**Speaker:** Christopher Wade

**Title:** Groundwater Induced Land Subsidence in the Southern Chesapeake Bay Region of Virginia

**Abstract:** In the United States more than 17,000 square miles in 45 states have been directly affected by land subsidence, defined as a gradual settling or sudden sinking of the Earth’s surface due to the movement of subsurface materials. Over 80% of this subsidence is attributable to the human extraction of groundwater. In coastal regions, such as the Southern Chesapeake Bay Region of Virginia, ongoing and substantial land subsidence has contributed to relative sea-level rise and changes in the flow of rivers, both of which affect the risk of flooding. Although the physical effects of land subsidence have been studied, few studies have quantified the economic damages that arise as land subsidence leads to an increase in the frequency and severity of flooding events. We develop an empirical simulation model that links economic decisions about groundwater pumping with aquifer characteristics to generate spatial predictions of land subsidence in southeastern Virginia. These predictions are used to estimate the loss in property values that occurs as land subsidence affects the boundaries of flood zones and the frequency of flooding within those zones. This model will be useful for groundwater managers in that it will provide necessary information in predicting amounts of land subsidence given different groundwater pumping schedules. Policymakers can use this information to develop groundwater policies that limit the damages created by over-extraction of groundwater and land subsidence while still meeting the water demand required to support a growing population.