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Application of new unstructured geometry capability within FDS to simulation of outdoor smoke transport and deposition MARCOS VANELLA, Fire Research Division, National Institute of Standards and Technology, Gaithersburg, MD, USA, ORIOL RIOS, HSE Department, CERN, 1211 Geneva 23, Switzerland, GLENN FORNEY, Fire Research Division, National Institute of Standards and Technology, Gaithersburg, MD, USA, EMANUELE GISSI, Corpo Nazionale dei Vigili del Fuoco, Italy, JASON FLOYD, Jensen Hughes, Rockville, MD, USA, SAVERIO LA MENDOLA, HSE Department, CERN, 1211 Geneva 23, Switzerland, RANDALL MCDERMOTT, Fire Research Division, National Institute of Standards and Technology, Gaithersburg, MD, USA — Over the years, the Fire Dynamics Simulator (FDS) has become one of the industry preferred tools for simulation of fire scenarios in design of indoor fire protection systems, forensic studies and wildland fires, among others. The flow solver of FDS evolves the Low Mach approximation equations for thermally driven buoyant flows by means of Large Eddy Simulation (LES), and standard discretization on block structured meshes. Recently, we have been developing the capability of FDS to simulate such flows over complex unstructured geometries via a cut-cell scheme and immersed boundary method. In this talk we will focus on the numerical scheme, and ongoing work on simulation of an outdoor smoke dispersion problem considering agglomeration and deposition in the kilometer scale CERN Meyrin campus. Details of the software implementation, simulation setup, and species transport and deposition results for a specific contaminant release scenario will be discussed.

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