



Project Summary

TUPOS-P—A Program for Analyzing Hourly and Partial Concentration Files Produced by TUPOS

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TUPOS-P is a postprocessor program for analyzing concentration files produced by the air quality dispersion model TUPOS. The program reads either hourly concentration or hourly partial concentration files and provides the following output:

- Hourly concentration summaries,
- Averaging period concentration summaries, and
- High-five concentration tables for five averaging times (1-hr, 3-hr, 8-hr, 24-hr, and an averaging time selected by the user).

If the concentration file being read consists of partial contributions, the user may request hourly contribution summaries and averaging period contribution summaries for up to 25 significant sources. Much of the printed output is optionally available so that unneeded output volume is avoided.

This Project Summary was developed by EPA's Atmospheric Sciences Research Laboratory, Research Triangle Park, NC, to announce key findings of the research project that is fully documented in a separated report of the same title (see Project Report ordering information at back).

Introduction

TUPOS-P is a data handling postprocessor adapted from the summary calculations of MPTER. The program reads either hourly concentration or partial concentration files created by the air quality dispersion model TUPOS and provides the following optional output:

- Hourly concentration summaries,
- Averaging period concentration summaries, and

- High-five concentration tables for five averaging times (1-hr, 3-hr, 8-hr, 24-hr, and an averaging time selected by the user).

The hourly concentration file has a single concentration (that due to all sources) for each receptor for each hour. The partial concentration file contains the concentration that results from each source (partial concentration) for each receptor for each hour. If the concentration file being read consists of partial contributions, the user may request hourly contribution summaries and averaging period contribution summaries for up to 25 significant sources.

TUPOS-P was designed to maximize user control. For instance, the number of hours required to have a valid 3-hr, 8-hr, 24-hr, or user-specified averaging period in the high-five tables is given by the user. In addition much of the printed output is optionally available so that unneeded output volume is avoided. Although TUPOS-P is specific to concentration files created by the dispersion model TUPOS, it can be easily modified to handle concentration files generated by other air quality models.

Discussion

Proper execution of TUPOS-P requires summary period information, averaging period information, print options, and a list of significant sources if applicable.

Summary period information includes:

- Starting point for summary (year, Julian day, hour),
- Number of hours in the summary,
- Concentration file indicator: 0 for hourly concentrations; 1 for hourly

partial concentrations, and

- Number of significant sources to be considered for the contribution summaries.

Averaging period information includes the following:

- Number of averaging periods to be summarized,
- Number of hours in the averaging period,
- Additional averaging time for the high-five table,
- Number of hours required to have a valid 3-hr, 8-hr, and 24-hr period, and
- Number of hours required to have a valid user-specified averaging period.

Much of the printed output is optional so that unneeded output can be omitted. For instance, the following output can be included or omitted according to the user's needs:

- Hourly summaries,
- Hourly partial contribution summaries,
- Averaging period summaries,
- Averaging period partial contribution summaries, and
- High-five tables.

The user supplies the list of sources to be included in the contribution summaries up to a maximum of 25 significant sources or can use any subset of the list supplied in the partial concentration file with the sources ordered by the significance criteria in TUPOS.

The primary input requirement for the program is, of course, the file containing hourly or partial concentrations. In order to use TUPOS-P without significant modification, the file must be generated by the dispersion model, TUPOS.

User control and user friendliness were kept in mind during the design of TUPOS-P. Input data errors or inconsistencies result in an appropriate error message.

A modular approach was adopted in the TUPOS-P design. Thus, although TUPOS-P is specific to concentration files created by TUPOS, it can be easily modified to handle concentration files generated by other air quality models.

Conclusions and Recommendations

The philosophy adopted in constructing the model TUPOS and the postprocessor TUPOS-P is to separate the two functions of dispersion model (calculating hourly pollutant concentrations) and analysis of the resulting concentrations (averaging over time periods of interest and ranking concentrations over a period of record). This latter "bookkeeping" function is primarily dependent upon the exact form of the air quality standards. By this partitioning, only that processor affected by either modeling improvements or by changes to air quality standards need be rewritten.

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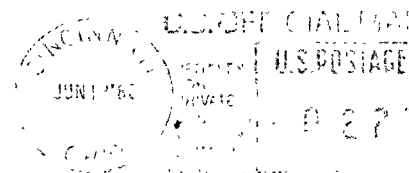
The complete report, entitled "TUPOS-P—A Program for Analyzing Hourly and Partial Concentration Files Produced by TUPOS," (Order No. PB 86-181 328/AS; Cost: \$16.95, subject to change) will be available only from:

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