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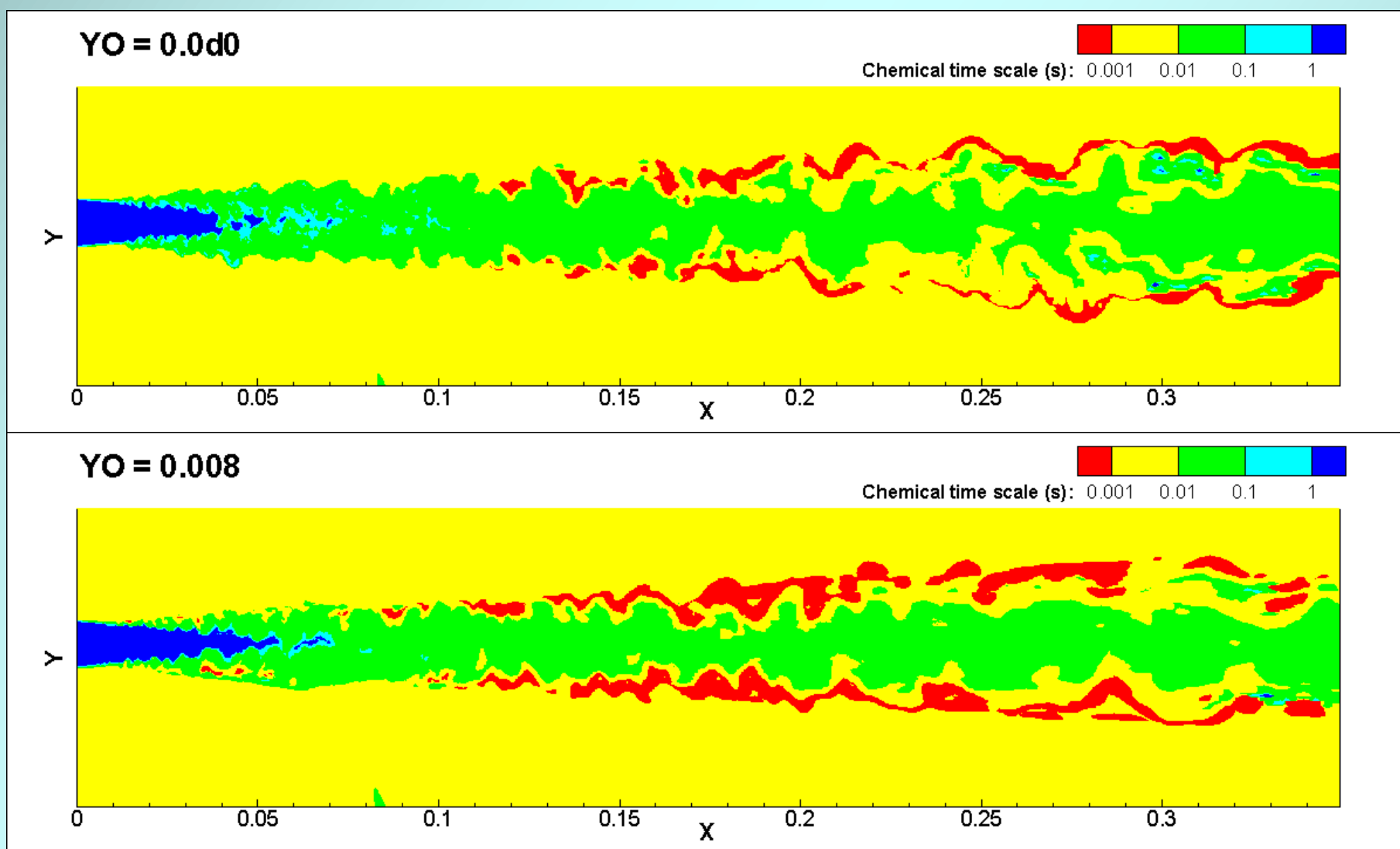
## Effects of Oxygen atom vitiation on supersonic air/H<sub>2</sub> diffusion flames

par

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**le jeudi 4 juillet 2013 à 11h**  
*salle de réunion ICARE*



Ground-tests for SCRAMJET engines need the supply of co-flowing air at elevated temperature. To that end, combustion heaters are used, with the drawback of adding both products (H<sub>2</sub>O, CO<sub>2</sub>) and radicals (H, O...) into the co-flow, although real flight conditions are supposed to be clean. Here, we investigate the influence of vitiation with Oxygen atom. Numerical simulations of air/H<sub>2</sub>, constant volume, 0D reaction and 1D diffusion flames at different O radical concentration are first performed to isolate basic effects. Then, we present and analyse the results of the Implicit Large Eddy Simulation of the supersonic LAERTE combustion chamber of ONERA for different levels of vitiation.