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Detecting Sea Water Migration in Canadian Arctic Fish

Recent studies revealed increasing rates of mercury exposure in Canadian Inuit populations. This is due to high contamination of freshwater fish which constitutes a primary component of the traditional northern diet. However, sea-run fish have much lower mercury than their freshwater counterparts. Thus, we need to determine the migratory patterns of various fish species to suggest safer food source. In order to do this, high frequency multivariate data is collected on the fish ear bones that record the chemical composition of the sample throughout lifetime. We propose the multiple change-point search methods to understand measurement error, seasonal trends, individual-level effects.