

# The surface quasi-geostrophic and related equations

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## **Abstract:**

The global (in time) regularity issue concerning the surface quasi-geostrophic (SQG) equation has recently attracted a lot of attention. Many studies have been devoted to this issue and important progress has been made. In particular, the global regularity for the SQG equation with critical dissipation has been successfully established. The global regularity issue for the inviscid SQG and the supercritical SQG equations has only been partially resolved. This talk presents recent theoretical and computational results on a family of active scalar models that generalize the SQG equations. It is based on collaborative work with Dongho Chae and Peter Constantin. The study of these model equations is partially motivated by an attempt to gain insight into the unresolved issues concerning the inviscid SQG and the supercritical SQG equations.