Right: Forecasting hazards posed by the "weather" in space can be as important—and as difficult—as forecasting thunderstorms, tornadoes, and hurricanes on the ground. The highly energetic charged particles emitted by the Sun can endanger astronauts, damage the electronics on satellites and planetary probes, increase the radiation exposure of crews and passengers in high-altitude aircraft, and even affect electrical systems on the Earth’s surface.

Now, however, Ilia Roussev at the University of Hawaii has developed a computer model that could improve space weather forecasts significantly. Based on a well-established, but highly complex physical theory known as magnetohydrodynamics, Roussev’s model, right, accurately simulates the flares and other solar eruptions that emit the high-energy particles.

For more information:
www.ifa.hawaii.edu/users/iroussev