STATIONARY WAVE ACTIVITY SIMULATED BY THE NASA AMES MGCM INCORPORATING NEW MOLA TOPOGRAPHY DATA. A.F.C. Bridger, *Department of Meteorology, San Jose State University, San Jose CA 95192, (bridger@hellas.arc.nasa.gov)*, J.L. Hollingsworth, *NASA Ames Research Center/SJSUF, MS 245-3, Moffett Field, CA 94035 (jeffh@humbabe.arc.nasa.gov)*, R.M. Haberle, *NASA Ames Research Center, MS 245-3, Moffett Field, CA 94035 (haberle@humbabe.arc.nasa.gov)*, J. Schaeffer, *NASA Ames Research Center, MS 245-3, Moffett Field, CA 94035 (jschaef@mintz.arc.nasa.gov)*.

Introduction: Annual simulations of Mars' atmosphere have been conducted with the NASA Ames Mars General Circulation Model (MGCM) using the newly-acquired MOLA topography data [1]. The data is provided at 1x1 deg resolution, and is used by the MGCM at 7.5x9 deg resolution. The vertical domain in the simulations reported here extends to around 80 km.

Simulated stationary wave activity is examined in each hemisphere as a function of season (at every 30 deg of Ls), dust loading (dust visible opacities of 0.3, 1, and 3), and topography (comparing results with MOLA vs. Smith-Zuber topography [2]).

Results: We find a sharp drop in stationary wave one and two activity (measured by geopotential amplitudes) in the northern midwinter season (Ls around 270) when the MOLA topography data is used, as opposed to when the Smith-Zuber topography data is used. A similar drop in transient wave activity during this same season when the MOLA data is used is reported elsewhere.

Figure 1 compares stationary wave one geopotential amplitudes at Ls 270 in simulations with the Smith-Zuber data (a) and the MOLA data (b). Results similar to those shown in Fig. 1(a) have been noted in previous MGCM simulations with other topography datasets (Consortium, DTM; [3]).]). For comparison, Figure 2 shows wave 1 activity for southern midwinter (Ls 90).

Diagnostic comparisons between the two simulations are made, with attention focussed on wave forcing from below, and on the mean states of the simulated atmospheres. These comparisons aid in explaining the reduced wave amplitudes during northern midwinter.

References: [1] Smith, D.E. et al (1999) *Science*, submitted. [2] Smith, D.E. and M.T. Zuber (1996) *Science* **271,** 184-188. [3] Barnes, J.R. et al. (1996) *J. Geophys. Res.* **101,** 12753-12776.

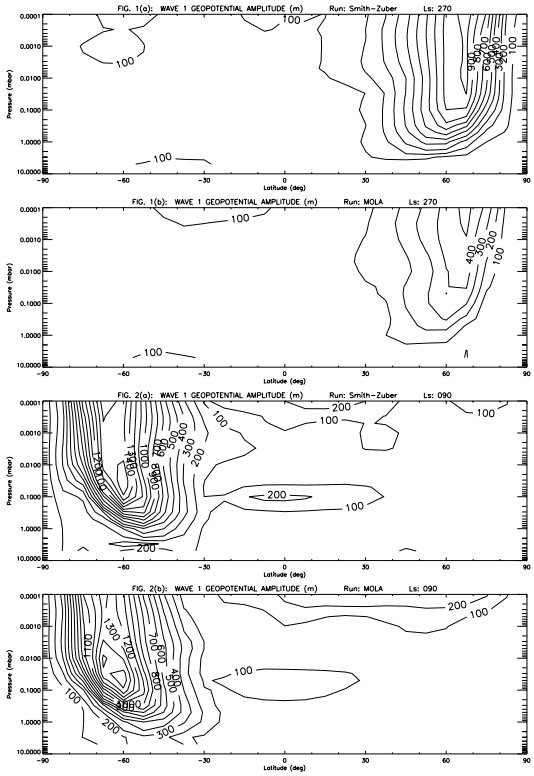

Figure 1: Stationary wave one geopotential amplitudes at Ls 270 (northern midwinter) with Smith-Zuber data (a) and MOLA data (b). The same but at Ls 90 (southern midwinter).