



Meteorology Seminar

Title: When will the Antarctic ozone hole recover?

Speaker: Dr Paul Newman, GSFC, NASA

Date: Thu 21st September 2006 at 2:15PM

Location: Mathematical Sciences Seminar Room

Abstract: The Antarctic ozone hole develops each year and culminates by early spring (late September – early October). Antarctic ozone values have been monitored since 1979 using satellite observations from the TOMS instrument. The severity of the hole has been assessed from TOMS using the minimum total ozone value from the October monthly mean (depth of the hole) and by calculating the average area coverage during this September –October period. Ozone is mainly destroyed by halogen (chlorine and bromine) catalytic cycles, and these losses are modulated by temperature variations in the collar of the polar lower stratospheric vortex. In this talk, I will show the relationships of halogens and temperature to both the size and depth of the hole. Because atmospheric halogen levels are responding to international agreements that limit or phase out production, the amount of halogens in the stratosphere should decrease over the next few decades. Using projections of halogen levels combined with age-of-air estimates, we find that the ozone hole is recovering at an extremely slow rate and that large ozone holes will regularly recur over the next 2 decades. The ozone hole will begin to show first signs of recovery in about 2023, and the hole will fully recover to pre-1980 levels in approximately 2070. This 2070 recovery is 20 years later than recent projections. I will also discuss current assessments of mid-latitude ozone recovery.

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