

**NASA Innovations in Climate Education (formerly Global Climate Change Education):
Advancing Student Knowledge Through Teacher Education (ASK Florida)**



NASA funded Advancing Student Knowledge Through Teacher Education (known as “ASK Florida”) to increase middle-school teachers’ content knowledge in climate change science and their ability to identify and use scientific and teaching tools to incorporate climate education in the classroom. Dr. JoEllen Carlson of the University of South Florida Coalition for Science Literacy (CSL) was the PI, with Dr. Mark Bourassa of the Florida State University (FSU) as co-PI. A team of scientists from the Center for Ocean-Atmospheric Prediction Studies (COAPS), the National Oceanic and Atmospheric Administration (NOAA), Florida’s State Climatologist, the University of Florida Water Institute, and selected science teachers developed content, pedagogy, and participated in facilitating the program.

ASK Florida was conducted during 2010-2014. Teachers from three diverse school districts participated in a four-day summer workshop and two two-day workshops during the school year. Workshop content was rich in science, data, and use of climate science resources; workshops were not “make-and-take.” Teachers developed and taught at least one climate lesson using the 5E instructional model (Engage, Explore, Explain, Extend or Elaborate, Evaluate), worked individually with coaches, and interacted with other teachers, science educators, and scientists throughout the year. An optional two-day workshop was offered the following summer.

Content and methods were built on current standards and best practice, including K-12 climate literacy standards, national science standards, Florida’s state standards, national PD standards, and content-specific pedagogy, such as inquiry learning and targeting to specific assessment results. The content related local, Florida, and Southeastern U.S. topics to global topics. The major climate change topic areas are Climate Fundamentals, Energy Transfer and Climate, Weather and Climate, Causes of Climate Change, Humans and Climate Change, Hurricanes, Sea Level, and Sinkholes. Effective teaching methods were embedded throughout.

Each school district and educational consortium in Florida received a complete set of materials for use in replicating the ASK Florida program. The materials include information for preparation and coordination, important aspects of the coaching component, content resources, facilitator agendas for the workshops, facilitator guides for delivery, and participant handouts and worksheets. The nine content resources provide science content background and include: Glossary; Introduction; The Differences Between Weather and Climate; Energy Transfer and Climate; Atmospheric and Oceanic Circulations; Causes of Climate Change; Humans and Climate Change; Sea Level; and Sinkholes. Additionally, the resources are maintained and available from <http://coaps.fsu.edu/outreach/ask-florida-climate-education>.