Glaciers are loosing mass and are in an imbalanced state almost everywhere in the world except for a few regions like Karakoram, Pamir etc. In spite of having less temperature fluctuations annually, the glaciers in the high Arctic are also melting rapidly. In one of the most populated areas of the world, these glaciers are important contributors to streamflow. Around 60 % of Svalbard's land area is covered by glaciers. Direct glaciological method has been used for calculating the glacial mass balance and surface ice velocity estimation of the Vestre Broggerbreen (VB) and Feiringbreen glaciers. Surface ice velocity is almost between 2 and 3 m/annum at most of the points. However, there are few points in VB where velocity is much higher than expectations (10-20 m/annum). Ground Penetrating Radar (GPR) survey has been performed to measure ice thickness. The average snow water equivalent (SWE) for the years 2014, 2015, and 2016 was 697.9±185 kg m-2, 603.4±162 kg m-2, and 376.8±172 kg m-2 over the VB respectively, while for the Feiringbreen it was 381.9±187 kg m-2in the year 2016.

Recent studies in the Hindu-Kush Karakorum Himalaya (HKH) region suggest that, the glaciers have lost a significant amount of mass and presently are in an imbalanced state. Here we present the long term annual and seasonal mass balances (MB) and meteorological conditions of Chhota Shigri glacier (“tier-2” type, representative glacier of the region) located in Lahaul and Spiti region, northern India. The glacier has lost mass between 2002 and 2016 (over last 14 years) with a cumulative glaciological MB of -7.72 m w.e. corresponding to a mean annual glacier-wide MB of -0.55 m w.e. a-1.The lower ablation part close to 4425 m a.s.l. (excluding debris-covered area) experienced the highest melting throughout the entire measurement period (since 2002) with cumulative value of ~50 m w.e. Melting at lowest part of the ablation zone is reduced by -1 to -2 m w.e. a-1 regardless of its altitude due to the “debris effect”, which protects the ice beneath the debris-cover from direct solar radiation and the atmosphere at the surface.