Abstract
A 3D simulation of the May 14-17, 1997 CME event was made using the CISM Coupled Magnetosphere-Ionosphere-Thermosphere (CMIT) model. In this paper, we describe the response of thermospheric winds to this event. It is found that a strong westward zonal wind jet occurs in the middle and low latitudes. A diagnostic analysis is carried out to study the mechanisms that are responsible for causing this neutral wind jet and its temporal variations.

The CMIT Model
The LFM code solves ideal MHD equations in the magnetosphere using the Partial Interface Method on a distorted spherical mesh and Yee type grid. The TING model solves time dependent, 3-D, coupled equations of momentum, energy, and mass continuity for neutrals, and O+ on both global coarse and local fine grids.

May 14-17, 1997 Event
Solar wind and IMF data from the WIND satellite that are used to drive the CMIT model.

Thermospheric Neutral Winds Response to Geomagnetic Storms
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Summary
A westward zonal neutral wind jet occurs in the lower thermosphere in low latitudes during a major geomagnetic storm. The wind speed here is larger than that in the upper thermosphere. The advection of westward momentum from the high latitude dusk cell to lower latitudes is the primary driving force for this jet. The recovery of this westward flow takes about 18 hours and is also caused by the momentum advection. The poleward Coriolis force is balanced by equatorward pressure gradient and momentum advection. This produces very small meridional winds in the middle and low latitudes.