

Short Biographical Sketch : Toshiro Tanimoto

I am a Distinguished Professor in the Department of Earth Science at the University of California, Santa Barbara. By training, I am a geophysicist/seismologist, specializing in seismic wave propagation and the oscillations of the Earth.

I used this skill to probe the interior structure of the Earth for the first 20 years of my research career, up to about 1998. My aim was to understand the form of mantle convection, whose surface manifestation is the plate tectonics. By mapping seismic speeds and anisotropy in the mantle, I dreamed of mapping mantle flow inside the Earth.

Around 1997, with Naoki Kobayashi and Kiwamu Nishida, we discovered that the Earth is undergoing oscillations for periods between about 100 sec and 300 sec, even when earthquakes were not happening. We called them the background oscillations but they are now commonly referred to as the hum of the Earth. After this work, I became more interested in understanding 'noises in seismograms' that are caused by ocean waves, atmospheric winds, hurricanes and tornadoes. They are 'environmental signals' and indicate the state of near-surface environment.

I was recently offered the Guggenheim Fellowship for 2022-2023. I plan to use the opportunity afforded by this fellowship to develop a new seismological approach to study shallow elastic structure in the Arctic zone. In polar regions, strong seasonal changes occur at shallow depths because of thawing of ice. This new approach could tell us the status of seasonally-changing structure in the uppermost 50-100 m throughout a year. I am interested in understanding how the global warming is manifested in such seasonal changes.

I was elected a Fellow of the American Geophysical Union (2012) and cited for excellence in refereeing by the editors of two highly respected journals, *Journal of Geophysical Research* (2015) and *Geophysical Journal International* (2010, 2011, 2013). My recent paper, Paper 116 in the publication list, was cited as one of the top downloaded papers in 2018-2019 by Wiley Publishing Co.