

News

40 Years of Research Milestones



Milestone of the Day

Discovery science researchers often look beyond narrow technical problems; they tackle the big questions of why and how systems in the natural world evolve and function. Discovery science creates the foundation for scientific and technological progress.

The Department of Energy's Office of Science supports energy science through discovery research; unique, world-class facilities; and investments in great scientific minds and partnerships. We're both the nation's largest supporter of basic research in the physical sciences and the home of groundbreaking work in the biological and earth sciences. We pride ourselves on setting ambitious goals, managing challenging projects, and publishing significant results. Our research has changed the world, from better understanding the furthest reaches of the universe to cataloging the genes inside of us.

To celebrate the Department of Energy's 40th anniversary, the Office of Science has collected 40 major papers from the past 40 years that we've supported via research through our National Laboratories, user facilities, and grants programs. These papers are a cream-of-the-crop selection that has changed the face of science. Leading up to our anniversary on October 1, we'll post one new milestone paper each day.



1989 - Acid Rain and the Nation

How the "acid" got into "acid rain" - and snow, fog, hail and dust containing acidic components fell far from the source wasn't known until this 1989 landmark paper. Stephen Schwartz at DOE's Brookhaven National Laboratory identified the underlying causes, processes and impacts of this precipitation. He also explained how sulfur and nitrogen oxides released at one source caused acid rain in other environments. Schwartz's findings gave the first clear picture of the nationwide impacts of different sulfur and nitrogen sources and led to changes to the Clean Air Act.

S.E. Schwartz, "[Acid deposition: Unraveling a regional phenomenon](#) [↗](#)." *Science* **243**, 753-763 (1989). [DOI: 10.1126/science.243.4892.753]. Subscription required: contact your local librarian for access. (Photo credit: public domain)