



WORLD HEALTH ORGANIZATION

ORGANISATION MONDIALE DE LA SANTÉ

WHO/WMO SYMPOSIUM ON URBAN CLIMATES AND BUILDING CLIMATOLOGY

Brussels 15-25 October 1968

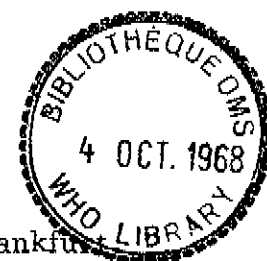
AP/WP/68.4 Add.1

ENGLISH ONLY

## THE EFFECTS OF AIR POLLUTION ON URBAN CLIMATES

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Zahl der Kraftfahrzeuge  
in Frankfurt a. M.

Zahl der Einwohner auf  
1 Personenkraftwagen

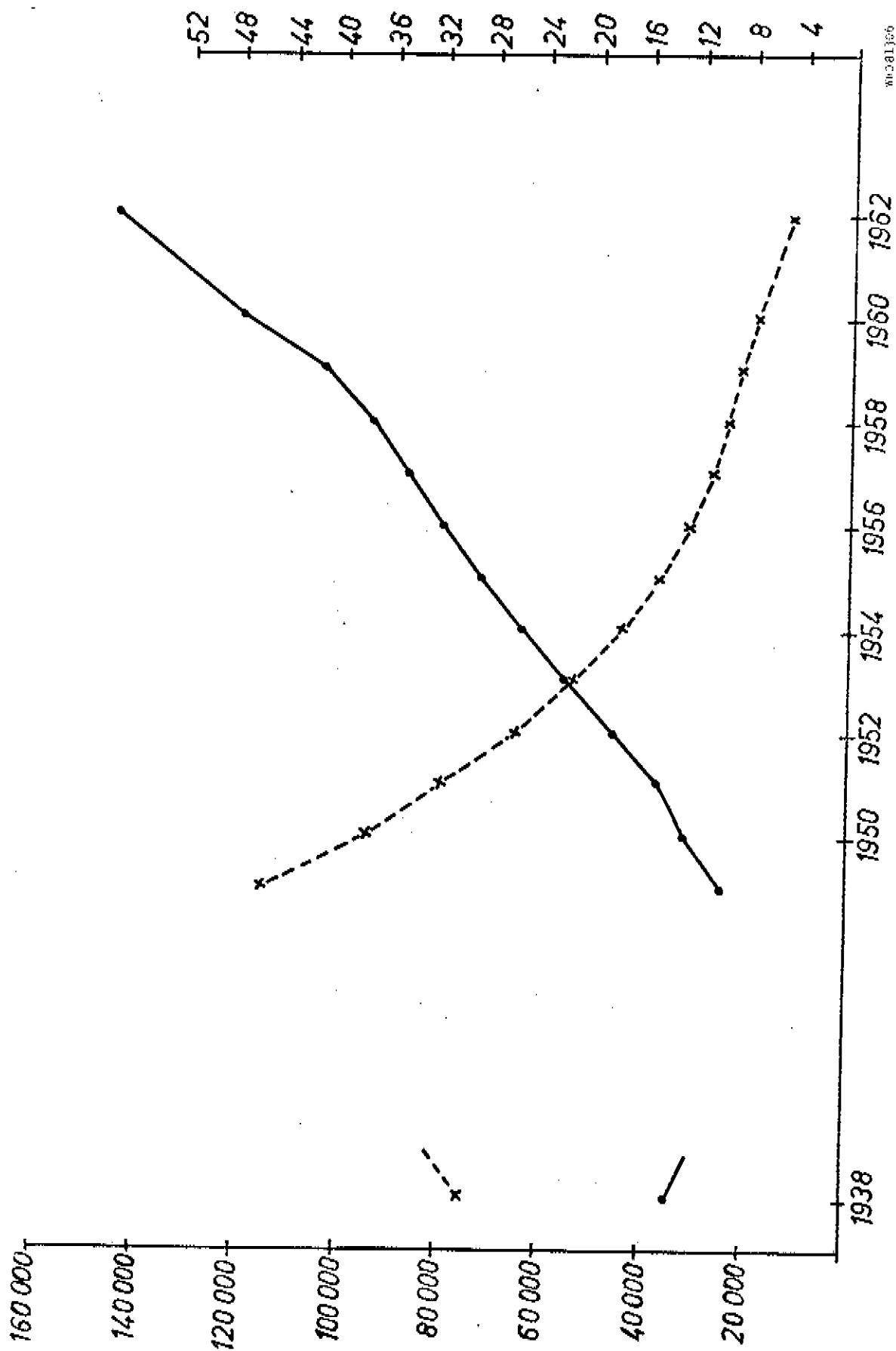


Fig.1 Increase of number of motor vehicles in the city of Frankfurt

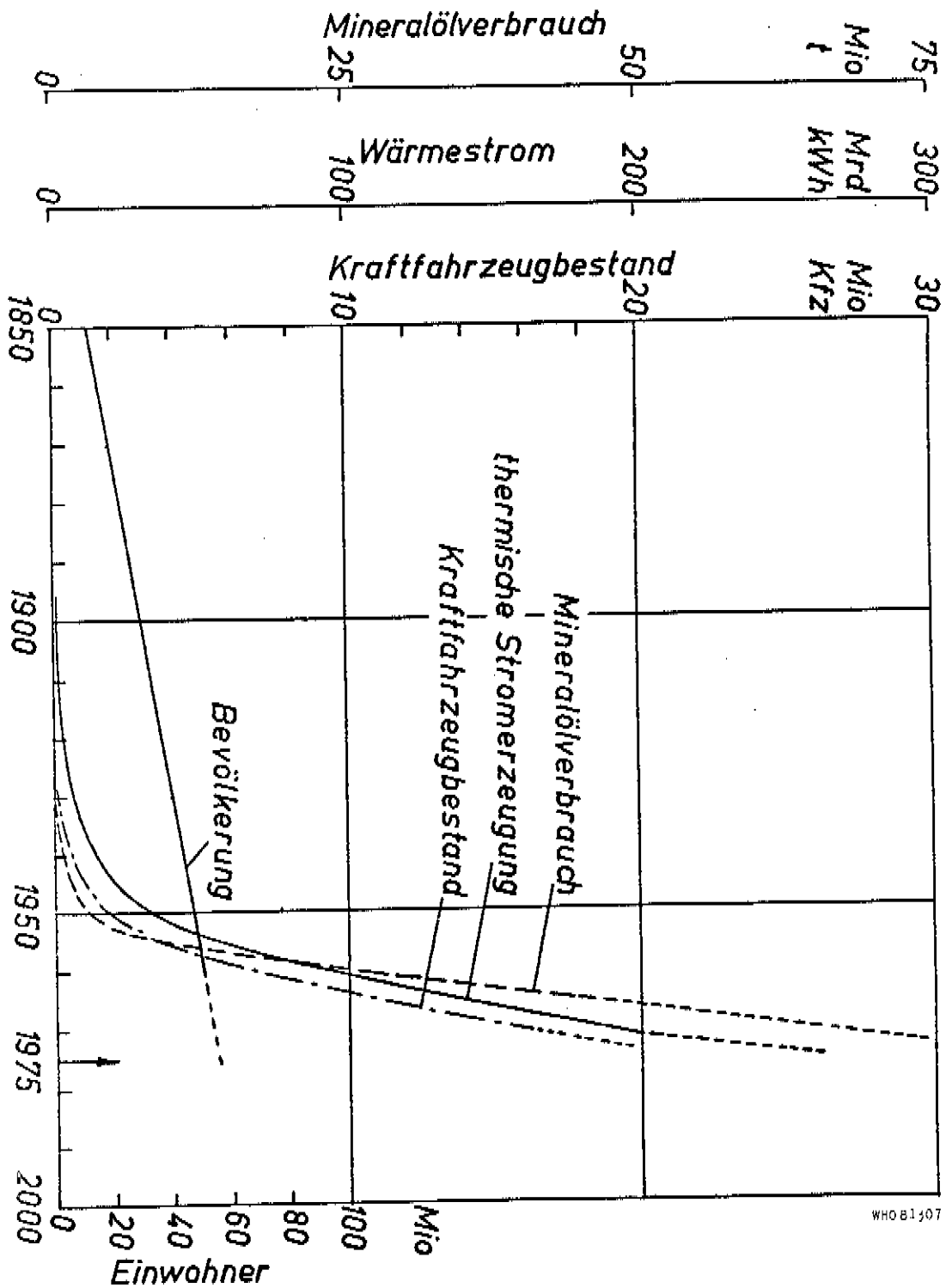


Fig. 2 Increase in the consumption of electric power and mineral oils related to the growth of population in the Federal Republic of Germany

# SO<sub>2</sub>-Konzentrationsverlauf über Mannheim - Ludwigshafen

Meßflug am 3.4.1965

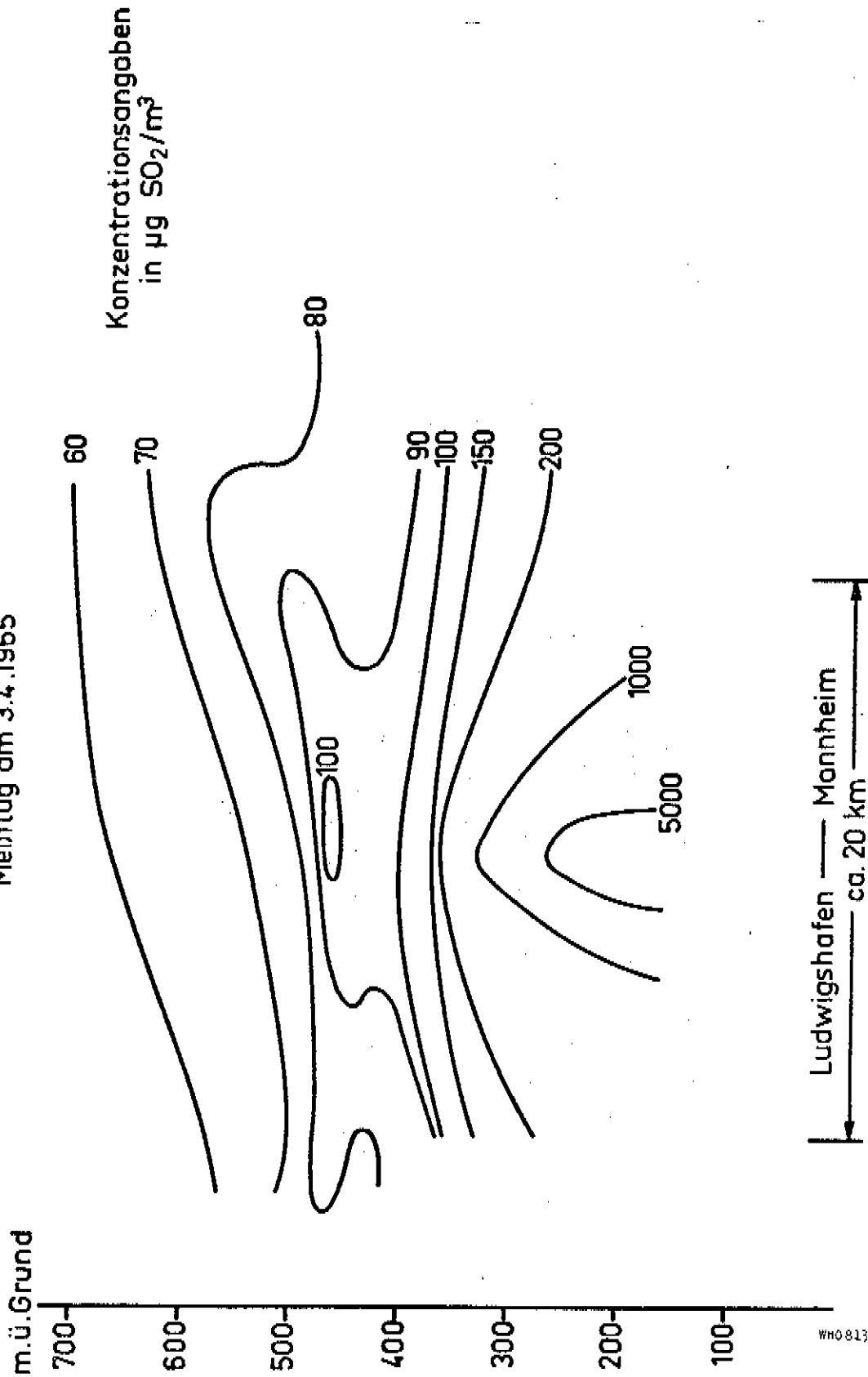
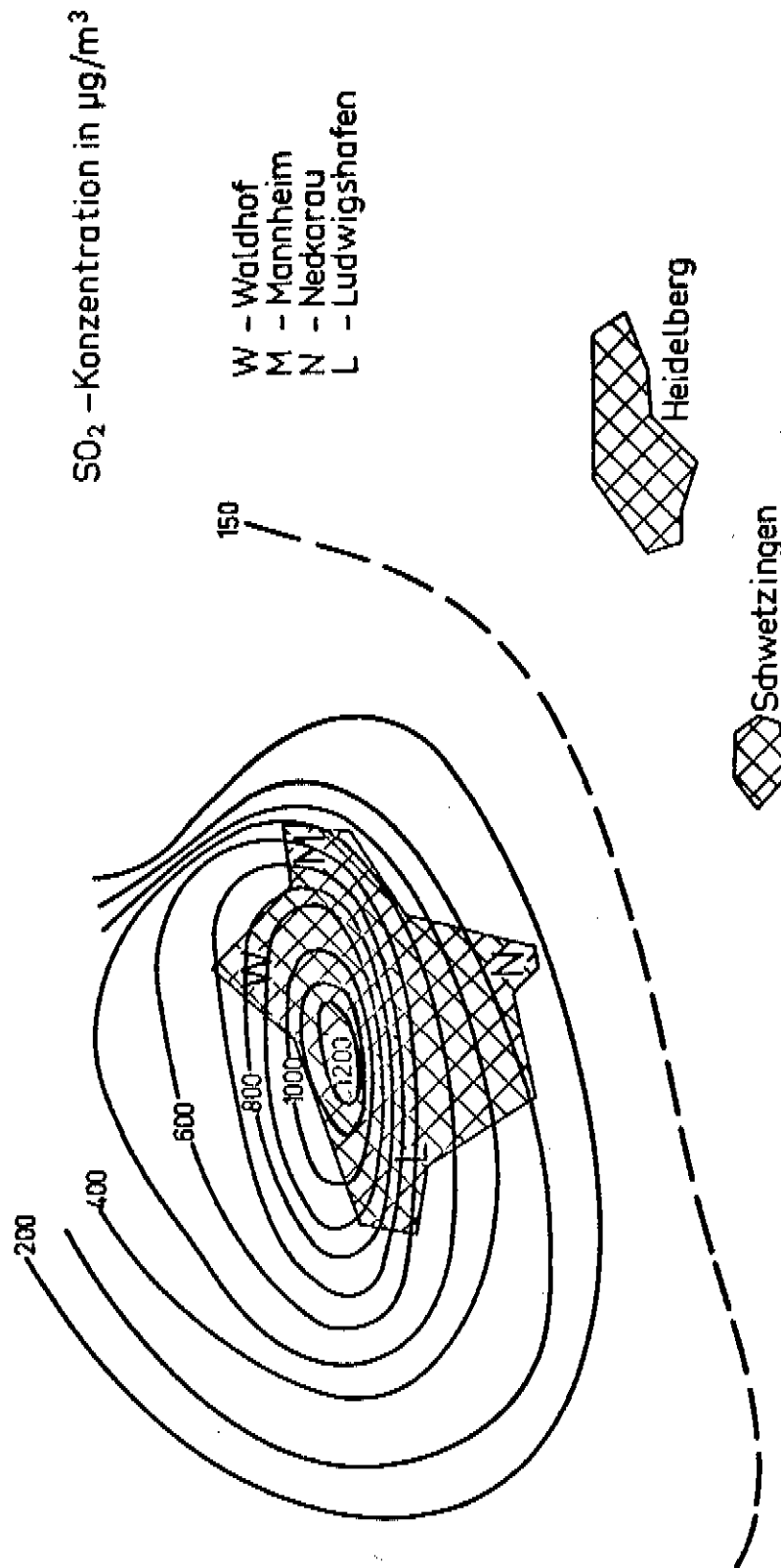


Fig.3 Distribution of SO<sub>2</sub> - concentration over the industrial area of Mannheim-Ludwigshafen

Horizontalverteilung des SO<sub>2</sub> in 300 m Höhe über Grund  
über Mannheim - Ludwigshafen  
(Meßflug am 3. April 1965)

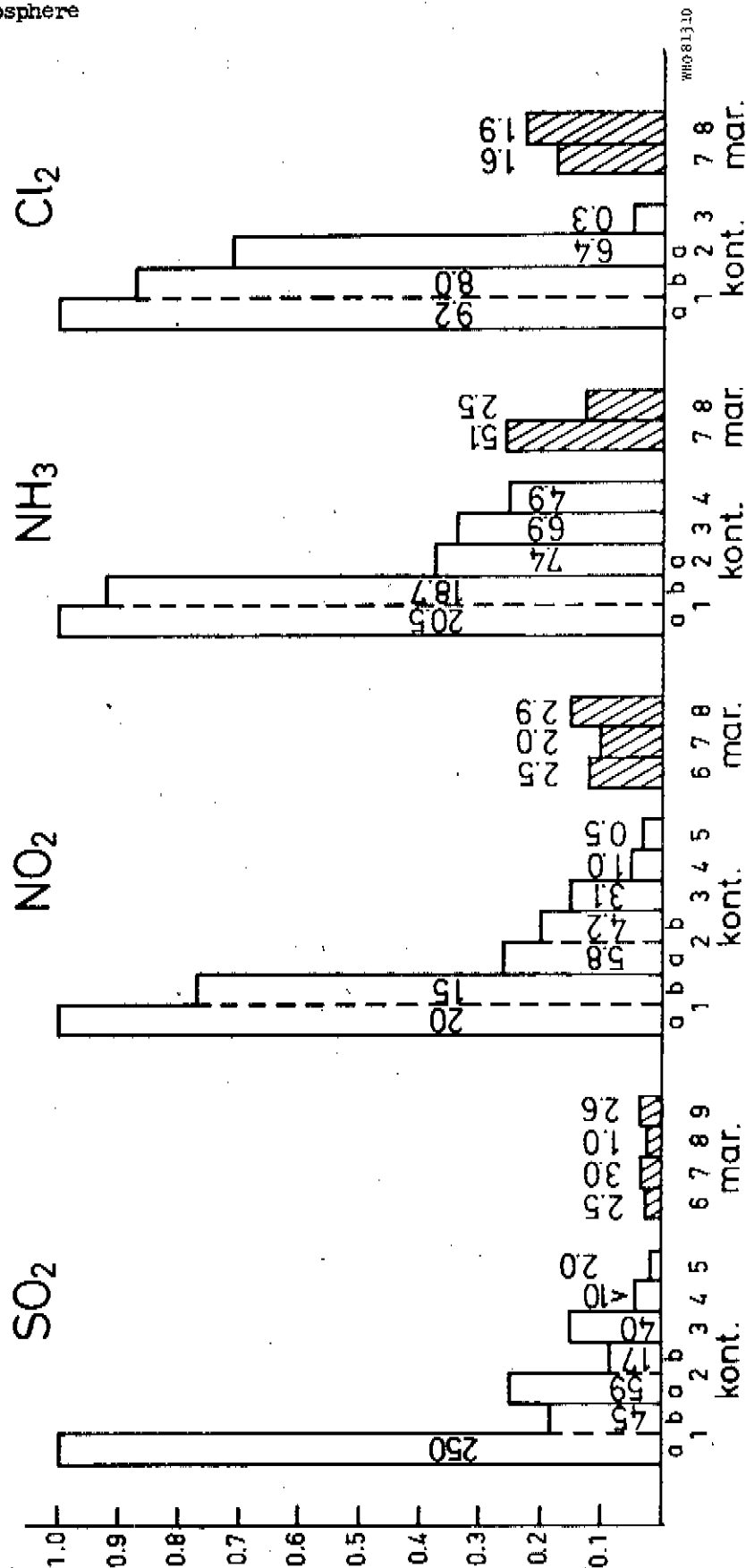


# Konzentration atmosphärischer Spurengase

- 1 a. Frankfurt/M (Winter)
- b. Frankfurt/M (Sommer)
- 2 a. Kl. Feldberg (Winter)
- b. Kl. Feldberg (Sommer)
- 3 Zugspitze (August)

- 4 St. Moritz (Sommer)
- 5 Corviglia b. St. Moritz (Sommer)
- 6 Capreia / Mittelländ. Meer (Sommer)
- 7 Florida
- 8 Hawaii
- 9 Meteor Expedition 1965 (40° - 50° N, Dez.)

(Konzentrationsangaben in  $\mu\text{g}/\text{m}^3$ )



WHO 81310

- I Städte > 1 Mill. Einwohner
  - II Städte > 700000 Einwohner
  - III Städte < 700000 Einwohner
  - IIIa Außenbezirke
  - IV Farm- u. Weideland (500)
- (11 Städte in USA)  
 (117 Städte in USA) } (9500)

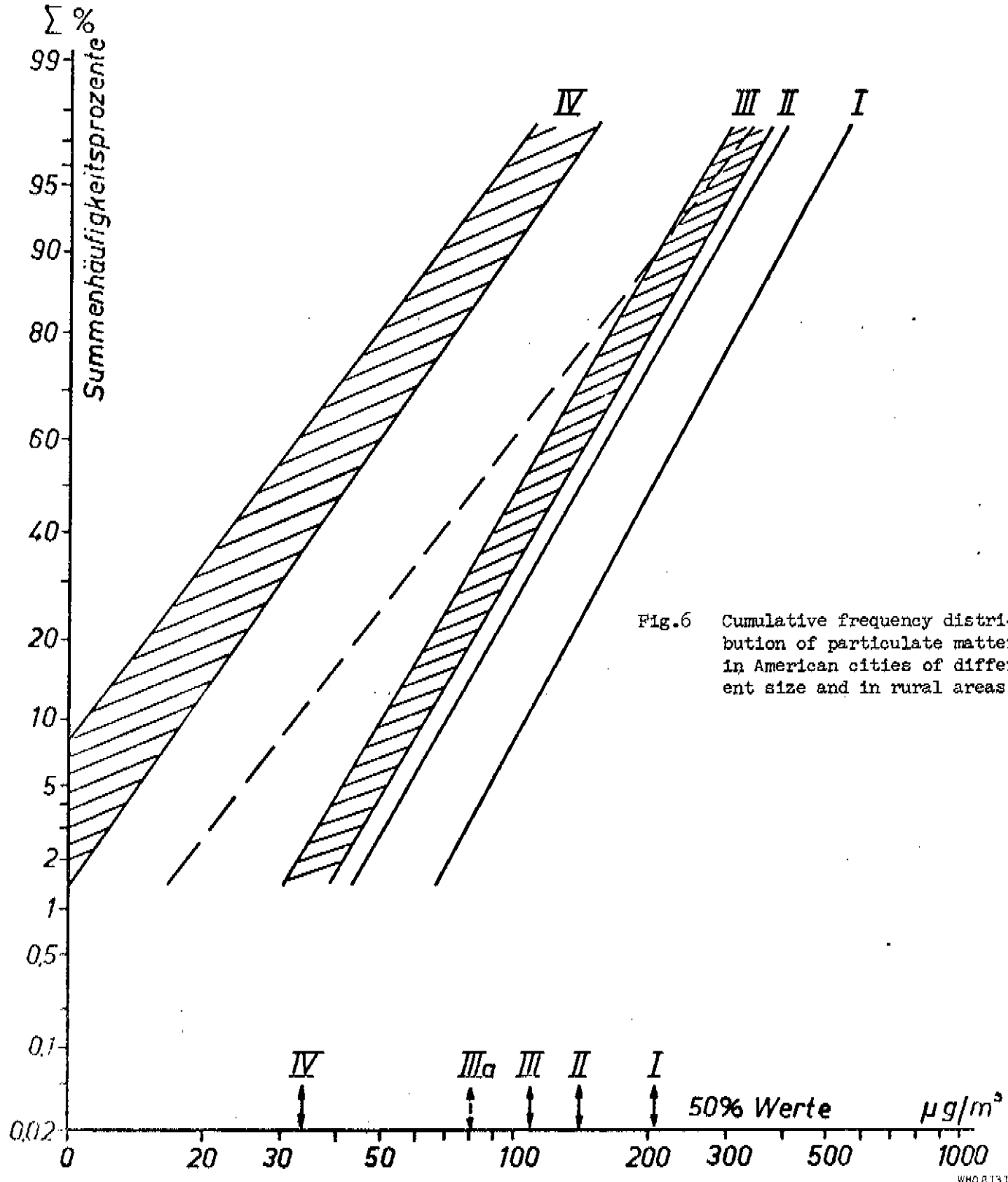
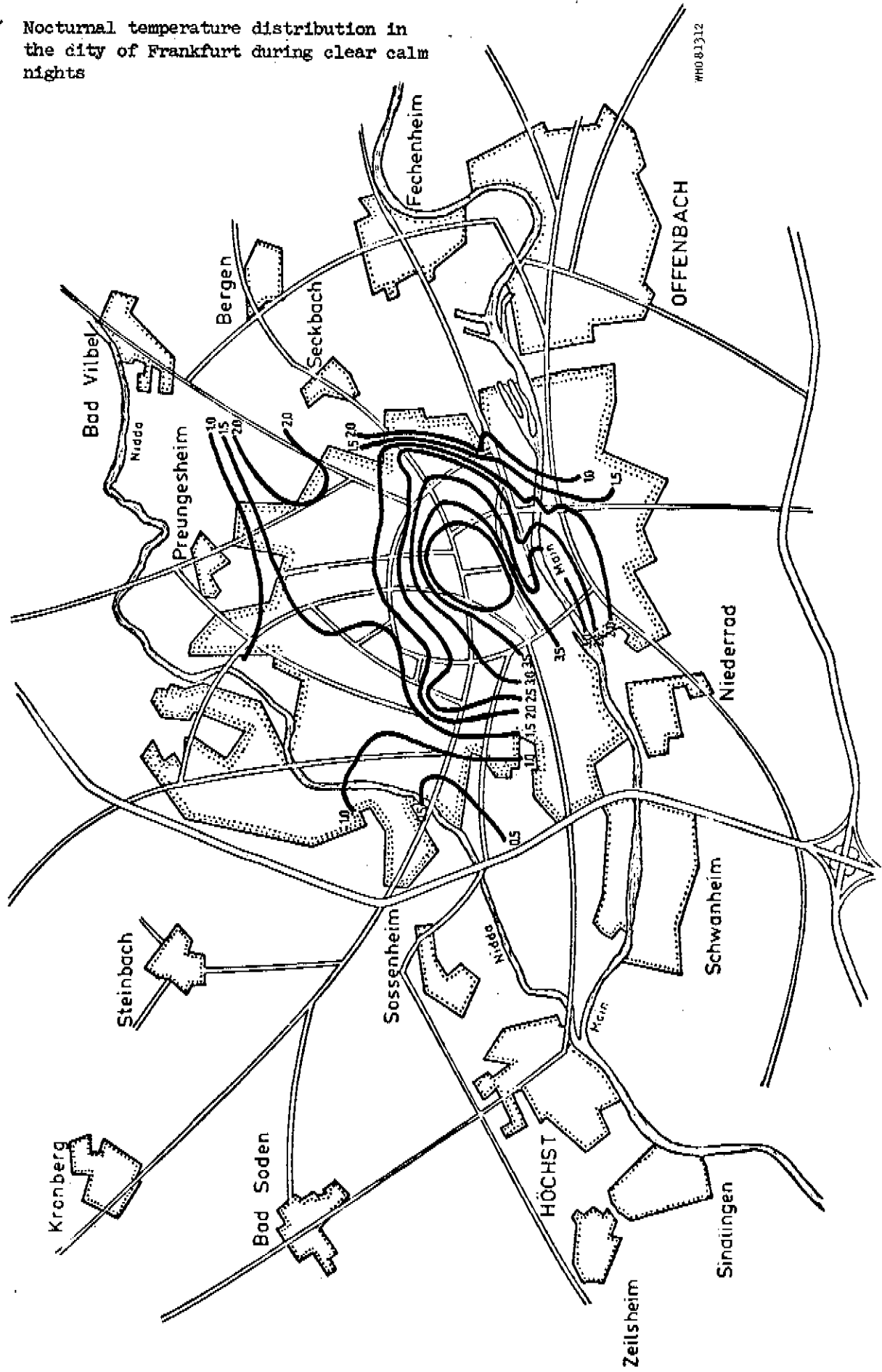


Fig.6 Cumulative frequency distribution of particulate matter in American cities of different size and in rural areas

Fig.7 Nocturnal temperature distribution in the city of Frankfurt during clear calm nights

Nächtliche Temperaturverteilung in Frankfurt /M. bei Strahlungswetter



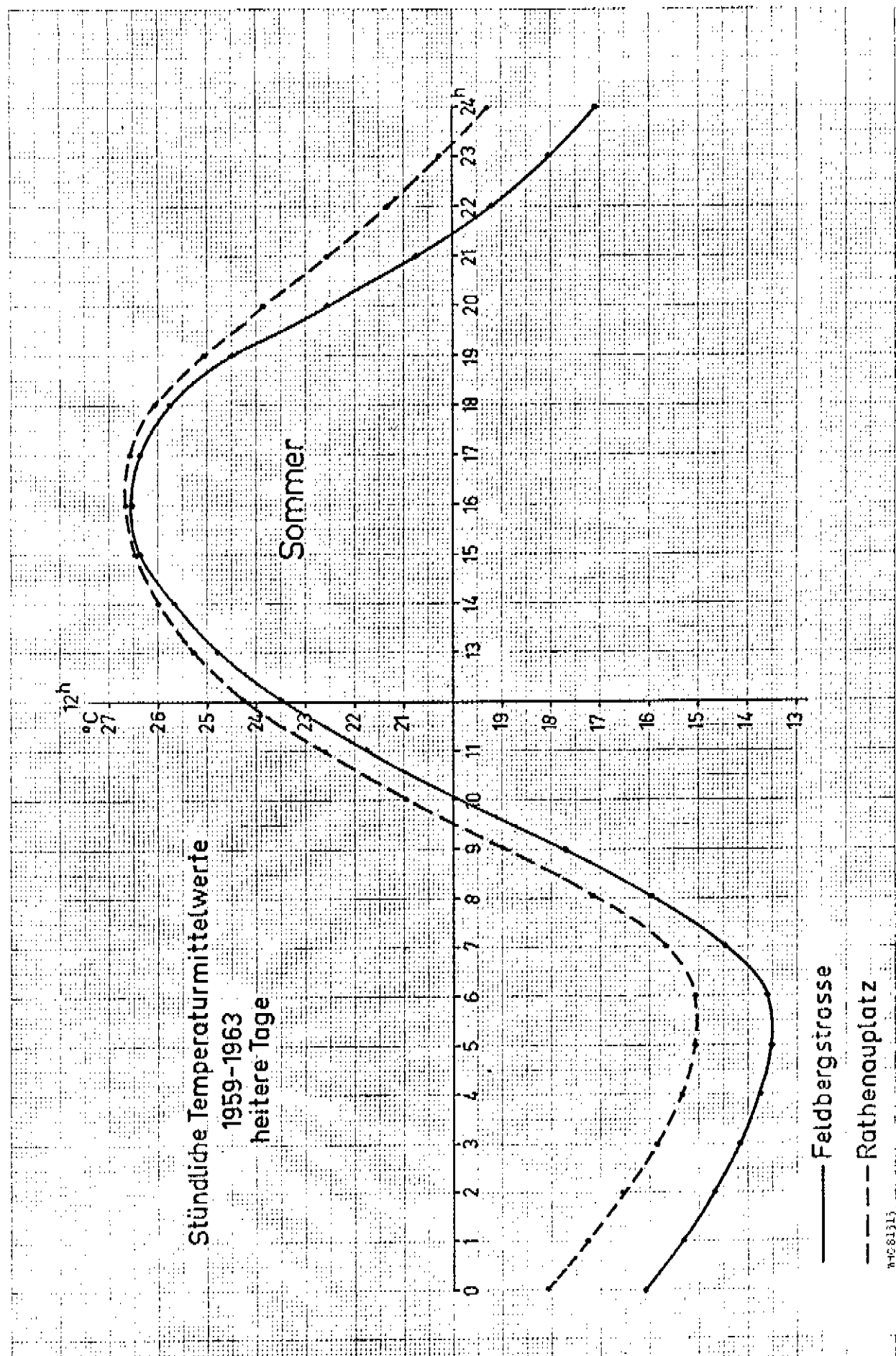
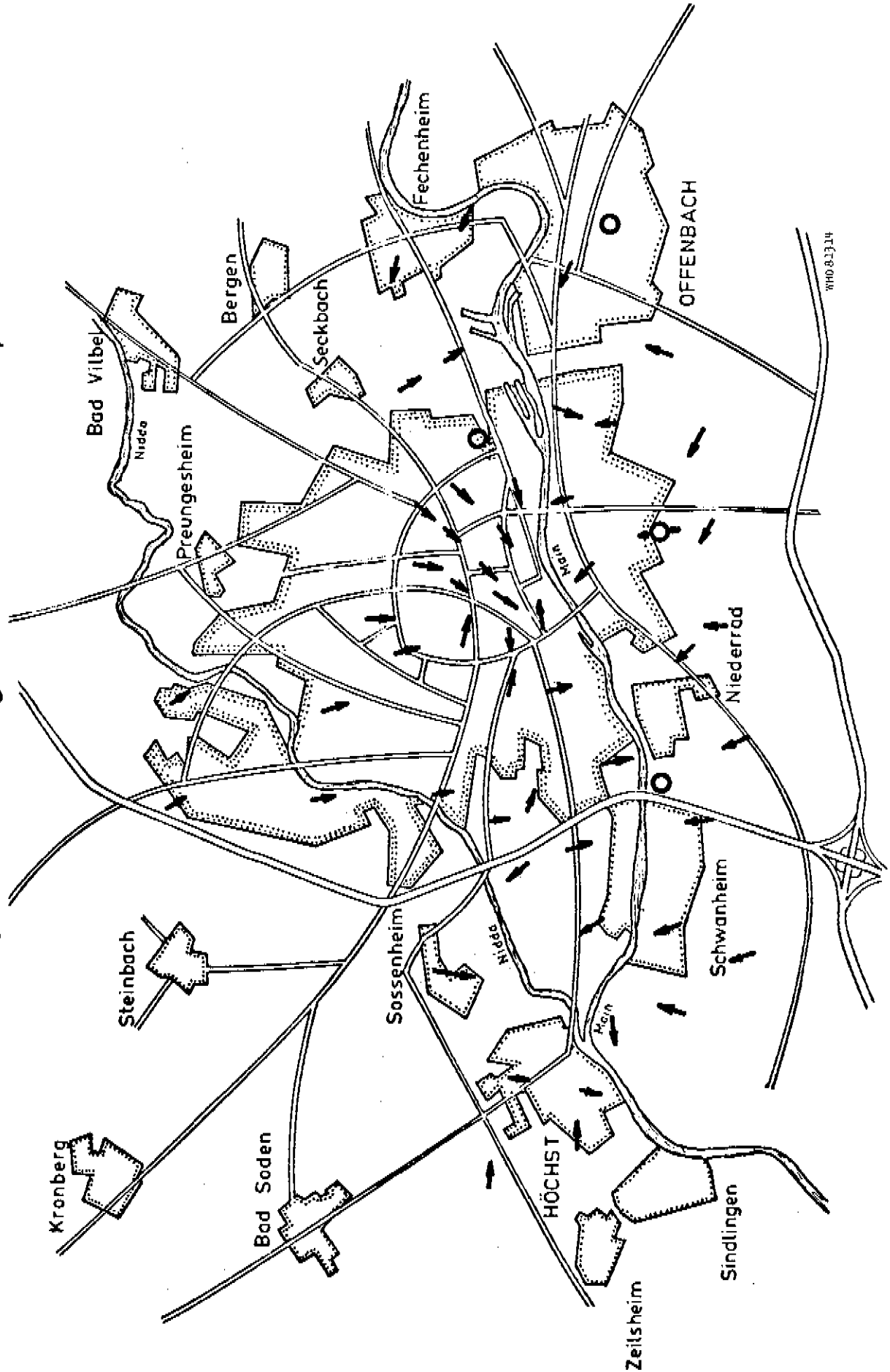


Fig.8 Average diurnal trend of temperature in the city and at the border of the city of Frankfurt

Fig.9 Wind distribution in Frankfurt during clear calm nights

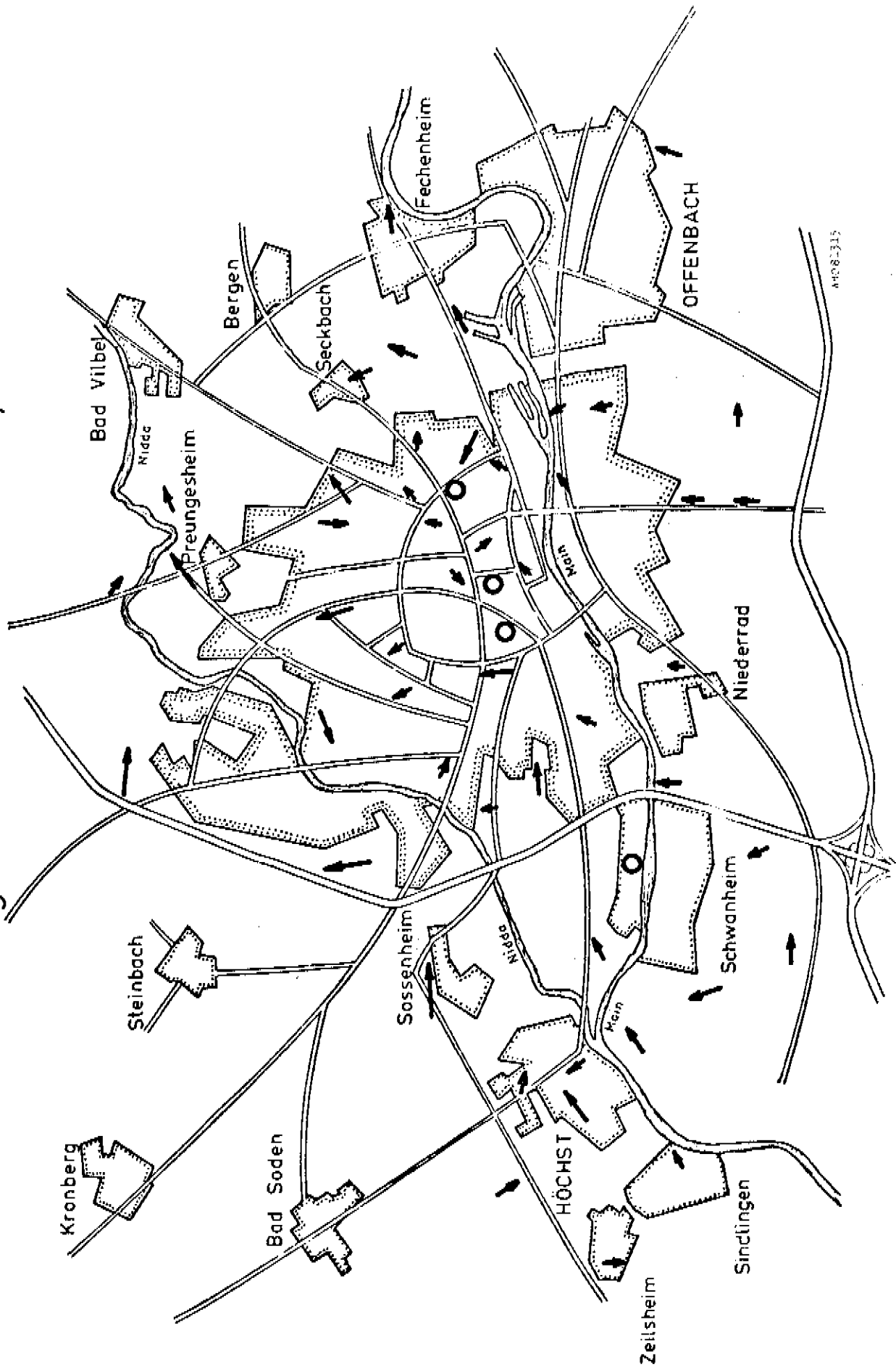
Windverteilung bei Strahlungswetter in Frankfurt/M.



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Fig.10 Wind distribution in Frankfurt with prevailing westerly winds

Windverteilung bei Westwetter in Frankfurt/M.



Schema der Luftzirkulation in einer Straße bei verschiedenen Windstärken über Dach (unter 2 m/s (a) und über 2 m/s (b).)

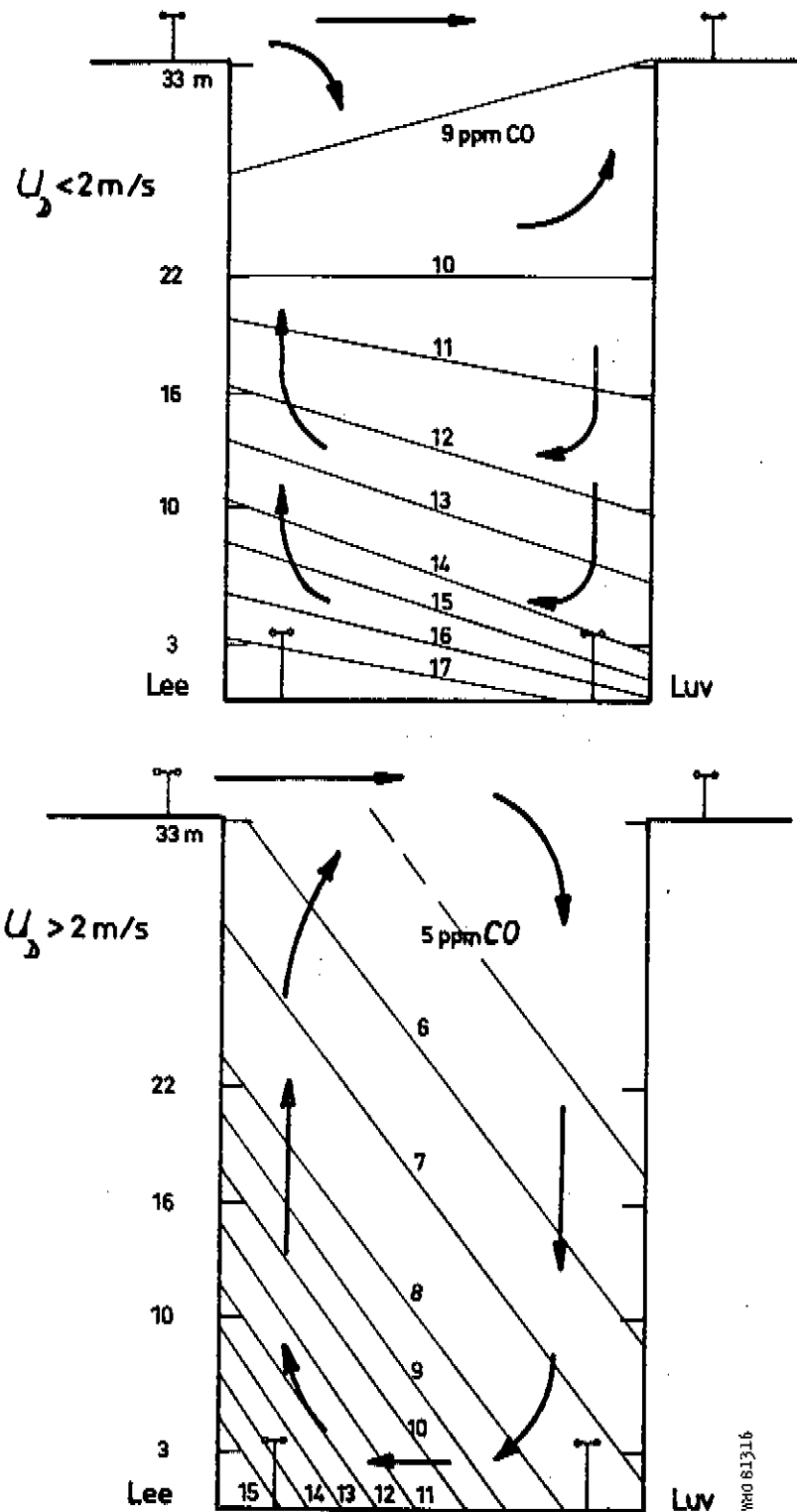
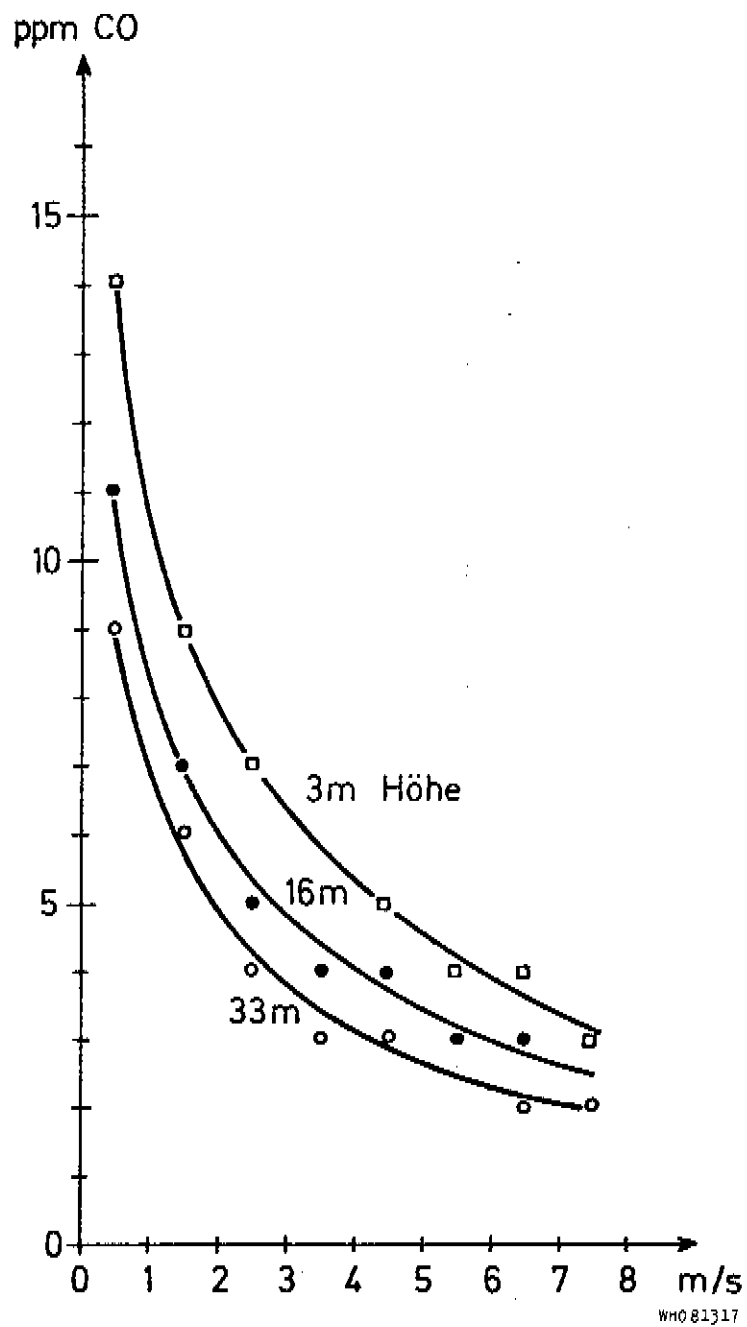


Fig.11 Circulation within streets at different wind speeds

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CO-Konzentration in Abhängigkeit von der  
Windgeschwindigkeit (Luvseite der Strasse)

Fig.12 CO-distribution in dependence of wind velocity and altitude above street-level