Developing a numerical model that can predict flow field both accurately and efficiently is important. The OE group at UT has developed a numerical model based on the VIScous and Vorticity Equation (VISVE). The major advantages of the VISVE method are that it needs a small computational domain, and that the pressure can be calculated after solving the flow field. In this work, an in-house k–ω SST model is implemented in the VISVE solver, enabling VISVE to solve turbulent flow. The k–ω SST model uses a blending function to gradually transform from the standard k–ω model near the wall, to a high Reynolds number version of the k–ε model in the outer portion of the boundary layer. This numerical model is applied on a 2D hydrofoil and a circular cylinder, and the results are shown to be in very good agreement with those from a RANS (Reynolds-Averaged Navier-Stokes) solver.

**Turbulence Modeling in VISVE (VIScous Vorticity Equation)**

Rui You

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The mission of the United States Geological Survey (USGS) is to provide reliable scientific information to mitigate the effects of natural disasters, manage natural resources, and protect our quality of life. Satellite remote sensing is one of the most effective ways this is accomplished as the information provided by Earth observation satellites has high temporal and spatial resolutions. Additionally, substantial amounts of data measuring a variety of variables is continually being processed and is promptly made available to the public. The primary goal of the National Land Imaging (NLI) Program is to provide the Federal Government and the public with this remotely sensed data and to be a leader in defining the future of land remote sensing domestically and abroad. The economic security and environmental vitality of local communities, states, regions, and countries rely on the continuous monitoring of our Earth. During this presentation I will discuss my activities as an NSF GRIP Intern with the NLI Program and present the major policy and science challenges associated with the future of land remote sensing.

**Intersection of Science and Policy in the National Land Imaging Program**

Matthew Preisser

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