Figure 10. Sensitivity of the predictions from HAM2D using the two-equation transition model to the free-stream turbulence intensity (Ti1, Ti2, Ti3) at two Reynolds numbers $Re = 3 \times 10^6$; $12 \times 10^6$, as defined in Table 2. The prediction of the lift-to-drag ratio is highly sensitive to the inflow turbulent intensity level. Also, the sensitivity becomes stronger at the higher Reynolds number, which results in the best correlation with the experiment using the lowest intensity (Ti3) as observed in a previous study using the $e^N$ transition model (Ceyhan et al., 2017b).

4.3 DU series airfoils and NACA64-618

The predictions of HAM2D using both transition models for the airfoils in the NREL 5 MW turbine (Jonkman et al., 2009) are compared against data available in the DOWEC 6MW pre-design report (Kooijman et al., 2003) for Reynolds numbers of 6 and 7 million. The reference data for the DU airfoils at $Re = 3 \times 10^6$ are taken from experiments in the LTT wind tunnel of TU Delft. The results for the $Re = 7 \times 10^6$ are the result of a synthesis process, in which measured data for at $Re = 3 \times 10^6$ are