



European Thermometer Record: 1751-2000

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Europe is the only place on the earth with a relatively extensive historical thermometer-based temperature record. It extends back 250 years. Several years ago, Balling *et al.* examined European temperature records for 57 European stations. Some had temperature records of more than two and a half centuries duration. Those records revealed that Europe had in fact warmed during the period of industrialization. Oddly, however, all of the warming occurred between 1890 and 1950 and most of that during winter months. Furthermore, Balling *et al.* concluded that urban effects had inflated the warming signal from European cities.

Now that the records are available through January 2000, they've been updated to see if any warming has been identified in Europe. As seen in *Figure 1*, Europe has warmed 0.58°C over the past 250 years but, still, the warming is largely confined to the winter. Europe cooled slightly from 1751 to 1890. The continent then warmed significantly from 1891 until the mid-1930s. Since then (mid-1930s to January 2000), no temperature trend appears.

Three important lessons can be gleaned from the record:

- (1) There has been no warming in Europe during the past 65 years.
- (2) Despite the effects of urbanization and the recovery from the Little Ice Age, Europe warmed only 0.58°C over the past 250 years, with all of the warming taking place between 1890 and the mid-1930s.
- (3) The observed warming occurred in the winter.

Finally, the European warm-up between 1890 and the mid-1930s occurred at the same time as the sun's output increased from 1365.5 Wm² (Watts per meter squared) to 1366.5 Wm². In many respects, the European temperatures seem to be driven by solar output more than by any buildup of greenhouse gases.

The 250-year temperature history of Europe leaves us asking, "Where's the greenhouse signal?"

References

Balling, R.C., Jr., R.S. Vose, and G.-R. Weber, 1998: Analysis of long-term European temperature records: 1751-1995. *Climate Research*, **10**, 193-200.

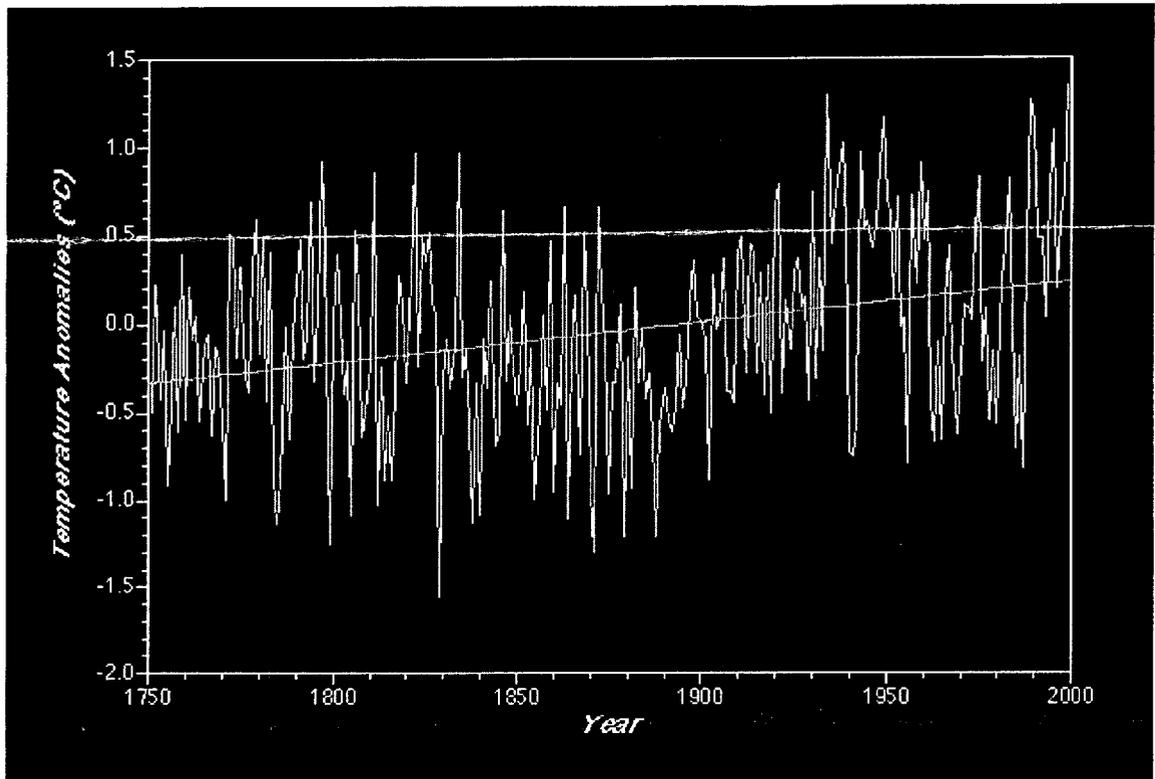


Figure 1. Annual temperature anomalies (°C) for Europe, 1751-1999.