

Climate change may cause major ozone loss

Researchers at the National Aeronautics and Space Administration (NASA), the United States, report that by 2030s climate change may surpass CFCs as the main cause of overall ozone loss. A study reveals that greenhouse gases like methane and carbon dioxide are changing the climate in many ways. Some of those effects include water vapour increases and temperature changes in the upper atmosphere, which may delay future ozone recovery over heavily populated areas. The study examined the ozone layer over heavily populated areas around the equator and mid-latitudes where ozone thinning occurs, excluding the Polar regions, where 'ozone holes' form.

Ozone thinning is observed when increased emissions of methane get transformed into water in the stratosphere. At high altitudes, water vapour can be broken down into molecules that destroy ozone. Also, methane and carbon dioxide change our climate by trapping heat in the atmosphere before it can escape out to space. This greenhouse effect heats air within the lowest layer of the atmosphere, called troposphere. Warming in the troposphere can alter atmospheric circulation and make the air wetter, since warmer air holds more water. Though complex and not well understood, there is evidence that water vapour can get wafted from the troposphere into the stratosphere by shifting air currents caused by climate change.

Computer model simulations were used to identify the different factors that contribute to ozone changes. According to the models, which contain some uncertainty, ozone levels are expected to reach their lowest point in recorded history by around 2006. One simulation isolated the impacts of CFCs on ozone and showed that as CFCs decline, by the year 2040 overall ozone makes close to a full recovery from current low levels. When CFCs, water vapour and temperature changes were all combined in a computer model, by 2040, overall ozone levels recovered only slightly from their current low point. These simulations suggest that climate change from greenhouse gases may greatly slow any anticipated ozone recovery. (Website: www.science.go.com)