To efficiently improve the accuracy of hyperspectral image (HSI) classification, the spatial information is usually fused with spectral information so that the classification performance can be enhanced. In this paper, we propose a new classification method called wavelet transform-based smooth ordering (WTSO). WTSO consists of three main components: wavelet transform for feature extraction, spectral-spatial based similarity measurement, smooth ordering based 1-D embedding, and construction of final classifier using interpolation scheme. Specifically, wavelet transform is firstly imposed to decompose the HSI signal into approximate coefficients (ACs) and details coefficients (DCs). Then, to measure the similar level of pairwise samples, a novel metric is defined on the ACs, where the spatial information is serving as the prior knowledge. Next, according to the measurement results, smooth ordering is applied so that the samples are aligned in a 1-D space (called 1-D embedding). Finally, since the reordering samples are smooth, the labels of test samples can be recovered using the simple 1-D interpolation method. In the last step, in order to reduce the bias and improve accuracy, the final classifier is constructed using multiple 1-D embeddings. The use of wavelet transform in WTSO can also reduce the high dimensionality of HSI data. By converting the hight dimensional samples into a 1-D ordering sequence, WTSO can reduce the computational cost, and simultaneously perform classification for the test samples. Note that in WTSO, the smooth ordering based 1-D embedding and interpolation are executed in an iterative manner. And they will be terminated after a finite steps. The proposed method is experimentally demonstrated on two real HSI data sets: IndianPines and University of Pavia, achieving promising results.