The key element of adaptive spatial filtering is the identification of statistically homogenous pixels (SHP). Let A_p be the amplitudes of pixel p:

$$A_p = [A_1(p), A_2(p), \ldots, A_M(p)] \tag{1}$$

where M is the number of SAR images. Let A_q be the amplitudes of pixel q located in the estimation window centered on p, and $A_q = [A_1(q), A_2(q), \ldots, A_M(q)]$. We can use statistical hypothesis testing to evaluate whether p and q are SHP (Samiei-Esfahany 2017):

$$H_0 : F_{A_p} = F_{A_q}, \quad H_1 : F_{A_p} \neq F_{A_q} \tag{2}$$

where F_{A_p} and F_{A_q} are the cumulative distribution function of amplitudes of p and q, respectively. In this paper, the Kolmogorov-Smirnov (KS) test is used to identify the SHP in a rectangular window with a dimensions of 19 × 13 (azimuth × range). The adaptive spatial filtering will be carried only if the number of SHP is more than 18 by which to preserve PS information.