


# Utah State University and USTAR SPACE WEATHER CENTER



## USTAR Space Weather Center at USU welcomed chief scientist Herb Carlson in March 2010

Herb Carlson has been appointed as chief scientist and director of strategic planning for the Utah State University USTAR Space Weather Center team. The former chief scientist for the United States Air Force Office of Scientific Research joined the team in March 2010.

Carlson's role includes technical and business tasks such as advising, recommending and participating in research that will best position the Space Weather Center in maintaining and extending an established lead in space weather prediction.

"Utah State University, thanks to work done by the Center for Atmospheric and Space Sciences, is a leader in space science research," said Carlson. "The years of hard work by CASS scientists help place the Space Weather Center in a position to develop new technology that is ahead of the game in forecasting space weather."

"The future of the USTAR Space Weather Center lies in meeting the growing needs of an already large national and international market that the center will materially serve," said Carlson. "The nation has a significant investment in space assets, to meet commercial and national defense

needs. Assured continuity of access to these assets is important to the commercial bottom line and national defense.”

Space weather disturbances can negatively impact GPS location devices, ATM machines, TV reception and transatlantic flight services.

The ionosphere is the shell of ionized upper atmosphere enveloping Earth. The USU SWC has state-of-the-art modeling capability to predict when the ionosphere will serve as a smooth benign transmission line, and when it may intermittently “fracture” due to magnetic storms or electric fields common at high latitudes.

“Ionospheric structuring without warning can cause surprise loss of communications, navigation, and space-based radar imaging,” said Carlson. “Reliable prediction allows information traffic to be rerouted for continuous connectivity.”

In 2009, the Space Weather Center released the iPhone app “SpaceWx” designed to visualize real-time space weather and allow for a more accurate GPS location identifier used by mobile smart phones. In the future, the SWC intends to develop predictive capabilities for more reliable high-frequency communications for use by the Federal Aviation Administration, commercial airlines, and the Federal Emergency Management Agency’s emergency backup communication. The SWC also plans to develop forecasting technologies for ionospheric plasma clouds that block access to satellite assets to enable reliable re-routing of information.

“The long-term goal of the SWC is to maintain its present lead in space weather research, using a comprehensive physics-based predictive model that is driven by real time global data,” said Carlson. “At Utah State University, we are in the position to achieve these goals.”



## SPACE ENVIRONMENT TECHNOLOGIES OPENS CORPORATE OFFICE ON USU INNOVATION CAMPUS

Space Environment Technologies, with affiliates in 7 states including Arizona, California, Colorado, Massachusetts, New Mexico and Texas, has now opened a new corporate presence on the USU Innovation Campus in North Logan, Utah. SET, a privately-held company, conducts space science research, provides space weather operations and develops space systems standards.

“The company was motivated to locate personnel and facilities on the Innovation Campus in North Logan from its close ties with the Utah State University USTAR Space Weather Center,” said W. Kent Tobiska, president of SET. “The Logan SET office not only will handle the company’s administrative functions but will also provide an exciting, newly expanded networking capability for SET’s operational servers.”

SET’s main customers are U.S. Air Force, National Oceanic and Atmospheric Administration, NASA and National Science Foundation agencies, as well as international commercial aerospace firms that use SET’s solar forecasts for helping with satellite operations.

Space Environment Technologies and the USU USTAR Space Weather Center, of which Tobiska is executive director, have worked together in the past. In 2009, the USTAR SWC developed and released “SpaceWx,” a popular iPhone app available through iTunes. The SpaceWx app shows the three major domains of space weather: the dynamic variability of the Sun’s photons, particles and fields as they affect Earth and 21st century technology. Space Environment Technologies is a major content provider for SpaceWx.

