**Historical Evaluation of the distribution of PAHs in samples from lakes in Southern Brazil**

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The development and growth of humanity also brought about growth in the alterations of the quality of water and aquatic ecosystems. Some effects are visible, such as silting, hydric pollution, presence of toxic chemical compounds, euthrophization, loss of biodiversity, biomagnification of contaminants, as well as the loss of the potential of the body of water for multiple uses in a basin. In order to control the pollution of such hydric resources it is necessary to know the pollution process which caused current conditions. Within this context, it is necessary to obtain information about the past of the hydrographic basin related to the disturbances to which the environment was subjected in the past, for such information make it possible to understand the current pollution scenario within a historical context; it also assists in establishing a standard in a temporal scale. The sediments contain substances of low solubility. Among the compounds investigated which are associated with pollution processes, are the aromatic and aliphatic hydrocarbons. PAHs are compounds which are usually produced by anthropogenic activities; their formation takes place by three chemical processes: pyrolytic, petrogenic or biogenic. Due to their physical and chemical properties, PAHs hardly ever decompose within a short period of time, thus they are often found in sediment. Thus, we evaluated the distribution of PAHs in two samples taken from Igapó Lakes I and II in Londrina, State of Paraná. Greater amounts of PAHs are clearly found in the first centimeters of the sediment, while the smaller amounts are found in the deeper layers. Such behavior is typical of PAHs. Anoxic environments make biodegradation more difficult, thus it is possible to associate their distribution with past events, such as the removal or organic matter or debris by burning, which was very common at the beginning of the occupation of this region.
Keywords: PAHs, Igapó Lakes, biomarks, sediments.

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**Tropical erosion: the story of Panama**

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Background erosion rates place human-induced erosion in context and are necessary for evaluating, regulating and remediating human impacts on erosion. This study presents the first broad quantification of background erosion rates in Panama and relates these to landscape variables including climate, seismicity, landuse, rock-type, and topography.

Using measurements of *in situ* $^{10}$Be in river sand, we calculated erosion rates for 40 watersheds (14 to 2410 km$^2$). 44 variables were quantified for each watershed to assess their relationship to erosion rates using bivariate linear regression, multiple regression, and ANOVA. We used grain size analysis as well as sampling up and downstream of a landslide to assess the impact of landslides on calculated erosion rates.

$^{10}$Be–inferred erosion rates ranged from 26 to 600 m/Myr. The strongest and most significant relationship is between erosion rate and silicate weathering rate, the mass of material leaving the basin in solution. None of the physiographic variables showed a significant relationship with erosion rate at the 95% level. The relationship between erosion rates and seismicity varied with quake distance from the watershed and average quake depth. $^{10}$Be concentration and grain size were inversely related in landslide samples. Landslide material has lower $^{10}$Be concentration than stream sediments.

Erosion rates in Panama are higher than other published $^{10}$Be-derived erosion rates in tropical climates – including those from Puerto Rico, Madagascar and Sri Lanka – likely the result of Panama's active tectonic setting. Although many cosmogenic studies have concluded that physiography controls erosion, Panamanian data are unique because they show little if any relationship between erosion rates and landscape-scale variables. We speculate that controls on erosion in humid, tropical climates are more complex than those elsewhere in the world – perhaps the result of widespread landsliding.