

## Ozone hole

### NERC research protects lives and the economy

NERC's ozone research has spared thousands of lives and reduced damage to crops, saving the UK c.£1.3bn pa. This is the conclusion of a 2015 NERC-commissioned analysis by Deloitte.

NERC scientists were the first to discover damage to the ozone layer high in the Earth's atmosphere. NERC research was crucial to the ratification of the 1987 Montreal Protocol curbing the use of man-made ozone-depleting chemicals, now widely recognised as among the most successful international environmental agreements of all time.

In 1985, scientists from NERC's British Antarctic Survey (BAS) discovered a marked thinning of the ozone layer in the upper atmosphere, which protects the planet from harmful ultraviolet (UV) rays. This discovery depended on collection and analysis of over 30 years of Antarctic atmospheric data measurements, and prompted the publication of a seminal 1985 *Nature* paper.

NERC research supported the case for the Montreal Protocol in 1987, an international treaty designed to protect the ozone layer by banning the global production of ozone-depleting substances. Without NERC science, it would have taken an estimated 5-10 years longer to discover the ozone hole, delaying the Montreal Protocol and increasing the negative effects of UV damage.

#### Investment

Through BAS, NERC invested £14.1m in ozone monitoring from 1957 to 2015. Between 2004 and 2010, NERC made grants worth an average of £1.5m annually to ozone-related research.

#### Impact

NERC investment in ozone research has generated enormous environmental, societal and economic benefits. Without Montreal, the UN Environment Programme has estimated that the number of global skin cancer cases would have been 14% higher by 2030. NERC science continues to protect the ozone layer by identifying new ozone-depleting substances and monitoring banned substances in the atmosphere. According to assessments made in 2014, if current rates of recovery persist, the ozone layer will be fully restored by around 2075.

Deloitte's analysis estimated that, by reaching international agreement 5-10 years earlier, NERC research:

- Saved the UK **c.£1.3bn pa** – £6.1bn-£11.2bn in total:
  - Saved almost **300 lives per year** from skin cancer in the UK alone, reducing annual healthcare costs by up to £560m – £2.6bn-£4.8bn in total
  - Protected farmers' livelihoods by reducing UV damage to crops, averting annual losses worth up to **£740m** – £3.4bn-£6.4bn in total.
- Reduced UV damage to buildings constructed with polymer-based materials, reducing repair costs expenditure and prolonging buildings' lives.
- Strengthened UK leadership, increasing soft power and influence over international agreements such as the Antarctic Treaty.



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