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Onset of the third episode of lava dome growth at Soufriere Hills Volcano, Montserrat

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For 24 months after the massive dome collapse in July 2003, there was no dome growth and this period exceeded the duration of the 1998-1999 pause in lava extrusion (20 months). The level of volcanic activity after July 2003 was generally much lower than the pause in 1998-99 leading to optimism that the eruption was in decline. The first precursors to renewed dome growth began in February 2005. A short-lived episode of GPS line-lengthening between two GPS sites in mid-February 2005 and concurrent increased SO2 emissions which lasted to the end of March was interpreted as an injection of mafic magma into the shallow magma reservoir at ~ 6km depth.

A change in GPS deformation on 9 April 2005 was followed by an increase in SO2 flux on 11 April and very vigorous venting on 15 April. From 15th April, the number of vt episodes increased dramatically compared with the previous 6 months. This is interpreted as the onset of magma rise up the conduit towards the surface.

On 4 June GPS line-lengthening began and on 6 June SO2 flux increased, this was interpreted as another influx of mafic magma into the reservoir. Rockfall signals, hybrid and long-period earthquakes increased significantly in number on 12/13 June Vigorous ash and gas venting began on 13 June with the opening of new fractures in the crater area.

Five vulcanian explosions took place between 28 June -27 July, the plumes reached up to 7km high (20,000ft). The ash was dominated by old, altered andesite but showed an increasing but very small glassy content with evidence for variable ascent rates. On 8

August 2005, a small new lava dome was observed inside the crater for the first time. It appeared to have a steady but slow growth rate of 0.5-0.7 m3/s through most of August. Despite this very slow start, extrusion rates increased rapidly from November 2005 and in February 2006 exceeded the highest rates seen at the peak of activity in 1997.