MACH REFLECTION OVER DUSTY SURFACES

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Data from the 600 Ton ANFO experiment, DIRECT COURSE, are presented, showing the influence of a dusty surface on a Mach reflection process. The evolution of a heavily laden dust pedestal is shown to be intrinsically tied to the double Mach reflection phenomena. The dust pedestal is observed to be weakly interactive with the flow field in the double Mach regime, but lagging behind the flow at pressure ranges below 100 psi. An optically thin dusty boundary layer is seen to precede the dust pedestal at all ranges. Estimates of the growth of this layer is provided based on photographic data and passive erosion gauges. Finally the DIRECT COURSE (24 Ton ANFO) event and Operation MIGHTY MACH (1000 lb. Pentalite) as well as with hydrocode calculations are also supportive of these phenomena.