

APPENDIX

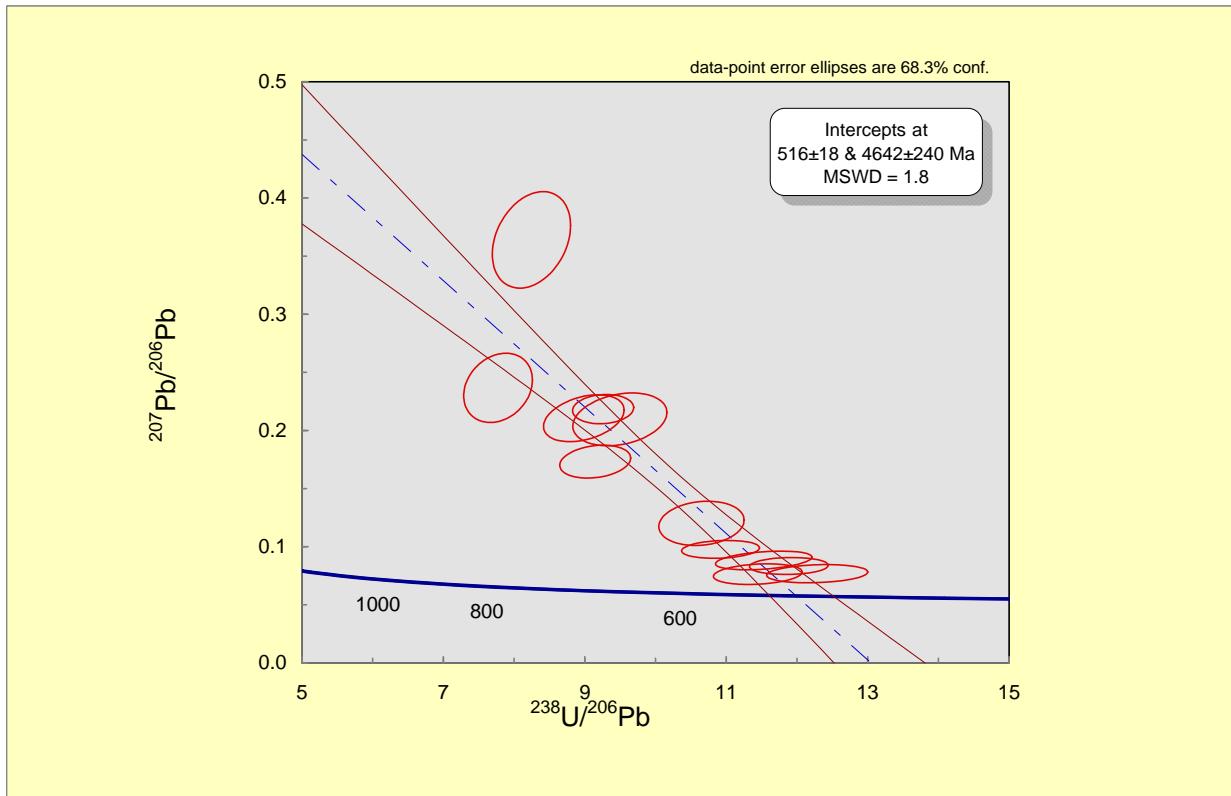


Figure DR1. Tera-Wasserburg plot for all 12 analyses gives an intercept age of 516 ± 18 Ma.

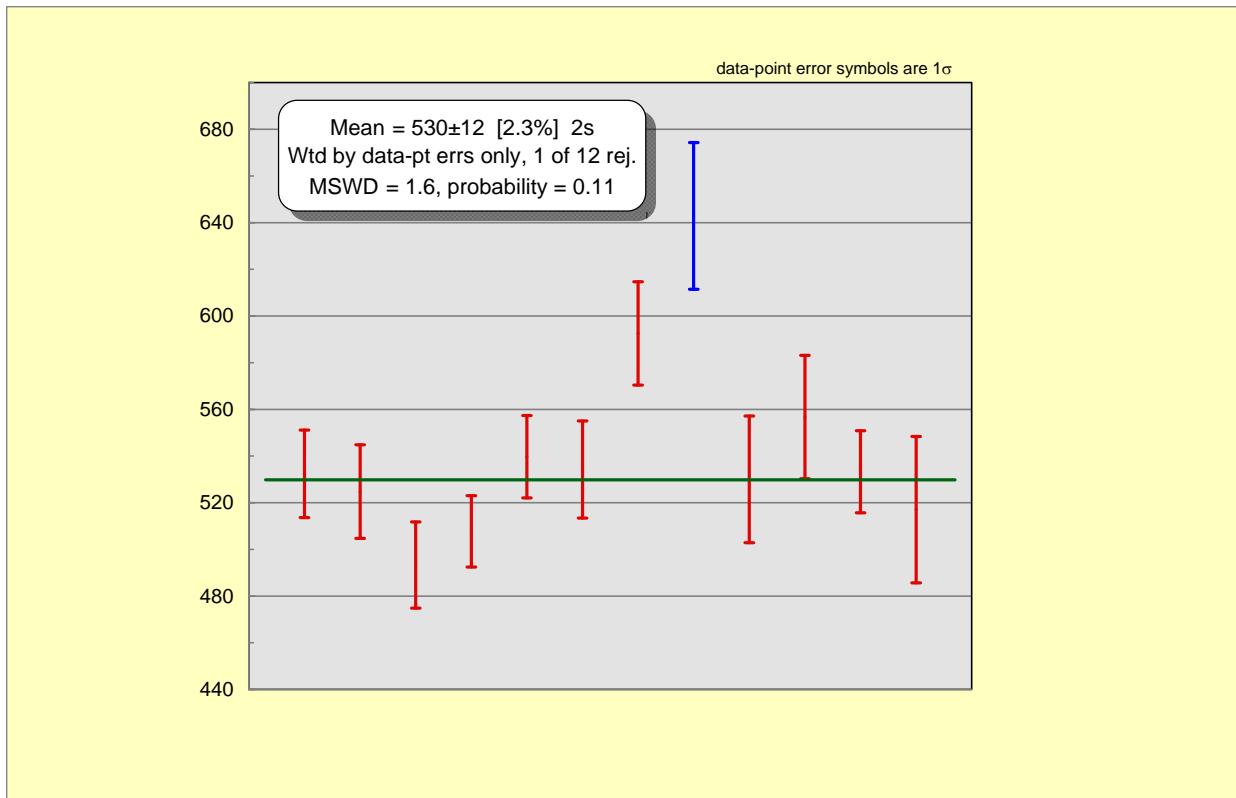


Figure DR2. Diagram showing a pooled $^{206}\text{Pb}/^{238}\text{U}$ age of 530 ± 12 Ma based on 11 analyses (out of 12).

TABLE DR1. REPEATED MEASUREMENTS OF A SYNTHETIC Au STANDARD (10000 PPM Au) WITH KNOWN CONCENTRATIONS FOR U AND Th (3 mg Au is equal to 100 μl synthetic Au standard)

Au equivalent	measured ppt Th	pg Th total	measured ppt U	pg U total
3 mg	13.6	3.9	19.7	5.8
4 mg	12.9	3.9	20.1	5.8
4 mg	14.7	5.2	18.1	7.7
5 mg	12.7	5.2	18.6	7.7
5 mg	13.5	6.6	18.7	9.7
6 mg	13.1	7.9	18.4	11.6
8 mg	14.4	10.5	19.2	15.4
mean	13.6		19.0	
standard dev. abs.	0.7		0.7	
standard dev. %	5.1		3.5	

TABLE DR2. RESULTS OF MEASUREMENTS FOR TRACE ELEMENTS IN RUTILE FROM DIAMANTINA, BRAZIL, AND ITS CALCULATED Zr-IN-RUTILE TEMPERATURES

	V	Cr	Fe	Zr	Nb	Mo	Sn	Sb	Hf	Ta	W	Nb/Ta	T*
No.	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ratio	°C
1	384	32	7950	52	1513	28	34	25	3.7	127	994	12	503
2	317	170	8874	73	1975	26	43	21	4.7	118	2281	17	523
3	292	34	8766	63	1706	43	48	32	4.2	189	1154	9	514
4	310	59	8221	84	1557	41	70	26	6.7	128	1802	12	532
5	302	65	9099	103	1551	49	74	24	7.7	94	2801	16	545
6	277	66	9041	78	1345	28	70	21	6.5	87	903	15	528
7	302	92	9335	95	1589	46	85	26	7.6	95	2387	17	540
8	277	80	8637	95	1534	34	93	23	8.7	93	1394	17	540
9	327	64	9036	77	2359	46	78	28	6.8	267	1946	9	526
10	358	101	8444	73	1004	35	58	21	5.0	72	969	14	523
11	389	40	8541	79	1380	39	57	24	5.6	92	2543	15	528
12	373	51	7141	60	869	24	34	15	3.7	63	199	14	511

* Zirconium-in-rutile temperatures calculated using the equation of Tomkins et al. (2007), assuming P = 3.4 Kbar (Morteani et al., 2001).

References Cited in the Appendix

- Morteani, G., Ackerman, D., and Horn, A.H., 2001, Aluminium-phosphates and borosilicates in muscovite–kyanite metaquartzites near Diamantina (Minas Gerais, Brazil): petrogenetic implications: *Periodico di Mineralogia*, v. 70, p. 111–129.
- Tomkins, H.S., Powell, R., and Ellis, D.J., 2007, The pressure dependence of the zirconium-in-rutile thermometer: *Journal of Metamorphic Geology*, v. 25, p. 703–713.