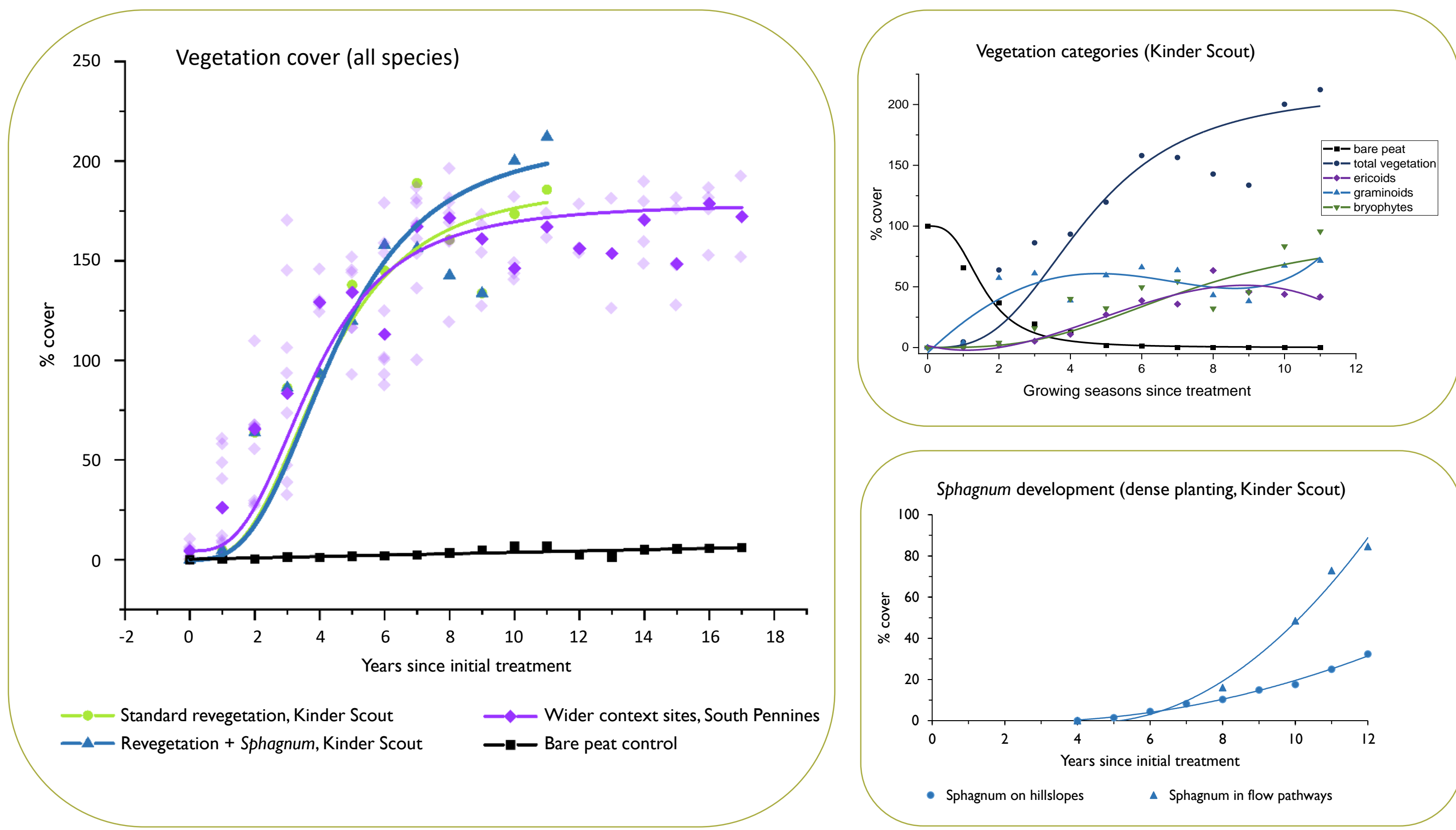


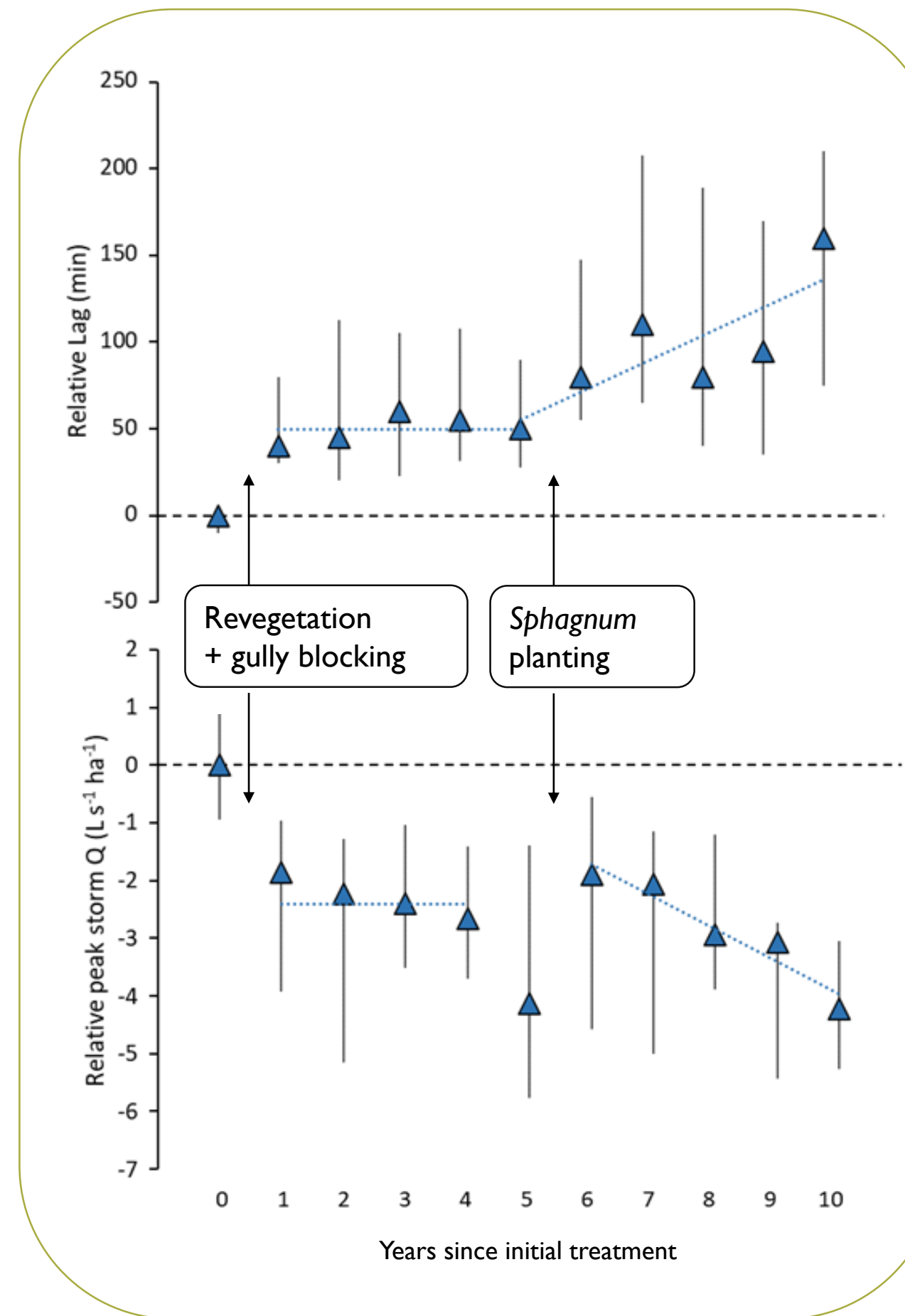
Trajectories of ecosystem change following restoration of heavily degraded blanket bog in the South Pennines SAC

Vegetation diversity



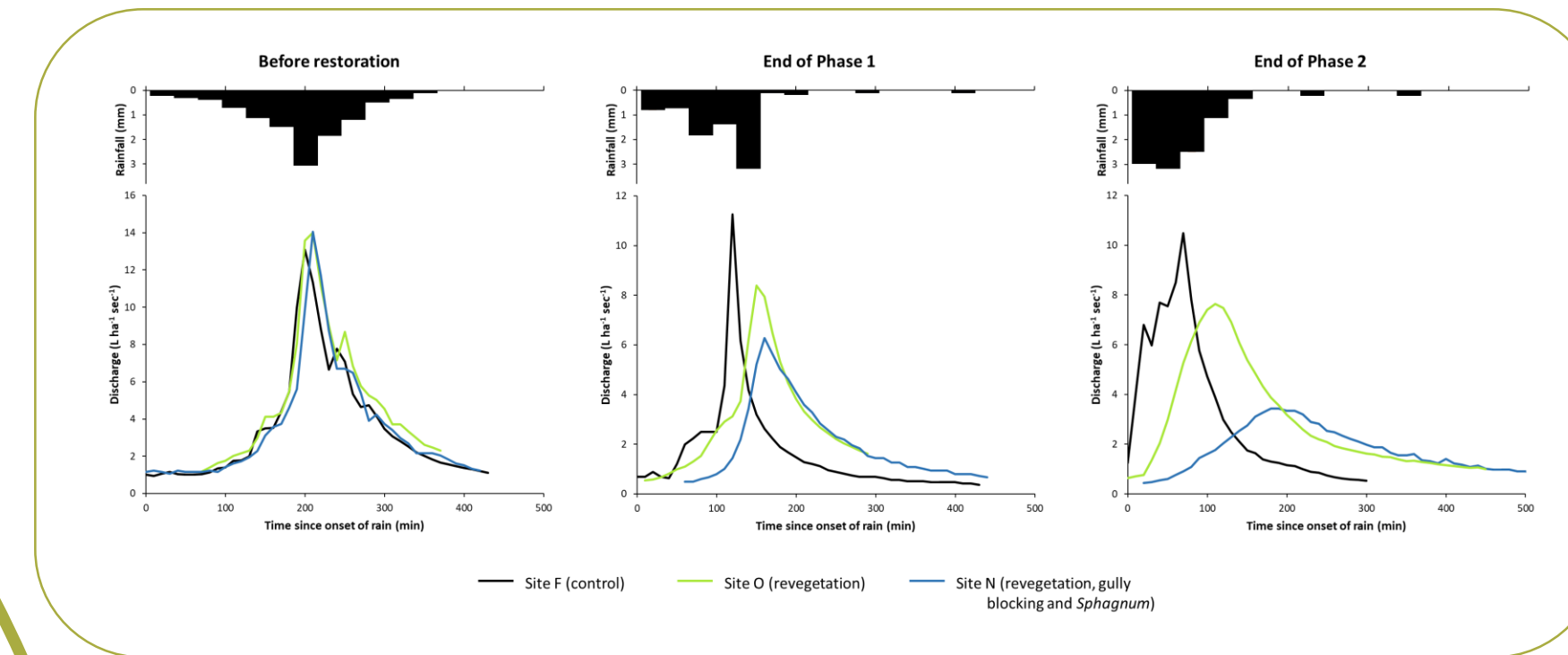
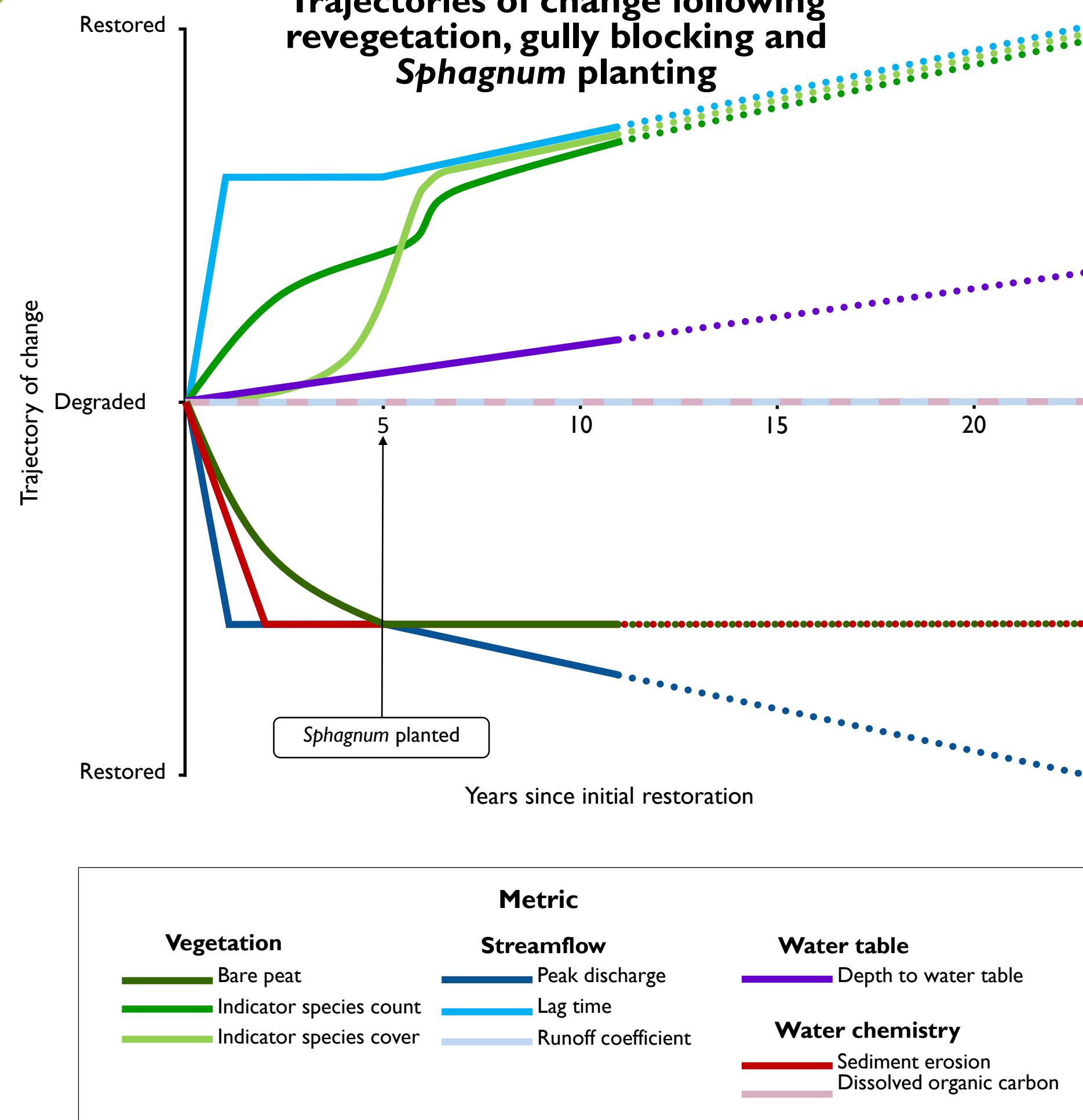
- Revegetation of bare peat is near-complete within 4 years of initial treatment, vegetation spread follows a 'dose response' S-curve shape
- Initial colonisation is dominated by 'nurse crop' graminoids
- Graminoids, ericoids and bryophytes have approximately equal cover from ~ 8 years after initial treatment
- *Sphagnum* spreads successfully in a range of topographic positions, covering ~30% of hillslopes and ~85% of flow pathways 8 years after dense planting

Natural Flood Management

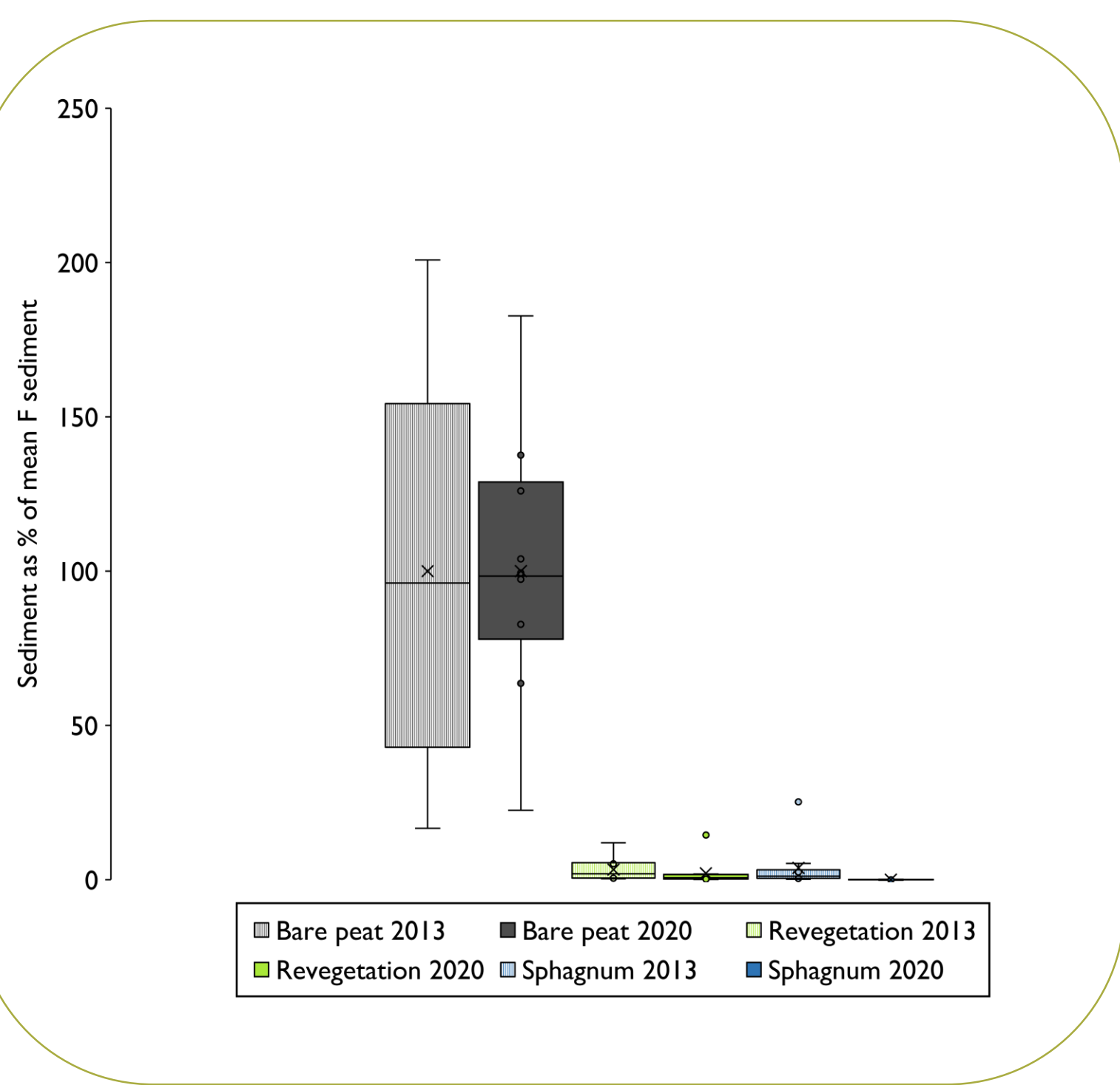


- Revegetation + gully blocking create step changes in peak flow reduction and lag time increase
- Planting *Sphagnum* initiates new trajectories extending these changes year on year
- *Sphagnum* growth on hillslopes and in flow pathways attenuates storm flow by increasing surface roughness and creating extensive dynamic storage
- 6 years after *Sphagnum* planting, peak Q_{rel} reduced by 65 percentage points (pp); lag time increased by 650 pp

Trajectories of change following revegetation, gully blocking and Sphagnum planting

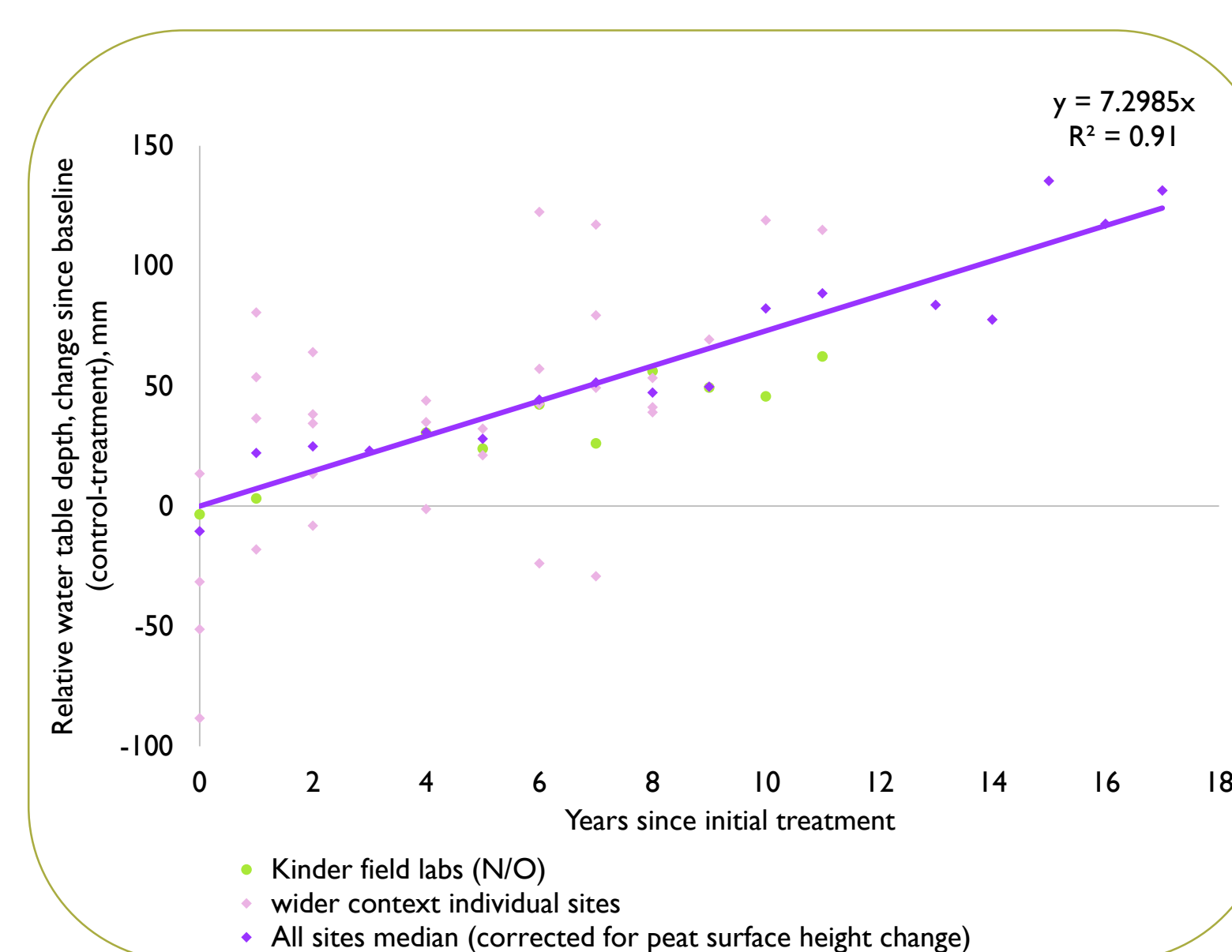


Sediment erosion and fluvial transport



- Sediment erosion and fluvial transport is reduced by >95% within 2 years of initial revegetation
- Any additional reductions in future years – or as a result of different treatments – are almost impossible to quantify as the initial reduction is so large

Water table



- Restoration of bare peat causes water tables to rise steadily at ~7mm yr⁻¹ for up to 17 years after initial treatment
- Long term trajectory remains linear
- Rate of rise determined more by topographic degradation than by treatment type
- Near-surface soil moisture is retained for longer in areas of dense *Sphagnum*

