Dust till Dawn:Exploring Saharan Dust Storms and their Influence on Climate Change
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Dr Highwood explained that probably only about 10 – 20% of the total atmospheric dust results from human activity and the effects on climate are more likely to be local than global. However Saharan storms that occur on average every few days, are a major contributor to the burden of atmospheric dusts and can be carried as far as South America and the Caribbean. Atmospheric dust reflects short-wave solar radiation and adsorbs terrestrial long-wave radiation. Major events can result in up to 20% loss of solar radiation. Dust has been shown to play a role in ice cloud formation by acting as nuclei for droplet formation and even small particles can significantly affect cloud properties and dynamics. The particles also play a role in aerosol/gas phase chemistry, acting as an adsorbant substrate and there is some evidence to suggest that this can lead to ozone destruction in dust layers. There is circumstantial evidence to suggest that Saharan dust storms have an influence on hurricane formation by lowering the sea temperature. In 2006 when there was significant dust activity, there were only 4 tropical storms and 5 hurricanes in the Atlantic: in 2005 when dust activity was lower than normal, there were 12 tropical storms and 15 hurricanes. However as yet there is no real scientific proof of any direct link.
Dust particles can also effect the biochemical cycles of oceanic algae through the transport of key nutrients such as iron, nitrogen and phosphorus.
Dr Highwood outlined the background to the Dust Outflow and Deposition to Ocean or DODO project and gave graphic details of the practicalities of chasing dust storms. In February and August 2006, attempts were made to follow and monitor Saharan dust storms from their formation over land and then passage over the ocean using a modified BAe 146 aircraft. Radiation levels were measured and dust samples collected for analysis in order generate sufficient information to develop a realistic model that will give greater understanding of the effects of Saharan dust storms. Extensive data was obtained from the second trip and it was possible to obtain good correlation with a similar NASA project when two aircraft flew side by side collecting samples. Unfortunately, data from the first trip was limited because for most of the period the winds were uncharacteristically from the south-west.
Dr Highwood dispelled any idea that the life of a dust storm chaser was a glamorous activity. At best it is extremely strenuous with very long days with up to five hour flights in very uncomfortable conditions.

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