



Importance of long-term observatories for ecosystem management: Variability in particle flux in the Northern Gulf of Mexico

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After the Deepwater Horizon oil spill it became apparent that relatively little is known about the Gulf of Mexico ecosystem. The lack of a baseline complicates mitigation, management and ecosystem monitoring after such an event. We have established three long-term monitoring sites in the Gulf, where sinking particle flux has been measured at depths >1000 m since 2012. Even though the three sites are in close vicinity to each other (max distance 260 km) and at similar depths, they vary considerably in flux magnitude, composition and temporal pattern. At the most northern site a strong riverine influence drives a distinct seasonal pattern linked to the Mississippi discharge. The most southern site shows signals of oil-derived flux originating from natural oil seeps at this site. Our data highlights the importance of multiple long-term observatory sites in relatively close vicinity in areas with strong oceanographic gradients, particularly for areas with high human activities.