On Climate Changes Brought About by Urban Living

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Urbanization

Concrete surface

Clusters of buildings

Energy consumption

Emissions

Climate Changes

Temperature

Wind

State of the sky

Evaporation

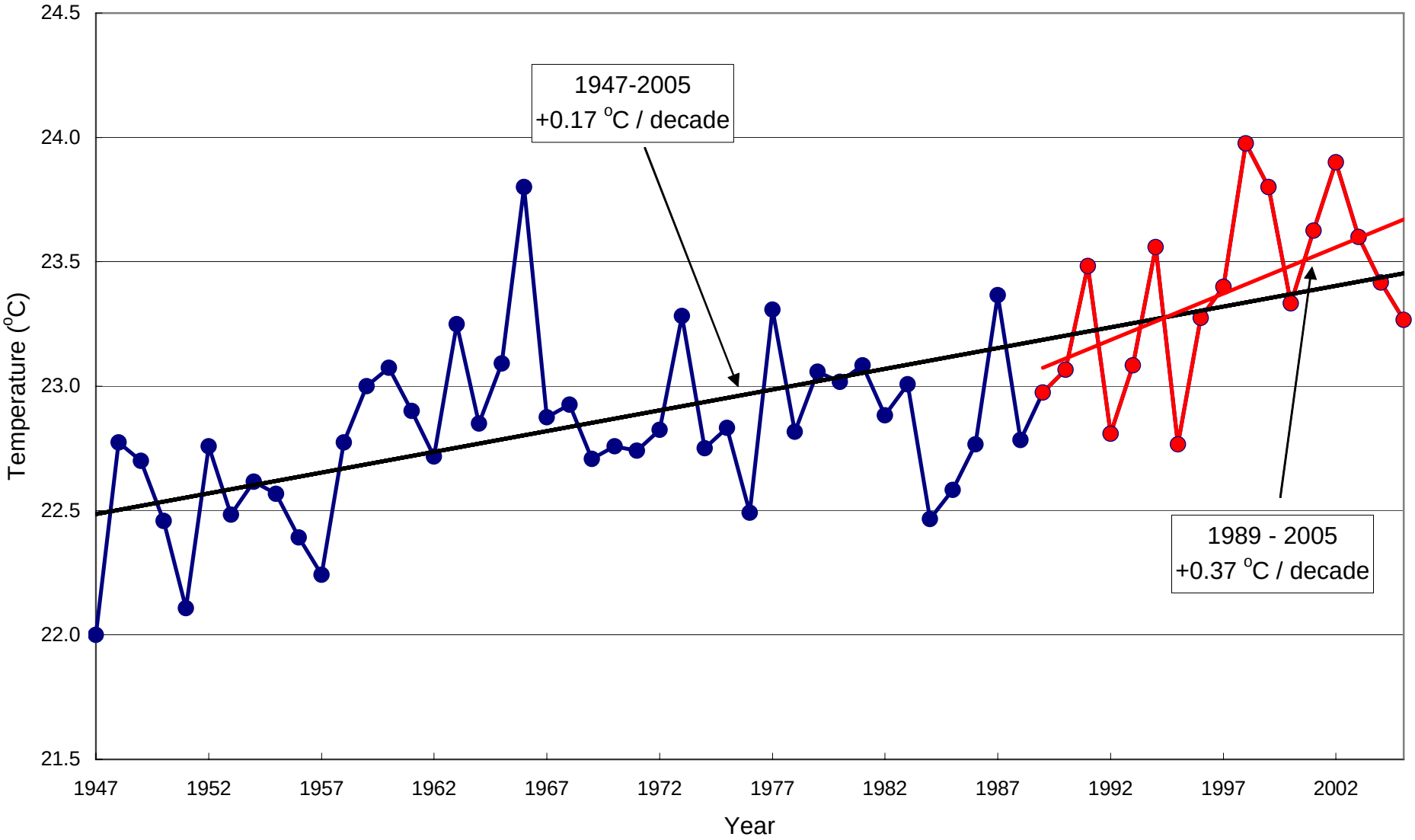

Fig.1 Annual mean temperature recorded at the Hong Kong Observatory Headquarters (1947-2005)

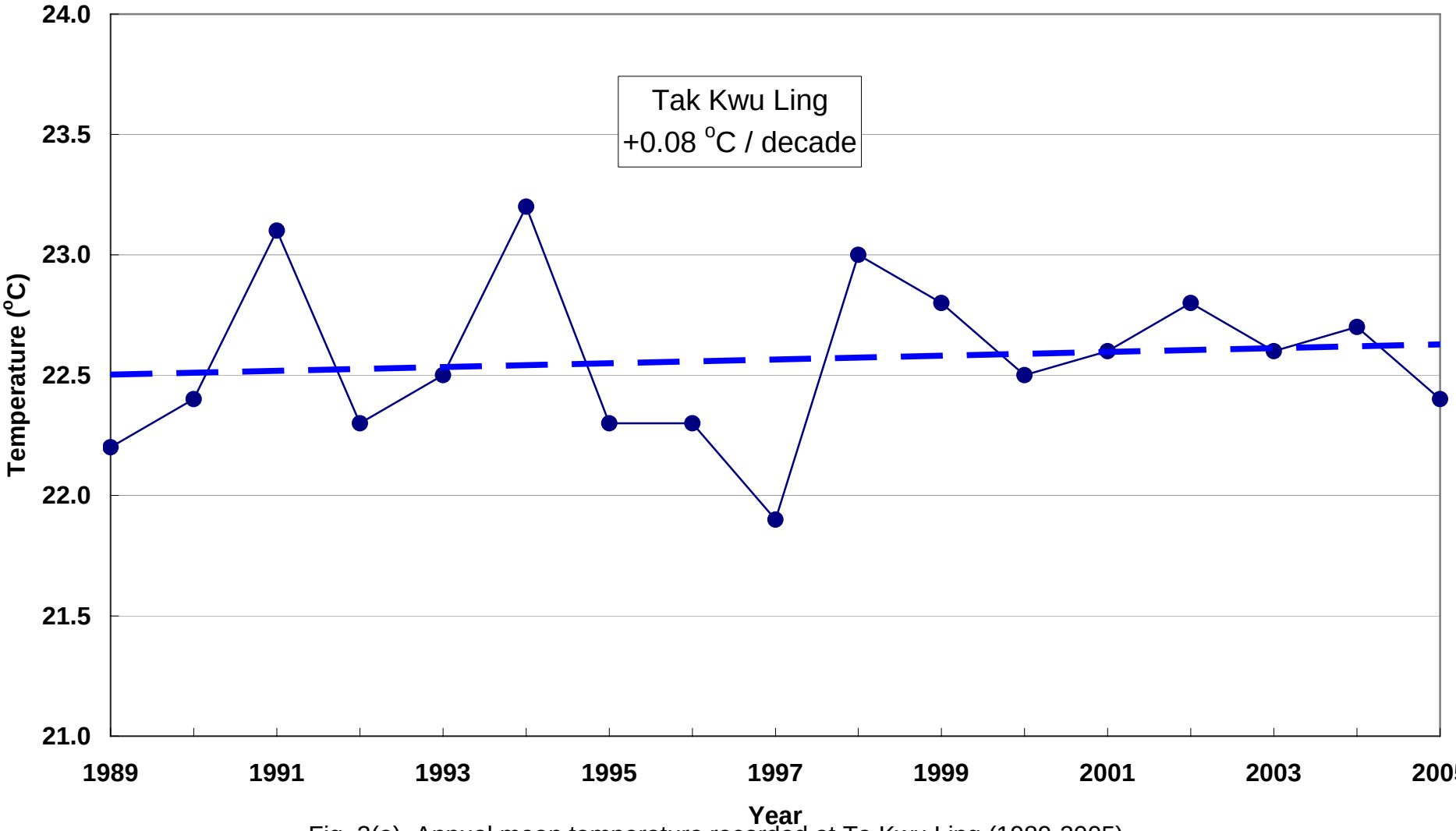

Fig. 2(a) Annual mean temperature recorded at Ta Kwu Ling (1989-2005)

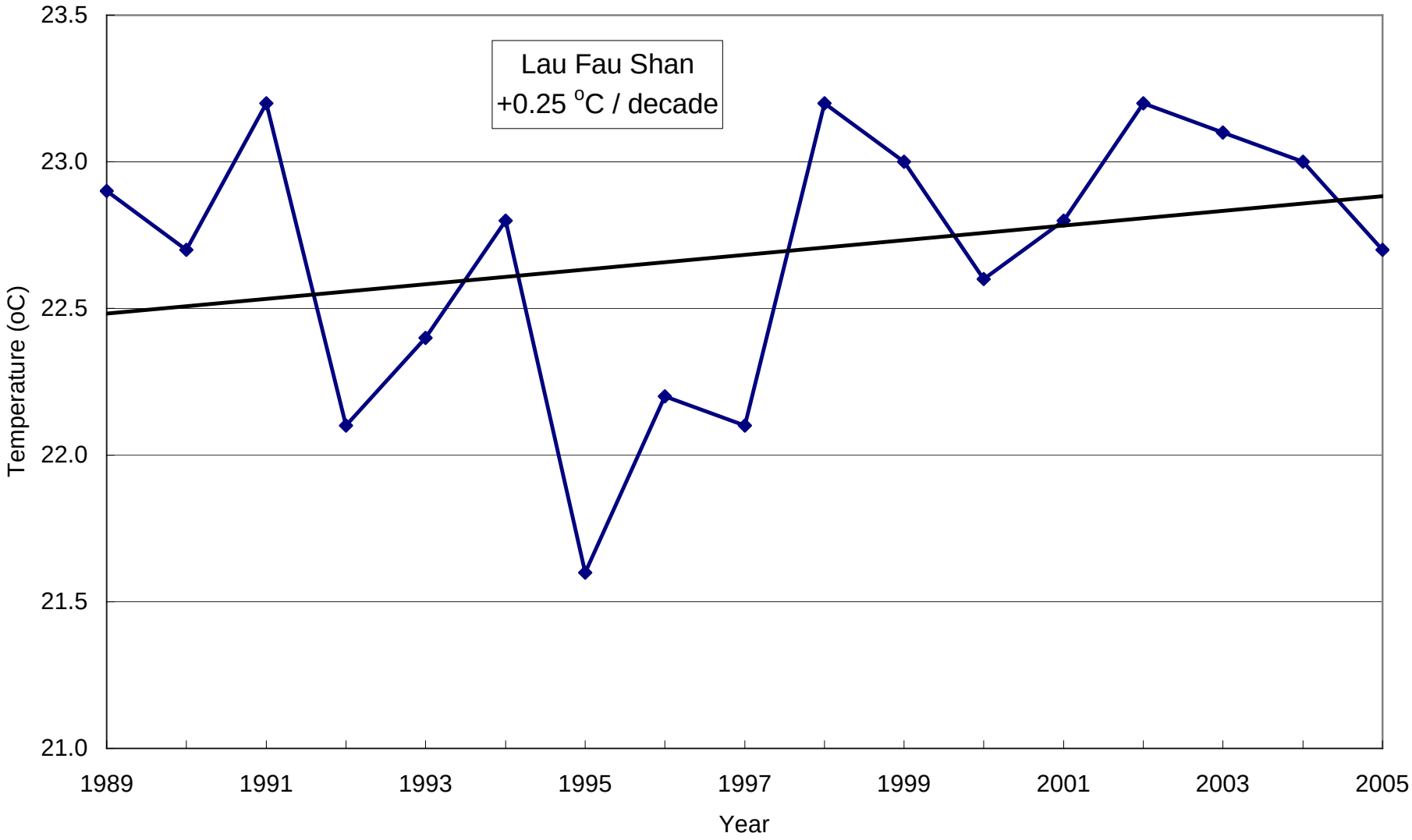

Fig. 2(b) Annual mean temperature recorded at Lau Fau Shan (1989-2005)

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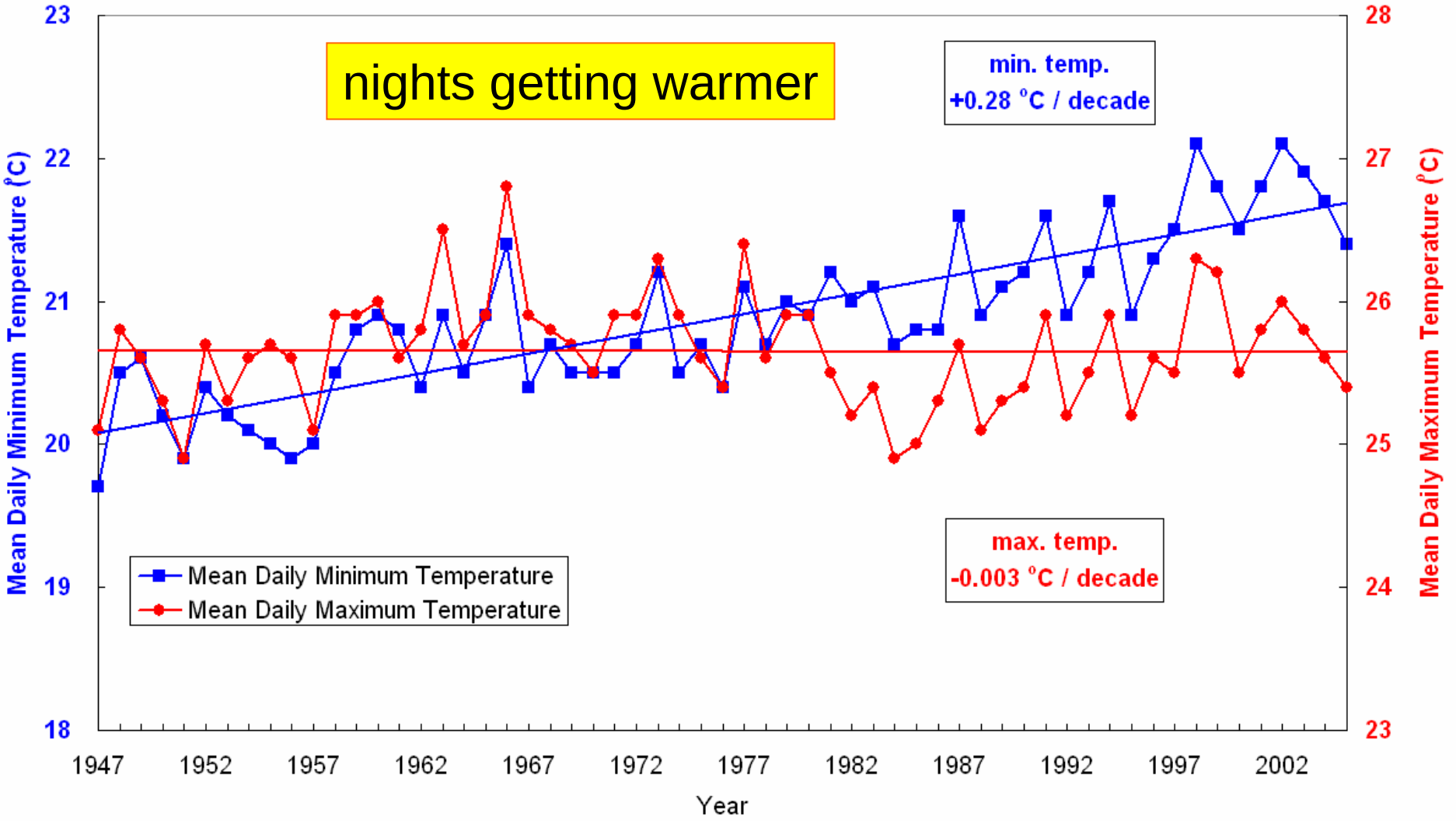

Fig. 3 Mean daily maximum (red) and mean daily minimum (blue) temperature of Hong Kong Observatory Headquarters (1947-2005)

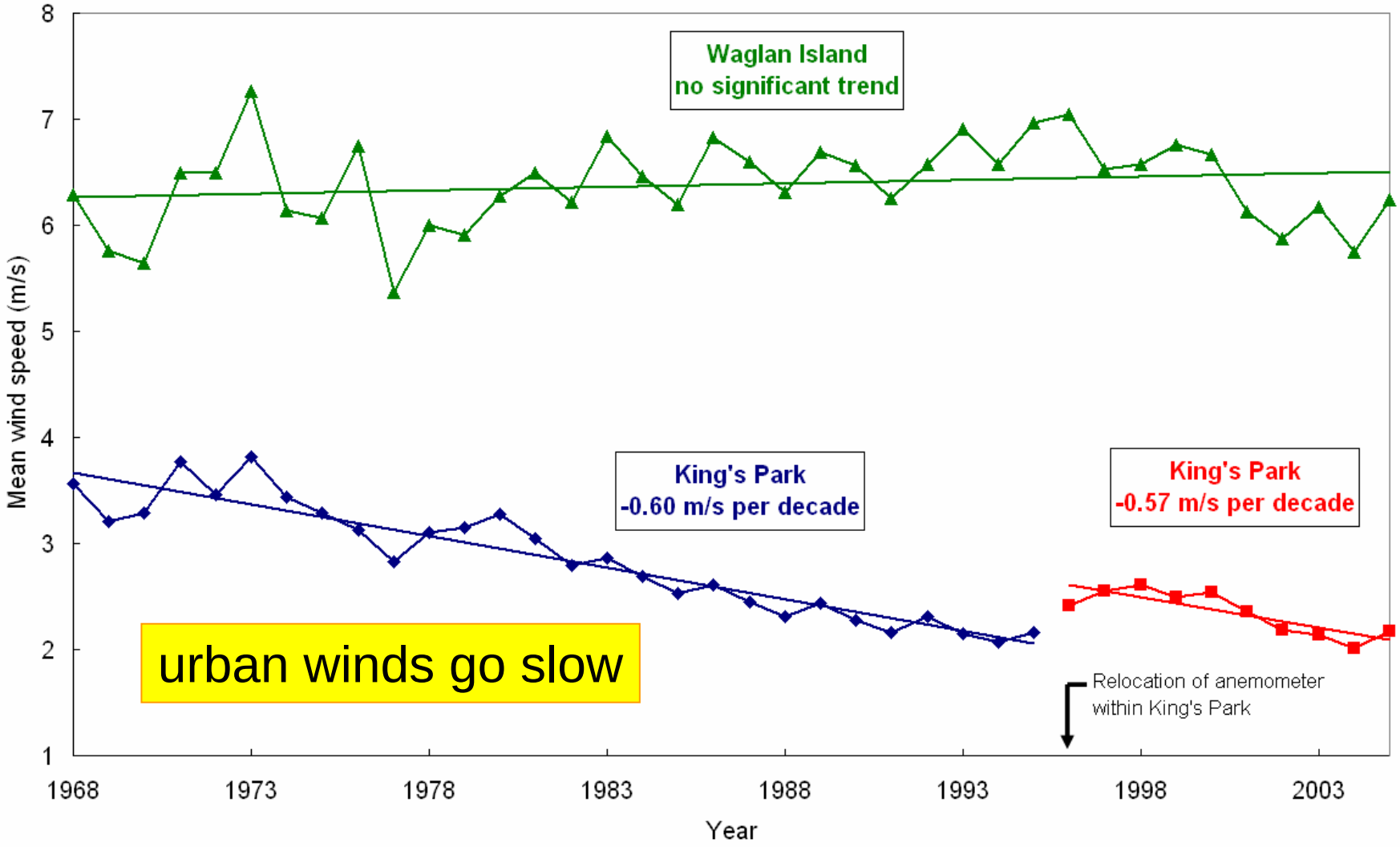

Fig. 4 Annual average of 12-hourly 10-minute mean wind speed of King's Park and Waglan Island (1968-2005)

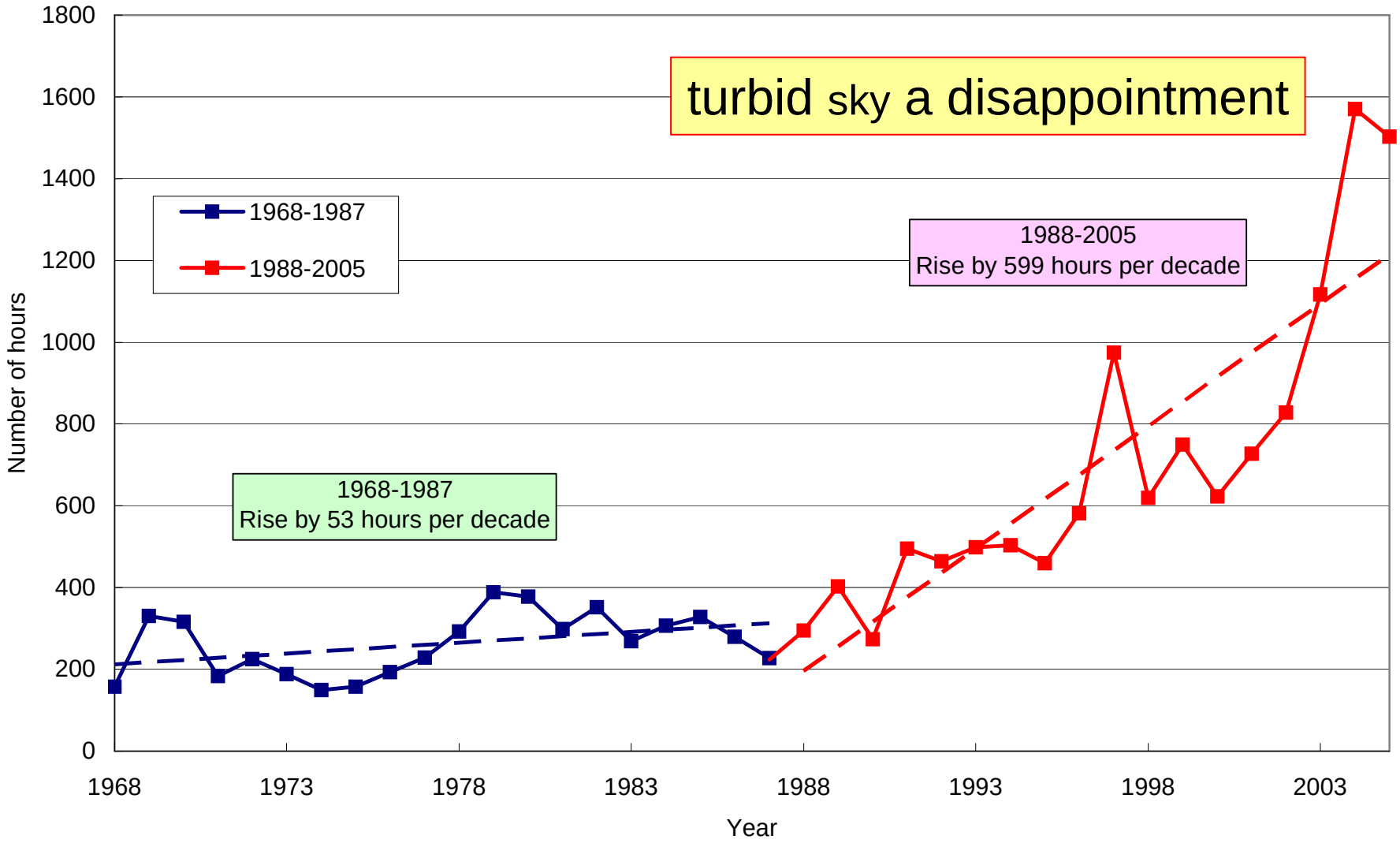

Fig. 5 Annual Total Number of Hours with Visibility at the Hong Kong Observatory Headquarters below 8 km from 1968 to 2005 (not counting rain, mist or fog)

Cloud amount

+1.8% per decade

(1961-2002)

urbanization > > condensation nuclei

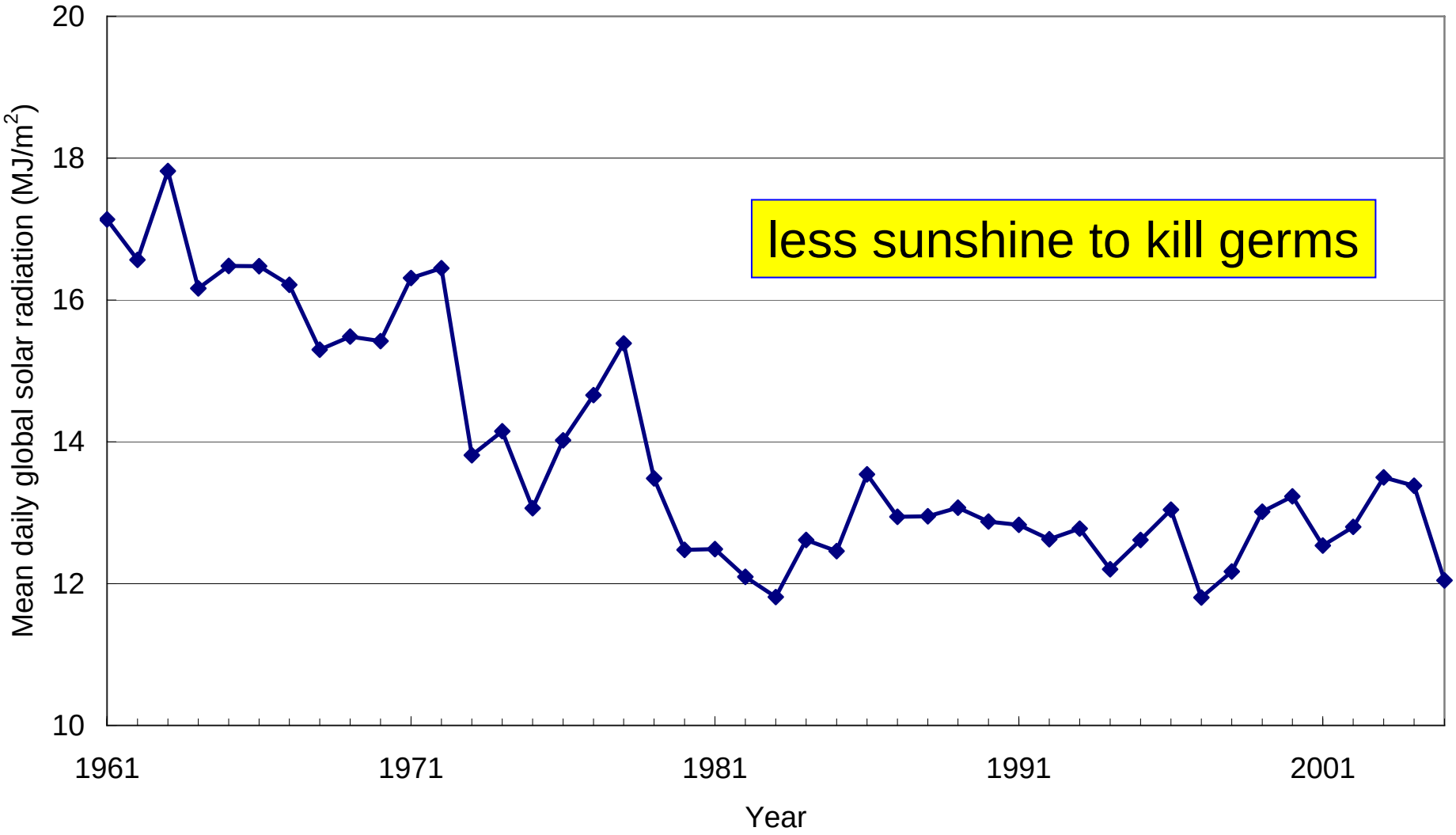

Fig. 6 Long-term trend in annual mean of the daily global solar radiation, 1961-2005

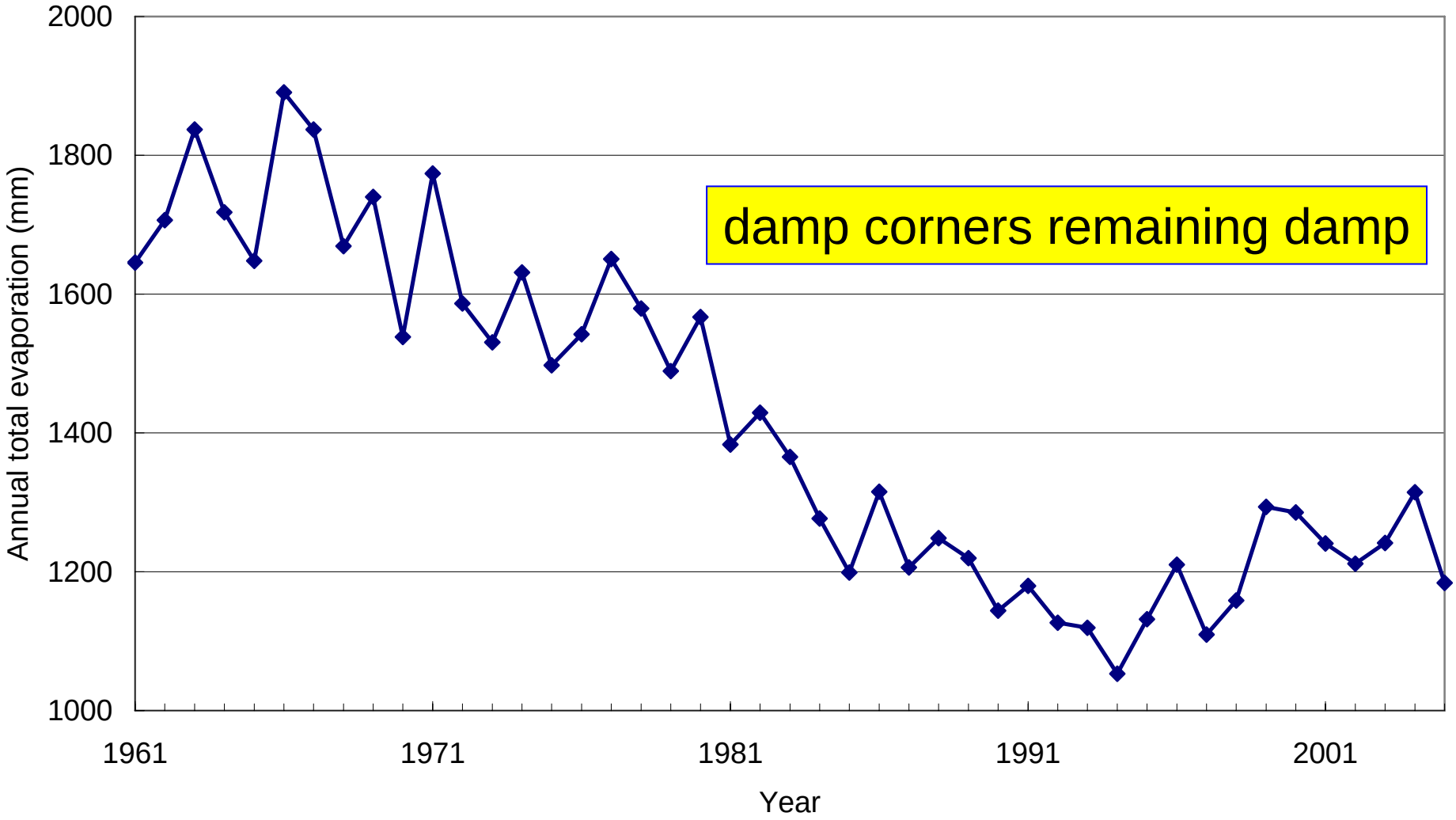

Fig. 7 Long-term trend in annual total evaporation, 1961-2005

No problem for the rich

Air-conditioning

High-definition TV

Artificial sunlight

Washing machine and dryer

But - using more energy

Changing climate even more

Problem for the old and the weak

Hot spells

Life threatening – USA and Europe

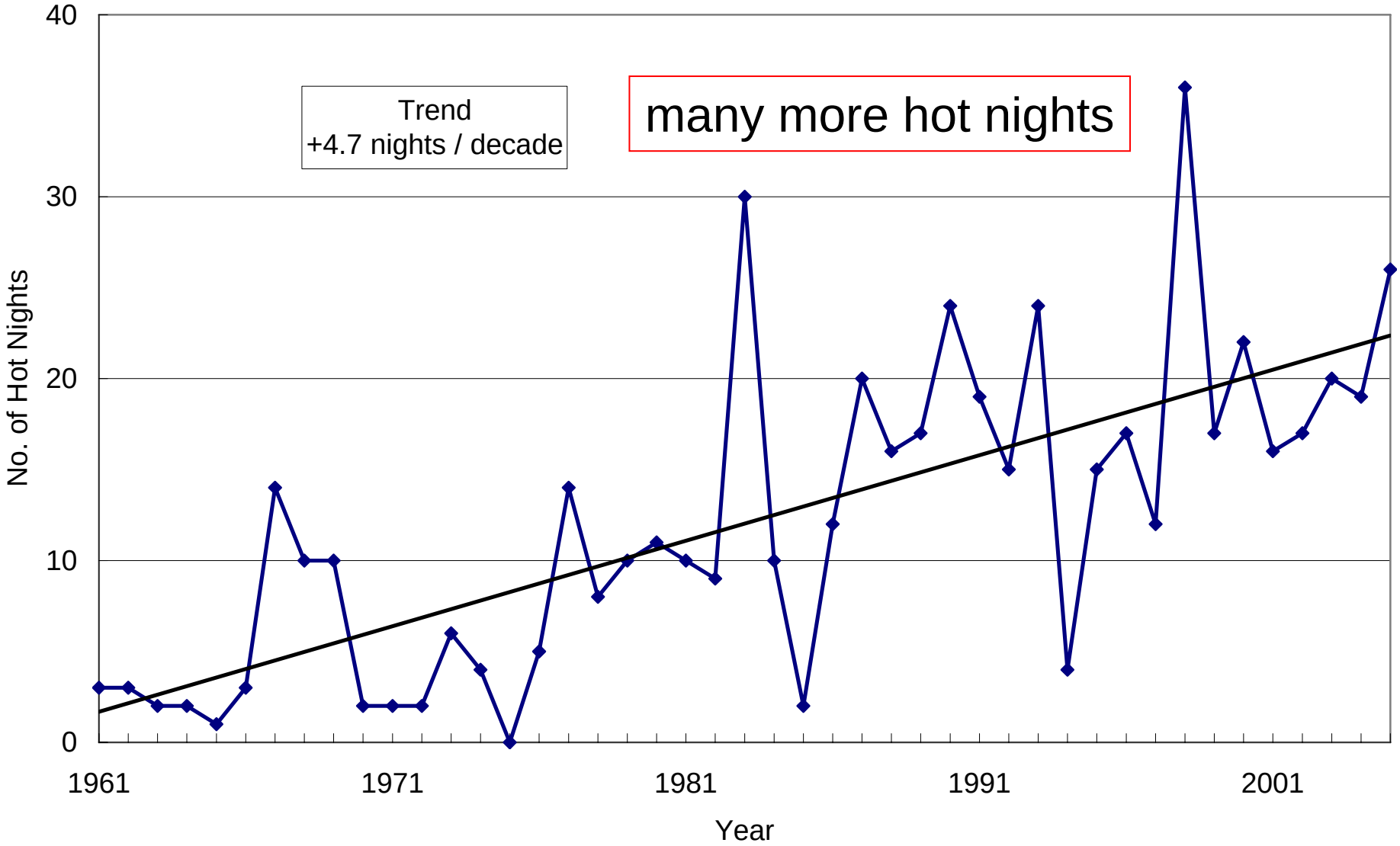

Fig. 8 Annual number of hot nights from 1961 to 2005

Future urban climate

Hot

Stuffy

Gloomy

Damp

Germs

Time to think

What to do?

Re-think the fundamentals about urban living

Buildings >> ??