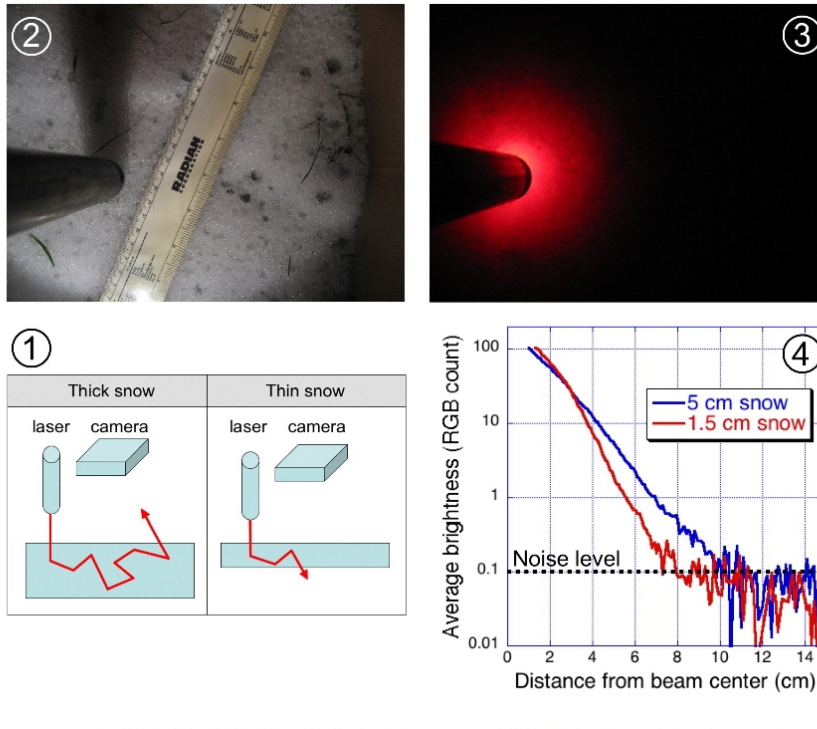


## Halo observations in snow



These images show the first demonstration of a new concept for airborne snow thickness measurements. Panel 1 illustrates that while in thick snow photons can travel far, in thin snow they often escape through the bottom and get absorbed by the ground. This difference allows one to infer snow thickness by measuring the size of the bright halo that forms around an illuminated spot. Panel 2 shows the view of a camera set up for ground-based demonstrations of this measurement concept. The black tube at left contains the light of a red laser pointer inside a small spot. The ruler provides scale but, of course, is not present at the time of actual halo observations. Panel 3 displays one of the first snow halo observations, from the night of December 5, 2007. It was taken over 5 cm deep fresh snow in Silver Spring, Maryland. The analysis of such images in Panel 4 confirms that indeed, the bright halo extends farther in thick snow. This result helps pave the way toward building a new lidar instrument for airborne snow thickness measurements. The new instrument could survey snow thickness over large areas and could even contribute to the validation of satellite-based snow measurements. For more information, see Várnai, T., and R. F. Cahalan, 2007: Potential for airborne offbeam lidar measurements of snow and sea ice thickness, *J. Geophys. Res.*, 112, C12S90, doi: 10.1029/2007JC004091.

Tamas Varnai