPGP), France
Sept 2002 – Sept. 2006	Graduate Research Assistant - Institut de Physique du Globe de Paris (IPGP), France

RESEARCH INTERESTS

- Active source seismic imaging to investigate the structure and properties of the crust and uppermost mantle
- Subduction zone processes at convergent plate boundaries
- Structure and evolution of mature oceanic crust and uppermost mantle with an emphasize on uppermost crust near subduction zones
- Tectonic history of submarine strike-slip fault systems and associated hazards
- Deformation and magmatism at continental rifted margins

FIELD EXPERIENCE

June 2019	Alaska Amphibious Community Seismic Experiment (AASCE). Active source seismic survey, Chief scientist, *R/V Marcus Langseth*
March-Apr. 2015	Eastern North American Margin (ENAM) Community Seismic Experiment (CSE). Broadband ocean bottom seismometer (OBS) network recovery. Chief scientist, *R/V Endeavor*
Sept. – Oct. 2014	Eastern North American Margin (ENAM) Community Seismic Experiment (CSE). Deep penetration multi-channel seismic study of the ENAM rifted margin. Co-chief scientist, *R/V Marcus Langseth*

Aug. 2013	High-resolution multichannel seismic study of recent tectono-sedimentary history of the southern Shelf in the Sea of Marmara, Turkey. Co-chief scientist, *R/V K. Piri Reis*
June - Aug. 2011	Offshore active-source seismic study of the Alaska subduction zone. Shipboard Scientist, *R/V Marcus Langseth*
April /Sept. 2009	Offshore OBS passive study of the Hellenic subduction zone. Shipboard Scientist, *R/V Aegaeo*
Jan. 2008	Offshore wide-angle seismic study of the subducting Louisville Ridge at the Fidji-Tonga subduction zone. Shipboard Scientist, *R/V Sonne*
Jan. - Feb. 2007	Onshore and Offshore active-source seismic study of the Lesser Antilles subduction zone. Shipboard Scientist, *R/V Maria S. Merian* and *N/O L'Atalante*
July 2006	Onshore broadband seismometer deployments for receiver functions analysis to study of deep structure of the Hellenic subduction zone, Peloponnese Peninsula, Greece.
Jan. to Feb. 2005	Multi-channel seismic reflection and wide-angle reflection/refraction study of incoming Pacific plate and Chile subduction zone. Shipboard Scientist, *R/V Sonne*

PUBLICATIONS (†- postdoc author, *graduate student mentoring, **graduate advisee)

2020

[25] **Bécel, A.**, J. Davis, B. Shuck, H. Van Avendonk, J. Gibson (2020), Evidence for a Prolonged Continental Breakup resulting from Slow Extension Rates at the Eastern North American Volcanic Rifted Margin, Journal of Geophyscial Research: Solid Earth, 125, e2020JB020093, https://doi.org /10.1029/2020JB020093.

[24] Barcheck, G., G. A. Abers, A. N. Adams, **A. Bécel**, J. Collins, J. B. Gaherty, P. J. Haeussler, Z. Li, G. Moore, E. Onyango, E. C. Roland, D. E. Sampson, S. Y. Schwartz, A. F. Sheehan, D. J. Shillington, P. J. Shore, S. C. Webb, D. A. Wiens and L. L. Worthington (2020), The Alaska Amphibious Community Seismic Experiment, *Seismol. Res. Lett.,* 1–10, doi: 10.1785/0220200189.

2019

[23] Lynner, C., H. J. A. Van Avendonk, **A. Bécel**, M. H. Benoit, G. L. Christeson, B. Dugan, J. B. Gaherty, S. Harder, M. J. Hornbach, D. Lizarralde, M. D. Long, M. B. Magnani, D. J. Shillington, K. Aderhold, Z. C. Eilon, L. S. Wagner (2019), The Eastern North American Margin Community Seismic Experiment: An amphibious active- and passive-source dataset, *Seismol. Res. Lett.*, 91, 533-540, doi: 10.1785/0220190142.

[22] Shuck*, B. D., H. Van Avendonk, **A. Bécel** (2019), The role of mantle melts in the transition from rifting to seafloor spreading offshore eastern North America, *Earth Planet Sci Lett.*, *525*, 115756,1-10, doi: 10.1016/j.epsl.2019.115756.

2018

[21] Davis†, J. K., **A. Bécel**, W. R. Buck (2018), Estimating emplacement rates for seaward-dipping reflectors associated with the U.S. East Coast Magnetic Anomaly, *Geophys. J. Int.*, *215*, 1594-1603, doi:10.1093/gji/ggy360.

[20] Geli, L., P. Henry, C. Grall, J.-B. Tary, A. Lomax, E. Batsi, E. Cros, C. Gürbüz, S. Işık, C. Sengor, X. Le Pichon, L. Ruffine, S. Dupré, V. Riboulot, Y. Thomas, D. Kalafat, G. Bayrakci, Q. Coutellier, T. Regnier, G. Westbrook, H. Saritas, G. Cifci, N. Cagatay, S. Ozeren, N. Görür, M. Tryon, M. Bohnhoff, L. Gasperini, F. Klingelhoefer, C. Scalabrin, J.-M. Augustin, D. Embriaco, G. Marinaro, Francesco F., S. Monna, G. Etiope, P. Favali, and **A. Bécel** (2018), Gas and seismicity within the Istanbul seismic gap, *Nature Scientific Reports,* 8:6819, doi:10.1038/s41598-018-23536-7.

[19] Li*, J., D. J. Shillington, D. Saffer, **A. Bécel**, M. R. Nedimović, H. Kuehn, S. C. Webb, G. A. Abers, and K. M. Keranen (2018), Connections between subducted sediment, pore-fluid pressure, and earthquake behavior along the Alaska megathrust, *46, 299-302, Geology*, doi.org/10.1130/G39557.1.

[18] Hill, J. C., D. S. Brothers, M. J. Hornbach, D. E. Sawyer, D. J. Shillington, **A. Bécel** (2018), Subsurface controls on the development of the Cape Fear Slide Complex central US Atlantic Margin, book volume entitled: Subaqueous Mass Movements and Their Consequences: Assessing Geohazards,

Environmental Implications and Economic Significance of Subaqueous Landslides across the World's Continental Margins, Geological Society, London, Special Publications, 477, https://doi.org/10.1144/SP477.17.

2017

[17] **Bécel, A.**, D. J. Shillington, M. Delescluse, M. R. Nedimović, G. A. Abers, D. M. Saffer, S. C. Webb, K. M. Keranen, P. H. Roche, J. Y. Li, and H. Kuehn (2017), Tsunamigenic structures in a creeping section of the Alaska subduction zone, *Nat. Geosci*, *10*(8), 609-613, doi:10.1038/Ngeo2990.

2016

[16] Sachpazi, M., M. Laigle, M. Charalampakis, J. Diaz, E. Kissling, A. Gesret, **A. Bécel**, E. Flueh, P. Miles, and A. Hirn (2016), Segmented Hellenic slab rollback driving Aegean deformation and seismicity, *Geophys. Res. Lett.*, *43*(2), 651-658, doi:10.1002/2015gl066818.

2015

[15] Shillington, D. J., **A. Bécel**, M. R. Nedimović, H. Kuehn, S. C. Webb, G. A. Abers, K. M. Keranen, J. Y. Li, M. Delescluse, and G. A. Mattei-Salicrup (2015), Link between plate fabric, hydration and subduction zone seismicity in Alaska, *Nat. Geosci.*, *8*(12), 961-964, doi:10.1038/NGEO2586.

[14] Li*, J., D. J. Shillington, **A. Bécel**, M. R. Nedimović, S. C. Webb, D. M. Saffer, K. M. Keranen, and H. Kuehn (2015), Downdip variations in seismic reflection character: Implications for fault structure and seismogenic behavior in the Alaska subduction zone, *J Geophys Res-Solid Earth*, *120*(11), 7883-7904, doi:10.1002/2015JB012338.

[13] **Bécel, A.**, D. J. Shillington, M. R. Nedimović, S. C. Webb, and H. Kuehn (2015), Origin of dipping structures in fast-spreading oceanic lower crust offshore Alaska imaged by multichannel seismic data, *Earth Planet. Sci. Lett.*, *424*, 26-37, doi:10.1016/j.epsl.2015.05.016.

2013

[12] Laigle, M., A. Hirn, M. Sapin, **A. Bécel**, P. Charvis, E. Flueh, J. Diaz, J. F. Lebrun, A. Gesret, R. Raffaele, A. Galve, M. Evain, M. Ruiz, H. Kopp, G. Bayrakci, W. Weinzierl, Y. Hello, J. C. Lepine, J. P. Viode, M. Sachpazi, J. Gallart, E. Kissling, and R. Nicolich (2013a), Seismic structure and activity of the north-central Lesser Antilles subduction zone from an integrated approach: Similarities with the Tohoku forearc, *Tectonophysics*, *603*, 1-20, doi:10.1016/j.tecto.2013.05.043.

[11] Laigle, M., **A. Bécel**, B. de Voogd, M. Sachpazi, G. Bayrakci, J. F. Lebrun, M. Evain, and T. W. R. Seismic (2013b), Along-arc segmentation and interaction of subducting ridges with the Lesser Antilles Subduction forearc crust revealed by MCS imaging, *Tectonophysics*, *603*, 32-54, doi:10.1016/j.tecto.2013.05.028.

[10] Evain, M., A. Galve, P. Charvis, M. Laigle, H. Kopp, **A. Bécel**, W. Weinzierl, A. Hirn, E. R. Flueh, J. Gallart, and the Lesser Antilles Thales Party (2013), Structure of the Lesser Antilles subduction forearc and backstop from 3D seismic refraction tomography, *Tectonophysics*, *603*, 55-67, doi:10.1016/j.tecto.2011.09.021.

[9] **Bécel, A.**, J. Diaz, M. Laigle, A. Hirn, and Thales Was Right Continuous (2013), Searching for unconventional seismic signals on a subduction zone with a submerged forearc: OBS offshore the Lesser Antilles, *Tectonophysics*, *603*, 21-31, doi:10.1016/j.tecto.2012.10.031.

[8] Bayrakci, G., M. Laigle, **A. Bécel**, A. Hirn, T. Taymaz, S. Yolsal-Cevikbilen, and Seismarmara Team (2013), 3-D sediment-basement tomography of the Northern Marmara trough by a dense OBS network at the nodes of a grid of controlled source profiles along the North Anatolian fault, *Geophys. J. Int.*, *194*(3), 1335-1357, doi:10.1093/gji/ggt211.

2012

[7] Grall, C., P. Henry, D. Tezcan, B. M. de Lepinay, **A. Bécel**, L. Geli, J. L. Rudkiewicz, T. Zitter, and F. Harmegnies (2012), Heat flow in the Sea of Marmara Central Basin: Possible implications for the tectonic evolution of the North Anatolian fault, *Geology*, *40*(1), 3-6, doi:10.1130/G32192.1.

2011

[6] Kopp, H., W. Weinzierl, **A. Bécel**, P. Charvis, M. Evain, E. R. Flueh, A. Gailler, A. Galve, A. Hirn, A. Kandilarov, D. Klaeschen, M. Laigle, C. Papenberg, L. Planert, E. Roux, Trail and Thales Teams (2011), Deep structure of the central Lesser Antilles Island Arc: Relevance for the formation of continental crust, *Earth Planet. Sci. Lett.*, *304*(1-2), 121-134, doi:10.1016/j.epsl.2011.01.024.

[5] Hergert, T., O. Heidbach, **A. Bécel**, and M. Laigle (2011), Geomechanical model of the Marmara Sea region-I. 3-D contemporary kinematics, *Geophys. J. Int.*, *185*(3), 1073-1089, doi:10.1111/j.1365-246X.2011.04991.x.

[4] **Bécel, A.**, M. Laigle, J. Diaz, J. P. Montagner, and A. Hirn (2011), Earth's free oscillations recorded by free-fall OBS ocean-bottom seismometers at the Lesser Antilles subduction zone, *Geophys. Res. Lett.*, *38*, doi:10.1029/2011gl049533.

2010

[3] **Bécel, A.**, M. Laigle, B. de Voogd, A. Hirn, T. Taymaz, S. Yolsal-Cevikbilen, and H. Shimamura (2010), North Marmara Trough architecture of basin infill, basement and faults, from PSDM reflection and OBS refraction seismics, *Tectonophysics*, *490*(1-2), 1-14, doi:10.1016/j.tecto.2010.04.004.

2009

[2] **Bécel, A.**, M. Laigle, B. de Voogd, A. Hirn, T. Taymaz, A. Galve, H. Shimamura, Y. Murai, J. C. Lepine, M. Sapin, and S. Ozalaybey (2009), Moho, crustal architecture and deep deformation under the North Marmara Trough, from the SEISMARMARA Leg 1 offshore-onshore reflection-refraction survey, *Tectonophysics*, *467*(1-4), 1-21, doi:10.1016/j.tecto.2008.10.022.

2008

[1] Laigle, M., **A. Bécel**, B. de Voogd, A. Hirn, T. Taymaz, S. Ozalaybey, and Seismarmara Leg1 Team (2008), A first deep seismic survey in the Sea of Marmara: Deep basins and whole crust architecture and evolution, *Earth Planet. Sci. Lett.*, *270*(3-4), 168-179, doi:10.1016/j.epsl.2008.02.031.

Publications : Submitted or in preparation

[28] Naif, S., N. C. Miller, D. Shillington, **A. Bécel**, D. Lizarralde, and S. Hemming (in prep). Multiple episodes of intraplate volcanism on the Cocos Plate fed by a long-lived melt channel at the lithosphere-asthenosphere boundary, *in prep*.

[27] Kuehn, H., M. R, Nedimović, D. J. Shillington, **A. Bécel** and J. Li, Great earthquake rupture segmentation at the eastern Alaska-Aleutian megathrust by subducted seamounts, *in review*.

[26] Miller, P.K., D. M. Saffer, G. A. Abers, D.J. Shillington, K. M. Keranen, **A. Bécel**, J. Li and C. Bate Subducted sediments and shear foliation cause low velocity zones along the plate interface, *in review*.

RECENT CONFERENCE ABSTRACTS (2013-2020)

2020

Laigle, M., H. Agurto-Detzel, **A. Bécel**, M. Boucard, C. Chalumeau, P. Charvis, J.-X. Dessa, A. Galve, M.-J. Hernandez, S. Hussni, F. Klingelhoeffer, H. Kopp, M. Laurencin, J.-F. Lebrun, B. Marcaillou, F. Michaud, M. Paulatto, A. Ribodetti, M. Sachpazi, L. Schenini, Imaging the megathrust in subduction zones: prime results in the Lesser Antilles, Greece and Ecuador, EGU meeting, Vienna, May 2020.

Kahrizi, A., M. Delescluse, M. Rodriguez, P.-H. Roche, **A. Bécel**, M. R. Nedimovic, D.J. Shillington, Using 2D long-streamer seismic data waveform tomography to decipher sedimentary record of fault activity, EGU meeting, Vienna, May 2020.

2019

Bécel, A., A. F. Sheehan, E. K. Myers, G. A. Abers, D. S. Foster, L. Worthington, A. N. Adams, P. J. Haeussler, E. C Roland, S. Y. Schwartz, D. J. Shillington, D. Wiens, S. C. Webb and the science party of the AACSE seismic source survey, Along-strike variations in sediment input at the Alaska Peninsula subduction zone from new open access multichannel seismic reflection data of the Alaska Amphibious Community Seismic Experiment, *AGU Fall meeting*, December 2019.

Bécel, A., J. K. Davis, J. Gibson, B. Shuck, H. van Avendonk, New constraints on the final stages of breakup and early spreading history of the Eastern North American Margin from MCS data of the Community Seismic Experiment, GeoPRISMS Integration and Synthesis TEI, San Antonio, TX, February, 2019.

Acquisto**, T. M., **A. Bécel**, S. C. Singh, D. J. Shillington and K. Key, Active source seismic study of upper oceanic crust in the Alaskan and Sumatran trench outer rise systems, *AGU Fall meeting*, December 2019.

Fortin, W., J. C Gibson, **A. Bécel**, D. J Shillington, D. Sawyer and J. Fillingham, Sediment Physical Properties at Cape Fear and Currituck Landslides: prestack waveform inversion velocity analysis, *AGU Fall meeting*, December 2019.

Myers*, E. K., E. C. Roland, **A. Bécel**, A. M. Tréhu and K. K. Davenport, A Combined Ocean Bottom Seismometer and Multi-Channel Seismic Streamer P-Wave Tomography Model Characterizing the Subducting Iquique Ridge, *AGU Fall meeting*, December 2019.

Naif, S., N. C. Miller, D. J. Shillington, **A. Bécel**, D. Lizzaralde and S.R. Hemming, Multiple episodes of intraplate volcanism on the Cocos Plate fed by a long-lived melt channel at the lithosphere-asthenosphere boundary, *AGU Fall meeting*, December 2019.

Adams, A. N., L. Worthington, J. S. Nakai, P. J. Haeussler, C. Droff, G. A Carver, G. A. Abers, **A. Bécel**, E. C. Roland, S. Y. Schwartz, A. F. Sheehan, D. J. Shillington, S. C. Webb and D. Wiens, Bringing Undergrads to the Field: A Short Course on Tectonics and Seismic Research on Kodiak, Alaska, *AGU Fall meeting*, December 2019.

Abers, G. A., A. N. Adams, A. Bécel, P. J. Haeussler, E. Roland, P. J. Shore, D. A. Wiens, S. Y. Schwartz, A. F. Sheehan, D. J. Shillington, S. Webb, L. L. Worthington, Alaska Amphibious Community Seismic Experiment: Update and Outlook, *SSA annual meeting*, Apr. 2019.

2018

Bécel, A., S. Singh and H. Carton, Probing the Spatial Heterogeneity of Mature (>50 Ma) Upper Oceanic Crust using Long Offset Streamer Data offshore Alaska and Sumatra, *AGU Fall Meeting*, Washington D.C., December 2018.

Naif, S., N. Miller, D. Lizarralde, D. J. Shillington and **A. Bécel**, Interplate volcanism, melt ponding at the LAB, and the Galapagos plume: a confluence of conspicuous constraints characterizing the Cocos crust, *AGU Fall Meeting*, Washington D.C., December 2018.

Janiszewski*, A., G. A. Abers, J. B. Gaherty, **A. Bécel**, Figuring out the Forearc: Shoreline-Crossing Seismic Imaging in Cascadia, 2018 *IRIS workshop*.

2017

Bécel, A., Offshore ENAM margin: Final stages of continental breakup and early seafloor spreading history, keynote lecture at GeoPRISMS mini-workshop entitled ENAM science advances: Progress and outlook, New Orleans, December 2017.

Bécel, A., H. Carton and D. J. Shillington, Uppermost oceanic crust structure and properties from multichannel seismic data at the Alaska subduction zone, *AGU Fall Meeting*, December 2017.

Davis†, J. K., **A. Bécel**, D. J. Shillington and R. Buck, Insights into crustal structure of the Eastern North American Margin from community multichannel seismic and potential field data, *AGU Fall Meeting*, December 2017.

Hussni* S., **A. Bécel**, L. Schenini, M. Laigle, J-X. Dessa, C. Vitard, and the SISMED Scientific Team, Pre-stack depth Migration imaging of the Hellenic Subduction Zone, AGU Fall Meeting, December 2017.

Kuehn*, H., M. R. Nedimović, D. J. Shillington, **A. Bécel**, J. Li, M. Delescluse, S. C. Webb, K. Louden, 3D model of the subducting plate interface between Kodiak Island and Shumagin Islands offshore the Alaska Peninsula, *Earthscope meeting*, Alaska, May 2017.

Bécel, A., D. J. Shillington, J. Li, D. Saffer, M. Delescluse, M. R. Nedimović, S. C. Webb, G. A. Abers, H. Kuehn, K. M. Keranen, Constraints on the Alaska subduction Zone from the Creeping Shumagin gap to the locked Semidi segment from seismic data of the ALEUT Project. Subduction Interface Processes conference, Barcelona, Spain, April 2017.

Roche, P.-H., M. Delescluse, **A. Bécel**, M. R. Nedimović, D. J. Shillington, S. C. Webb, H. Kuehn, Long streamer waveform tomography imaging of the Sanak Basin, Alaska subduction zone, *EGU General Assembly*, vol. 19, page 12650, April 2017.

Bécel, A. and the Langseth ENAM-CSE scientific team, Constraints on the Final Stages of Breakup and Early Spreading history of the Eastern North American Margin from New Multichannel Seismic Data of the Community Seismic Experiment, Geo-PRISMS Theoritical and Experimental Institute for the Rift Initiation and Evolution Initiative, Albuquerque, NM, Feb. 2017.

2016

Bécel, A. and the Langseth ENAM-CSE scientific team, Constraints on the Final Stages of Breakup and Early Spreading history of the Eastern North American Margin from New Multichannel Seismic Data of the

Community Seismic Experiment, *Eos, Transactions, AGU Fall Meeting*, Abstract T51G-2999, Dec. 2016.

Shillington, D. J., **A. Bécel**, J. Li, M. R. Nedimovic, G. A. Abers, K. M. Kernanen, D. Saffer, S. C. Webb, Seismic imaging all along the Alaska subduction megathrust (invited). *Eos, Transactions, AGU Fall Meeting*, Abstract S33F-01, Dec. 2016.

Shillington, D.J., **A. Bécel**, J. Li, M. R. Nedimović, H. Kuehn, S. C. Webb, D. Saffer, G. A. Abers, K. M. Keranen, K.M. (2016) Controls on faulting, earthquakes and water cycling in the Alaska subduction zone, *SEISMIX Meeting*, Aviemore, Scotland.

Laigle, M., S. Hussni*, A. **Bécel,** J.-X. Dessa, L. Schenini, M. Sachpazi, C. Vitard, C., Deep Seismic Imaging of the Hellenic Subduction Zone with New MCS Data of the SISMED Project, *Eos, Transactions, AGU Fall Meeting*, T31D-2937, Dec. 2016.

Kuehn*, H., M. R., Nedimovic, D. J. Shillington, **A. Bécel,** J. Li, S. C. Webb, K. E. Louden, 3D map of subduction zone geometry off the Alaska Peninsula, Eos, Transactions, *AGU Fall Meeting*, T11D-2643, Dec. 2016.

Saffer, D.M., J. Li, D. J. Shillington, P. Miller, G. A. Abers, **A. Bécel**, K. M. Keranen, Physical properties and fluids along the Aleutian Megathrust: Insights from the integration of laboratory experiments and regional geophysical surveys, *Eos, Transactions, AGU Fall Meeting*, Abstract T14C-01, Dec. 2016

Miller, P., G. A. Abers, D. Saffer, C. Bate, D. J. Shillington, K. M. Keranen, **A. Bécel**, J. Li (2016) Anisotropy in P and S-wave velocities in exhumed metasediments from the Aleutian Megathrust: Implications for the interpretation of low velocity zones, *Eos, Transactions, AGU Fall Meeting*, T51B-2904.

Kuehn* H., M. R. Nedimovic, D. J. Shillington, J. Li, **A. Bécel**, and M. Delescluse (2016), Characterization of geometry, properties and coupling of the Alaska subduction zone by means of reflection images and traveltime tomography, *EGU General Assembly, Geophysical Research Abstracts*, Vol. 18, EGU2016-15686.

2015

Bécel, A., D. J. Shillington, M. R. Nedimovic, S. C. Webb, H. Kuehn (2015), Seismic structure of the ~50 Myr fast and intermediate North Pacific oceanic crust off Alaska, *AGU Fall Meeting,* Abstract V12A-05, Dec. 2015.

Bécel A., D. J. Shillington, J. Li, M. R. Nedimovic, G. A. Abers, K. M. Keranen, M. Delescluse, D. Saffer, and S. C. Webb, Plate boundary at the Alaska-Aleutian subduction zone, GeoPRISMS TEI for the Subduction Cycles and Deformation Initiative, Redondo Beach, California, Oct. 2015.

Abers, G.A., K. M. Keranen, S. Nale, D. J. Shillington, **A. Bécel**, J. Li, D. M. Saffer, P. Miller, Seismic imaging constraints on megathrust fault zone properties, GeoPRISMS TEI for the Subduction Cycles and Deformation Initiative, Redondo Beach, California, Oct. 2015.

Miller, P. K., C. Bate, D. M. Saffer, G. Abers, D. Shillington, K. Keranen, **A. Bécel**, J. Li (2015), P- and S-wave velocities of exhumed metasediments from the Aleutian subduction megathrust: Implications for the interpretation of low velocity zones and fault reflectivity, *AGU Fall Meeting,* Abstract MR33A-2650, Dec. 2015.

Phrampus, B., M. Hornbach, D. J. Shillington, **A. Bécel** (2015), Opening of the US East Coast for E&P: A Preliminary Analysis of Heat Flow, Geothermal conference.

Okay, S., C. Sorlien, G. Cifci, M.-H. Cormier, D. Dondurur, M. Steckler, B. Barin, L. Seeber, T. Gungor, E. Meriç İlkimen, **A. Bécel** and the Seislab Team (2015), Collaborative Research: The North Anatolian Fault System in the Marmara Sea, Turkey - Insights from the Quaternary evolution of a multi-stranded transform. *EGU General Assembly*, April 2015.

2014

Shillington, D.J., **A. Bécel**, M. R. Nedimovic, J. Li, H. Kuehn, S. C. Webb, G. A. Abers, K. M. Keranen, D. Saffer, Downdip and along-strike variations in the properties of the Alaska megathrust from active-source seismic imaging, AGU Fall Meeting, Abstract T11A-4535, Dec. 2014.

Li*, J., D. J. Shillington, **A. Bécel**, M. R. Nedimovic, H. Kuehn, S. C. Webb, G. A. Abers, K. Keranen, D. Saffer, Shallow velocity structure of the Alaska Peninsula subduction zone and implications for controls on seismic behavior, AGU Fall Meeting, Abstract T11A-4537, Dec. 2014.

Van Avendonk, H., M. B. Magnani, D J. Shillington, J. Gaherty, M. Hornbach, B. Dungan, M. Long, D. Lizarralde, **A. Bécel**, M. Benoit, S. Harder, L. Wagner, G. Christeson, ENAM: A community seismic

experiment targeting rifting processes and post-rift evolution of the Mid Atlantic US margin, AGU Fall Meeting, Abstract T53B-4683, Dec. 2014.

2013

Bécel, A., D. J. Shillington, M. R., Nedimovic, K. M., Keranen, J., Li, S. C., Webb, H., Kuehn, Plate boundary and major fault system in the overriding plate within the Shumagin gap at the Alaska-Aleutian subduction zone, *AGU Fall Meeting,* Abstract T43D-2696, Dec. 2013.

Bécel, A., D. J. Shillington, M. R. Nedimović, H. Kuehn and S. C. Webb, Constraints on the plate interface at the Alaska-Aleutian subduction zone from MCS and OBS data of the ALEUT Project, *EGU General Assembly, Vienna*, Abstract-10828, Apr. 2013.

Li*, J., **A. Bécel**, D. J. Shillington, M. R. Nedimović, H. Kuehn, S. C. Webb, Constraints from seismic reflection signature on the seismogenic region in the Alaska/Aleutian subduction zone from the 1938 Alaska rupture zone to the Shumagin gap, *AGU Fall Meeting,* Abstract T53F-02, Dec. 2013.

Shillington, D. J., **A. Bécel**, M. R. Nedimovic, H. Kuehn, S. C. Webb, J. Li, K. M. Keranen, G. A. Abers, (2013) Local structural controls on outer-rise faulting, hydration, and seismicity in the Alaska subduction zone, *AGU Fall Meeting,* Abstract T54B-06, Dec. 2013.

Michaelson, C. A., M. Delescluse, **A. Bécel**, M. R. Nedimovic, D. J. Shillington, K. E. Louden, S. C. Webb (2013) Deciphering the mechanics of an imaged fault system in the over-riding plate at the Shumagin Seismic Gap, Alaska subduction zone using MCS waveform tomography, *AGU Fall Meeting,* Abstract T43D-2695, Dec. 2013.

FUNDED PROPOSALS (Bécel total since 2013: $ 2.53 million)

- NSF OCE-2016062, 12/01/2020-11/30/2023, **$695,786**, *Collaborative research: Quantifying incoming plate hydration and role of fluids on megathrust properties in and around the Guerrero Gap, offshore Mexico*, lead PI: A. Bécel, coPIs: B. Boston [with A. Arnulf (UTIG), D.J. Shillington (NAU), Victor Cruz-Atienza (UNAM), Y. Ito (Univ. Kyoto)], (total award: **$5.7M** including $1.2M.for OBSIC and $3.3M for R/V *Langseth*).
- NSF OCE-1947758, 04/01/2020-03/31/2023, **$309,992**, *Collaborative Research: Incoming plate and forearc structure of the Semidi and SW Kodiak Segments offshore Alaska Peninsula from 3-D active-source and local earthquake tomography*, lead PI: A. Bécel [with Pablo Canales (WHOI)].
- NSF Supplement to *Alaska Amphibious Community Seismic Experiment,* CORNELL UNIV., CU 80572-10908, 8/15/17 - 7/30/20, $27,092, lead PI: A. Bécel (main award: PI: S. Webb, co-PIs: D.J. Shillington, total awarded (LDEO): **$176,983** [with G. Abers (lead), A.N. Adams, P.J. Haeussler, E.C. Roland, S.Y. Schwartz, A.F. Sheehan, D. Wiens, L. Worthington].
- NSF OCE-1830717, 09/01/2018-08/31/2020, **$316,215**, *Collaborative Research: Constraints on sediment physical properties at the Cape Fear and Currituck landslides from velocity analysis of new, open access seismic reflection data*. PI: W. Fortin, co-PIs: D. J. Shillington, A. Bécel [with D. Sawyer (OSU)].
- NSF OCE-1634625, 09/01/2016-08/31/2019, **$310,514**, *Formation and evolution of upper oceanic crust from seismic data acquired over mature oceanic crust near the Sumatra and Alaska subduction zones*, Sole PI: A. Bécel.
- NSF OCE-1551807, 03/15/2016-02/28/2018, **$199,192**. *Final stages of breakup and early spreading history of the Eastern North America passive margin from multichannel seismic data,* Sole PI: A. Bécel.
- NSF-OCE-1607104-EAGER, 01/01/2016-12/31/2017, **$30,000**, *Seismic imaging of the interplate boundary and deformation within the overriding Aegean lithosphere at the Hellenic subduction zone west of Crete (Greece)*, PI: A. Bécel.
- NSF-EAR-1347312-GeoPRISMS, 02/2014-01/2016, **$268,709**, *Collaborative Research: The Aleutian megathrust from trench to base of the seismogenic zone; integration and synthesis of laboratory, geophysical and geological data,* PI: D.J. Shillington, co-PIs: A. Bécel and M. Nedimović [with D. Saffer (Penn State), G Abers and K. Keranen (Cornell)].
- NSF-OCE-1347498, 8/15/2013-7/31/2016, **$226,125**, *Collaborative Research: A community seismic experiment targeting the pre-, syn- and post-rift evolution of the Mid-Atlantic US margin*, PI: D.J. Shillington, co-PIs: A Bécel and J. Gaherty [with H. Van Avendonk (lead), M. B. Magnani, M. Hornbach, B. Dungan, M. Long, D. Lizarralde, M. Benoit, S. Harder, L. Wagner, G. Christeson].

- IRIS PIF-OMO-2015-[LDEO], Joint IIC QA/QC of OBSIP Data, LDEO, SIO, and WHOI IICs undertake a coordinated approach to assessing the quality of seismic data acquired by the BB-OBSIP instruments over the last 12 years, LDEO-PIs: A. Barclay, J. Gaherty, M. Tolstoy, with A. Bécel.

OTHERS AWARDED GRANTS / FELLOWSHIPS

- Haiti-TWIST (TWIn Seismic Transects) cruise proposal, submitted to CNFH in 2019, PIs: W. R. Roest (Ifremer), B. Marcaillou (GeoAzur), classified Priority 1 for schedule as soon as 2021.
- TelluS/SYSTER – INSU Project (2017), **7,800€** (for travels), Imagerie par tomographie de forme d'onde de données sismiques acquises avec des flûtes longues dans les bassins sédimentaires (TOMOSEDIM), PIs: M. Delescluse, A. Bécel.
- TelluS/ALEAS- INSU Project (2017) AO2017- 982825 SISMED, (**9,000 €** for travels) InveStigation par l'Imagerie Sismique de failles sismogènes profondes en MEDiterranée (PIs: M. Laigle, A. Bécel, J.X. Dessa, graduate student: S. Hussni)
- Training and Mobility of Researchers (TMR) Grant from EU (2008), Seismic processing with pre-stack depth migration: Seismic structure of the forearc domain deformed by the propagation in subduction of the Tiburon and Barracuda Ridges at the Lesser Antilles subduction zone, IFM-Geomar Research Center, Kiel, Germany (1 month).
- Training and Mobility of Researchers (TMR) Grant from EU (2004), Seismic processing with pre-stack depth migration: Image lateral heterogeneity of coeval dated markers to detect faults and constrain minimum bounds on duration of their activity, IFM-Geomar, Kiel Research Center, Germany (1 month).
- 2002-2005: 3-year Doctoral Fellowship from the French Ministry of Higher Education and Research

AWARDS

GeoPRISMS Distinguished Lecturer GeoPRISMS-NSF 2018-2019

TEACHING EXPERIENCE

Training through Langseth ENAM and AACSE Community Seismic Experiments:

June 2019: Brought 8 young scientists to sea. Trained them to the fundamentals of reflection seismology through daily 1-hr lectures and processing of multichannel seismic using data acquired during the survey.

June 2015: I co-taught a 9-days intensive marine seismic reflection processing workshop at Lamont (lectures in the morning and labs in the afternoon). This workshop involved 12 early career scientists and graduate students from the U.S. community.

Sept-Oct 2014: Brought 9 young scientists to sea. All participants participated in all stages of data acquisition and contributed to onboard processing of the ENAM seismic data.
1 lecture on basic multichannel seismic reflection data processing techniques (8 graduate students and early career scientist)

IPGP-University Paris Diderot (Paris VII)

Spring 2006: Electrical and Electromagnetic imaging (1st year Master Students)
(6 labs of 2 hrs), Co-lead and co-designed laboratories.

Fall 2005: Multichannel Seismic Reflection Processing (1st year Master students)
(5 labs of 3 hrs), Co-lead and designed laboratories.

Fall 2005: One week of Geophysics Field program (35 hrs) in Chambon la Forêt (France). Program covers a range of geophysical methods (gravity, magnetics, radar, seismic and electric methods) (2nd year Master students).

IPGP-University Paris Diderot (Paris VII)

Fall 2004: Multichannel Seismic Reflection Processing – (2nd year Master students)
(5 labs of 3 hrs). Co-lead and designed laboratories.

STUDENTS AND ADVISING

- Postdoc: Joshua K. Davis (2017-2018)
- Graduate student: Tanner Acquisto (LDEO, PhD advisor, 2018-present)
- Graduate student mentoring:
  LDEO: Jiyao Li (2013-2016), Helen Janiszewski (2016-2017), James Gibson (2017-2018)
  Dalhousie, Halifax, Canada: Harold Kuehn (2011-2018)
  GeoAzur, Nice, France: Sara Hussni (2016-present)
  Univ. Washington: Emma Myers (2019-present)
- External examiner:
  - June. 2018: Ekeabino Momoh, PhD (advisors: Mathilde Cannat and Sylvie Leroy)
  Institut de Physique du Globe de Paris (IPGP), France.
  - September 2020: Pranav Audhkhasi (advisor: Satish Singh)
  Institut de Physique du Globe de Paris (IPGP), France.

INVITED TALKS AND SEMINARS (since 2009)

Rift and Rifted Margins Online Seminar, Aug. 2020
SUNY New Platz, Harrington lecture, Nov. 2019
University of Texas Institute for Geophysics, TX, April 2019
University of New Mexico, NM, (as GeoPRISMS Distinguished lecturer), March 2019
New Mexico Tech., NM (as GeoPRISMS Distinguished lecturer), March 2019
UConn, CT February 2019
Scripps Institution of Oceanography, CA (as GeoPRISMS Distinguished lecturer), February 2019
Pittsburgh Geological Society, PA (as GeoPRISMS Distinguished lecturer), December 2018
Southern Methodist University, TX (as GeoPRISMS Distinguished lecturer), November 2018
James Madison University, VA (as GeoPRISMS Distinguished lecturer), October 2018
Electromagnetic Methods Research Consortium Workshop, Columbia University, October, October 2018
IODP Workshop, Mt Hood, OR, September 2018
Rutgers University, NJ, April 2018
GeoPRISMS workshop, Keynote Lecture, New Orleans, December 2017
IPG-Paris, France, January 2016
Geoazur, Nice, France, May 2015
LDEO, Columbia University, NY, November 2013
LDEO, Columbia University, NY, February 2012
Dalhousie University; Halifax, NS, Canada, February 2012
ISTerre, Grenoble, France, February 2011
IODP Marmara Trans Workshop, Istanbul, Turkey, June 2011
Collège de France – CEREGE, Aix-en-Provence, 2010
EGU General Assembly, Vienna, 2010
GeoAzur, Nice, January, 2009

OTHER PROFESSIONAL EXPERIENCES AND SERVICES

Member of GEOMAR Scientific Advisory Board Spring 2020-present

AGU Session Convener or Co-convener (AGU2019: T022 and ST2B-2)

Associate Editor for Journal of Geophysical Research-Solid Earth 2018-present

Service in national organizations and committees

Marine Seismology Symposium organizing committee 2019-present

SEG-AGU organizing committee 2017-present

Marine Seismic Research Oversight Committee (MSROC) 2020-present

Co-chair: AGU-SEG Collaboration Committee 2022 Joint Workshop on Convergent Margins 2020-present

Outreach activities

Blog at Sea - Alaska-Amphibious Community Seismic Experiment https://alaskaamphibious.wordpress.com	June 2019
Participation in NSF National Ocean's month	June 2019
Conducted a series of interviews with press following the publication in Nature Geoscience of the paper on the "*Tsunamigenic structures in a creeping section at the Alaska subduction zone*"	July-Aug 2017
Blog at Sea– Eastern North American Margin Community Seismic Experiment http://enamseismic.blogspot.com/	March-April 2015 Sept-Oct 2014
Demonstrations at the "Fête de la Science" (Science Festival) at IPGP (France) 2 days: one day for school groups and one day for public	Oct. 2004

Institutional Service

Chief Scientist for LDEO's Office of Marine Operations	2015-present
Search committee, Marine Operation Manager at LDEO's Office of Marine Operations	2020
Search committee, Marine geophysics postdoc researcher	2019
Co-organizer of LDEO's joint SGT and MG&G seminar series	2014-2015
Seismology Graduate student representative, IPG Paris	Sept. 2005-Aug. 2006

Manuscript reviewer for:

Earth and Planetary Science Letters; Geochemistry, Geophysics, Geosystems; Geology; Geophysical Research Letters; Geophysical Journal International; Journal of Geophysical Research; Tectonophysics; Progress in Earth and Planetary Science; Tectonics; Nature Geoscience, Seismological Research Letters.

Proposal reviewer for:

National Science Foundation (EAR-EARTHSCOPE; EAR-TECTONICS, OCE MG&G, FRES); EUROFLEETS+ SEA Call OCEAN proposals; Columbia University RISE competition.

NSF-Panelist (OCE-MG&G, 2018**)**

Recent Community workshop participation (2010-2019)

- Aleutian-Alaska Workshop GeoPRISMS synthesis – Lamont Doherty Earth Observatory (August 2019).
- GeoPRISMS – Integration and Synthesis Theoretical and Experimental Institute, San Antonio, TX (Feb. 2019).
- Electromagnetic Methods Research Consortium Workshop, Columbia University, NY (October 2018).
- IODP Workshop – Scientific Exploration of the Artic and North Pacific (SEA-NorP), Mt. Hood, Oregon (Sept 2017).
- IODP Workshop – Drilling strategies for assessing links between Quaternary Gulf Stream dynamics, pore pressure evolution and slope stability, SMU, Dallas, TX (April 2017).
- GeoPRISMS - Theoretical and Experimental Institute for the Rift Initiation and Evolution Initiative, Albuquerque, NM (Feb. 2017).
- GeoPRISMS - Theoritical and Experimental Institute for the Subduction Cycles and Deformation Initiative, Redondo Beach, CA (Oct. 2015).
- OBS symposium, Vancouver, WA (Oct. 2015).
- Geological Society of America Penrose conference. Deformation, Fluid Flow, and Mass Transfer in the Forearc of Convergent Margins, Italy (March 2012) (presenter)
- IODP Marmara Trans Workshop, Istanbul, Turkey, June 2011 (invited)
- NERIES-ESONET OBS-Marine Seismology workshop at IPG Paris, France (February 2010)

PRESS COVERAGE

Tsunamigenic structures in a creeping section of the Alaska subduction zone (7 among 23 selected)

- New Images of Alaska Sub-Seafloor Suggest High Tsunami Danger, Columbia University-Earth Institute Press release, 7/31/2017.
- Alaska at Risk of a Massive Earthquake and Tsunami Similar to Devastating 2011 Japan Event,

Newsweek, 8/1/2017

- Scientists Discover New Tsunami Risk for Alaska, The Maritime Executive, The Maritime Executive, 8/1/2017
- Scientists Discover Fault Linked To Unusually High Tsunami Risk In Alaska, Forbes, 8/1/2017
- Mega-Tsunami Could Be Triggered by an Alaska Quake, Scientific American, 8/10/2017
- New geologic mapping along Alaska Peninsula reveals tsunami risk, Alaska Dispatch News, 8/1/2017
- Kornei, K. (2017), Faults off Alaska look akin to those behind 2011 Japan disaster, *Eos, 98,* https://doi.org/10.1029/2017EO082869. Published on 21 September 2017.