



PRESS RELEASE

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ANNY CAZENAVE LAUREATE OF THE 2020 VETLESEN PRIZE

Anny Cazenave, Emeritus Research Scientist at the LEGOS space geophysics and oceanography research laboratory, expert adviser to CNES and fellow of the French Academy of Sciences, is to receive the 2020 Vetlesen Prize for achievement in Earth sciences. She will receive her award in April at Columbia University (United States), as announced on Tuesday 21 January by the Earth Institute. This is the second time this prize, designed to be the Nobel Prize of the Earth sciences, has been awarded to a French scientist, the first having been the climatologist Jean Jouzel.

Over the course of her career, Anny Cazenave has played a key role documenting sea level rise driven by global warming. This rise, currently more than 3 millimetres a year, is today two times the rate during most of the 20th century, and it is speeding up. Scientists have determined that the increase is coming from two main sources: melt water from glaciers and ice sheets (in Greenland and Antarctica), and expansion of seawater itself as it warms. Anny Cazenave and her team quantified much of this by harnessing satellite data to analyse these phenomena in unprecedented detail.

Until the nineties, sea levels were recorded mainly by tidal gauges anchored at coastal ports. Since then, space agencies—particularly CNES and NASA—have launched a new series of satellite radar altimeters capable of surveying sea level variations everywhere in the world with unprecedented precision. Anny Cazenave and her colleagues developed ways to analyse these data and combine them with information from other Earth-observing systems to understand the causes. Altimetry satellites have also revealed that sea level rise is not even, and in some regions is three times faster than the global mean. These regional variations are chiefly due to the fact that the sea is not expanding evenly, as some regions of the ocean store more heat than others.

Anny Cazenave received her PhD in geophysics in 1975 from the University of Toulouse. Her early career focused on space geodesy and its applications in solid Earth research, notably the measurement of Earth's gravity field, plate tectonics and crustal deformations and variations in Earth's rotation. Using data acquired by the very first altimetry satellites, she also showed that the ocean surface is not flat, but subtly mimics the topography of the ocean floor. Numerous studies resulted from these findings, focusing for example on the dynamics of the oceanic crust and the mechanically strong layer of the uppermost mantle below it (the lithosphere).

The Vetlesen Prize is awarded every three years “for scientific achievement resulting in a clearer understanding of the Earth, its history, or its relation to the Universe”. The Vetlesen Foundation was created in 1955 by the Norwegian sailor and naval engineer George Unger Vetlesen.

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