Recently there has been substantial interest in constructing wavelets on nested sequences of nonuniform partitions. A sequence of partitions obtained by uniformly subdividing an arbitrary initial coarse partition is said to be semi-regular. We develop a construction of orthogonal “wavelet macroelements” that may be pieced together to construct continuous, orthogonal, wavelet bases on semi-regular sequences of triangulations. The bases at level $j$ consist of local functions whose support is at most the star of a vertex in the $j$-th triangulation. (Received September 30, 2002)