INTERMODULAR DESCRIPTION SHEET:	UMAP Unit 770, corrected (12/98) 1st ed.
TITLE:	Climate Change and the Daily Temperature Cycle
AUTHOR:	Robert M. Gethner Mathematics Dept. Franklin & Marshall College Lancaster, PA 17604–3003 r_gethner@acad.FandM.edu
MATHEMATICAL FIELD:	Linear ordinary differential equations
APPLICATION FIELD:	Geophysics, climate modeling
TARGET AUDIENCE:	Students in a sophomore/junior-level mathematical models class.
ABSTRACT:	We construct differential equations models of the daily temperature cycle on atmosphere-free planets and on planets that have atmospheres. The models give some insight into the behavior, observed in recent decades, that nighttime lows have been increasing faster than daytime highs over the Earth's land surfaces.
PREREQUISITES:	Mastery of one-variable calculus and some familiarity with first-order differential equations, including knowing how to linearize them. Some optional computer exercises require the use of a graphing calculator, or, better, computer software, for plotting functions and determining coordinates on the plots.

This UMAP Module originally appeared in *The UMAP Journal* 19 (1) (1998) 33–86.

COMAP, Inc., Suite 210, 57 Bedford Street, Lexington, MA 02173
(800) 77-COMAP = (800) 772-6627, or (781) 862-7878; http://www.comap.com