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Application of Docker Containerizing Software in undergraduate education to increase model understanding.

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Investigation of atmospheric models in undergraduate programs is generally limited to upper level numerical modeling classes. Application of Docker software allows for the Weather Research and Forecasting (WRF) model to be readily available for classroom use and hands on investigation. As with any skill (e.g., scientific writing, programming), repeated exposure is needed to achieve proficiency and gain a deep understanding. Investigation of model components such as the model core, initial and boundary conditions, parameterizations, and uncertainty and ensemble forecasting will be integrated into existing courses. Specifically use of WRF Docker in the classroom will be tested at UND over the next two academic years. Plans are to target four classes which are usually taken four different years by undergraduate majors: Intro to Meteorology, Meteorological Instrumentation, Physical Meteorology, and Numerical Methods. Building the understanding of model aspects over time should deepen understanding as compared to solely covering topics in a single senior level course. Examples of planned class activities will be presented. Integration of the Big Weather Web project into classroom activities will also be discussed.