Space-time environmental associations in childhood type 1 diabetes. 
A case-control geographical approach in the Isis-Diab cohort.

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BACKGROUND
Type 1 diabetes (T1D) concordance in monozygotic twin pairs being ~40%, non-heritable factors play a major causal role in this autoimmune disease. T1D has recently increased in young European children. Collecting prospective environmental data in a cohort of millions children-years starting soon after birth seems unpracticable. Retrospective case-control studies are an alternative, if biased controls and recall bias can both be avoided.

OBJECTIVES
To develop a "virtual control" (VC) geographical approach to unravel environmental factors significantly associated with T1D.

RESULTS
The socioeconomic and land cover environment of T1D children was comparable to controls. The T1D children showed a greater past exposure to influenza (**) and acute diarrheas (*) and a lower past exposure to varicella (*). T1D children were more frequently exposed to heatwaves (**).

CONCLUSIONS
Our exploratory approach with 4 databases provides a proof-of-concept to space-time environment associations studies. Environmental markers (not causes) of T1D can be found. By using more databases, a larger part of a child’s environment can be covered.