1071-35-103 **Jiahong Wu*** (jiahong@math.okstate.edu), 401 Mathematical Sciences, Stillwater, OK 74078.

Recent progress on the surface quasi-geostrophic and related equations.

Fundamental issues such as the global regularity problem concerning the surface quasi-geostrophic (SQG) and related equations have attracted a lot of attention recently. Significant progress has been made on various fronts. This talk focuses on some very recent advances on the generalized SQG equations. These equations are active scalar equations with the velocity fields determined by the scalars through general Fourier multiplier operators. The SQG equation is a special case of these general models and it corresponds to the Riesz transform. We present several existence and uniqueness results for the case when the operators are very singular integral operators. These results are from three recent papers in collaboration with D. Chae, P. Constantin, D. Cordoba and F. Gancedo. These papers can be found in arXiv. (Received February 25, 2011)