



## Used of observed snow in the Snomod model

H.K. Sorteberg

Agder Energi AS, Serviceboks 635, Stoaveien 14, N-4809 Arendal, Norway (hilleborg@sorteberg.com)

For the hydroelectric industry in Norway, it is important to know exactly what resources are available at all times. The correct volume of snow reserves and the accurate forecasting of the spring flood volume can provide the best basis for maximising production values. The forward market can fluctuate considerably, and it is therefore important to know what is available at the right time. For many years, the Snomod model has been used to calculate snow reserves and to forecast the spring flood volume. Snomod is based on a regression equation between the annual observations of inflow and one or more precipitation series. Manual snow measurements are used in both Snomod and the HBV model and other models to estimate the correct snow reserves. In operational use, Snomod is updated manually with the snow estimate that is considered to be correct. Following the winter of 2007-2008, analyses were carried out to determine how accurate the forecasting was. The analyses were based on comparing the spring flood volume forecast with the observed spring flood volume using the 'observed precipitation' precipitation scenario. Such analyses can tell us something about the quality of the model results for this winter. Analyses have been carried out for 18 models using Snomod. When the results from the analyses are compared with the spring floods, the spring flood volume has been forecast accurately for most of the models with observed precipitation when observed snow has been used in the forecasting process. The results indicate that nine of the models are very good, five are good and two are reasonable. Only one model produced a poor forecast of the spring flood volume. If a corresponding analysis without correction for observed snow is carried out, and the observed spring flood is compared with the forecast spring flood, the results are not as good. This may stem from the fact that during the spring of 2008 there were higher levels of evaporation during the melting season than those used in the model, which in turn may have led to the model overestimating the spring flood volume. It is entirely clear that when observed snow is used in the models the results of the spring flood forecast for the winter of 2007-2008 within the requirements and are therefore good.