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Isotopic fractionation during the uptake of molecular hydrogen by soil: some theoretical considerations

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We present a theoretical calculation of the fractionation factor during the uptake of molecular hydrogen by soil. It is based on an analytical expression for the deposition velocity that considers molecular diffusion through a dry top soil layer without H_2 removal into a deeper moist layer with enzymatic H_2 removal and H_2 production. The so derived fractionation factor depends on soil moisture and will be compared to existing field measurements on forest soil by Rice et al. 2011.