Small Particle Effects on Hypersonic and Subsonic Flight Vehicles

What information is available on the effects of certain flight conditions, namely the interactions of small and large particulates in the air, on high-speed (hypersonic/supersonic) vehicles?

The Defense Systems Information Analysis Center (DSIAC) was asked to identify information describing the effects small particles have on hypersonic and supersonic flight vehicles. DSIAC staff compiled research describing the effects of a variety of small particles, including water droplets, ice, rain, dust, sand, and volcanic ash. Volcanic ash effects on subsonic flight vehicles,... READ MORE
Deputy Defense Secretary, U.K. Counterpart Discuss Defense, Security Priorities

Deputy Defense Secretary Kathleen H. Hicks met with U.K. National Security Advisor Sir Stephen Lovegrove to reaffirm the U.S.-U.K. bilateral relationship between the United States and the United Kingdom, a Defense Department spokesman said.

The two leaders met at the Pentagon and exchanged views on defense and security priorities, including the progress on U.S. strategic reviews and the recently announced Australian, U.K., and U.S. trilateral security partnership to ensure peace and stability in the Indo-Pacific region, the spokesman said.

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Image: U.S. Space Force

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Jeffrey A. McChesney
CEO & Founder, Target Arm Inc.

I have decades of experience in the art of warfare and high-technology development. I work with the military to enable high volley rates for kinetic and intelligence, surveillance, targeting, and reconnaissance (ISTAR) uses for unmanned aerial vehicles (UAVs) while on the move, with the goal of persistent air dominance at every echelon.
Modern military systems and supporting infrastructure depend upon sensitive semiconductor electronic components to provide their sensing, communications, and weapon system functions. These electronic devices are known to be potentially vulnerable to high-power electromagnetic sources and environments, such as those produced by high-power microwave (HPM), radio frequency, directed energy weapons. HPM is a new form of “non-kinetic” energy weapons threats that systems must face in addition to traditional kinetic energy weapons, such as projectiles, rockets, and missiles. HPM weapons can irradiate a target with sufficient energy to couple the energy into the target's electronics and...
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