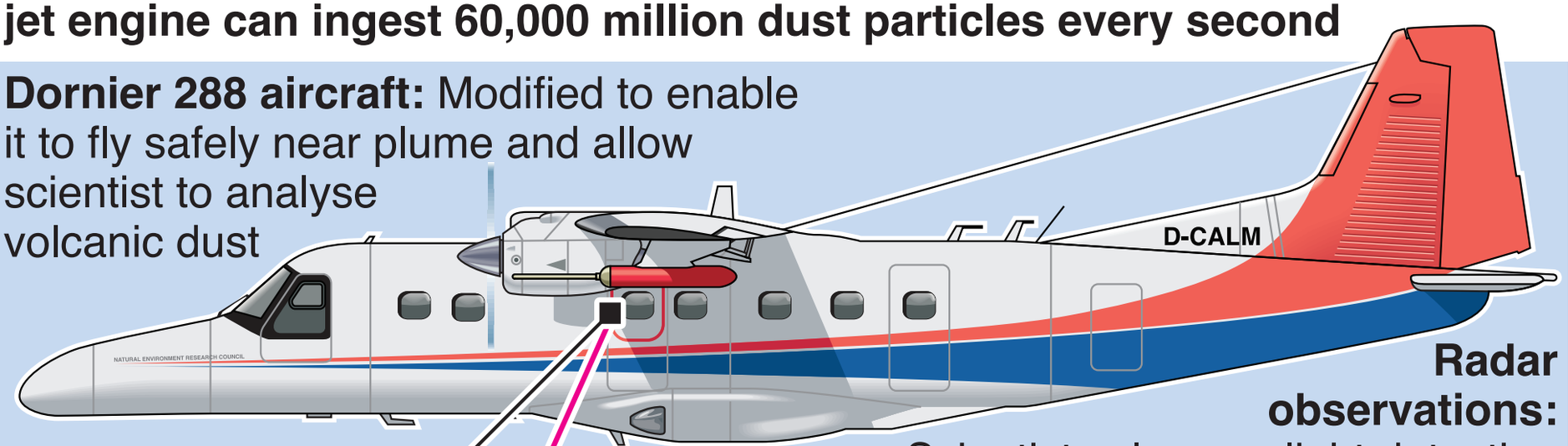
Tracking down volcanic ash cloud

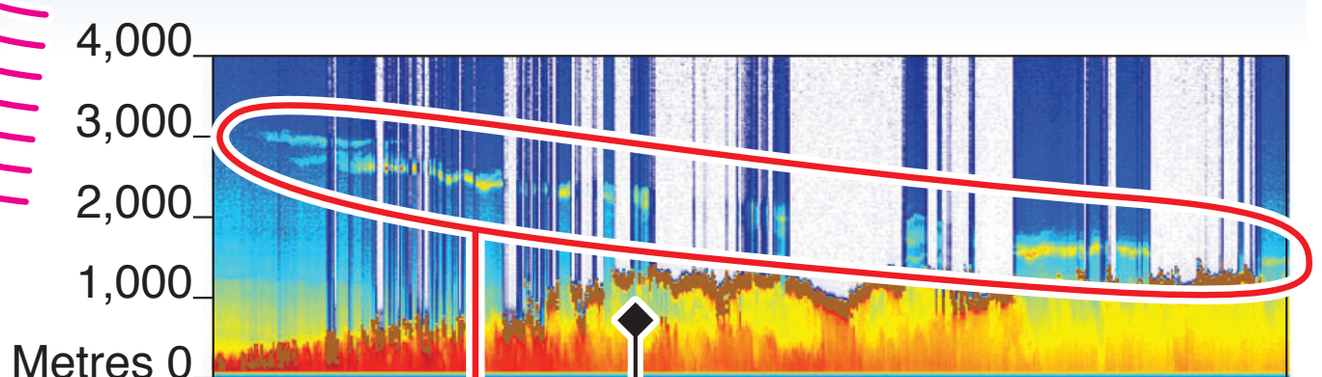
The highly abrasive volcanic dust that damages turbine blades is indistinguishable from light cloud and does not show up on radar fitted to airliners. At concentrations of 0.3 milligrams per cubic metre, a typical jet engine can ingest 60,000 million dust particles every second

Dornier 288 aircraft: Modified to enable it to fly safely near plume and allow scientist to analyse volcanic dust



Laser beams: Detect particles of sulphur dioxide – gas exhaled by volcanoes which forms sulphuric acid

Radar observations: Scientists also use light detection and ranging systems (Lidar) to determine height, density and position of cloud. **Lidar sends laser signals into sky, which are then reflected back by aerosols – airborne particles in atmosphere**



Ash consists of silica – sharp, abrasive particles which are main constituent of sand and glass

Volcanic ash plume

Boundary layer: Colours show different aerosol particles in lowest part of atmosphere

Sources: Met Office, National Environment Research Council

Graph shows Lidar observation of April 16 over Cardington, England