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*Ascent Sequences, $2 + 2$-free posets, Upper Triangular Matrices, and Genocchi numbers.*

The combinatorics of the Genocchi numbers was developed by Dumont and various co-authors in the 70's and 80's. More recently, Bousquet-Melou, Claesson, Dukes, Kitaev and Parviainen showed that the 2+2-free posets are in bijection with so-called ascent sequences and with non-negative integer valued upper triangular matrices which have no zero rows or columns. We will show that the Genocchi and the Median Genocchi numbers count the number of up-down ascent sequences. We also show how the $q$-analogues of the Genocchi and Median Gennochi numbers can be obtained by $q$-counting up-down ascent sequences.