

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 5](#)

Atmos. Chem. Phys., 4, 1419-1425, 2004
www.atmos-chem-phys.net/4/1419/2004/

© Author(s) 2004. This work is licensed
under a Creative Commons License.

On the decadal increase in the tropical mean outgoing longwave radiation for the period 1984-2000

D. Hatzidimitriou^{1,2}, I. Vardavas^{1,2}, K. G. Pavlakis²,
N. Hatzianastassiou^{2,3}, C. Matsoukas², and E. Drakakis^{2,4}

¹Department of Physics, University of Crete, Heraklion, Crete, Greece

²Foundation for Research and Technology-Hellas, Heraklion, Crete, Greece

³Department of Physics, University of Ioannina, Greece

⁴Department of Electrical Engineering, Technological Educational Institute of Crete, Greece

Abstract. In the present paper, we have calculated the outgoing longwave radiation at the top of the atmosphere (OLR at TOA) using a deterministic radiation transfer model, cloud data from ISCCP-D, and atmospheric temperature and humidity data from NCEP/NCAR reanalysis, for the seventeen-year period 1984-2000. We constructed anomaly time-series of the OLR at TOA, as well as of all of the key input climatological data, averaged in the tropical region between 20°N and 20°S. We compared the anomaly time-series of the model calculated OLR at TOA with that obtained from the ERBE S-10N (WFOV NF edition 2) non-scanner measurements. The model results display very similar seasonal and inter-annual variability as the ERBS data, and indicate a decadal increase of OLR at TOA of $1.9 \pm 0.2 \text{ Wm}^{-2}/\text{decade}$, which is lower than that displayed by the ERBS time-series ($3.5 \pm 0.3 \text{ Wm}^{-2}$). Analysis of the inter-annual and long-term variability of the various parameters determining the OLR at TOA, showed that the most important contribution to the observed trend comes from a decrease in high-level cloud cover over the period 1984-2000, followed by an apparent drying of the upper troposphere and a decrease in low-level cloudiness. Opposite but small trends are introduced by a decrease in low-level cloud top pressure, an apparent cooling of the lower stratosphere (at the 50mbar level) and a small decadal increase in mid-level cloud cover.

[Final Revised Paper](#) (PDF, 2470 KB) [Discussion Paper](#) (ACPD)

Citation: Hatzidimitriou, D., Vardavas, I., Pavlakis, K. G., Hatzianastassiou, N., Matsoukas, C., and Drakakis, E.: On the decadal increase in the tropical mean outgoing longwave radiation for the period 1984-2000, Atmos. Chem. Phys., 4, 1419-1425, 2004. [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 | ACP, 04 Mar 2009:
Laboratory studies of ice
formation pathways from
ammonium sulfate particles

02 | ACPD, 04 Mar 2009:
Data assimilation of CALIPSO
aerosol observations

03 | ACPD, 04 Mar 2009:
Regional modelling of tracer
transport by tropical
convection – Part 2:
Sensitivity to model
resolutions

04 | ACPD, 04 Mar 2009:
Regional modelling of tracer