

Secondary cosmic-ray neutrons are strongly attenuated by water in either solid or liquid form, which suggests a method for measuring snow water equivalent that has several favorable characteristics. The cosmic-ray attenuation method is passive, portable, flexible and operates over an exceptionally wide range of snow pack thicknesses. Although highly promising observations were made as early as the 1960s, the technique is still unfamiliar to most snow hydrologists. Side-by-side measurements performed recently with a snow pillow and buried cosmic-ray probe suggests that the cosmic-ray attenuation technique merits consideration for a wide range of applications, including applications now performed with a snow pillow, and those that are problematic because of dense vegetation, rough terrain or a lack of vehicular access. During the snow-free season, a closely related technique can be used to monitor soil moisture.