

This paper is dedicated to a first approach for the study of the so called eruptive fires or accelerating forest fires. It is a preliminary work to test the hypothesis of Volatile Organic Compounds (VOCs) accumulation as the cause of this phenomenon. In this work we explore the ability of the numerical code Fire Dynamics Simulator (FDS-v5.5) to simulate premixed flame spread. In a first part the burning velocities of propane/air and n-decane/air mixtures are calculated for different initial temperatures and equivalence ratio (0.7-1.3) at atmospheric pressure using a cylindrical combustion chamber. The preheat temperatures range for propane and n-decane fuels are respectively 300-423 K and 360-470 K. In a second part, the laminar burning speeds of the α -pinene, which is the main VOC emitted by Mediterranean vegetal species, is simulated for the same equivalence ratio and initial temperatures 373-453 K. The obtained results of these three fuels are compared to the experimental and computed results of the literature. These comparisons demonstrate the ability of FDS-v5.5 to deliver reliable predictions on laminar burning velocities of premixed flames