

C 211

**Spectral Analysis of 46 year gappy tidal records at Bay of Fundy, Canada and comparison of two algorithms**

This study describes the spectral analysis of hourly tidal records (January 1947 to December 1992) at Bay of Fundy, Canada. This data series contains 118 gaps over this 46 year time span. Since standard methods of time series analysis perform poorly for this type of data series, two algorithms specifically designed for handling gaps were used;

that due to Vanicek (1971) denoted as LSSA-UNB and that due to Lomb (1976) denoted as LSSA-NR.

Significant tidal periods, such as  $M_2$ ,  $S_2$ ,  $N_2$ ,  $L_2$ ,  $K_1$ ,  $K_2$ ,  $Mf$ ,  $MSf$ ,  $Mm$ ,  $SSa$ ,  $Sa$ ,  $So$ , hidden in the Saint John Records, were identified. The analysis provided magnitudes for the most prominent constituents. These two results and the equilibrium periods (i.e Doodson's figures) were compared in detail.

Also, It was notice that both programs showed accurate results for high frequencies, and for low frequencies, the Lomb algorithm performed well; hence, finally it was concluded that most reliable algorithm is LSSA-UNB. However LSSA-NR is somewhat more efficient.