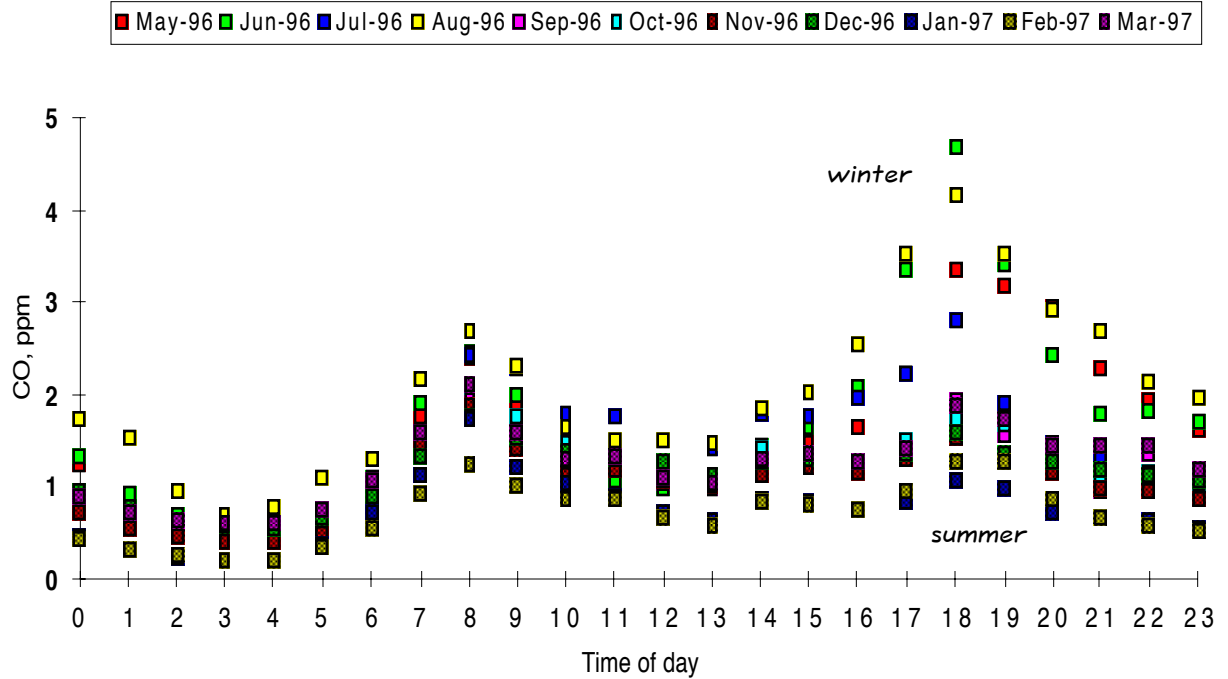


Porto Alegre, Brazil



In this light-industrial area, CO is almost entirely the result of vehicular exhausts. The diurnal signature of this composite chart shows peak traffic periods throughout the year. The highest levels are in winter; the lowest in summer. The data plotted are the representative hourly averages for each of 11 months gathered near the city center.

Routine Air Quality Data Acquisition

Bear Facts -- #91

The complexity of an air quality monitoring station can be reduced with the inclusion of reliable data acquisition instrumentation. The five-channel Langan DataBear proves useful in this application.



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 San Francisco, California 94115
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the DataBear

Bear Facts are published to provide useful insights into the operation and applications for the DataBear™ Measurer and associated complete instruments.

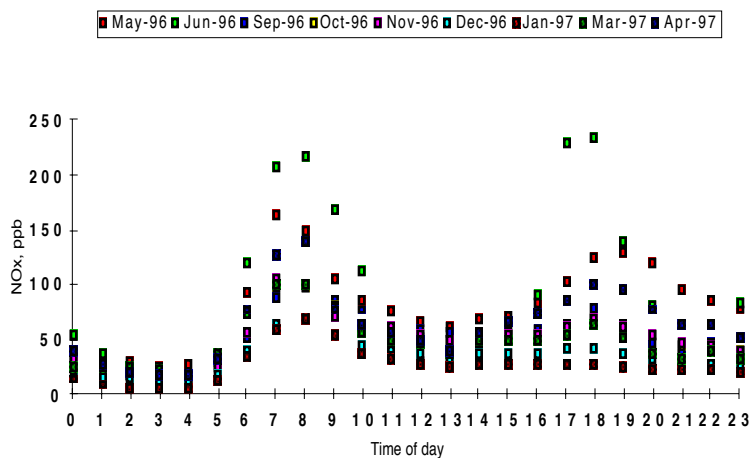
Porto Alegre, Brazil, is an urban area similar in latitude, size and coastal proximity to New Orleans, USA. Faced with the installation of the first routine air quality measurements in a major Brazilian city outside of São Paulo, the research contractor (DGA, Inc.*) selected EPA-certified analysers and calibration instrumentation with all data accumulated by a Langan DataBear Measurer each minute. The standard operating procedures for the site included retrieving the data twice each week using a Macintosh® PowerBook. While other sample rates, retrieval times or DOS-based laptops could have been used, these were the selected design configurations. They resulted in an efficient, cost-effective air monitoring station. Of particular added significance was the battery-powered nature of the DataBear. There were frequent power outages; when the analyzers were reset automatically, their condition continued to be observed without interruption to data acquisition.

Hourly means were exported from the Langan software for importing into Microsoft's Excel® spreadsheets. The plots shown are extracted from the report of the first year of operation. Carbon monoxide, ozone, nitrogen oxides, sulfur dioxide and particulates were observed. The need to make routine visits to the site for gathering absorbant tubes and canisters made the high-density sample rate convenient.

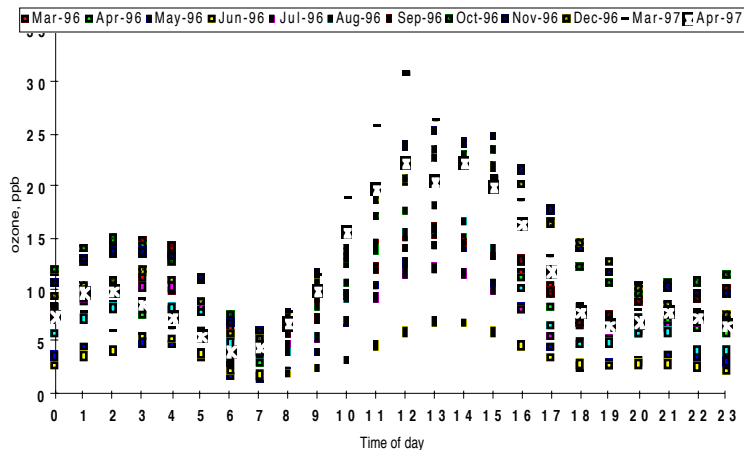
Analysis instrumentation has matured over the past thirty years of public concentration on the health effects of ambient air; technologies have been refined and procedures accepted. The ease of data collection provided by reliable, small, stand-alone sample-storage devices complements this equipment. The associated software brings confidence to routine data reduction, especially where a full automated network is not practical.

*DGA, Inc., 4526 Telephone Road, Suite 205
Ventura, CA 93003-5633 USA
(805) 644-0125 (voice) (805) 644-0142 (fax)

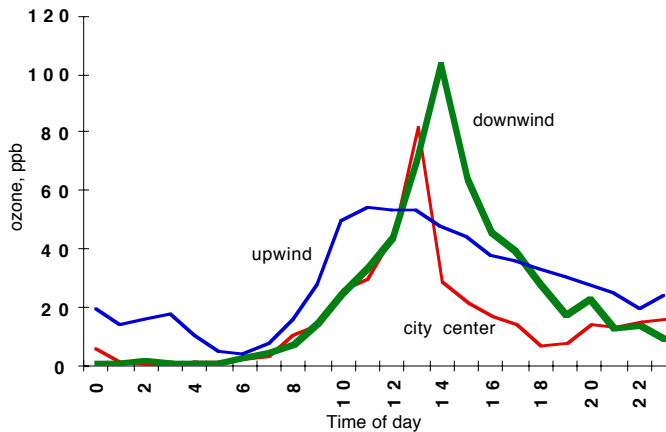
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Patterns of combined nitrogen oxides (above) compare with the CO data. Ozone measurements (below) show the effect of being reduced during the traffic peaks, consistent with the chemical processes involved. As for CO, these are also hourly averages for each month in Porto Alegre.



A single day showing hourly ozone levels at three Porto Alegre sites



cut inside dotted line for small size

A very simple reliable data acquisition instrument, the Langan DataBear Measurer, can be used in a complex full-complement air quality monitoring station. This Bear Facts shows some results of one year of operation at a site in South America. The hand-held logging device proved to be an essential component for routine data collection.