

ROBERT C. THUNELL
Carolina Distinguished Professor
Department of Earth and Ocean Sciences
and
Senior Associate Dean for Natural Sciences
University of South Carolina
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EDUCATION:

B.A. Geology/Biology, Brown University, Providence, Rhode Island, 1973.
M.S. Graduate School of Oceanography, University of Rhode Island, Kingston, Rhode Island, 1975.
Ph.D. Graduate School of Oceanography, University of Rhode Island, Kingston, Rhode Island, 1978.
Postdoctoral Scholar, Woods Hole Oceanographic Institution, Woods Hole, Mass., 1978-1979

EMPLOYMENT:

Assistant Professor of Geology and Marine Science, University of South Carolina, Columbia, South Carolina, 1979-1983
Associate Professor of Geology and Marine Science, University of South Carolina, Columbia, South Carolina, 1983-1987
Director of Graduate Studies in Geology, University of South Carolina, Columbia, South Carolina, 1985-1988, 2001-2004.
Professor of Geology and Marine Science, University of South Carolina, Columbia, South Carolina, 1987-present
Chairman, Department of Geological Sciences, University of South Carolina, Columbia, South Carolina, 1989-2001
Carolina Distinguished Professor, 1992-present
Director, Marine Science Program, 2004-2010
Director, School of the Earth, Ocean and Environment, 2009-2011
Senior Associate Dean for Natural Sciences, 2011-present

PROFESSIONAL SOCIETIES:

1. American Geophysical Union
2. American Association for the Advancement of Science
3. Geological Society of America

PROFESSIONAL AWARDS:

1. Elected a Fellow of the Geological Society of America, 1987
2. Recipient of the W. Storrs Cole Research Award (Geological Society of America), 1991
3. AGU Editor's Citation for Excellence in Refereeing, 1994
4. Elected a Fellow of the American Geophysical Union, 2006
5. Elected a Fellow of the American Association for the Advancement of Science, 2010
6. Distinguished Achievement Award, University of Rhode Island, 2013

UNIVERSITY AWARDS

1. Carolina Distinguished Professor, 1992
2. Outstanding Advisor, 1993
3. USC Education Foundation Research Award, 1997
4. Russell Research Award for Science and Engineering, 2004
5. Carolina Trustee Professorship Award, 2010

SELECTED UNIVERSITY SERVICE AND ADMINISTRATIVE RESPONSIBILITIES:

1. Chair, Department of Geological Sciences, 1989-2001
2. Director, Marine Science Program, 2004 - 2010
3. University Committee on Tenure and Promotion, 2003-2005
4. School of the Environment Advisory Committee, 1998-2010
5. College of Arts and Sciences Academic Planning Council, 2008-2011
6. Focus Carolina Steering Committee, 2008-2009
7. Chair, Focus Carolina Committee on Research, Scholarship and Creative Achievement, 2008-2009
8. Director, School of the Earth, Ocean and Environment, 2009-2011
9. University Research Advisory Council, 2010-2011
10. Senior Associate Dean for Natural Sciences, 2011-present

EDITORIAL APPOINTMENTS:

1. Associate Editor, Marine Micropaleontology, 1983-2003
2. Associate Editor, Journal of Foraminiferal Research, 1985-2003
3. Associate Editor, Paleoceanography, 1986-1987; 1993-2004
4. Associate Editor, Bulletin Geological Society of America, 1986-1989
5. Editor, Paleoceanography, 1988-1992

SELECTED PROFESSIONAL ACTIVITIES:

- IUGS Commission on Mediterranean Stratigraphy, 1981-1993
- Deep Sea Drilling Project, Mediterranean Working Group, 1983-1985
- Convener, Paleoceanography Symposium, First Inter. Conf. on Paleoceanography, Zurich, 1983
- Co-Convener, Symposium on "Deep-Sea Sediments and Paleoceanography", Soc. Econ. Paleont. and Mineral. Annual Meeting, 1986
- NSF Ocean Sciences Review Panel, 1987-1989
- Convener, Symposium on "Paleoceanography: New Approaches to Old Problems", American Geophysical Union Spring Meeting, 1987
- American Geophysical Union Committee on Paleoceanography, 1989-1994
- American Geophysical Union Editors Council, 1989-1992
- Co-Convener, Symposium on "Quaternary Oceanography of the Pacific", American Geophysical Union Spring Meeting, 1989
- Convener, Symposium on "Paleoceanography of Marginal Basins", Third Inter. Conf. on Paleoceanography, Cambridge, 1989
- Co-Organizer, Symposium on "Biotic and Geochemical Indices of Ocean Processes", American Geophysical Union Spring Meeting, 1991
- Convener, Symposium on "Tertiary Oceans", Inter. Conf. on Paleoceanography, Kiel, 1992

- Geological Society of America Donath Young Scientist Award Selection Committee, 1996-1999.
- US Representative to the IMAGES Scientific Steering Committee, 1997-2002.
- NSF Marine Earth System History (MESH) Steering Committee, 1998-2002
- NSF Earth System History Review Panel, 2003
- Convener, Session on “Cariaco Basin: Past and Present Processes”, 2004 Fall AGU Meeting.
- Convener, Session on “An Era of Paleooceanographic Research”, 2005 Fall AGU Meeting.
- Member, AGU Fellows Selection Committee, 2006-2008
- Chair, AGU Ocean Sciences Nominating Committee, 2009
- Member, AGU Editor Search Committee for *Paleoceanography*, 2009
- Member, APLU Board on Oceans, Atmosphere, and Climate, 2015-present

GRADUATE STUDENT SUPERVISION

- Degrees Completed: 14 PhD and 22 MS
- Current Students: 2 PhD

GRADUATE STUDENTS RECEIVING DEGREES

- | | |
|----------------------------|--------------------------------|
| 1. D. Boylan - MS, 1982 | 19. C. Christensen – PhD, 1997 |
| 2. M. Katz - MS, 1983 | 20. C. Pride - PhD, 1997 |
| 3. C. Morgan - MS, 1983 | 21. E. Emmer – MS, 1998 |
| 4. E. Neff - MS, 1983 | 22. E. Kincaid – MS, 2000 |
| 5. E. Tappa - MS, 1984 | 23. K. Tedesco – PhD, 2002 |
| 6. B. Linsley - MS, 1984 | 24. J. Friddell – PhD, 2001 |
| 7. L. Reynolds - MS, 1984 | 25. K. Visser – MS, 2002 |
| 8. J. Gerstel - MS, 1985 | 26. B. Perlet – MS, 2002 |
| 9. S. Locke - MS, 1986 | 27. S. Healy – MS, 2002 |
| 10. J. Wright - MS, 1986 | 28. M. McConnell – MS, 2003 |
| 11. J. Smale - MS, 1987 | 29. A. Elmore – MS, 2005 |
| 12. M. Howell - PhD, 1988 | 30. G. Kendrick – MS, 2006 |
| 13. L. Sautter - PhD, 1990 | 31. M. McConnell – PhD, 2008 |
| 14. J. Smale - PhD, 1991 | 32. M. Hardee – PhD, 2008 |
| 15. D. Gellar - MS, 1992 | 33. A. Newton – PhD, 2009 |
| 16. Q. Miao - PhD, 1993 | 34. A. Pusz – PhD, 2011 |
| 17. G. Mortyn - MS, 1994 | 35. K. Wejnert – PhD, 2013 |
| 18. D. Patrick – MS, 1994 | 36. B. Marshall – PhD, 2015 |

POST-DOCTORAL INVESTIGATORS SUPERVISED

- | | |
|----------------------------------|-------------------------------------|
| L. Sautter - Postdoc, 1990 | Manuel Bringue –Postdoc, 2015-2017 |
| D. Anderson - Postdoc, 1990-1992 | Jose Ontiveros – Postdoc, 2016-2017 |
| P. Ziveri - Postdoc, 1993-1995 | |
| H. Wang - Postdoc, 1993-1995 | |
| J. Le – Postdoc, 1992-1997 | |
| S. Poli - Postdoc, 1996-1999 | |
| D. Black – Postdoc, 1998-2002 | |
| K. Wejnert – Postdoc, 2013 | |
| K. Gibson – Postdoc, 2012-2016 | |

EXTERNAL GRANT SUPPORT SINCE 1985

1. "Oxygen deficient basins"; American Chemical Society; \$29,300
2. "Cretaceous-Tertiary boundary studies"; NSF; \$26,791
3. "Neogene marine record of Sicily"; NSF; \$87,506
4. "Aragonite dissolution cycles"; NSF; with A. Droxler, \$79,992
5. "Gulf coast stratigraphy"; Marathon Oil; \$119,000
6. "Planktonic foraminiferal fluxes in the North Pacific"; NSF; \$76,115
7. "Early Pliocene history of the Mediterranean"; NATO; \$5,000
8. "Planktonic foraminiferal response to upwelling"; NSF; \$139,074
9. "Sedimentation in thermospheric and psychrospheric basins"; NSF; \$242,123
10. "Benthic foraminiferal biofacies of phosphatic and organic-rich sediments"; American Chemical Society; \$38,600
11. "Pliocene history of the Mediterranean"; NATO; \$5,000
12. "The last glacial to Recent in the Gulf of California"; NSF; \$171,011
13. "Sedimentation in thermospheric and psychrospheric basins: a comparison of the South China and Sulu Seas" (renewal); NSF; \$100,000
14. "Minority student fellowship"; NSF; \$30,000
15. "Planktonic foraminiferal response to oceanic upwelling and its sedimentary record"; (renewal); NSF; \$144,000
16. "Global change research"; NSF; \$259,940; 9/92-8/96.
17. "Decadal to century-scale climate change"; NOAA; \$125,430; 8/93-7/95.
18. "High resolution climate change during the Holocene"; NSF; \$159,770; 11/93-10/95.
19. "Organic carbon fluxes in Cariaco Basin"; NSF; \$359,991; 4/95-3/98.
20. "Acquisition of a mass spectrometry facility for global change research"; NSF; \$205,592 (with D. Williams); 9/94-8/96.
21. "Development and calibration of paleoclimate proxies"; NOAA; \$315,000; 4/95-3/98.
22. "Climate variability of the Northeast Pacific/Western North America"; NSF; \$84,342 (with J. Le); 4/96-3/98.
23. "Deep and intermediate water circulation in the western North Atlantic"; USSAC; \$22,500 (with M. Poli); 6/97-10/99.
24. "Glacial-interglacial changes in Indo-Pacific through flow and the stability of the warm pool"; NSF; \$68,174; 9/15/98- 9/14/00.
25. "Decadal-scale climate variability during the Holocene as recorded in Santa Barbara Basin"; NSF; \$227,514; 8/1/98-7/31/01.
26. "Monitoring seasonal to decadal scale climate variability"; NASA; \$27,558; 3/1/98-8/31/99.
27. "Organic carbon fluxes and accumulation in Cariaco Basin", NSF; \$345,537; 5/1/98-4/30/01.
28. "Millennial-scale variability in western North Atlantic intermediate and deep water conditions during MIS 11-12", NSF; \$199,886; 12/15/99-12/14/02.
29. "A high resolution study of sea surface temperature variability in the Indo-Pacific Warm Pool", NSF; \$276,937; 4/01/01-3/31/04.
30. "Proxy calibration and Holocene climate variability in the Santa Barbara Basin", NSF; \$235,141; 8/01/01-7/31/04.
31. "Particulate organic carbon fluxes and sediment accumulation in the Cariaco Basin", NSF; \$279,757; 9/01/01-8/31/03.
32. "An assessment of global carbon flux along continental margins", NASA; \$149,985; 8/01-7/04.

33. “Decadal to century scale climate variability during the Holocene”; NSF; \$296,843; 7/03-6/06.
34. “The Cariaco Basin oceanographic time series program”; NSF; \$927,496; 10/03-9/08.
35. “Equipment supplement for the Cariaco Ocean Time Series”; NSF; \$35,551, 9/04-8/06.
36. “Acquisition of a stable isotope ratio mass spectrometer for climate change research”; \$260,000; 6/06-5/08.
37. “Establishment of a climate type section for the tropical Atlantic from Cariaco Basin sediments”; \$315,996; 9/06-8/09.
38. “Isotopic analysis of foraminifera”; USGS; \$16,256; 8/06-12/06.
39. “Testing the polar gateway hypothesis”; NSF; \$595,190; 10/07-09/10 (co-PI with D. Barbeau).
40. “MRI: Acquisition of ICP Instrumentation”; NSF; \$695,247; 09/08-08/11.
41. “Cariaco Basin oceanographic time series”; NSF; \$873,995; 12/08-11/13.
42. “Equatorial Guinea training program”; Hess, Marathon, AFEX and Noble Oil; \$3,600,000; 07/07-06/11 (co-PI with J. Kellogg)
43. “Real time assessment of ocean acidification proxies”; NSF; \$440,877; 09/01/10-08/31/13
44. “Cariaco Basin oceanographic time series”; NSF; \$624,087; 02/01/13-01/21/16
45. “Sediment trapping program in the Gulf of Mexico”; USGS; \$70,270; 08/01/2011-07/31/16
46. “Impact of Ocean Acidification on Planktonic Foraminifera in the California Current System during the Last 300 Years”; NSF; \$412,497; 8/16-7/19
47. “Cariaco Basin Oceanographic Time Series; NSF; \$119,919; 2/17-1/18

Total Funding: \$13,706,233

PUBLICATIONS (Total # = 226; Google Scholar h-index = 57; Citations >13,500)

- 1) Kennett, J. P. and Thunell, R., 1975. Global increase in Quaternary explosive volcanism. Science 197: 497-503.
- 2) Thunell, R., 1975. Calcium carbonate dissolution history in Late Quaternary deep-sea sediments, western Gulf of Mexico. Quat. Res. 6: 281-297.
- 3) Thunell, R., 1976. Optimum indices of calcium carbonate dissolution in deep-sea sediments. Geology 4: 525-528, 1976.
- 4) Kennett, J., Thunell, R. and McBirney, A., 1977. Episodes of Cenozoic volcanism in the Circum-Pacific region. Jour. Volcan. and Geotherm. Res. 2: 145-163.
- 5) Kennett, J. and Thunell, R., 1977. Explosive Cenozoic volcanism and climatic implications. Science 196: 1231-1234.
- 6) Kennett, J. and Thunell, R., 1977. Comments on Cenozoic explosive volcanism as related to east and southeast Asian arcs. Amer. Geophys. Union Maurice Ewing Series 1, 348-352.
- 7) Thunell, R., Williams, D., and Kennett, J., 1977. Late Quaternary paleoclimatology, stratigraphy and sapropel history in eastern Mediterranean deep-sea sediments. Marine Micropaleontology. 3: 371-388.
- 8) Thunell, R., 1978. Distribution of Recent planktonic foraminifera in surface sediments of the Mediterranean Sea. Marine Micropaleontology. 3: 147-173.
- 9) Williams, D., Thunell, R. and Kennett, J., 1978. Periodic fresh water flooding and stagnation of the eastern Mediterranean Sea during the Late Quaternary. Science 201: 252-254.
- 10) Thunell, R., 1978. Late Quaternary calcium carbonate dissolution history, Gulf of Mexico. In: Symposium on Progress In Marine Research in the Caribbean and Adjacent Regions, (ed.) H.B. Stewart, Jr., Food and Agriculture Organization of the United Nations, Rome, 429-444.
- 11) Thunell, R., 1979. Pliocene-Pleistocene paleotemperature and paleosalinity history of the Mediterranean Sea: Results from DSDP Sites 125 and 132. Marine Micropaleontology. 4: 137-187.
- 12) Thunell, R., 1979 A glacial reconstruction of the eastern Mediterranean Sea, 18,000 years B. P. Quaternary Research 11: 353-372.
- 13) Thunell, R. and Williams, D., 1979. Faunal and oxygen isotopic evidence from surface water salinity changes during sapropel formation in the eastern Mediterranean. Sedimentary Geology 23: 81-93.

- 14) Thunell, R., 1979. Climatic evolution of the Mediterranean Sea during the last 5.0 million years. Sedimentary Geology 23: 67-79.
- 15) Thunell, R., Sparks, S., Federman, A. and Williams, D. 1979. The age, origin and volcanological significance of the Y-5 ash layer in the Mediterranean. Quaternary Research 12: 241-253.
- 16) Thunell, R. and Lohmann, G., 1979. Modern biogeography of the planktonic foraminiferal fauna associated with late eastern Mediterranean. Nature 281: 211-213.
- 17) Keigwin, L. and Thunell, R., 1979. Middle Pliocene climatic change in the western Mediterranean from faunal and oxygen isotopic trends. Nature 282: 294-296.
- 18) Thunell, R., 1980. Mediterranean Neogene planktonic foraminiferal biostratigraphy: Quantitative results from DSDP Sites 125, 132 and 372. Micropaleontology 25: 412-437.
- 19) Thunell, R., 1981. Late Miocene - Early Pliocene planktonic foraminiferal biostratigraphy and paleoceanography of low latitude marine sequences. Marine Micropaleontology 6: 71-90.
- 20) Thunell, R. and Honjo, S., 1981. Planktonic foraminiferal flux to the deep ocean: Sediment trap results from the tropical Atlantic and the central Pacific. Marine Geology 40: 237-253.
- 21) Thunell, R. and Honjo, S., 1981. Calcite dissolution and the modification of planktonic foraminiferal assemblages. Marine Micropaleontology 6: 169-182.
- 22) Thunell, R., 1981. Cenozoic paleotemperature changes and planktonic foraminiferal evolution. Nature 289: 670-672.
- 23) Thunell, R., Keir, R. and Honjo, S., 1981. Calcite dissolution: An in situ study in the Panama Basin. Science 212: 659-661.
- 24) Thunell, R., 1982. Calcite dissolution and abyssal hydrography in the Atlantic Ocean. Marine Geology 47: 165-180.
- 25) Thunell, R. and Belyea, P., 1982. Neogene planktonic foraminiferal biogeography of the Atlantic Ocean. Micropaleontology 28: 281-298.
- 26) Thunell, R. and Williams, D., 1982. Paleoceanographic events associated with Termination II in the eastern Mediterranean. Oceanologica Acta 5: 229-233.
- 27) Thunell, R., Williams, D. and Cita, M., 1983. Glacial anoxia in the eastern Mediterranean. Journal of Foraminiferal Research 13: 283-290.
- 28) Corliss, B. and Thunell, R., 1983. Carbonate sedimentation beneath the Antarctic Circumpolar Current during the late Quaternary. Marine Geology 51: 293-326.

- 29) Thunell, R., Curry, W. and Honjo, S., 1983. Seasonal variation in the flux of planktonic foraminifera: Time series sediment trap results from the Panama Basin. Earth and Planet. Sci. Lett. 64: 44-55.
- 30) Curry, W., Thunell, R. and Honjo, S., 1983. Seasonal changes in the isotopic composition of planktonic foraminifera collected in Panama Basin sediment traps. Earth and Planet. Sci. Lett. 64: 33-43.
- 31) Thunell, R. and Williams, D., 1983. The stepwise development of Pliocene-Pleistocene paleoclimatic and paleoceanographic conditions in the Mediterranean: Oxygen isotopic studies of DSDP Sites 125 and 132. Utrecht Micropaleontological Bulletin 30: 111-127.
- 32) Thunell, R. and Williams, D. 1983. Paleotemperature and paleosalinity history of the eastern Mediterranean during the late Quaternary. Paleogeography, Paleoclimatology, Paleoecology 44: 23-39.
- 33) Leonard, K., Williams, D. and Thunell, R., 1983. Pliocene paleoclimatic and paleoceanographic history of the South Atlantic Ocean: Stable isotopic records from Leg 72 DSDP Sites 516A and 517. Initial Reports of the Deep Sea Drilling Project, Leg 72, (U.S. Government Printing Office) Washington, D.C., 72: 895-906.
- 34) Williams, D., Healy-Williams, N. and Thunell, R., 1983. Detailed stable isotope and carbonate records from the late Maestrichtian - early Paleocene section of Site 516F (Leg 72) including the Cretaceous- Tertiary boundary. Initial Reports of the Deep Sea Drilling Project, Leg 72 (U.S. Government Printing Office) Washington, D.C., 72: 921-929.
- 35) Tappa, E. and Thunell, R., 1984. Late Pleistocene glacial/interglacial changes in planktonic foraminiferal biofacies and carbonate dissolution patterns in the Vema Channel. Marine Geology 58: 101-122.
- 36) Johnson, D., Ledbetter, M., Tappa, E. and Thunell, R., 1984. Late Tertiary/Quaternary magnetostratigraphy and biostratigraphy of Vema Channel sediments. Marine Geology 58: 89-100.
- 37) Muerdter, D., Kennett, J. and Thunell, R., 1984. Late Quaternary sapropel sediments in the eastern Mediterranean Sea: Faunal variation and chronology. Quaternary Research 21: 385-403.
- 38) Belyea, P. and Thunell, R. 1984. Fourier shape analysis and planktonic foraminiferal evolution: The Neogloboquadrina-Pulleniatina lineages. Jour. Paleontology 58: 1026-1040.
- 39) Katz, M. and Thunell, R., 1984. Benthic foraminiferal biofacies associated with middle Miocene to early Pliocene oxygen-deficient conditions in the eastern Mediterranean. Journal of Foraminiferal Research 14: 187-202.
- 40) Thunell, R. and Reynolds, L., 1984. Sedimentation of planktonic foraminifera: Seasonal changes in species flux in the Panama Basin. Micropaleontology 30: 243-262.

- 41) Thunell, R., Williams, D. and Belyea, P., 1984. Anoxic events in the Mediterranean Sea in relation to the evolution of late Neogene climates. Marine Geology 59: 105-134.
- 42) Reynolds, L. and Thunell, R. 1985. Seasonal succession of planktonic foraminifera in the subpolar North Pacific. Jour. Foram. Research 15: 282-301.
- 43) Linsley, B., Thunell, R. and Morgan, C., 1985. Oxygen minimum expansion in the Sulu Sea, western equatorial Pacific, during the last glacial low stand of sea level. Marine Micropaleontology 9: 395-418.
- 44) Zachos, J., Arthur, M., Thunell, R., and Tappa, E., 1985. Stable isotope and trace element geochemistry of carbonate sediments across the Cretaceous/Tertiary boundary at DSDP Hole 577, Leg 86. In: Heath, G. R., Burckle, L. and others, Initial Reports of the Deep Sea Drilling Project, Leg 86 (U.S. Government Printing Office) Washington, D.C., 86: 513-532.
- 45) Williams, D., Thunell, R. and Hodell, D., 1985. Synthesis of Late Cretaceous, Tertiary and Quaternary stable isotope records of the South Atlantic based on Leg 72 DSDP core material. In: South Atlantic Paleooceanography, K. Hsu and H. Weissert (eds.), Cambridge Univ. Press, p. 205-241.
- 46) Reynolds, L. and Thunell, R., 1986. Seasonal production and morphologic variation of Neogloboquadrina pachyderma (Ehrenberg) in the northeast Pacific. Micropaleontology 32: 1-18.
- 47) Thunell, R. and Corliss, B., 1986. Late Eocene/Early Oligocene carbonate sedimentation in the deep sea. In: Ch. Pomeroy (ed.), Geologic Events at the Eocene/Oligocene Boundary, Elsevier Publishers, 363-380.
- 48) Gerstel, J., Thunell, R., Zachos, J. and Arthur, M., 1986. The Cretaceous/Tertiary boundary event in the North Pacific: planktonic foraminiferal results from DSDP Site 577, Shatsky Rise. Paleoceanography 1: 19-117.
- 49) Abul-Nasr, R. and Thunell, R., 1987. Eocene eustatic sea level changes, evidence from western Sinai, Egypt., Paleogeog., Paleoclim., Paleoecol. 58: 1-9.
- 50) Thunell, R., Williams, D. and Howell, M., 1987. Atlantic-Mediterranean water exchange during the late Neogene. Paleoceanography 2: 661-678.
- 51) Thunell, R. and Honjo, S., 1987. Planktonic foraminiferal production: seasonal and interannual changes in the North Pacific. Nature 328: 335-337.
- 52) Gerstel, J., Thunell, R. and Ehrlich, R., 1987. Danian faunal succession: planktonic foraminiferal response to a changing marine environment. Geology 15: 665-668.
- 53) Howell, M., Thunell, R. and Sprovieri, R., 1987. Paleontological and geochemical analyses of laminated sedimentary units from the Monte San Nicola section in Sicily. Riv. Ital. Paleont. Strat. 92: 401-434.

- 55) Smale, J., Thunell, R. and Schamel, S., 1988. Sedimentological evidence for early Miocene fault reactivation in the Gulf of Suez. Geology 16: 113-116.
- 56) Williams, D. Thunell, R. and Tappa, E., 1988. Chronology of the Pleistocene oxygen isotope record: 0 - 1.88 million years before present. Paleogeog., Paleoclim., Paleoecol. 64: 221-240.
- 57) Howell, M, Thunell, R. and others, 1988. Late Neogene laminated and opal-rich facies from the Mediterranean region. Paleogeog., Paleoclim., Paleoecol. 64: 265-286.
- 58) Wright, J. and Thunell, R., 1988. Neogene planktonic foraminiferal biogeography and paleoceanography of the Indian Ocean. Micropaleontology 34: 193-216.
- 59) Locke, S. and Thunell, R., 1988. Paleoceanographic record of the last glacial/interglacial cycle in the Red Sea and Gulf of Aden. Paleogeog. Paleoclim., Paleoecol. 64: 163-187.
- 60) Thunell, R., Williams, D. and Locke, S., 1988. Glacio-eustatic sea level control on Red Sea salinity. Nature 334: 601-604.
- 61) Channell, J., Rio, D. and Thunell, R., 1988. Miocene-Pliocene boundary magnetostratigraphy at Capo Spartivento, Calabria, Italy. Geology 16: 1096-1099.
- 62) Thunell, R. and Williams, D., 1989. Glacial-Holocene salinity changes in the Mediterranean Sea: Hydrographic and depositional effects. Nature 338: 493-496.
- 63) Rio, D., Thunell, R. and others, 1989. Stratigraphy and depositional history of the Pliocene Bianco section, Calabria, Southern Italy. Paleogeog. Paleoclim. Paleoecol. 76: 85-105.
- 64) Bertoldi, R., Rio, D. and Thunell, R., 1989. Pliocene-Pleistocene vegetational and climatic evolution of the south- central Mediterranean. Paleogeog. Paleoclim. Paleoecol. 72: 263-275.
- 65) Sautter, L., and Thunell, R., 1989. Seasonal succession of planktonic foraminifera: Results from a four-year time series sediment trap experiment in the Northeast Pacific. Jour. Foram. Research 19: 253-267.
- 66) Rio, D., Sprovieri, R., Thunell, R. and others. 1990. Pliocene-Pleistocene paleoenvironmental history of the western Mediterranean: A synthesis of ODP Site 653 results. Proceedings of the Ocean Drilling Program 107: 695-704.
- 67) Thunell, R., Williams, D., Rio, D. and Sprovieri, R., 1990. Pliocene-Pleistocene stable isotope record for ODP Site 653, Tyrrhenian Basin: Implications for the paleoenvironmental history of the Mediterranean. Proceedings of the Ocean Drilling Program 107: 387-399.
- 68) Howell, M., Thunell, R. and Rio, D., 1990. Laminated sediments from the Vrica section (Calabria, Southern Italy): Evidence for Plio-Pleistocene climatic change in the Mediterranean region. Paleogeog. Paleoclim. Paleoecol. 78: 195-216.

- 69) Linsley, B. and Thunell, R., 1990. The record of deglaciation in the Sulu Sea: evidence for the Younger Dryas event in the tropical western Pacific. Paleoceanography 5: 1025- 1039.
- 70) Thunell, R., Rio, D. and Sprovieri, R., 1991. An overview of the post-Messinian paleoenvironmental history of the western Mediterranean. Paleoceanography 6: 143-164.
- 71) Sautter, L. and Thunell, R., 1991. Planktonic foraminiferal response to upwelling and seasonal hydrographic conditions: sediment trap results from the San Pedro Basin, Southern California Bight. Jour. Foram. Res., 21: 347-363.
- 72) Sautter, L. and Thunell, R., 1991. Seasonal variability in the oxygen and carbon isotopic composition of planktonic foraminifera from an upwelling environment: sediment trap results from the San Pedro Basin, Southern California Bight. Paleoceanography 6: 307-334.
- 73) Rio, D., Sprovieri, R. and Thunell, R., 1991. Pliocene-lower Pleistocene chronostratigraphy: a reevaluation of Mediterranean type sections. Geol. Soc. Amer. Bull., 103: 1049-1058.
- 74) Thunell, R., Rio, D, Sprovieri, R. and Raffi, I., 1991. Limestone-marl couplets: Origin of the early Pliocene Trubi marls in Calabria, southern Italy. Jour. Sedimentary Petrology, 61: 1109-1122.
- 75) Howell, M. and Thunell, R., 1992. Organic carbon accumulation in Bannock Basin: evaluating the role of productivity in the formation of eastern Mediterranean sapropels. Marine Geology, 103: 461-471.
- 76) Thunell, R. and Sautter, L., 1992. Planktonic foraminiferal faunal and stable isotopic indices of upwelling, in Evolution of Upwelling Systems since the Miocene, C. Summerhayes and W. Prell, eds., Geological Society of London, Spec. Pub. 64: 77-91.
- 77) Thunell, R., Miao, Q., Calvert, S. and Pedersen. T., 1992. Glacial-Holocene biogenic sedimentation patterns in the South China Sea: productivity variations and surface water pCO₂. Paleoceanography, 7: 143-162.
- 78) Kuehl, S., Fuglseth, T. and Thunell, R., 1993. Sediment mixing and accumulation rates in the Sulu and South China Seas: implications for organic carbon preservation in deep-sea environments. Marine Geology, 111: 15-35.
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