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Doug Roble, Digital Domain Productions, Inc.. *Visual Effects and Fluids - The search for artistic realism.*

In the late 1990s a couple of papers came out that showed that realistic fluid simulations (both gas and liquid) were viable for visual effects in film production. Since then, there has been an explosion of research in fluid simulation for computer graphics and use of fluid simulations in film. Both academic researchers and industry engineers have been working on many aspects of improving the simulations: What is the best way to track the fluid? How fast can the simulations run? How can artists control the fluid? Is it possible to reduce or remove the numerical diffusion inherent in the simulation?

This talk will examine the recent history of fluid simulation in the visual effects industry and some significant mathematical advances that changed the way we do simulation. We will illustrate these changes with examples from various films and discuss the way fluid simulation is used by artists in production. (Received September 27, 2012)