Integration of outcrop, core, and seismic-reflection data in order to constrain the depositional setting and mechanics of slurry flows using examples from the Ouachita Basin, Arkansas and the San Joaquin Basin, California.

Larisa Masalimova
Stanford University, Department of Geological and Environmental Sciences
Stanford, CA
larushka@stanford.edu

This research will focus on poorly studied slurry beds, which represent the deposits from transitional flows, which show evidence of deposition involving both cohesive (debris flow) and turbulence effects. Slurry beds and similar deposits are documented in many sedimentary basins throughout the world (in the North Sea, the Karoo Basin, the Molasse Basin, the East Carpathians, the Magallanes Basin, etc.). These slurry beds show unique sedimentary features, such as banding, water escape structures, and a high mud content of more than 5% implying distinct depositional processes and downslope evolution than conventional turbidities. This research will focus on the sedimentary mechanics, depositional setting, clay mineralogy, mud content and its role in formation of the slurry flows using examples from the Pennsylvanian Jackfork Group of the Ouachita Basin, Arkansas and the Miocene Monterey Formation of the San Joaquin Basin. One of the main goals of this research is to study a range of thick and thin slurry beds to determine if a regular internal structuring exists and to try to characterize the variations in sedimentary structures across the range from thick to thin, and mud-rich to mud poor deposits. Slurry flow formation, evolution and deposition will be documented through integration of seismic and outcrop data, thin section and geochemical analysis. This study will be beneficial for oil exploration, as it will document reservoir quality (porosity, permeability), and predict the occurrence as well as lithological changes of the slurry beds as potential reservoirs for hydrocarbons.