University of Victoria Retirees Association

In Search of the Holy Grail of Seismology

The Discovery of a Deterministic Earthquake Precursor

Presented by Dr. Kin-Yip Chun, Seismologist

Professor (Emeritus), University of Toronto

In the mid-1980's US launched a national project "Parkfield Earthquake Prediction Experiment (PEPE)" to monitor a 30-km segment of the San Andreas along which a magnitude 6 earthquake was known to occur with an approximate recurrence time of 22 years. The multi-million dollar project used a very dense network of hi-tech geophysical instruments to allow real-time monitoring of anomalous phenomena occurring along the fault. When the anticipated earthquake did occur, in 2004 -- more than 12 years later than was predicted -- it did so with no apparent precursor of any kind. Deploying a new seismic analysis method we had developed, we re-examined the high-quality data left over from the PEPE. Within a year we unearthed a deterministic earthquake precursor that one would have expected to see, knowing what rock-fracture experimentalists had told us at least two decades earlier.

WHEN?

DATE: Wednesday, June 14, 2023

TIME: Registration opens at 6:00pm

The one-hour presentation starts at 6:30pm

Q&A to follow the presentation

WHERE?

PLACE: Bob Wright Centre (Room A 104)

Parking across the Ring Road at Lot #1

HOW MUCH?

COST: $10.00

Students attend free with presentation of their students' cards

REGISTRATION?

https://www.eventbrite.ca/e/634247891517

Need to know more? Email uvra@uvic.ca

"In Search of the Holy Grail of Seismology (earthquake precursor) along the San Andreas Fault, near a desert hamlet (Parkfield) with population of 18 people"

PRESENTER

Dr. Kin-Yip Chun, Seismologist

Professor (Emeritus) of Seismology, Department of Physics, University of Toronto

ABOUT THE PRESENTATION

The talk will be based on a research article we published in the *Bulletin of Seismological Society of America*. Our research made use of seismic data of extremely high quality that was generated during the most ambitious earthquake prediction experiment the world had ever seen: "The Parkfield (California) Earthquake Prediction Experiment (1986 - 2004)." Essentially, we developed a new data analysis method that allowed us to "see" an earthquake precursor emerging with precision similar to what one can expect from simulated earthquake experiments performed in a rock-physics laboratory.

ABOUT THE PRESENTER

EDUCATION

Ph.D. Geophysics, University of California at Berkeley (1983)
MA Geophysics, Columbia University (1975)
B.Sci. Engineering Science, University of Toronto (1973)

ACADEMIC APPOINTMENTS

University of Toronto: Professor (Emeritus) of Seismology, Department of Physics
University of Toronto: (Emeritus) Full Member of the Graduate Faculty, School of Graduate Studies (since 2011)
Tongji University: Founder and Director, Global Seismology and Geodynamics Program, School of Ocean & Earth Sciences
Shanghai Normal University: Visiting Professor of Earth Sciences
East China Normal University: Visiting Professor of Earth Sciences

ABOUT THE PRESENTER (Cont.)

MAJOR RESEARCH AREAS

Verification of compliance with Comprehensive Nuclear Test Ban Treaty; Mathematical theory of seismic wave propagation; Earth structure and plate tectonics; Earthquake prediction

MAJOR FUNDING AGENCIES

Natural Sciences and Engineering Research Council of Canada; Geological Survey of Canada; Governing Council of University of Toronto; Arms Control Division, External Affairs Canada; US Defense Advanced Research Project Agency; US Airforce Research Laboratory

PROFESSIONAL AFFILIATIONS

Seismological Society of America; American Geophysical Union; Canadian Geophysical Union; Chinese Geophysical Society; Seismological Society of China

SCHOLARLY PUBLICATIONS IN MAJOR ACADEMIC JOURNALS

Bulletin of the Seismological Society of America
Journal of Geophysical Research (USA)
Geophysical Journal International (UK)
Chinese Journal of Geophysics (China)

PUBLICATION ABOUT THE TOPIC DISCUSSED IN THIS INVITATION

Chun, K.-Y., Q.-Y. Yuan, and G. A. Henderson (2010), Precursory Rise of P-Wave Attenuation before the 2004 Parkfield Earthquake, the *Bulletin of the Seismological Society of America*, 100, No 2, 509-521.

NOTE: For Dr. Chun's publications list, please go to:
https://www.uvic.ca/retirees/assets/docs/list-of-dr-chun-publications.pdf