A traditional, standard method to compute the gravitational effect of the residual topographic masses relative to the level surface of the computation point, also known as the terrain correction, is based on a finite-element decomposition into right rectangular prisms with vertical dimensions equal to discrete, gridded terrain elevations. An alternative construction is proposed based on the two-dimensional Haar wavelet, which ultimately is an identical decomposition, but instead slices the topography into horizontal slabs. It is shown that far fewer such prisms need to be included to obtain the same accuracy in the terrain correction. The method is tested on first and second derivatives of the gravitational potential in areas of relatively gentle and rough terrain.