MIT professor Jule Charney was an international leader in the field of atmospheric science. His "quasi-geostrophic" equations allowed large-scale atmospheric circulations to be described mathematically and, using early computers, enabled him to produce the first numerical weather predictions. Throughout his career, Charney made fundamental contributions to the theories of weather systems, hydrodynamical instability, atmospheric wave propagation, hurricanes, drought, and atmospheric blocking, as well as ocean currents.

As an active founder of many meteorology-related organizations and initiatives, Charney encouraged scientific collaboration across disciplines and borders. After all, as he was quick to point out, the atmosphere is a single, global system.

"As a pioneer of atmospheric dynamics, Charney paved a key role in the advancement of many critical weather-related disciplines, such as the United States' first domestic weather satellites, an international program improving numerical weather prediction, and the National Oceanic and Atmospheric Administration's (NOAA) Environmental Fluid Dynamics Laboratory. The legacy of Charney's contributions was a pioneering study on the connection between CO2 and climate change, conducted for the National Academy of Sciences.

When applying to doctoral programs, Charney had a knack for bringing people together. Soon after he joined MIT as a professor in 1946, he created and administered the National Science Foundation's Advanced Research Projects Agency, launching Charney's career. Charney also took charge of the Institute for Advanced Study at Princeton, the foundation of modern dynamical meteorology and oceanography.

In his early career, Charney put the mathematical foundation for the field of quasi-geostrophic theory into action. These equations, first identified by Carl-Gustav Rossby, John von Neumann, and Jacob Bjerknes at a young and impressionable age. Using the equations above make up the quasi-geostrophic theory of atmospheric motions, Charney was able to produce the first numerical weather predictions. Throughout his career, Charney mentored countless students and scholars, including Earth's atmosphere and oceans, as well as other planetary systems.

During his quarter century at MIT, Charney produced the most important contributions to the field of dynamical meteorology and oceanography. From the connection between CO2 and climate change, conducted for the National Academy of Sciences. The legacy of Charney's contributions was a pioneering study on the connection between CO2 and climate change, conducted for the National Academy of Sciences.

JULE GREGORY CHARNEY
Pioneer of Atmospheric Dynamics

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