

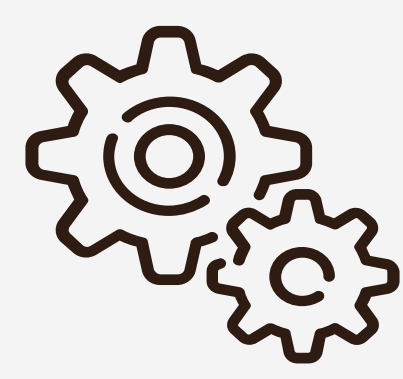
Disentangling climate change from air pollution effects on epiphytic bryophytes

V. Hutsemékers¹
 L. Mouton²
 H. Westenbohm²
 F. Collart³
 A. Vanderpoorten²

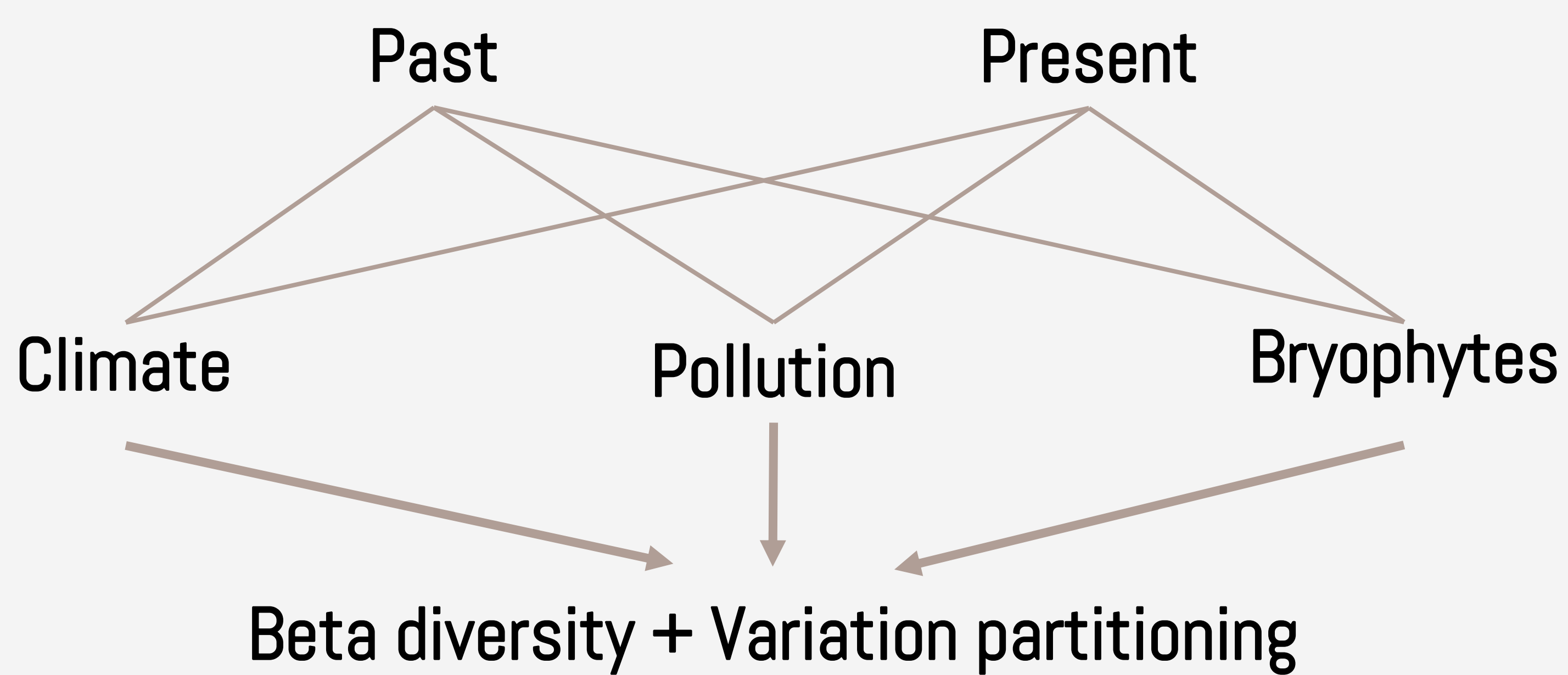


Introduction

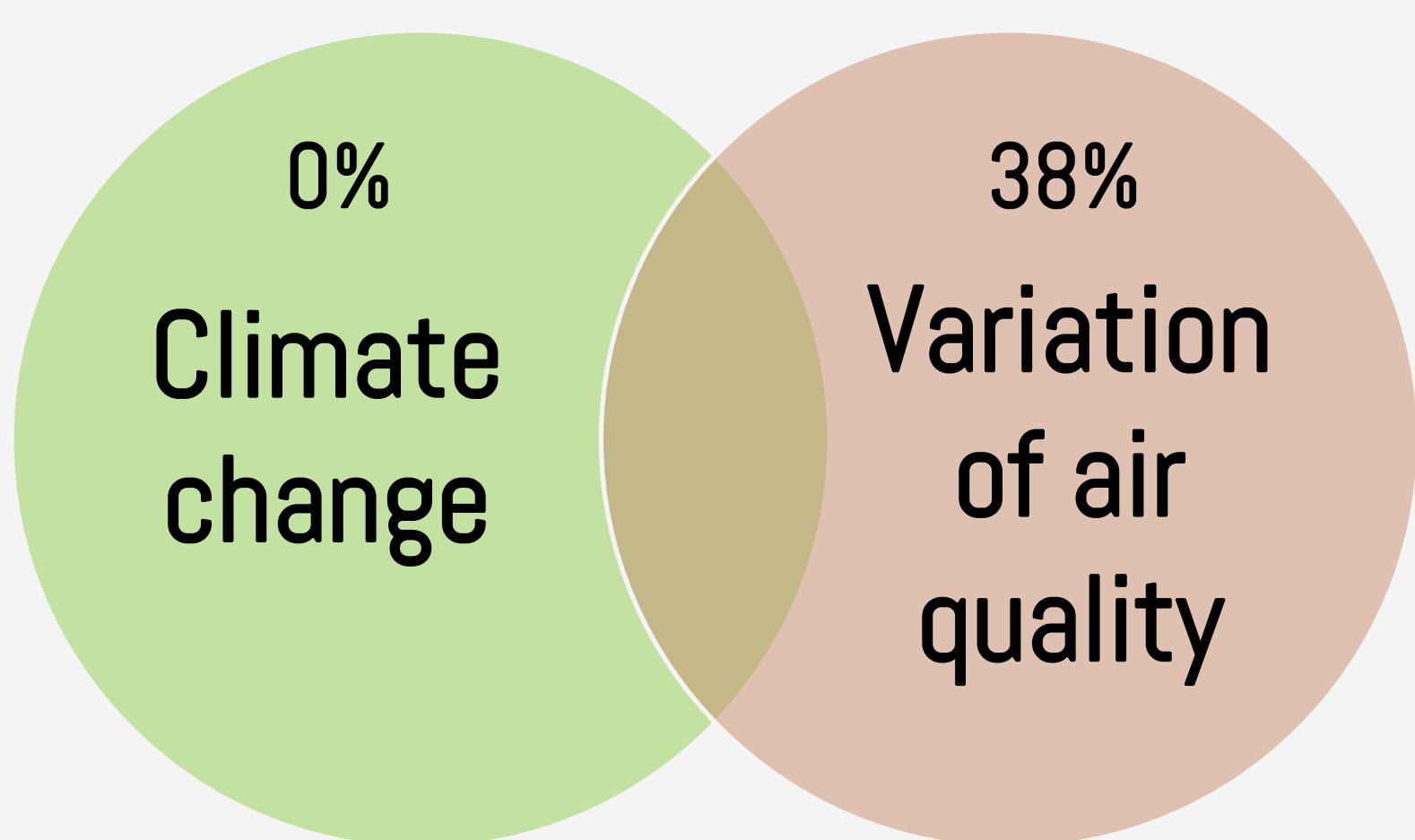
For few decades, a general change in **epiphytic flora** has been noticed among bryologists in Europe. In Belgium, this change in taxonomic composition and richness is concomitant with the improvement in **air quality** after the pollution peak of the industrial era in late 1980s. Epiphytic bryophytes are largely known as good **bioindicators** for air quality. However, disentangling the impact of air quality from **climate change**, that occurs in the meantime and also affects bryophytes flora, is a contemporary challenge.



Method

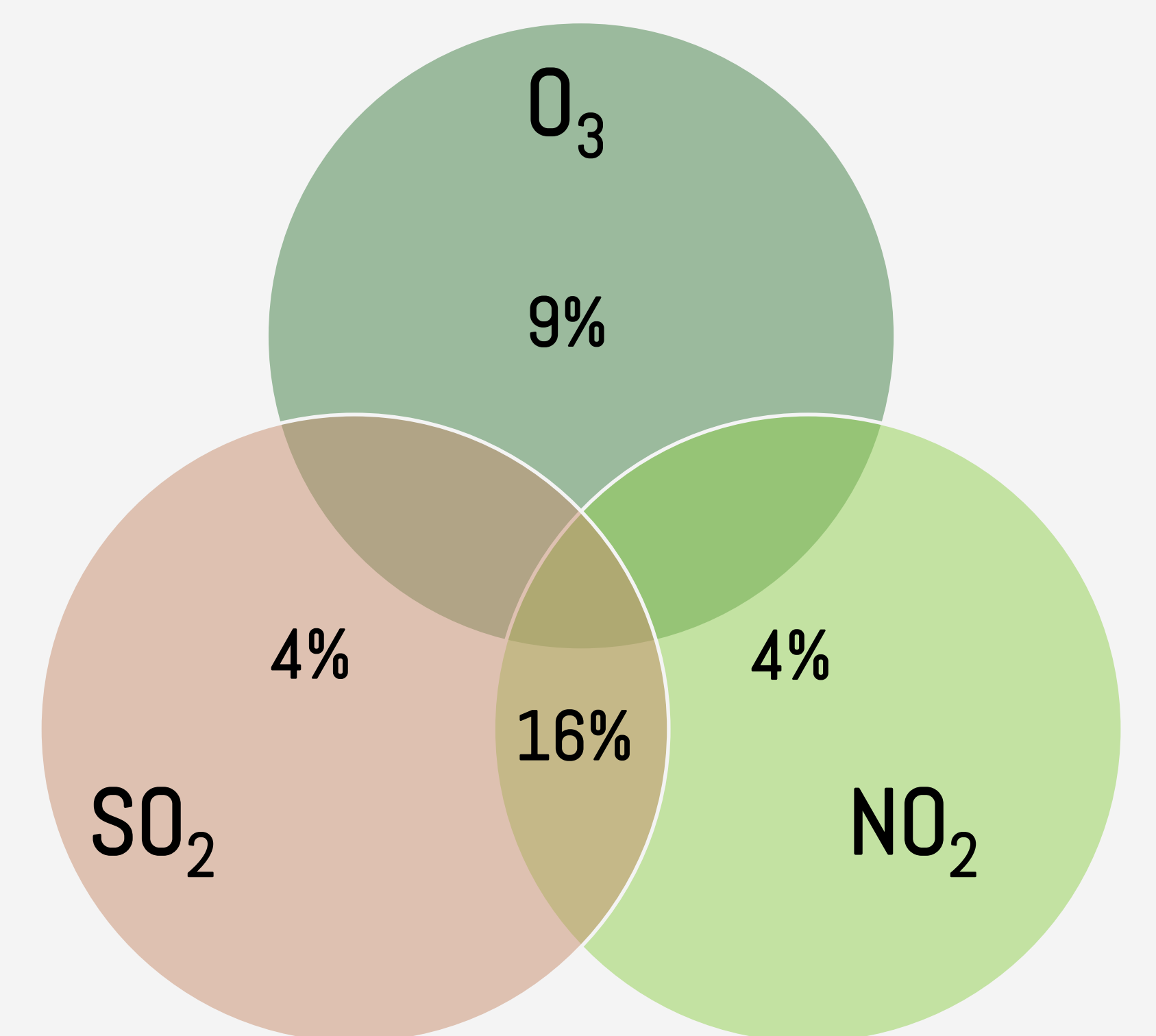


Results

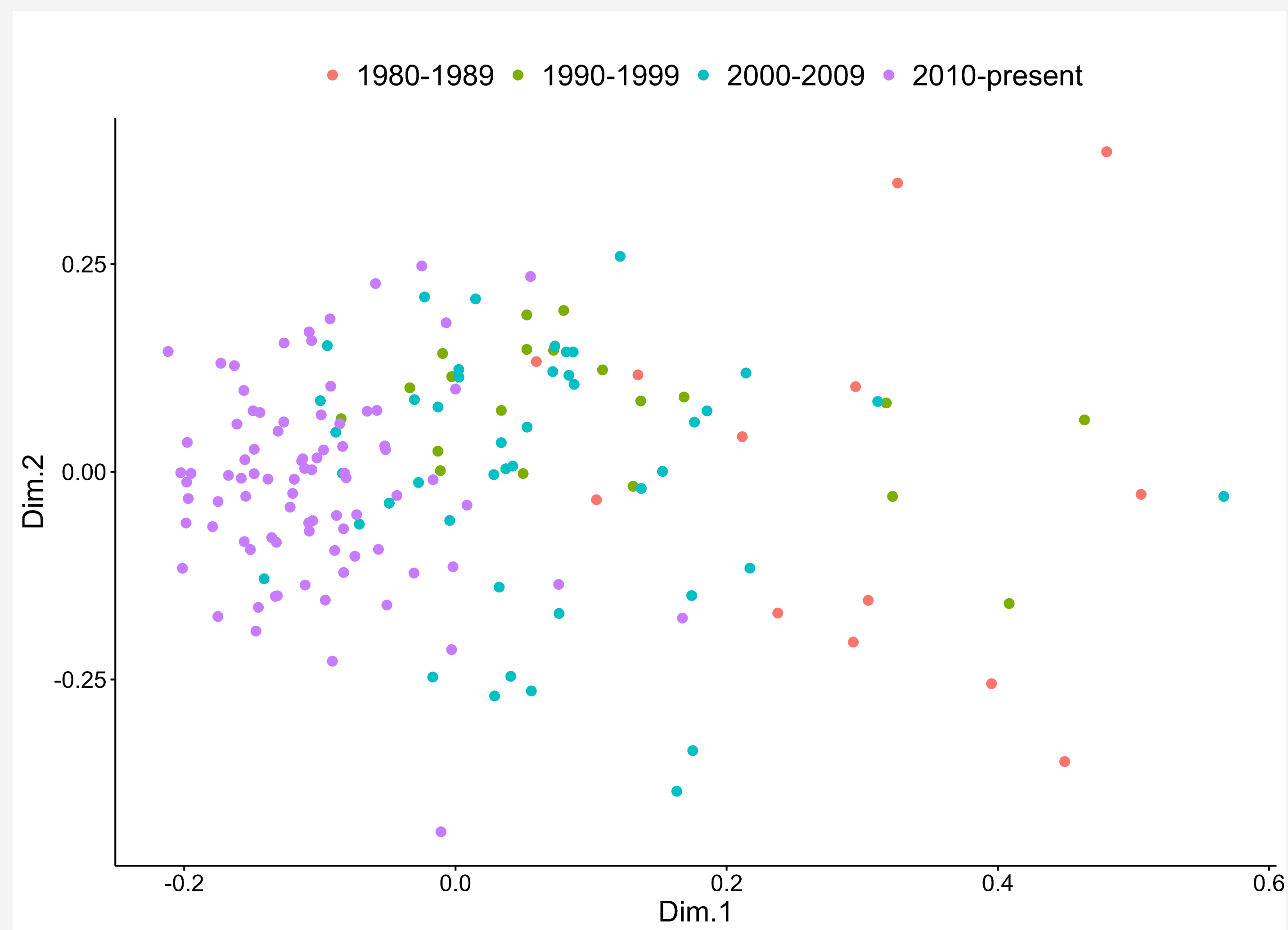


Variance percentage of epiphytic bryophyte richness explained by the temporal variation of climate (t° and precipitation) and air pollutants concentrations (SO₂, NO₂, O₃ combined).

Through time :
 increasing richness > change in taxonomic composition
 The increasing richness:
 with time > among sites



Variance percentage of epiphytic bryophyte richness explained by the temporal variation in air pollutants concentrations.



Conclusion

Epiphytic bryophyte communities experienced strong **increase of species richness** in the course of the past four decades, which is larger than their actual spatial patterns of variation. While global warming raises growing attention, our analyses revealed that the **temporal shifts** in epiphytic communities result mostly from variation of **air pollution loads**.

GlobChange Biol.2023;00:1-11.
 DOI: 10.1111/gcb.16736



Lea.mouton@uliege.be

¹ Belgian Interregional Environment Agency, Brussels

² University of Liège, Institute of Botany, Liège

³ Department of Ecology and Evolution, University of Lausanne, Switzerland