



TEMPEST-D

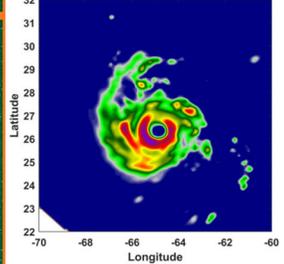
TEMPEST-D (Temporal Experiment for Storms and Tropical Systems—Demonstration), a small but mighty weather satellite led by Colorado State University, demonstrating game-changing technology to improve weather forecasting.



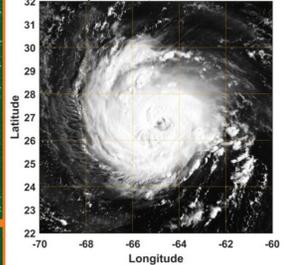
Mission

The TEMPEST mission concept deploys a closely spaced train of tiny cube satellites, or CubeSats, that carry identical low-cost, low-power remote-sensing technologies. The mission aims to provide answers to the big question, “Why do convective storms, heavy precipitation, and clouds occur exactly when and where they do?”

TEMPEST-D Precipitation Intensity (165 GHz)
September 11, 2018 11:40 UTC



GOES Visible Image (ABI)
September 11, 2018 12:30 UTC



Demonstrating Future Technologies

During its three-year mission in low-Earth orbit, TEMPEST-D proved its potential to keep pace with larger, more expensive satellites currently used for weather forecasting. The dictionary-sized satellite collected scientifically useful global data and exquisite weather images of multiple hurricanes and typhoons. SpaceX recently launched a copy of the TEMPEST-D sensor as a technology demonstration to show the feasibility of compact instruments for weather prediction and environmental monitoring.

Partners

NASA

- Caltech Jet Propulsion Laboratory
- Earth Venture Technology, Flight and Research & Applications Programs
- Earth Science Technology Office

Industry

- Blue Canyon Technologies
- Northrop Grumman

“The confidence gained from the success of TEMPEST-D can directly lead to innovative constellations of small satellites for Earth remote sensing, as we have never been able to imagine before.”

– Steven Reising
Professor of Electrical and Computer Engineering



Research Team

Steven Reising,
Professor in the Department of Electrical and Computer Engineering (PI)

V. Chandrasekar,
University Distinguished Professor in the
Department of Electrical and Computer Engineering (Deputy PI)

Christian Kummerow
Professor in the Department of Atmospheric Science (Lead Scientist)



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About Steven Reising



- Studies microwave remote sensing of the atmosphere and oceans, Earth science measurements from nanosatellites and CubeSats, radiometer, and radar systems
- Has been principal investigator on projects with such organizations as NASA, NOAA, the National Science Foundation (NSF), the U.S. Department of Defense, the Office of Naval Research, the Naval Research Laboratory
- Co-investigator on INCUS – CSU’s \$177 million NASA mission to study storms in the tropics

About V. Chandrasekar

- For nearly four decades, has worked in geoscience and remote sensing technologies to advance understanding of land, oceans, atmosphere, and space
- Has been principal investigator on myriad projects with organizations ranging from NASA to NOAA to the NSF
- Fellow of the National Academy of Inventors, American Meteorological Society, IEEE, International Union of Radio Science, and CSU’s Cooperative Institute for Research in the Atmosphere. In 2016, he was knighted by the government of Finland for his technical contributions.

