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Supplement of

On the assimilation of optical reflectances and snow depth observations into a detailed snowpack model

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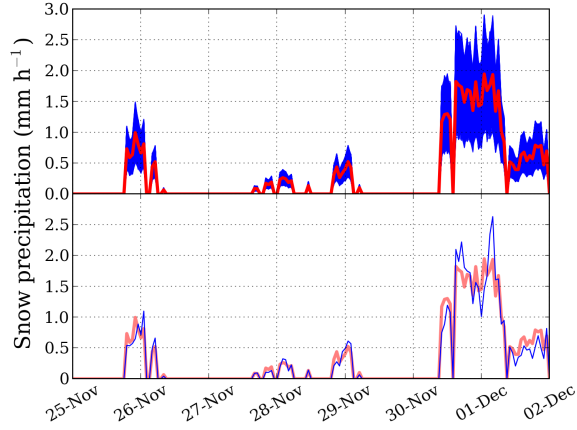


Figure S1: Snow precipitation rate at the CdP site over one week (25/11/2010 to 02/12/2010), from the unperturbed meteorological reanalysis (in red, both top and bottom), a single realization of the perturbed reanalysis (in blue, bottom), and the full ensemble of 300 perturbed analysis (in blue, top).

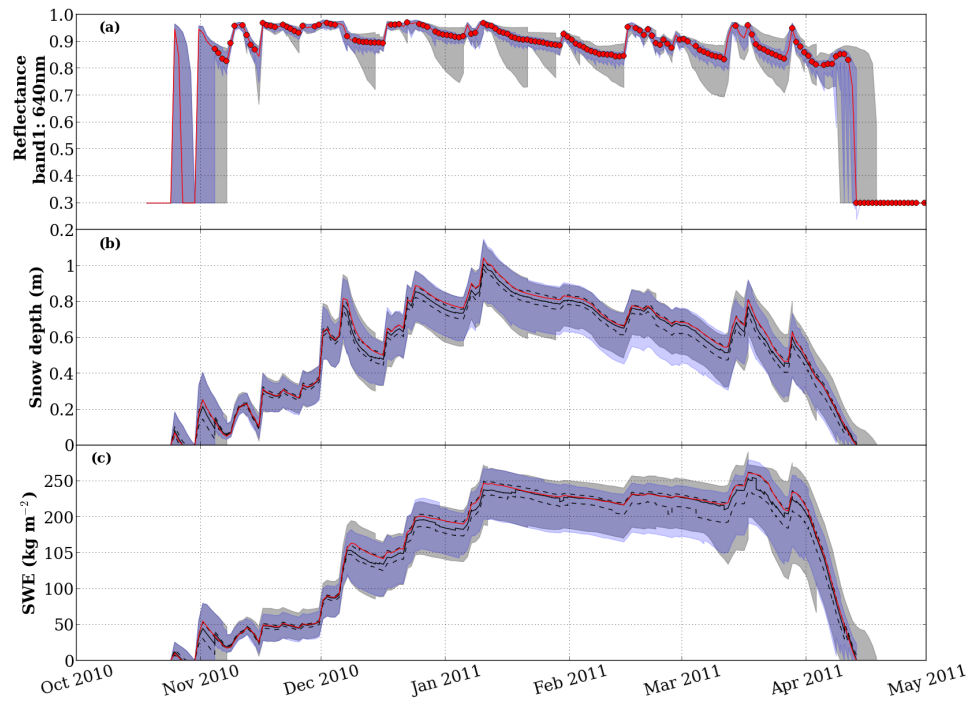


Figure S2: Same as Fig. 3, but without the 1240-nm reflectance (panel (b) of Fig. 3), and where the grey envelopes are from the baseline assimilation experiment and the blue envelopes represent the ensemble assimilating MODIS-like reflectances every day. The blue color is darker where both envelopes are superposed.

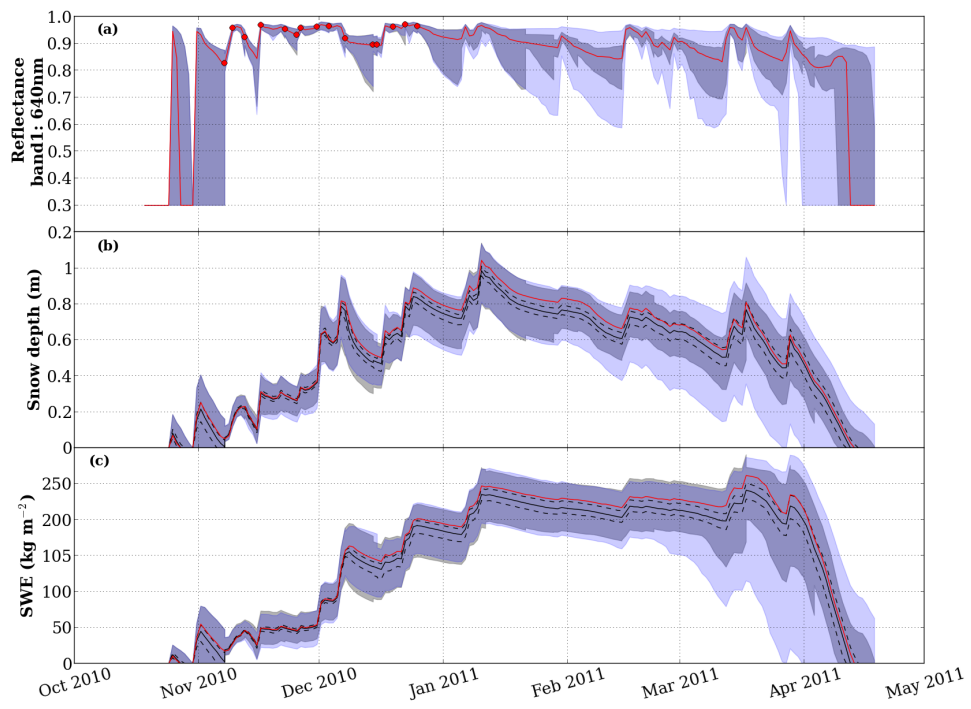


Figure S3: Same as Fig. S2 where the blue envelopes are from the experiment assimilating MODIS-like reflectances from October to December 2010 only.

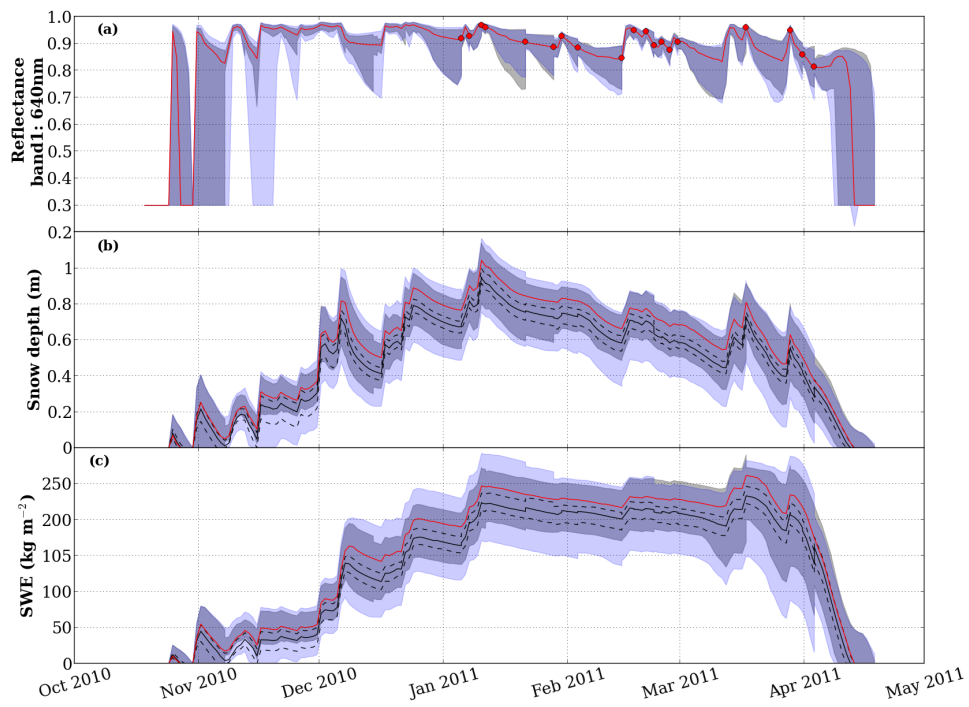


Figure S4: Same as Fig. S2 where the blue envelopes are from the experiment assimilating MODIS-like reflectances from January to April 2011 only.

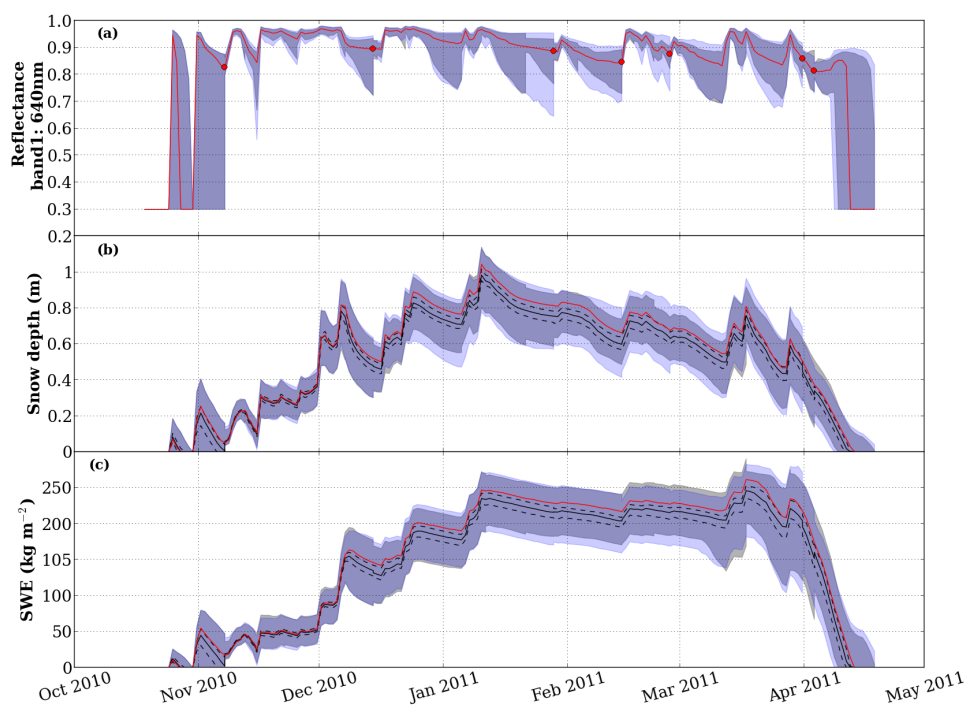


Figure S5: Same as Fig. S2 where the blue envelopes are from the experiment assimilating MODIS-like reflectances at 7 selected dates right after several day-long periods without precipitations and right before snowfalls.

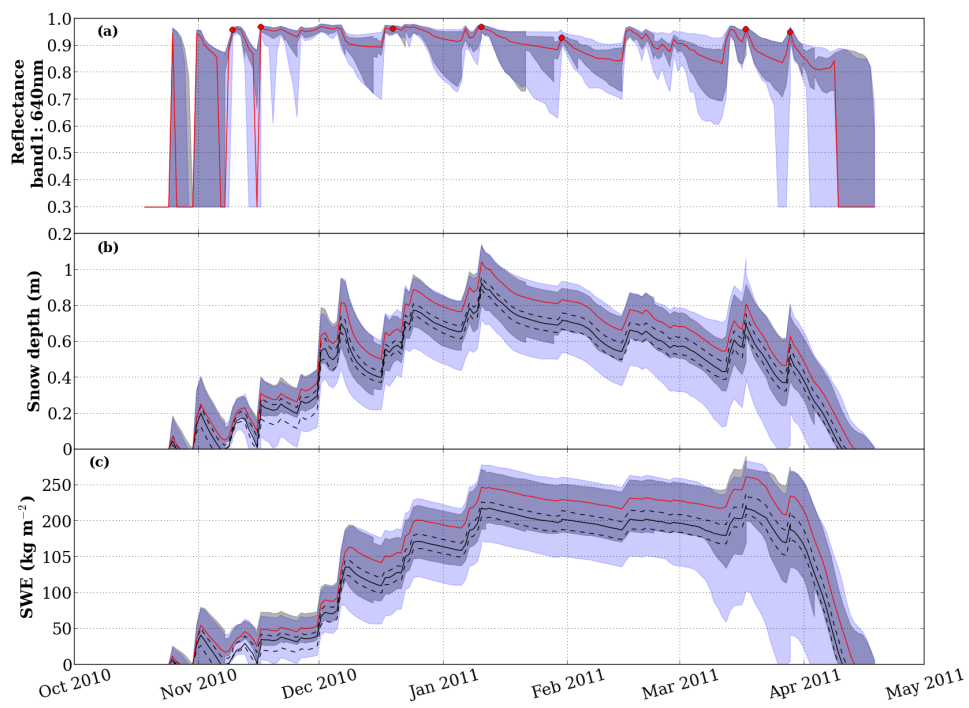


Figure S6: Same as Fig. S2 where the blue envelopes are from the experiment assimilating MODIS-like reflectances at 7 selected dates right after snowfall events.

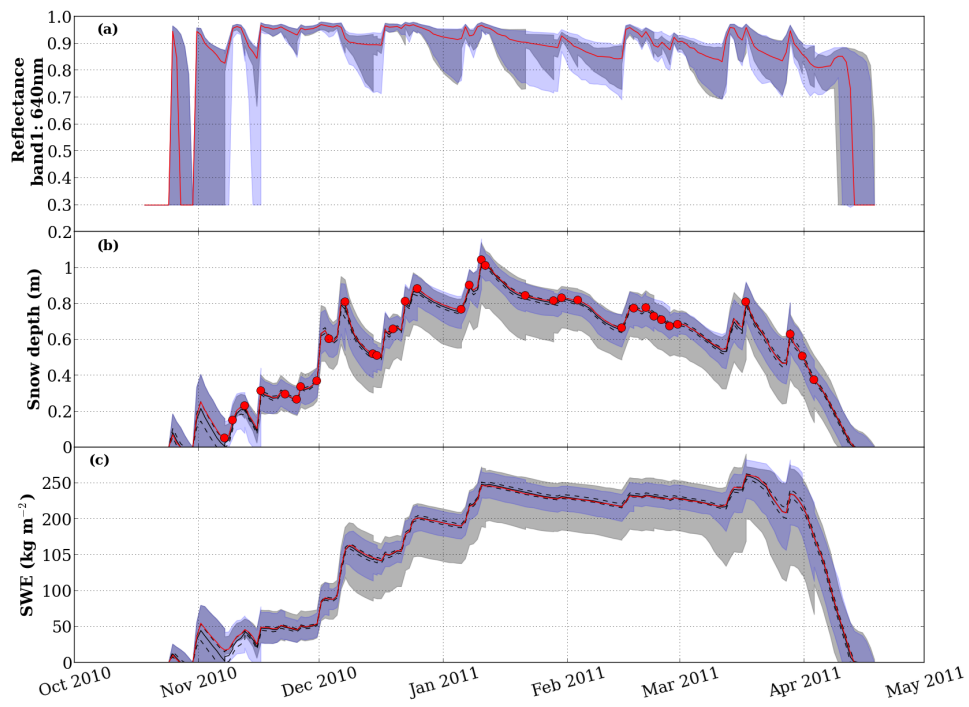


Figure S7: Same as Fig. S2 where the blue envelopes are from the experiment assimilating synthetic SD observations with the same time frequency as MODIS-like reflectances in the baseline experiment. On graph (b), the red dots show the assimilated SD observations.

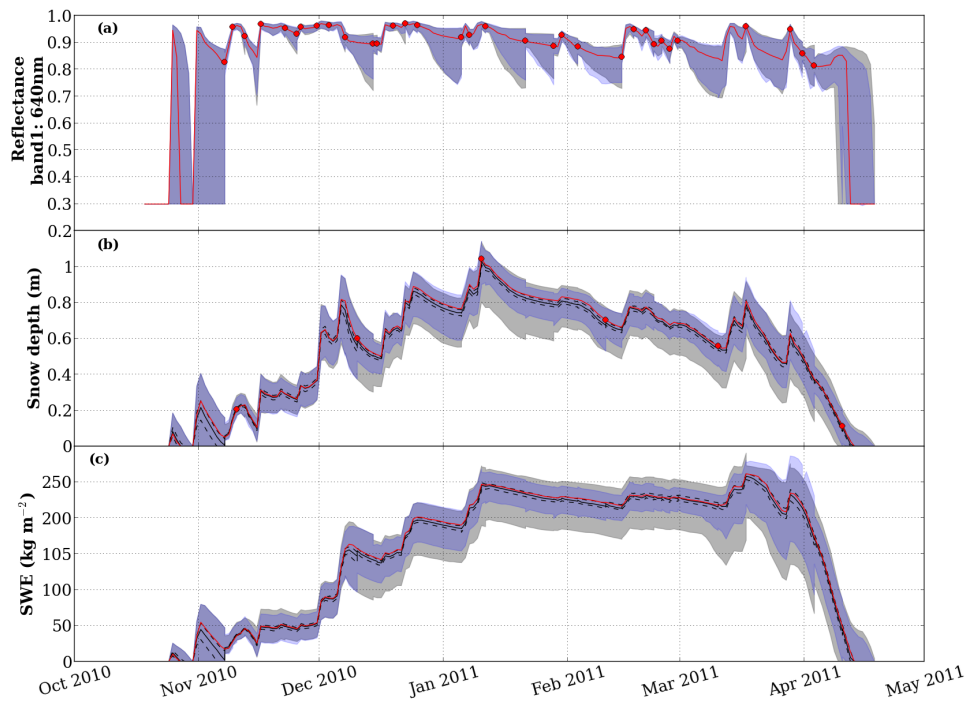


Figure S8: Same as Fig. S2 where the blue envelopes are from the experiment assimilating jointly synthetic MODIS-like reflectances and synthetic SD observations. The MODIS-like reflectances are assimilated with the same time frequency as MODIS-like reflectances in the baseline experiment while synthetic SD observations are assimilated the 10th of each months. On graph (a) and (b), the red dots show the assimilated MODIS-like reflectances and SD observations, respectively.