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## Sediment Response to Deforestation within the Amazon River Basin

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The Amazon River Basin is the largest river system in the world, accounting for one-fifth of global freshwater discharge and supplying 40% of the Atlantic Ocean's sediment flux. Though the Amazon is most often recognized for its rich biological diversity, it also performs a suite of ecosystem functions such as river flow regulation, local climate modulation, and carbon sequestration. Despite its ecological importance, the Amazon experiences thousands of kilometers of deforestation annually with recent rates increasing to levels unseen since the late 2000s. These increased rates of deforestation within the basin have led to changes in sediment concentration within its river systems, affecting not only the ecological balance within the system but also the availability of water to those dependent on river flows. Furthermore, sediment plays an important role in river channel morphology and landscape development, effectively influencing the future topography of the basin. Therefore, it is important to closely examine the relationship between deforestation and suspended sediment in order to characterize the extent of influence anthropogenic activities, such as deforestation, have on rivers.

In this study, we analyze the impact of deforestation from 2001 to 2020 on suspended sediment throughout the Amazon River Basin. These effects are studied by quantifying the spatiotemporal relationships between observed suspended sediment (at gage sites and using a basin wide remote sensing product) and changes in land cover over time. We hypothesize that deforestation will lead to significant increases in suspended sediment flux in adjacent streams and that the effect of deforestation on suspended sediment flux will decrease significantly downstream.