

Home

Online Library ACP

- ▣ Recent Final Revised Papers
- ▣ [Volumes and Issues](#)
- ▣ Special Issues
- ▣ Library Search
- ▣ Title and Author Search

Online Library ACPD

Alerts & RSS Feeds

General Information

Submission

Review

Production

Subscription

Comment on a Paper

Impact
Factor
4.865

ISI
indexed



▣ [Volumes and Issues](#) ▣ [Contents of Issue 17](#)

Atmos. Chem. Phys., 8, 5477-5487, 2008

www.atmos-chem-phys.net/8/5477/2008/

© Author(s) 2008. This work is distributed under the Creative Commons Attribution 3.0 License.

Technical Note: Review of methods for linear least-squares fitting of data and application to atmospheric chemistry problems

C. A. Cantrell

National Center for Atmospheric Research Atmospheric Chemistry Division 1850

Table Mesa Drive Boulder, CO 80305, USA

Abstract. The representation of data, whether geophysical observations, numerical model output or laboratory results, by a best fit straight line is a routine practice in the geosciences and other fields. While the literature is full of detailed analyses of procedures for fitting straight lines to values with uncertainties, a surprising number of scientists blindly use the standard least-squares method, such as found on calculators and in spreadsheet programs, that assumes no uncertainties in the x values.

Here, the available procedures for estimating the best fit straight line to data, including those applicable to situations for uncertainties present in both the x and y variables, are reviewed. Representative methods that are presented in the literature for bivariate weighted fits are compared using several sample data sets, and guidance is presented as to when the somewhat more involved iterative methods are required, or when the standard least-squares procedure would be expected to be satisfactory. A spreadsheet-based template is made available that employs one method for bivariate fitting.

▣ [Final Revised Paper](#) (PDF, 1157 KB) ▣ [Supplement](#) (635 KB) ▣ [Discussion Paper](#) (ACPD)

Citation: Cantrell, C. A.: Technical Note: Review of methods for linear least-squares fitting of data and application to atmospheric chemistry problems, Atmos. Chem. Phys., 8, 5477-5487, 2008. ▣ [Bibtex](#) ▣ [EndNote](#) ▣ [Reference Manager](#)

Search ACP

Library Search

Author Search

News

- ▣ [Sister Journals AMT & GMD](#)
- ▣ [Financial Support for Authors](#)
- ▣ [Journal Impact Factor](#)
- ▣ [Public Relations & Background Information](#)

Recent Papers

01 | ACPD, 19 Nov 2008:
Stratospheric BrONO₂
observed by MIPAS

02 | ACPD, 19 Nov 2008:
Methyl chavicol:
characterization of its
biogenic emission rate,
abundance, and oxidation
products in the atmosphere

03 | ACP, 19 Nov 2008:
Technical Note: Quantitative
long-term measurements of
VOC concentrations by PTR-
MS – measurement,
calibration, and volume
mixing ratio calculation
methods