This thesis deals with snow cover mapping by using time-series of SAR images of the sensors ENVISAT ASAR and TerraSAR-X. The methodology is based on the so-called Nagler's algorithm, which is based on determination of the change of absorption of radar signal due to the liquid water content in the snow cover. The resulting ratio image is classified into the areas with wet snow or without it according to the selected threshold value. The results are compared with the maps of snow cover derived from MODIS optical data and with data from meteorological stations of CHMI. The main aims of this work are to suggest most suitable conditions (time of the year, weather) for acquisition of reference images, to find the change of the threshold value with respect the chosen reference image and the type of land cover. The same methodology should then be applied on the radar data of shorter wavelength. The obtained results will be further used for improving the methodology of snow cover mapping from SAR data in the Czech Republic.