

- ceous Florianópolis dike swarm (Santa Catarina Island), Southern Brazil: Physics of the Earth and Planetary Interiors, v. 108, p. 257-290.
- Reid, D.L. and D.C. Rex, 1994, Cretaceous dikes associated with the opening of the South Atlantic: the Mehlberg dike, northern Richtersveld: South African Journal of Geology, v. 97, p. 135-145.
- Renne, P.R., M. Ernesto, I. Pacca, R. Coe, J. Glen, M. Prevot, M. and M. Perrin, 1992, The age of the Paraná flood volcanism, rifting of Gondwanaland, and the Jurassic-Cretaceous boundary: Science, New York, v. 258, p. 975-979.
- Renne, P.R., K. Deckart, M. Ernesto, G. Féraud, and E.M. Piccirillo, 1996a, Age of the Ponta Grossa dike swarm (Brazil), and implications to Paraná flood volcanism: Earth and Planetary Science Letters, v.144, p. 199-211.
- Renne, P.R., J.M. Glen, S.C. Milner, and A.R. Duncan, 1996b, Age of Etendeka flood volcanism and associated intrusions in southwestern Africa: Geology, v. 24, p. 659-662.
- Renne, P.R., M. Ernesto, and S.C. Milner, 1997, Geochronology of the Paraná-Etendeka magmatic province: EOS, Transactions American Geophysical Union, v. 78, p. 742.
- Rocha Campos, C., A.C. Cordani, K. Kawashita, and I. K. Sonaki, 1988, Age of the Paraná flood volcanism, *in* E.M. Piccirillo, and A.J. Melfi, eds, Mesozoic flood volcanism from the Paraná Basin, Brazil: Petrogenetic and geophysical aspects: IAG-SP São Paulo, p. 25-45.
- Sandwell, D.T., and W.H.F. Smith, 2009, Global marine gravity from retracked Geosat and ERS-1 altimetry, segmentation versus spreading rate: Jour. Geophys. Res. Solid Earth, v. 114, B01411, doi:10.1029/2008JB006008.
- Saunders, M. and S. Bowman, 2014. The Pelotas Basin oil province revealed—New interpretation from long offset 2D seismic data: First Break, v.32, p.67-72.
- Schmitt, A.K., R. Emmermann, R.B. Trumbull, B. Bühn, and F. Henjes-Kunst, 2000, Petrogenesis and  $^{40}\text{Ar}/^{39}\text{Ar}$  geochronology of the Brandberg complex, Namibia: Evidence for a major mantle contribution in metaluminous and peralkaline granites: Journal of Petrology, v. 41, p. 1207-1239.
- Schumann, T.K., 2002, The hydrocarbon potential of the deep offshore along the Argentine volcanic rifted margin: a numerical simulation: Hamburg, University, PhD dissertation, 219 p.
- Seton, M., R.D. Müller, S. Zahirovic, C. Gaina, T.H. Torsvik, G. Shephard, A. Talsma, M. Gurnis, M. Turner, S. Maus, and M. Chandler, 2012, Global continental and ocean basin reconstructions since 200 Ma: Earth-Science Reviews, v. 113, n. 3-4, p. 212-270.
- Soto, M., E. Morales, G. Veroslavsky, H. Santa Ana, N. Ucha, and P. Rodriguez, 2011, The continental margin of Uruguay: Crustal architecture and segmentation: Marine and Petroleum Geology, v. 28, p.1676-1689.
- Stewart, K., S. Turner, S. Kelley, C. Hawkesworth, L. Kirstein, and M.A.M. Mantovani, 1996, 3D  $^{40}\text{Ar}/^{39}\text{Ar}$  geochronology in the Paraná flood basal province: Earth and Planetary Science Letters, Washington, v. 143, p. 95-110.
- Stica, J.M., P.V. Zalán, and A.L. Ferrari, 2013, The evolution of rifting on the volcanic margin of the Pelotas Basin and the contextualization of the Paraná and Etendeka

- LIP in the separation of Gondwana in the South Atlantic: *Marine and Petroleum Geology*, v.50, p. 1-21.
- Talwani, M., and V. Abreu, 2000, Inferences regarding initiation of oceanic crust formation from the U.S. East Coast margin and conjugate South Atlantic margins, *in* W.U. Mohriak, and M. Talwani, eds, *Atlantic Rifts and Continental Margins*, Washington: AGU Geophysical Monograph, v. 115, p. 211-233.
- Thiede, D.S. and P.M. Vasconcelos, 2010, Paraná flood basalts: rapid extrusion hypothesis confirmed by new  $^{40}\text{Ar}/^{39}\text{Ar}$  results: *Geology*, v. 38, n. 8, p. 747-750.
- Tomazzoli, E.R., A.M.P. Mizusaki, E.F. Lima, A. Félix, and A.M.G. Figueiredo, 2005, Rochas ácidas associadas ao enxame de diques Florianópolis na Ilha Do Arvoredo e na Ilha de Santa Catarina (SC): Dados geocronológicos preliminares: 3o Simpósio de vulcanismo e ambientes associados, Cabo Frio (Rj).
- Trumbull, R.B., D.L. Reid, C. de Beer, D. van Acken, and R.L. Romer, 2007, Magmatism and continental breakup at the west margin of southern Africa: A geochemical comparison of dolerite dikes from northwestern Namibia and the Western Cape: *South African Journal of Geology*, v. 110, n. 2-3, p. 477-502.
- Turner, S.P., M. Regelous, S. Kelley, C.J. Hawkesworth and M. S. M. Mantovani, 1994, Magmatism and continental break-up in the South Atlantic: high precision  $^{40}\text{Ar}-^{39}\text{Ar}$  Geochronology: *Earth and Planetary Science Letters*, Amsterdam, v. 121, p. 333-348.
- Turner, S.P., D.W. Peate, C.J. Hawkesworth, and M.S.M. Mantovani, 1999, Chemical stratigraphy of the Parana basalt succession in western Uruguay: further evidence for the diachronous nature of the Parana magma types: *Journal of Geodynamics*, v. 28, p. 459-469.
- Ulbrich, H.G.J., and C.B. Gomez, 1981, Alkaline rocks from continental Brazil: *Earth Science Review*, Amsterdam, v. 17, p. 135-154.
- Valdecir de Assis, J., V. Freitas, and L.H. Heaman, 2011, The onset of flood basalt volcanism, Northern Paraná Basin, Brazil: A precise U-Pb baddeleyite/zircon age for a Chapecó-type dacite: *Earth and Planetary Science Letters*, v. 302, p. 147-153.
- Viero, A.P., and A. Roisenberg, 1992, Petrologia e geoquímica do complexo de Lomba Grande: *Portal de periódicos UFRGS*. Universidade Federal do Rio Grande do Sul, v. 19, n.1, p. 41-54.
- Vital Bueno, G., A.A. Zacharias, S.O. Oreiro, J.A. Cupertino, U.H. Frank, M.A. Falkenhein, and M.A.M. Neto, 2007, Bacia de Pelotas: *Boletim de Geociências da Petrobras*, Rio De Janeiro, v.15, n. 2, p. 551-559.
- White, I.C., 1908, Relatório sobre as "coal measures" e rochas associadas do Sul do Brasil: *Relatório Final da Comissão de estudos das minas de carvão de pedra do Brasil*, Rio de Janeiro: Imprensa Nacional, v. 28, p. 617.
- Wilson, M., 1989, *Igneous petrogenesis: a global tectonic approach*. Springer, p. 466.
- Zalán, P.V., S. Wolff, J.C.J. Conceição, M.A.M. Astolfi, I.S. Vieira, V.T. Appo, and O.A. Zanotto, 1987, *Tectônica e sedimentação da Bacia do Paraná: 3º Simpósio Sul Brasileiro de geología*, Curitiba, Atas SBG, v. 1, p. 441-477.

**Table 1. General characteristics of the Pelotas basin volcanic units.**

Volcanic Unit	Volcanic environment	Examples	Age (m.a.)	Petrography	Geochemistry	Max Time Thickness (OWT, msec)	Max Depth Thickness (m)	Density Log ( $g/cm^3$ )	Sonic Log Velocity (m/s)	Refraction Velocity (m/s)	Geometry and reflection configuration	Tectonism
"A"	Early rift flows	1-RSS-3RS core (3800/3908 m); Figures 6 to 10	125±0.8 ( $^{40}Ar/^{39}Ar$ ) 124±8.6 ( $^{39}K/^{40}Ar$ )	Basalt	Alkaline, high $TiO_2$	345	2001	na	3900-5900	5450/6200	Sheet drape, local y wedges (cl grabens) parallel to subparallel	Highly affected by the early rift tectonics
"B"	SDRs	Figures 6, 7 and 10	na	na	na	1000	5800	na	na	5600/6600	Wedges, divergent reflectors, onlap relationship	Late rift /early postrift
"C"	SDRs	2-BPS-6BP core (6150/6167 m); Figures 6 to 10	na	Basalt	Tholeiitic high $TiO_2$	1400	8120	na	3900-5900 low/high velocity layering alternations	5600/6200	Wedges, divergent reflectors, onlap relationship	Late rift /early postrift
"D"	SDRs	Figures 6, 7, 9 and 10	na	na	na	500	2900	na	na	5600/6200	Wedges, divergent reflectors, onlap relationship	Late rift /early postrift
"E"	SDRs	Figures 6, 7, 9 and 10	na	na	na	927	5376.6	na	na	5600/6200	Wedges, divergent reflectors, onlap relationship	Late rift /early postrift
"F"	SDRs	Figures 6, 7, 9 and 10	na	na	na	825	4785	na	na	5400	Wedges, divergent reflectors, onlap relationship	Late rift /early postrift
"G1"	Deep rounded bodies	Figures 6 and 7	time equivalent to the SDRs?	na	na	na	na	na	na	7000	Mounded features	Cut off by SDRs
"G2"	Shallow rounded bodies	Figure 10	Late rift/postrift	na	na	na	na	na	na	na	Mounded features	Covered by sediments
"H"	Flat layered volcanics	1-RSS-3RS core (3550/3560 m); Figures 6, 7, 9 and 10	118.3±1.7 ( $^{40}Ar/^{39}Ar$ ) 114±3 ( $^{39}K/^{40}Ar$ ) 113±0.1 ( $^{39}Ar/^{40}Ar$ )	Basalt, trachy-basalts, trachyandesite and basaltic andesite. Gray to brown color, amygdaloidal texture	Tholeiitic low $TiO_2$	500	2300	2.3/2.9 low/high density layering alternations	3700/5700 low/high velocity layering alternations	4600/5800	Sheet drape, parallel to subparallel	Post-rift tectonics
"I"	Oceanic volcanic cones and plateaus	Figure 11	Upper Cretaceous to Recent	na	Unknown, probably alkaline	na	na	na	na	na	Volcanic cones	Drift