



Snow loads on defensive snow net systems

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Net systems are active safety devices that ensure the stability of the snow cover in avalanche starting zones. Snow load on snow nets is a complex system that is influenced by several factors. On the test site at “Hafelekar” at 2.254 m a. s. l. above Innsbruck (Tyrol, Austria) two different types of snow net systems have been equipped with gauges to measure the loading applied to the different components. In addition to the pressure forces on the posts and the tension forces in the anchors, in the base perimeter wires and the up- and downstream wires, also the continuous change of the net geometry during winter is recorded. This paper presents field instrumentation data of the two net systems, especially the snow load variation due to changing snow depth and snow density. The temporal variation of snow depth is recorded by means of a terrestrial laser ranging system. Two automatic weather stations are providing continuous measurements of wind, snow height and air temperature. Finally a summary of the static calculations according to the method proposed by Haefeli in 1954 and the Swiss Guidelines and a comparison between the calculated and the measured forces on the snow nets are given. The results depict that both registered pressure forces on the posts and tension forces in the anchors and up- and downstream wires are much lesser than those calculated according to Haefeli and the Swiss Guidelines.