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Mining Effect on the Suspended Sediment in an Amazonian Environment

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The objective of this research is to characterize total suspended sediment and its chemical composition of stream water draining a small catchment (164 ha), the lower portion (34 ha) of which has been affected by Mn-ore mining activities. These activities included road construction, deforestation and sterile material deposits, thus altering the topography and the vegetal cover of this part of the basin. The catchment (Pedra Preta stream) is located at the northeastern Amazonia in the Amapá State (00° 55' 29.2" N, 51° 59' 32.6" W), Brazil. Stream water and suspended sediment samples collected in the course of one year (July/93-June/94) were analysed. Samples were collected monthly in the natural undisturbed rainforest (PN - head waters) and altered (PF - outlet, with mining activities influence) areas of the catchment.

Results for base cations and total sediment load are shown together with precipitation data (Table 1). Maximum rainfall occurred from January to March with heavy and continuous rains. The driest periods were July and August. May was abnormally rainy, although the rains were not continuous. The total suspended sediment within the undisturbed area (PN) was almost constant during the year while mining activities influenced outlet (PF) concentrations during the wetter periods (Table 1). The chemical concentrations followed the same pattern. These results indicate that the erosional process is very active in the disturbed area, especially in periods of high and continuous rainfall.

Month	Prec. mm	Tot. Sed. mg 10 ² L ⁻¹		Na mg 10 ² L ⁻¹		K mg 10 ² L ⁻¹		Mg mg 10 ² L ⁻¹		Ca mg 10 ² L ⁻¹	
		PN	PF	PN	PF	PN	PF	PN	PF	PN	PF
July	36	0.05	0.08	22	19	12	50	6.7	7.6	13	17
Aug	17	0.07	0.05	16	15	6.8	12	5.1	4.5	13	11
Sept	51	0.03	0.04	17	13	7.2	8.1	5.8	4.2	16	13
Oct	43	0.03	0.05	13	18	6.5	62	4.6	8.4	12	19
Nov	45	0.04	0.10	18	26	7.4	23	5.7	6.0	16	15
Dec	43	0.07	0.53	23	21	11	15	7.0	6.5	14	16
Jan	71	0.04	0.54	19	19	6.5	47	8.7	7.0	17	1.9
Feb	89	0.13	2.10	18	25	7.6	170	6.8	21	17	46
March	70	0.06	1.14	18	25	4.9	132	6.7	15	14	20
April	55	0.04	0.23	18	20	4.3	22	2.7	8.2	10	13
May	95	0.04	0.17	20	17	4.8	19	2.6	5.2	9.0	12
June	45	0.03	0.07	17	16	5.0	7.0	2.2	4.6	8.5	8.7

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