Abstract Submitted
for the DFD16 Meeting of
The American Physical Society

Biofuels spills in surface waters a laboratory investigation of mixing and interfacial dynamics[1] XIAOXIANG WANG, ALINE COTEL, University of Michigan — There are increasing risks of spills of ethanol-based biofuels in aquatic environments, however the environmental impact of such accidents is poorly understood and no adequate mitigation strategies are in place today. The interaction of water and biofuels is a complex dynamical problem and we aim to quantify the physical processes involved in such dynamics. A solution of ethanol and glycol is used to represent a typical ethanol-based fuel. A small-scale Plexiglas tank has been designed to investigate the effect of natural conditions on the mixing of water and biofuels, e.g. slope angle, flow rate, wave amplitude and frequency in wind driven conditions. Our previous work showed that the existence of two distinct mixing regimes; a first turbulence-driven fast mixing regime and a second regime driven by interface instabilities. We investigate these mixing regimes under an extended range of physical parameters representing more natural configurations.

[1]Funded by NSF

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Date submitted: 27 Jul 2016 Electronic form version 1.4