

The Near-Real-Time Fiber-Optic DAS (distributed acoustic sensing) Database

Chin-Shang Ku¹

1: Institute of Earth Sciences, Academia Sinica, Taipei, Taiwan

Distributed acoustic sensing (DAS) technology has emerged as a significant field in geoscience in recent years. This technique utilizes the phase changes of Rayleigh scattering of laser light measured within the optical fiber to obtain strain parallel to the direction of laser light propagation. With spatial intervals of several meters, just a few kilometers of optical fiber can generate a data volume comparable to that recorded by thousands of traditional seismometers, providing higher resolution in both spatial and temporal domains. However, as a few kilometers of optical fiber can accumulate a massive amount of data in a short time, the original data storage format is not familiar to the geoscience field, posing a challenge for database establishment. Therefore, this work aims to establish a novel seismic fiber-optic data processing process to create a near-real-time database and data acquisition platform. This platform will facilitate the sharing and application of vast amounts of fiber-optic seismology data in the future.