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Reactive nitrogen (Nr) is a major plant nutrient which historically was in short supply in most semi-natural ecosystems. However, as a consequence of an increased use of N fertilisers and more intensive farming methods, atmospheric Nr -deposition and atmospheric ammonia (NH₃) concentrations have increased dramatically during the last century. This has a significant effect on semi-natural systems, with some sensitive species disappearing altogether in the vicinity of elevated atmospheric N input. Whether one form of nitrogen has more effect on vegetation changes than the other is less well studied. To get more evidence for this, a field experiment at an ombrotrophic bog, Whim (Scottish Borders). This globally unique experiment was set up in 2002 where different forms and doses of N have been applied systematically. Nitrogen was applied as ammonia (NH₃) gas to investigate effects of dry deposition and atmospheric concentrations along a gradient away from a free-air released fumigation line source. Wet deposition is added in the form of NH₄Cl and NaNO₃, respectively, using a rainwater collection and spraying system, at concentrations ranging from 8 to 56 kg N ha⁻¹ yr⁻¹. Both systems are automated and coupled to meteorological conditions.

Within the first three years, the vegetation composition in the dry deposition system changed dramatically with an almost complete loss of *Calluna vulgaris*, *Sphagnum capillifolium* and *Cladonia Portentosa* close to the fumigation line. Further away from the fumigation line the changes were smaller and slower to materialise. In later years the changes in vegetation composition were slowing down. Now, after 14 years of ammonia application, we are analysing the data along the whole transect, and are collating results on whether the vegetation composition is still changing or has stabilised.

In the wet deposition treatments, changes in vegetation composition during the early years were much smaller than in the dry deposition treatment, indicating only a slow decline in some key species as *Cladonia portentosa* and *Sphagnum capillifolium*. More recently we started to see more clearly some interesting changes in the vegetation composition which data are being analysed. We will report on the temporal trends in changes in vegetation composition after 14 years of treatments.