Atmospheric $^{7}Be/^{210}Pb$ as a tool for determining the origin of detrital material in ombrogenous sediment: a hypothesis

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^{7}Be and ^{210}Pb distribution in sediments and in the atmosphere are potentially useful in studying the dynamics of surface processes. ^{210}Pb in the atmosphere origin lies in the degassing of ^{222}Rn from continental surfaces. As the ^{222}Rn flux from the ocean is negligible, and thus ^{210}Pb may be a useful tracer of continental material transport. ^{7}Be, on the other hand, is produced via cosmic ray spallation reactions with nitrogen and oxygen. The measured ratio of these two isotopes in aerosols over the Atlantic is being used to examine the transport of African Dust to the southeastern United States. The $^{7}Be/^{210}Pb$ activity ratio of material collected in the Azores during a storm event at the end of February averaged 4.0 ± 0.2, with concentrations varying being 50-150 $Bq.g^{-1}$ for ^{210}Pb and 180 and 750 $Bq.g^{-1}$ for ^{7}Be. Comparing these ratios with the historical record in Miami indicated much of the material is transport across the Atlantic within a very short time. In south Florida, there is growing body of evidence that suggests that much of the trace metal load in ombrogeneous sediments of the Florida Everglades is derived from external sources. What is unknown at this time is whether this material is derived from regional sources or part of the worldwide atmospheric transport of material. Using these ratios and the measured elemental concentrations the sources appeared to be defined. In the ombrogeneous sediment of south Florida, there is significant evidence that metals may be derived from transported aerosols with some contribution as detrital material transported with Africa as dust during the summer.