Organic carbon transport by the Ayeyarwady (Irrawaddy) and Thanlwin (Salween) rivers, Myanmar

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We report results of a preliminary study of particulate and dissolved organic carbon transport in the Ayeyarwady and Thanlwin Rivers of Myanmar, based on 52 suspended sediment samples and 9 water samples collected during conditions of low and high flow in 2005 and 2006. The Ayeyarwady transports 2.2 to 4.3 MtC/yr as POC with a weighted average carbon isotope value of -24.8 per mil, while the Thanlwin transports an additional 2.4-3.4 MtC/yr with a carbon isotope value of -25.3‰. In addition, the Ayeyarwady transports ∼0.9Mt/yr, and the Thanlwin ∼0.23Mt/yr, of DOC with a carbon isotope value of -26.2 per mil and -27.1 per mil respectively. The Ayeyarwady and Thanlwin catchments adjoin each other, debouching into the Indian Ocean over a length scale similar to the deltas of the Ganges-Brahmaputra or the Amazon. Therefore, the Ayeyarwady and Thanlwin rivers should be considered a single point source contributing to the global ocean. The implied organic carbon yield from the catchments is 8.4-12.9 t/km^2/yr, which is clearly amongst the highest in the world among rivers of similarly large size. The high organic carbon yields are likely to be the result of (i) a strongly monsoonal climate, (ii) the large area of highly productive forest present on steep slopes in a region of active tectonism, and (iii) the comparatively small area of floodplain in the catchments.