

Frederica Darema

Dr. Frederica Darema is the SES Director of the Air Force Office of Scientific Research. Prior that she was the SES Director of the Mathematics, Information and Life Sciences Directorate at AFOSR, and she also spearheaded the Dynamic Data Driven Applications Systems (DDDAS) Program. Prior to AFOSR, she held executive level positions at NSF, as Senior Science and Technology Advisor, and Senior Science Analyst, in the Computer and Information Science and Engineering Directorate at NSF. Dr. Darema received her BS degree from the School of Physics and Mathematics of the University of Athens - Greece, and MS and Ph. D. degrees in Theoretical Nuclear Physics from the Illinois Institute of Technology and the University of California at Davis, respectively, where she attended as a Fulbright Scholar and a Distinguished Scholar. After Physics Research Associate positions at the University of Pittsburgh and Brookhaven National Lab, she received an APS Industrial Fellowship and became a Technical Staff Member in the Nuclear Sciences Department at Schlumberger-Doll Research. Subsequently, she joined the IBM T. J. Watson Research Center as a Research Staff Member in the Computer Sciences Department, and later-on she established a multidisciplinary research group on parallel applications and became the Research Manager of that group. While at IBM she also served in the IBM Corporate Technical Strategy Group, examining and helping to set corporate-wide strategies. Dr. Darema's interests and technical contributions span the development of parallel applications, parallel algorithms, programming models, environments, and performance methods and tools for the design of applications and of software for parallel and distributed systems. Ideas she has promoted and scientific directions she has spearheaded are key for the Internet of Things and Autonomic Systems capabilities. In her career Dr. Darema has developed initiatives and programs that are recognized as having "changed the landscape of Computer Science research"; such initiatives include: the Next Generation Systems Program on novel research directions in systems software, and the DDDAS paradigm which has been characterized as "visionary" and "revolutionary". She has also led initiatives on research at the interface of neurobiology and computing, and other across-NSF and cross-agency initiatives and programs, such as those on: Information Technology Research; Nanotechnology Science and Engineering; Scalable Enterprise Systems; and Sensors. During 1996--1998, she completed a two-year assignment at DARPA where she initiated a new thrust for research on methods and technology for performance engineered systems. Dr. Darema was elected IEEE Fellow for proposing the SPMD (Single-Program-Multiple-Data) computational model that has become the predominant model for programming high-performance parallel and distributed computers. Dr. Darema is also the recipient of the IEEE Technical Achievement Award, for her work in pioneering DDDAS. Dr. Darema has given numerous keynotes and other invited presentations in professional forums.