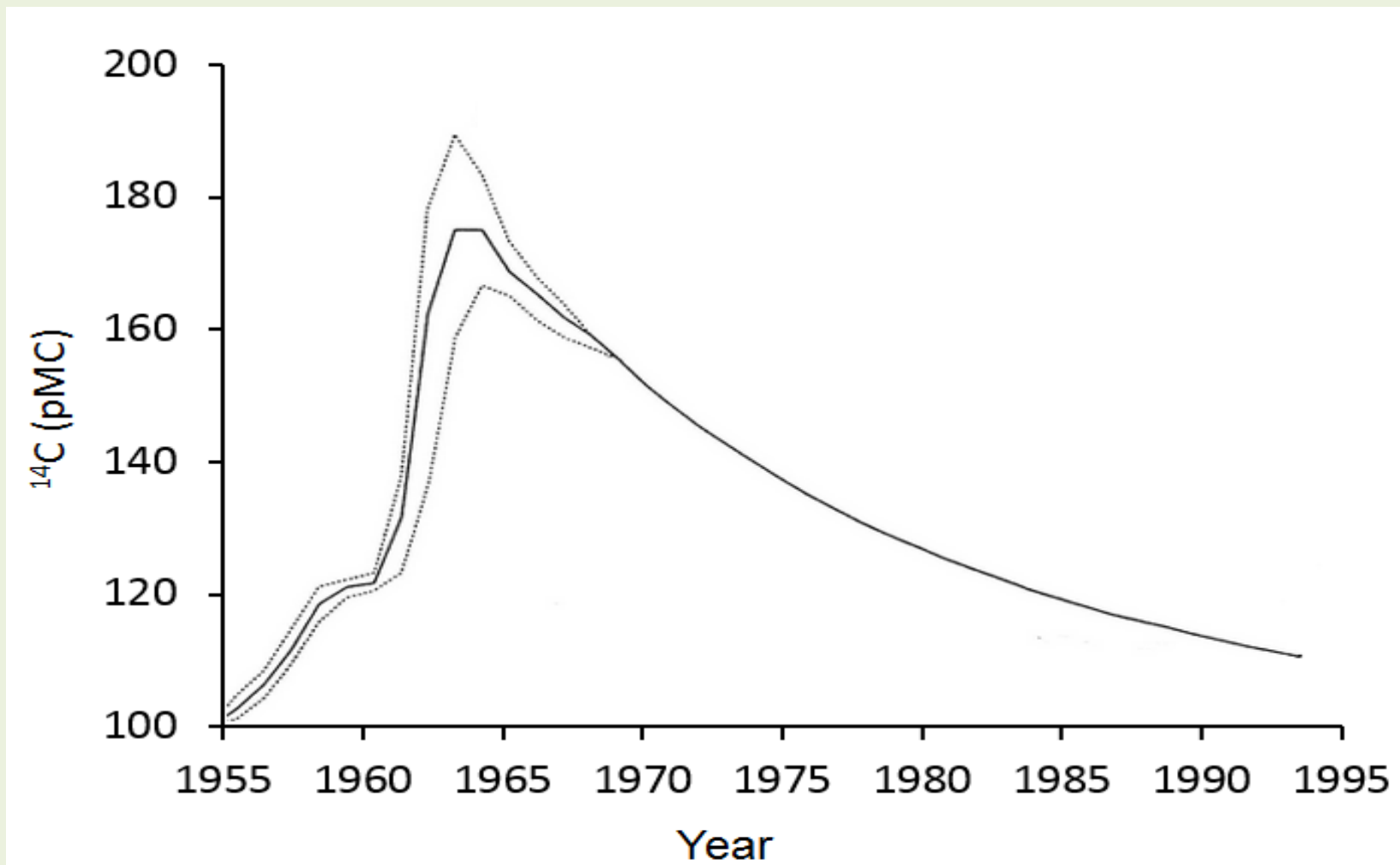


Key Questions:

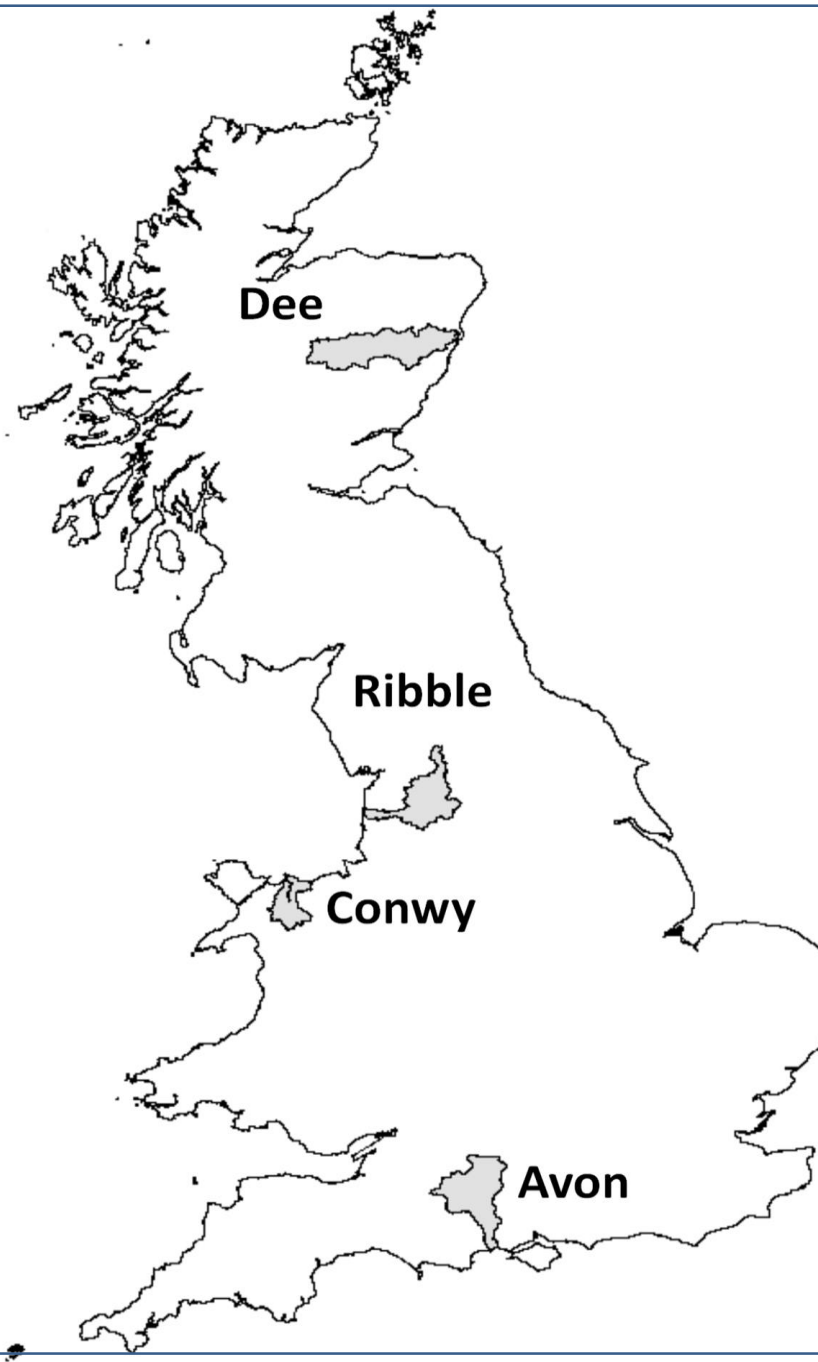
- What is the time elapsed between carbon fixation and release into the rivers?
- What are the dominant sources of POC in the catchments?
- How do these compare to global catchments?

Radiocarbon formed naturally gives the ability to measure ¹⁴C on the millennial timescale.

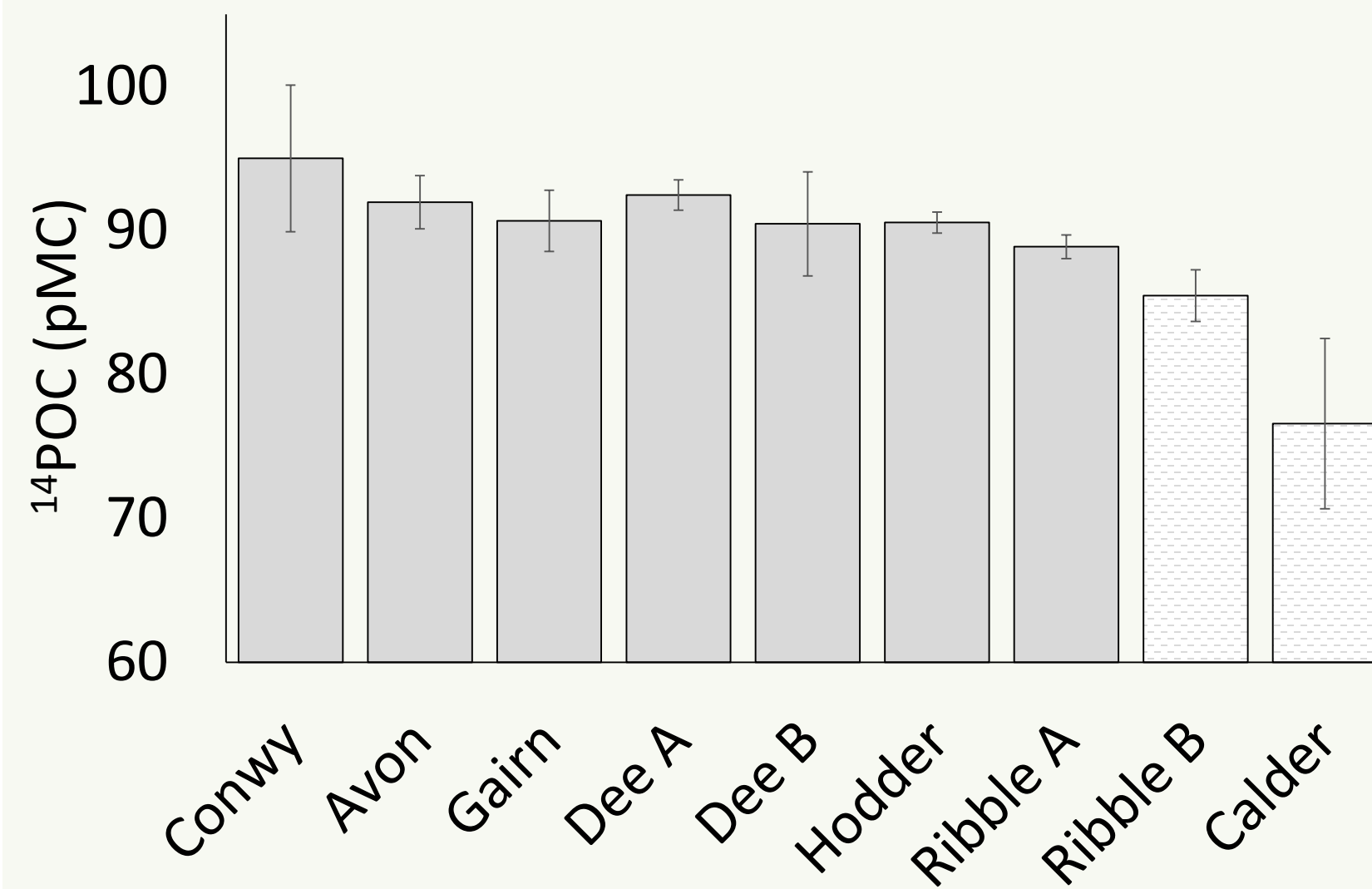
Atmospheric weapons testing created a **Bomb carbon** spike in ¹⁴C concentrations, giving the ability to measure radiocarbon on the decadal timescale.



- Large catchments.
- All mainly improved grassland & semi natural
- River Calder tributary in Ribble contains industrialised areas.
- Avon only area with mainly cultivated land
- Avon mainly lowland – little discharge variation
- Dee and Conwy catchments – extensive upland areas.

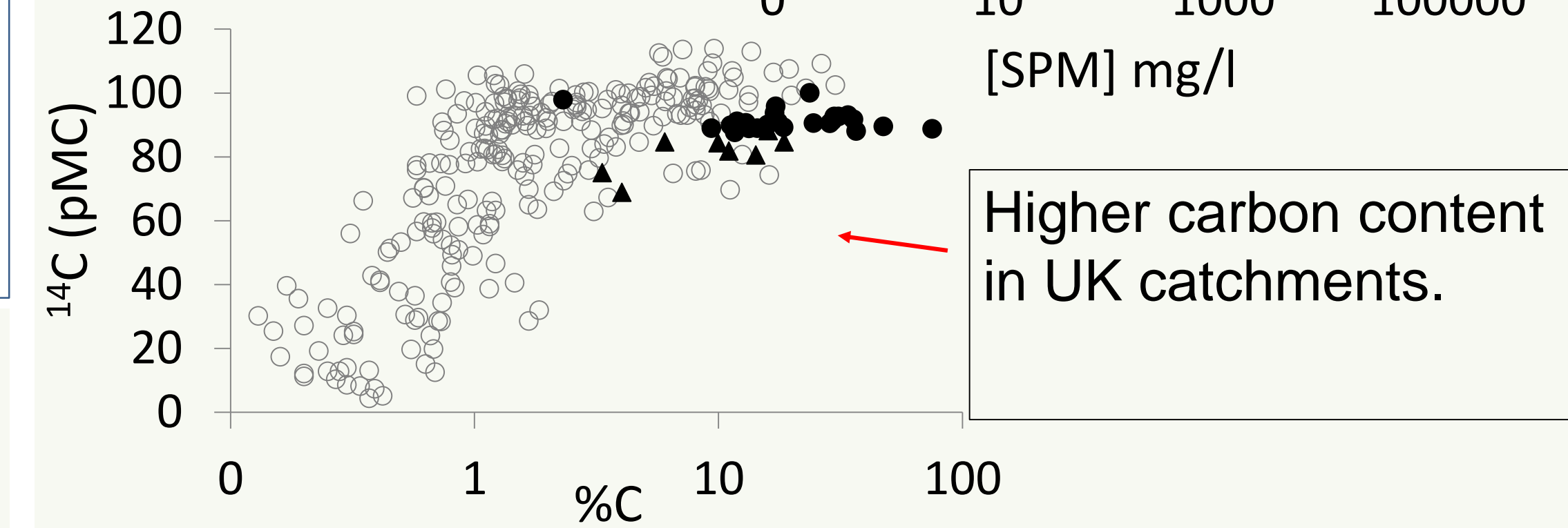
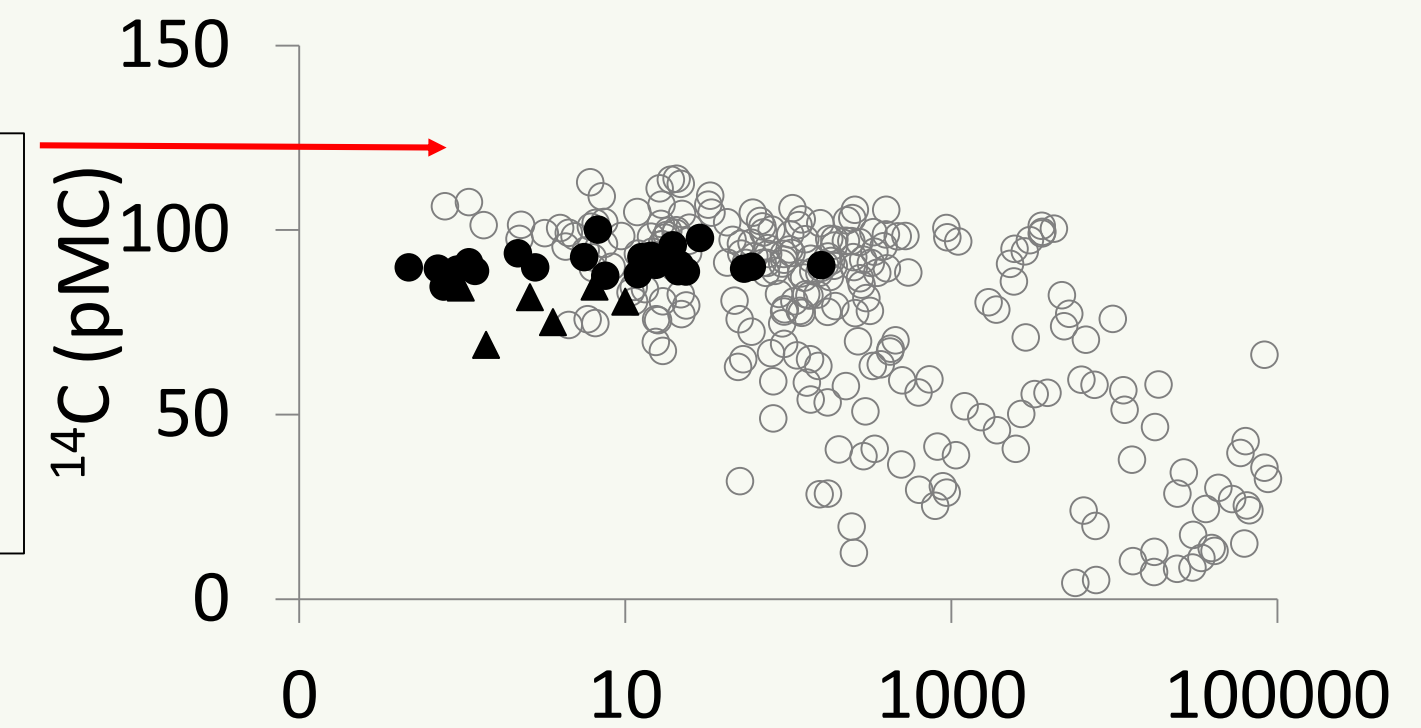


Results – All sites contain some depleted ¹⁴C



Global Context: Temperate, low erosion catchments are lacking. Focus is on large areas with high sediment export.

Suspended solid concentration lower in UK catchments, but ¹⁴C enriched.



Higher carbon content in UK catchments.

Conclusions:

- Depleted ¹⁴C: average across the catchments of 91.2pMC (681 years).
- River Calder significantly depleted ¹⁴C from industry.
- UK catchments fit within the general pattern of global data.
- Topsoil likely source, mixed with highly aged material from sub-surface erosion.