Dr. Gladys B. West
Inducted 2018

Dr. Gladys B. West was born in Sutherland, Virginia, in 1930. After graduating at the top of her high school class, she attended Virginia State College (now University), where she majored in mathematics. Upon her graduation with a Bachelor of Science degree in 1952, Dr. West taught mathematics at schools in Sussex County until 1954, when she decided to pursue her Master of Science in Mathematics, full-time, at Virginia State College.

After completing her graduate degree in 1955, West worked again as a teacher for a short time in Martinsville, Virginia. Dr. West was hired the following year as a mathematician at the U.S. Naval Weapons Laboratory (NWL) in Dahlgren, Virginia, where she first worked with the Naval Ordnance Research Calculator (NORC), to verify calculations for range tables associated with various Navy weapon systems. In 1962, she joined the Scientific Programming & Analysis Branch in the Computation Division at Dahlgren, where she served on a five-member team that programmed the NORC for Project 29V, a path-breaking astronomical study that established the regularity of the motion of Pluto relative to Neptune, based on 5 billion arithmetic calculations that consumed 100 hours of computing time. Based on the programming team's Project 29V work, the Department of the Navy gave the team an "Award of Merit for Group Achievement" in December 1964.

Thereafter, Dr. West worked on precise calculation of satellite orbits using the NWL's more advanced Stretch (IBM 7030) computer. Using complex algorithms to account for variations in gravitational, tidal, and other forces that distorted Earth's shape, she programmed the computer to deliver increasingly refined calculations for an extremely accurate geodetic Earth model, a geoid, optimized for what eventually became the Global Positioning System (GPS) orbit.

Without that model, and regular updates thereto, the extraordinary positioning, navigation and timing accuracy of GPS would be impossible to achieve.

While working on geoid calculations at Dahlgren, West earned a Master of Arts in Public Administration degree, in 1973, from the University of Oklahoma. In 1975, one year after NWL was renamed the Naval Surface Warfare Center (NSWC), Gladys West became project manager for the Geodynamics Experimental Ocean Satellite, or GEOS-3, which confirmed conceptually that satellite radar altimeters could be employed for ocean geodesy measurements and resulted in the acquisition of a significant set of data. Then, in 1978, as project manager for SEASAT, West oversaw development of the first satellite capable of remotely sensing oceans, which resulted in further refinement of altitude variations. That led, in 1984, to geodetic data collection from the Geodetic Satellite, or GEOSAT, which enabled all the military services to create computer simulations of Earth's surface for cutting-edge applications. In June 1986, West published a guide, titled "Data Processing System Specifications for the GEOSAT Satellite Radar Altimeter," that explained how to calculate the accuracy of geoid heights using GEOSAT data.

Throughout her 42-year career at Dahlgen's NWL and NSWC, mathematician Gladys West used her computer programming skills to continually improve location accuracy for Department of Defense purposes. During those years she also found time to serve on Dahlgren's school board and lead the Dahlgren Toastmistress Club. She retired in 1998 and, in 2000, earned a Doctor of Philosophy degree in Public Administration from Virginia Polytechnic Institute and State University. Since her retirement, Dr. West has worked tirelessly to mentor youngsters, emphasizing the importance of learning science, technology, engineering and mathematics (STEM); she has volunteered regularly to speak at local elementary schools. On 21 February 2018, the Virginia General Assembly recognized her "analytical skill and her ability to accurately calculate complex mathematical figures," which enabled her to make "valuable contributions to the development of the Global Positioning System."