Buoyancy-driven flow in a peat moss layer as a mechanism for solute transport

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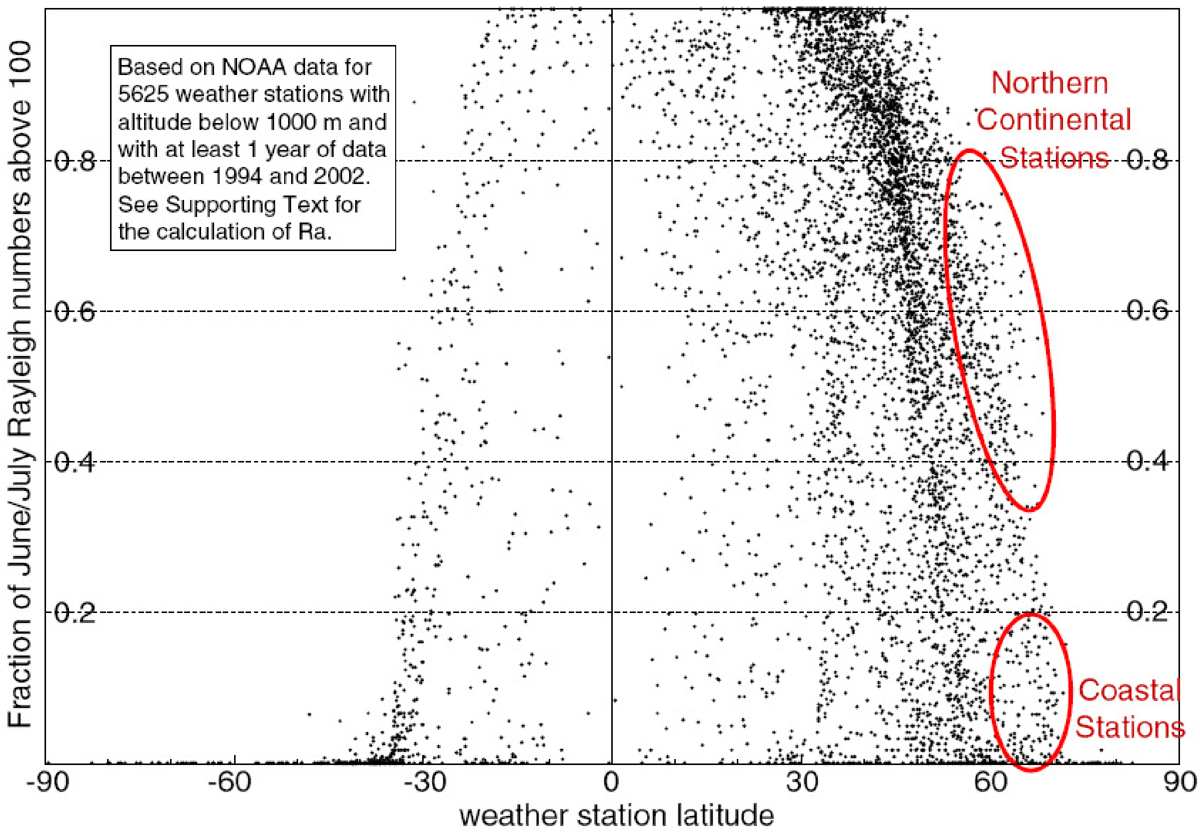
Movie 1. Animation of the simulated temperature distribution and fluid flow over a period of 4 d in a saturated peat moss layer of 15 cm using a square temperature wave at the surface and a Rayleigh number of 100. The temperatures are shown as a grey background (darker is colder). The fluid flow is visualized by means of notional "dust particles" that move with the fluid (from Fig. 4).

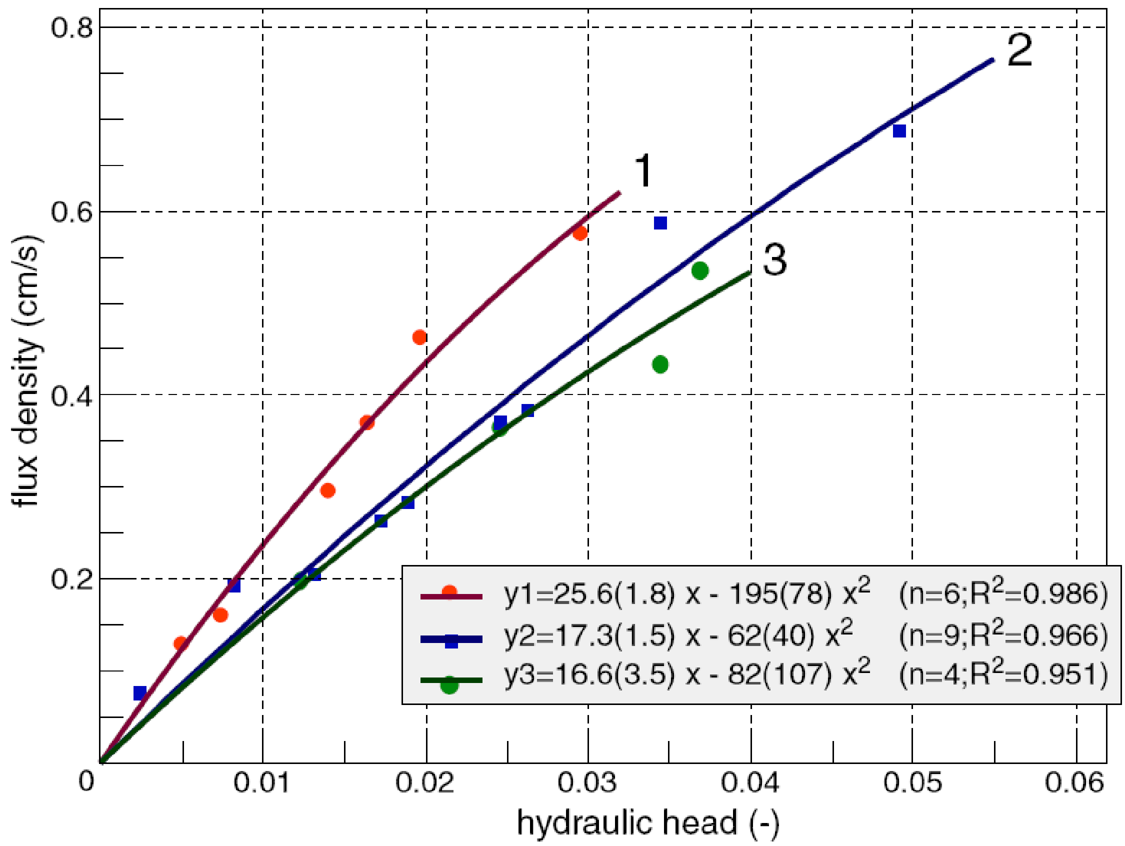
Movie 2. The same type of animation as in Movie 1, here with a sine wave at the surface and a Rayleigh number of 100.

Movie 3. The same type of animation as in Movie 1, here with a sine wave at the surface and a Rayleigh number of 50.



Supporting Figure 9

Fig. 9. The fraction of daily Rayleigh numbers in June and July above 100 as function of weather station latitude. Because the thermal expansion coefficient of water increases with temperature, the highest Rayleigh numbers occur in warm regions. Due to relatively large daily temperature differences, however, northern continental stations still show a significant proportion of large Rayleigh numbers. The Rayleigh numbers (Eq. 3) have been calculated from the daily maximum and minimum temperatures for 5,625 weather stations in the public data of the National Oceanic and Atmospheric Administration (ftp.ncdc.noaa.gov/pub/data/globalsod). Details on the calculation are provided in *Supporting Text*.



Supporting Figure 10

Fig. 10. The flux density as function of the hydraulic head measured for peat moss packed in a cylinder with a diameter of 9 cm (for details, see *Appendix A*).