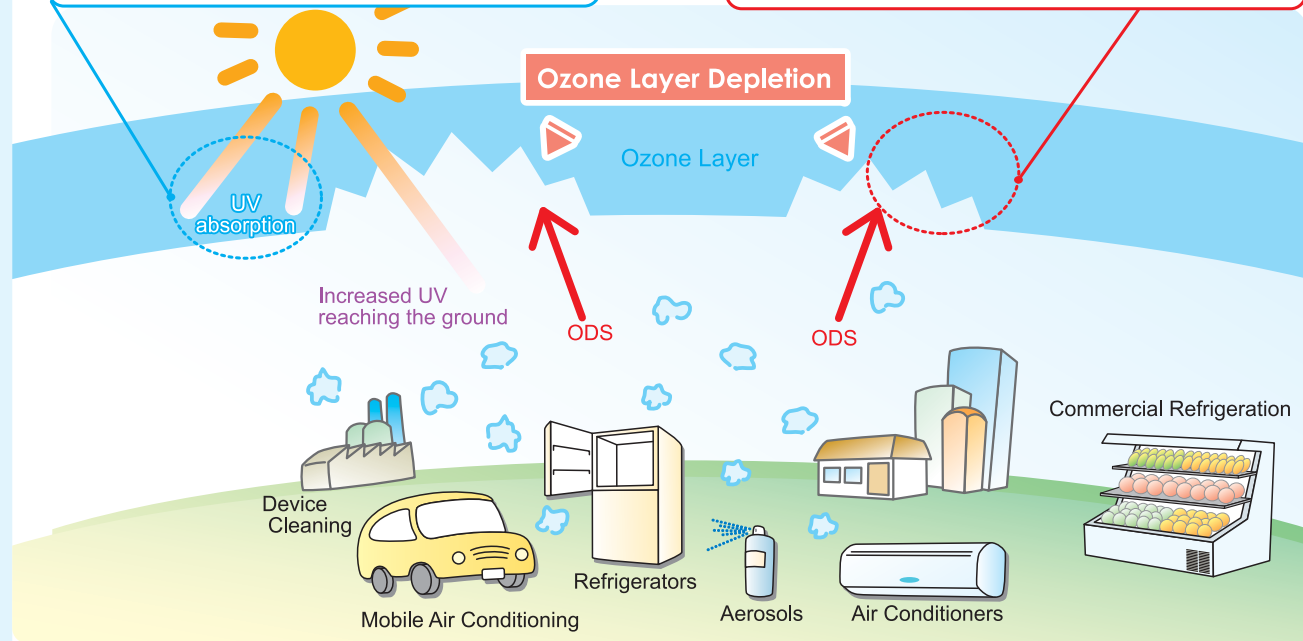
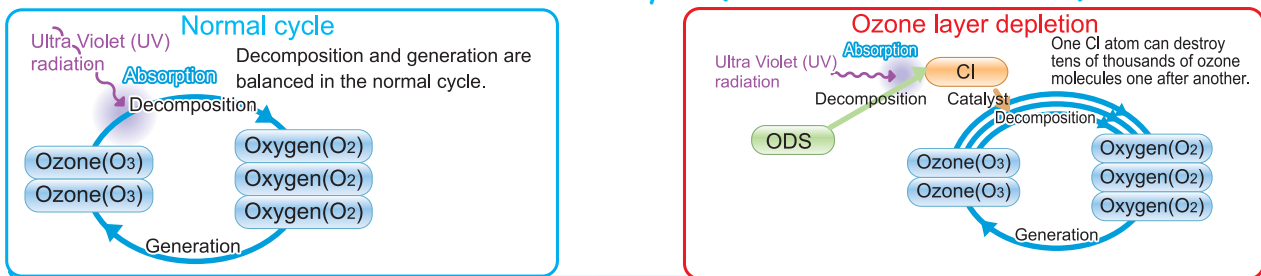




Ozone Layer & Ozone Holes

The ozone layer is a protective shield up in the air that absorbs harmful ultraviolet rays (UV-B), which can cause various negative impacts on human health and ecosystems. However, it has been destroyed by man-made chemicals called Ozone Depleting Substances (ODS) so much that there is a "hole" in the ozone layer (known as ozone hole).

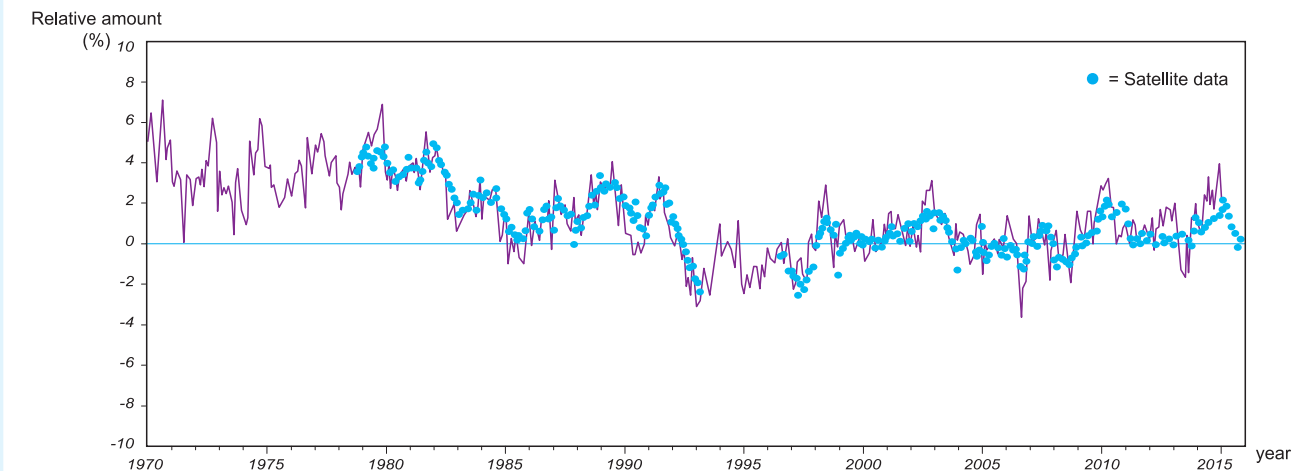


Negative impacts of excessive UV on human health

Acute (symptoms immediately appear)	Chronic (symptoms gradually appear)
<p>Sunburn Red inflammation of the skin that appears a few hours after UV exposure</p> <p>Suntan Browning of the skin that appears a few days after UV exposure</p> <p>Snow blindness Inflammation of the iris of the eye that occurs when the eye is exposed to UV in places such as skiing grounds and marine beaches. The white of the eye congests, accompanied by pain. The symptom is remedied in 1-2 days.</p> <p>Suppressions of the immune system</p>	<p>Skin</p> <ul style="list-style-type: none"> Wrinkle, Freckle, Senile plaque Benign tumor Precancerous lesion Solar keratosis Skin cancer <p>Eye</p> <ul style="list-style-type: none"> Cataract A disease caused by UV exposure, etc. in which the crystalline lens of the eye gradually gets cloudy. The vision weakened by cataracts cannot be corrected with glasses and severe cases need surgical operation. Pterygium A disease in which the abnormal growth caused by UV in the tissue of the white (conjunctiva) of the eye gradually develops towards the iris (cornea). It can be removed by surgical operations but may recur.

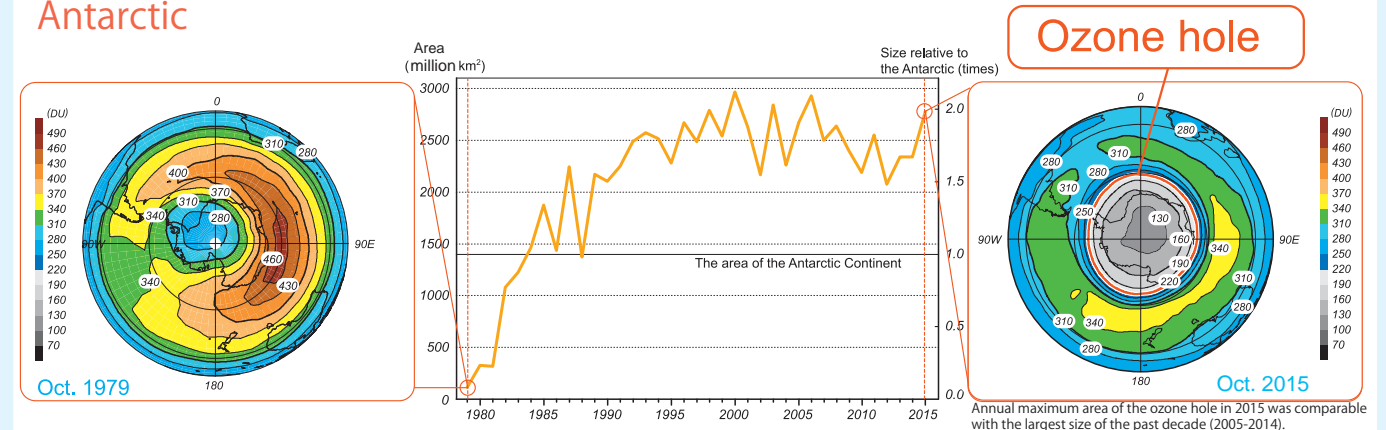
The amount of the ozone in the ozone layer decreased in the 1980s and the early 1990s. Although it picked up slightly in the recent years, the amount of ozone in the ozone layer continues to be smaller than before.

Global



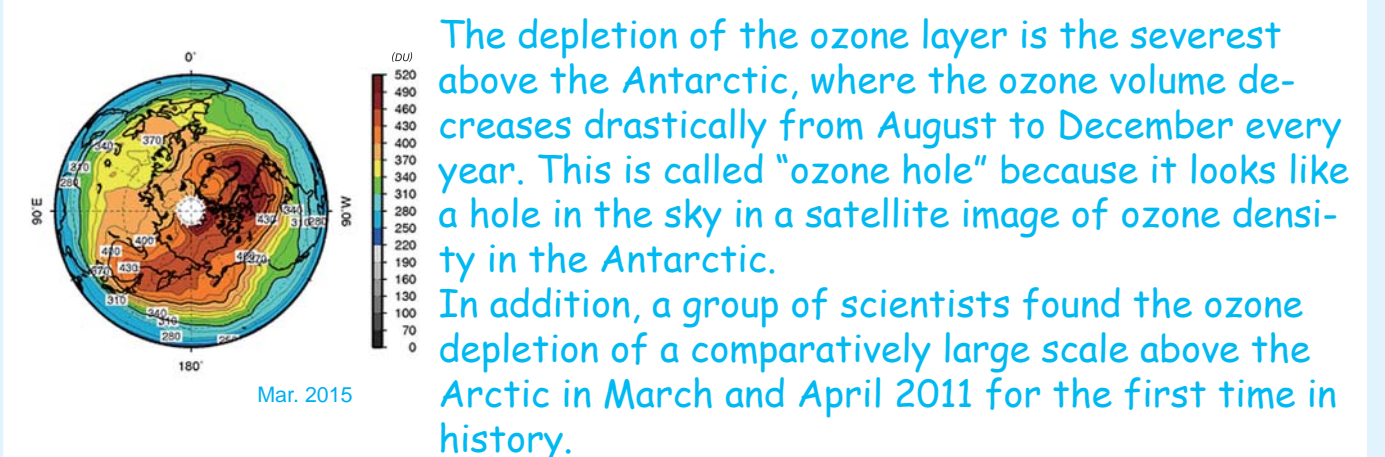
Time series in global mean total ozone
Source: Japan Meteorological Agency

Antarctic



Changes in annual maximum of the ozone hole area (center) and the total ozone maps over the Antarctic region in October (left and right)
Based on the data provided by Japan Meteorological Agency

Arctic



Source: National Institute for Environmental Studies of Japan