The response of groundwater level at Manazuru well to tidal change at Manazuru port in Kanagawa Prefecture

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Hot Springs Research Institute of Kanagawa Prefecture is measuring groundwater level change at Manazuru well and tidal change at Manazuru port with 1Hz sampling digital data. The groundwater level change at Manazuru well highly correlates to the tidal change in Manazuru port. We try to evaluate the response function of groundwater level at Manazuru well to the tidal change at Manazuru port. Spectral analysis is applied to two datasets from Mar, 1 to Mar, 7 and Mar, 11 to Mar, 16, 2011, the later includes tsunami data of the 2011 Tohoku Earthquake. Two strong spectral peaks appear at periods of 12.14 hours and 24.28 hours for both the data at Manazuru well and at Manazuru port. The ratios of spectral amplitudes of the groundwater level to the tide are 0.78(12hours period) and 0.72(24hours period). The latter dataset exhibits the spectral peaks around 1.15 hours for the tsunami tidal change, and the amplitude ratios range from 0.44 to 0.47.

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