



Massive processing of ambient noise records

Xavier Briand (1), Pierre Boué (1), Florent Brenguier (1), Michel Campillo (1), Kentaro Emoto (1), Philippe Roux (1), and Tetsuya Takeda (2)

(1) Isterre, University of Grenoble and CNRS, France , (2) National Research Institute for Earth Science and Disaster Prevention (NIED), Tsukuba, Japan

The ERC Whisper project aims at processing large seismological data set consisting of long ambient noise records. We develop a workflow and adapt it to a grid of clusters to analyse large data sets with size up to several tens of TB. The parallelization is performed for sublists of dates and sublists of stations. We design a first pipeline in order to process the raw traces (quality control, organization of the usable data, instrumentals responses, ..). Then we implement the computation of correlations (quadratic in space) and their analysis in terms of their temporal variations. The data are available by a distributed storage managed by Irods. The transfert increases proportionally with the numbers of sublists of stations (in the worst case).

In the framework of the Japanese-French project NAMAZU, we applied this set of codes to large data sets recorded in Japan. The goal is to analyze the temporal change of the Earth's crust associated with the giant 2011 Tohoku earthquake. We present the figures and the performances of our package for this processing together with examples of the scientific results. We also analyze the implementation of a project of correlation at the global scale. We discuss the possibility of integration of these codes in a platform for distributed processing and computing, as considered in the VERCE project.