Monitoring of suspended sediment mineralogy in Puerto-Rican Rivers: Effects of flowrate and lithology

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SUPPORTING INFORMATION

Table S1a. List of analyzed samples from Rio Mameyes.

Rio Icacos		Source Rock: 100% Quartz Diorite		
Sample name	Type	Sampling coordinates	Collection date (MM-DD-YYYY)	Analysis
RI 5823	Filter	18.2751; -65.7854	2/7/2006	Picture, XRD, XRF
RI 5840	Filter	18.2751; -65.7854	2/14/2006	Picture, XRD, XRF
RI 5857	Filter	18.2751; -65.7854	2/21/2006	Picture, XRD, XRF
RI 5872	Filter	18.2751; -65.7854	2/28/2006	Picture, XRD, XRF
RI 5887	Filter	18.2751; -65.7854	3/7/2006	Picture, XRD, XRF, SEM/EDX
RI 5938	Filter	18.2751; -65.7854	3/28/2006	Picture, XRD, XRF
RI 5989	Filter	18.2751; -65.7854	4/18/2006	Picture, XRD, XRF
RI 6006	Filter	18.2751; -65.7854	4/25/2006	Picture, XRD, XRF
RI 6024	Filter	18.2751; -65.7854	5/2/2006	Picture, XRD, XRF, SEM/EDX
RI 6057	Filter	18.2751; -65.7854	5/16/2006	Picture, XRD, XRF
RI 6079	Filter	18.2751; -65.7854	5/23/2006	Picture, XRD, XRF
RI 6089	Filter	18.2751; -65.7854	5/30/2006	Picture, XRD, XRF
RI 6123	Filter	18.2751; -65.7854	6/13/2006	Picture, XRD, XRF
RI 6140	Filter	18.2751; -65.7854	6/20/2006	Picture, XRD, XRF
RI 6157	Filter	18.2751; -65.7854	6/27/2006	Picture, XRD, XRF
RI 6191	Filter	18.2751; -65.7854	7/11/2006	Picture, XRD, XRF
RI 6208	Filter	18.2751; -65.7854	7/18/2006	Picture, XRD, XRF
RI 6225	Filter	18.2751; -65.7854	7/25/2006	Picture, XRD, XRF
RI 6242	Filter	18.2751; -65.7854	8/1/2006	Picture, XRD, XRF
RI 6259	Filter	18.2751; -65.7854	8/8/2006	Picture, XRD, XRF
RI 6293	Filter	18.2751; -65.7854	8/22/2006	Picture, XRD, XRF
RI 6310	Filter	18.2751; -65.7854	8/29/2006	Picture, XRD, XRF
RI 6344	Filter	18.2751; -65.7854	9/12/2006	Picture, XRD, XRF
RI 6361	Filter	18.2751; -65.7854	9/19/2006	Picture, XRD, XRF
RI 6395	Filter	18.2751; -65.7854	10/3/2006	Picture, XRD, XRF
RI-22-01a	Grab, Streambed	18.2756; -65.7854	1/14/2022	XRD (bulk and fine), Texture
RI-22-01b	Grab, Streambed	18.2760; -65.7854	1/14/2022	XRD (bulk and fine), Texture
RI-22-01c	Grab, Streambed	18.2767; -65.7857	1/14/2022	XRD (bulk and fine), Texture
RI-22-02a	Grab, Streambank	18.2753; -65.7854	1/14/2022	XRD (bulk and fine), Texture
RI-22-02b	Grab, Streambank	18.2760; -65.7854	1/14/2022	XRD (bulk and fine), Texture
RI-22-02c	Grab, Streamband	18.2774; -65.7854	1/14/2022	XRD (bulk and fine), Texture

Table S1b. List of analyzed samples from Rio Icacos.

Rio Mameyes	Source Rock: 80% Volcaniclastic and 20% Quartz Diorite			
Sample name	Type	Sampling coordinates	Collection date (MM-DD-YYYY)	Analysis
MPR 5816	Filter	18.3274; -65.7504	2/7/2006	Picture, XRD, XRF, SEM/EDX
MPR 5865	Filter	18.3274; -65.7504	2/28/2006	Picture, XRD, XRF
MPR 5948	Filter	18.3274; -65.7504	4/4/2006	Picture, XRD, XRF
MPR 5882	Filter	18.3274; -65.7504	4/11/2006	Picture, XRD, XRF
MPR 6016	Filter	18.3274; -65.7504	5/2/2006	Picture, XRD, XRF, SEM/EDX
MPR 6050	Filter	18.3274; -65.7504	5/16/2006	Picture, XRD, XRF
MPR 6067	Filter	18.3274; -65.7504	5/23/2006	Picture, XRD, XRF
MPR 6116	Filter	18.3274; -65.7504	6/13/2006	Picture, XRD, XRF
MPR 6167	Filter	18.3274; -65.7504	7/5/2006	Picture, XRD, XRF
MPR 6218	Filter	18.3274; -65.7504	7/25/2006	Picture, XRD, XRF
MPR 6252	Filter	18.3274; -65.7504	8/8/2006	Picture, XRD, XRF
MPR 6320	Filter	18.3274; -65.7504	9/5/2006	Picture, XRD, XRF
MPR 6354	Filter	18.3274; -65.7504	9/19/2006	Picture, XRD, XRF
MPR 6388	Filter	18.3274; -65.7504	10/3/2006	Picture, XRD, XRF
MPR-22-01a	Grab, Streambed	18.3273; -65.7503	1/14/2022	XRD (bulk and fine), Texture
MPR-22-01b	Grab, Streambed	18.3271; -65.7502	1/14/2022	XRD (bulk and fine), Texture
MPR-22-01c	Grab, Streambed	18.3268; -65.7499	1/14/2022	XRD (bulk and fine), Texture
MPR-22-02a	Grab, Streambank	18.3273; -65.7503	1/14/2022	XRD (bulk and fine), Texture
MPR-22-02b	Grab, Streambank	18.3274; -65.7504	1/14/2022	XRD (bulk and fine), Texture
MPR-22-02c	Grab, Streamband	18.3269; -65.7498	1/14/2022	XRD (bulk and fine), Texture

Table S1c. List of analyzed samples from Quebrada Sonadora.

Quebrada Sonadora	Source Rock: 100% Volcaniclastic			
Sample name	Type	Sampling coordinates	Collection date (MM-DD-YYYY)	Analysis
QS 5819	Filter	18.3270; -65.8232	2/7/2006	Picture, XRD, XRF
QS 5836	Filter	18.3270; -65.8232	2/14/2006	Picture, XRD, XRF
QS 5853	Filter	18.3270; -65.8232	2/21/2006	Picture, XRD, XRF
QS 5868	Filter	18.3270; -65.8232	2/28/2006	Picture, XRD, XRF
QS 5883	Filter	18.3270; -65.8232	3/7/2006	Picture, XRD, XRF, SEM/EDX
QS 5900	Filter	18.3270; -65.8232	3/14/2006	Picture, XRD, XRF
QS 5917	Filter	18.3270; -65.8232	3/21/2006	Picture, XRD, XRF
QS 5934	Filter	18.3270; -65.8232	3/28/2006	Picture, XRD, XRF
QS 5951	Filter	18.3270; -65.8232	4/4/2006	Picture, XRD, XRF
QS 5968	Filter	18.3270; -65.8232	4/11/2006	Picture, XRD, XRF
QS 5985	Filter	18.3270; -65.8232	4/18/2006	Picture, XRD, XRF
QS 6002	Filter	18.3270; -65.8232	4/25/2006	Picture, XRD, XRF
QS 6019	Filter	18.3270; -65.8232	5/2/2006	Picture, XRD, XRF, SEM/EDX
QS 6036	Filter	18.3270; -65.8232	5/9/2006	Picture, XRD, XRF
QS 6053	Filter	18.3270; -65.8232	5/16/2006	Picture, XRD, XRF
QS 6070	Filter	18.3270; -65.8232	5/23/2006	Picture, XRD, XRF
QS 6085	Filter	18.3270; -65.8232	5/30/2006	Picture, XRD, XRF
QS 6119	Filter	18.3270; -65.8232	6/13/2006	Picture, XRD, XRF
QS 6136	Filter	18.3270; -65.8232	6/20/2006	Picture, XRD, XRF
QS 6170	Filter	18.3270; -65.8232	7/5/2006	Picture, XRD, XRF
QS 6187	Filter	18.3270; -65.8232	7/11/2006	Picture, XRD, XRF
QS 6204	Filter	18.3270; -65.8232	7/18/2006	Picture, XRD, XRF
QS 6221	Filter	18.3270; -65.8232	7/25/2006	Picture, XRD, XRF
QS 6238	Filter	18.3270; -65.8232	8/1/2006	Picture, XRD, XRF
QS 6255	Filter	18.3270; -65.8232	8/8/2006	Picture, XRD, XRF
QS 6289	Filter	18.3270; -65.8232	8/22/2006	Picture, XRD, XRF
QS 6306	Filter	18.3270; -65.8232	8/29/2006	Picture, XRD, XRF
QS 6323	Filter	18.3270; -65.8232	9/5/2006	Picture, XRD, XRF
QS 6340	Filter	18.3270; -65.8232	9/12/2006	Picture, XRD, XRF
QS 6357	Filter	18.3270; -65.8232	9/19/2006	Picture, XRD, XRF
QS 6374	Filter	18.3270; -65.8232	9/26/2006	Picture, XRD, XRF
QS 6391	Filter	18.3270; -65.8232	10/3/2006	Picture, XRD, XRF

QS-22-01a	Grab, Streambed	18.3270; -65.8232	1/13/2022	XRD (bulk and fine), Texture
QS-22-01b	Grab, Streambed	18.3270; -65.8229	1/13/2022	XRD (bulk and fine), Texture
QS-22-01c	Grab, Streambed	18.3269; -65.8229	1/13/2022	XRD (bulk and fine), Texture
QS-22-02a	Grab, Streambank	18.3270; -65.8232	1/13/2022	XRD (bulk and fine), Texture
QS-22-02b	Grab, Streambank	18.3269; -65.8229	1/13/2022	XRD (bulk and fine), Texture
QS-22-02c	Grab, Streamband	18.3268; -65.8230	1/13/2022	XRD (bulk and fine), Texture

Table S2a. Date and maximum peak discharge (in m^3/s) of the top 5 discharge events for each river during the study period (date format: MM/DD/YYYY).

	Rio Mameyes		Rio Icacos		Q. Sonadora	
Rank #	date	discharge (m^3/s)	date	discharge (m^3/s)	date	discharge (m^3/s)
1	4/5/2006	77.30	1/15/2006	22.96	4/21/2006	25.46
2	11/13/2006	54.65	11/13/2006	17.22	4/5/2006	18.26
3	10/20/2006	41.34	4/7/2006	14.58	10/11/2006	11.07
4	6/4/2006	31.71	10/19/2006	13.59	4/1/2006	9.51
5	10/10/2006	26.45	5/28/2006	10.22	4/21/2006	9.12

Table S2b. Date and average daily discharge (in m^3/s) of the top 5 daily discharge events for each river during the study period (date format: MM/DD/YYYY).

	Rio Mameyes		Rio Icacos		Q. Sonadora	
Rank #	date	discharge (m3/s)	date	discharge (m3/s)	date	discharge (m3/s)
1	4/5/2006	9.97	1/15/2006	2.19	4/22/2006	1.66
2	11/13/2006	8.72	4/22/2006	1.98	7/8/2006	1.29
3	7/10/2006	6.88	11/13/2006	1.82	1/22/2006	1.23
4	1/28/2006	6.82	7/10/2006	1.74	7/10/2006	1.14
5	4/22/2006	6.54	4/7/2006	1.65	1/28/2006	1.04

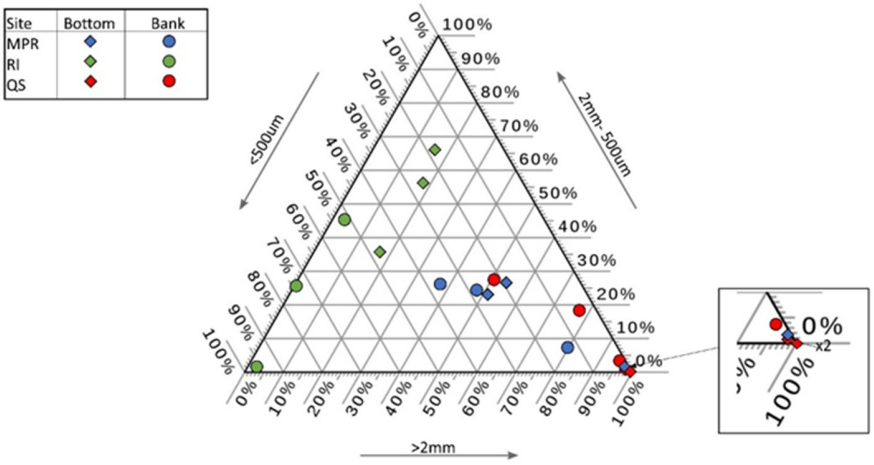

Figure S1. Grab sample sediments texture diagram. Inset is a zoom on the sand pole of the diagram.

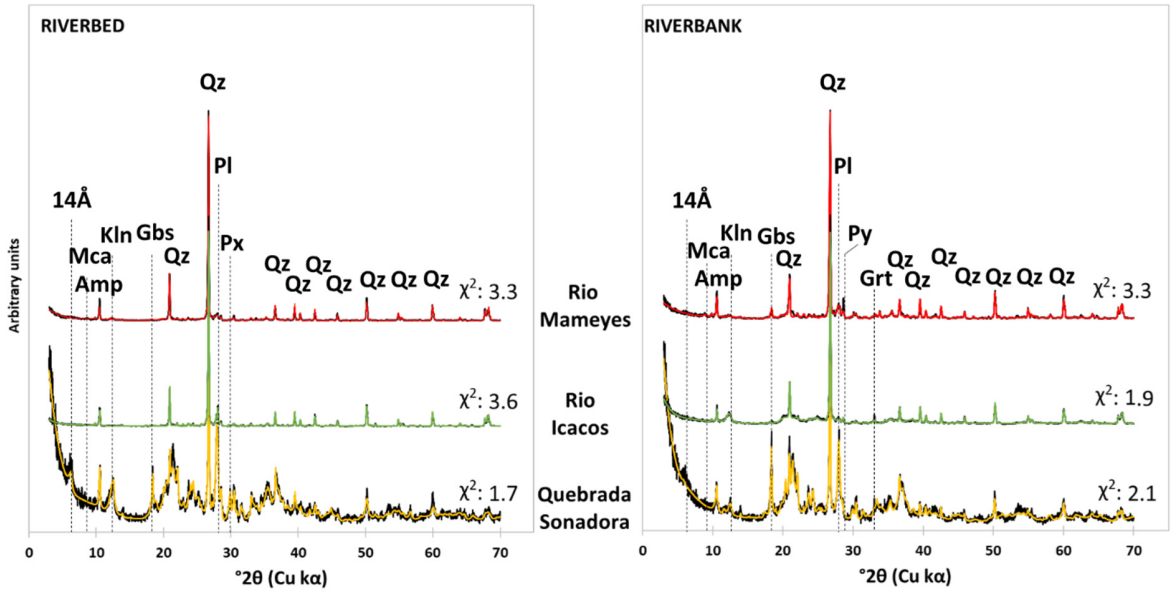

Figure S2. XRD Diffractograms (black) and quantitative models (colors) of bulk sediment grab samples collected from the three rivers in January 2022. (Left: Sediment collected from riverbeds, right: Sediment collected from the riverbanks. Letters abbreviations follow Warr [41] and correspond to 14Å = 14Å d-spacing clay mineral (typically modeled as clinochlore), Mca = micas, Amp = amphibole, Kln = kaolinite, Gbs = gibbsite, Qz = quartz, Pl = plagioclase feldspars, Px= pyroxenes, Py = pyrite, Grt = garnet. $\chi 2$ values represents the goodness of fit as the average of the ration of the squared residuals over a 10% measurement error. A value below 5 is considered good and a value of 1 represent a perfect fit.

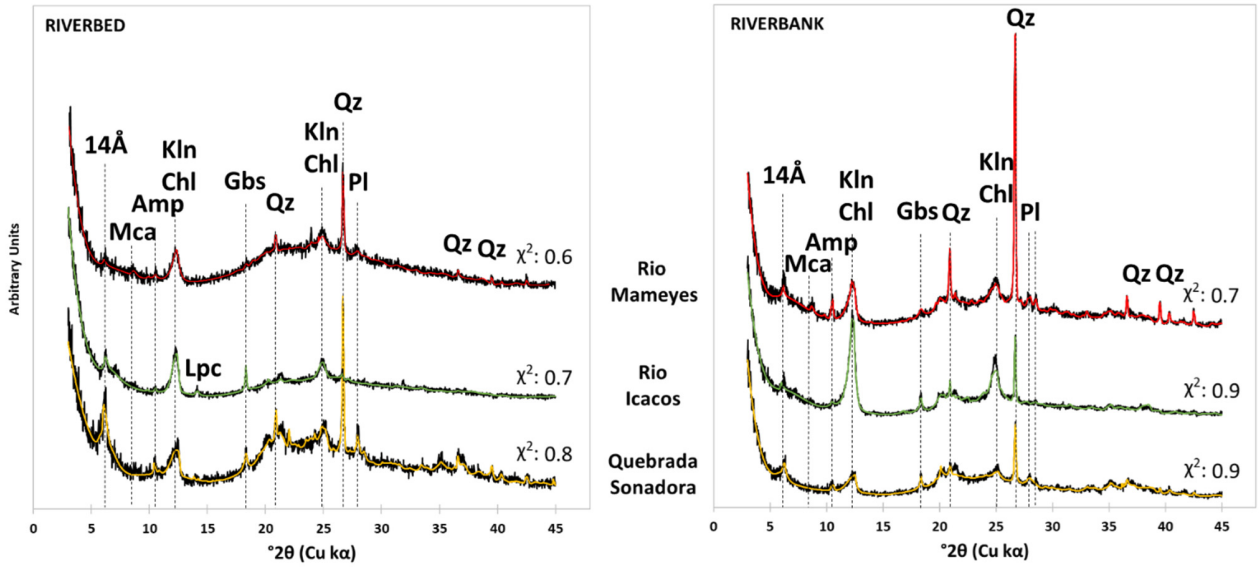

Figure S3. XRD Diffractograms (black) and quantitative models (colors) of the <50 μm fraction of sediment grab samples collected from the three rivers in January 2022. (Left: Sediment collected from riverbeds, right: Sediment collected from the riverbanks. For χ2 explanation refer to Figure S2. According to Warr [41], Lpc corresponds to lepidocrocite and Chl to chlorite other abbreviations are the same as figure S2. χ2 values represents the goodness of fit as the average of the ration of the squared residuals over a 10% measurement error. A value below 5 is considered good and a value of 1 represent a perfect fit.