



## **RealCalc : a real time Java calculation tool. Application to HVSR estimation**

G. Hloupis (1,2) and F. Vallianatos (1)

(1) Laboratory of Geophysics and Seismology, Department of Natural Resources and Environment, Technological Educational Institute of Crete, Romanou 3, 73133, Chania, Greece , (2) School of Engineering and Design, Brunel University, Uxbridge, UB88PH, UK

Java computation platform is not a newcomer in the seismology field. It is mainly used for applications regarding collecting, requesting, spreading and visualizing seismological data because it is productive, safe and has low maintenance costs. Although it has very attractive characteristics for the engineers, Java didn't used frequently in real time applications where prediction and reliability required as a reaction to real world events. The main reasons for this are the absence of priority support (such as priority ceiling or priority inversion) and the use of an automated memory management (called garbage collector). To overcome these problems a number of extensions have been proposed with the Real Time Specification for Java (RTSJ) being the most promising and used one.

In the current study we used the RTSJ to build an application that receives data continuously and provides estimations in real time. The application consists of four main modules: incoming data, preprocessing, estimation and publication. As an application example we present real time HVSR estimation. Microtremors recordings are collected continuously from the incoming data module. The preprocessing module consists of a window selector tool based on wavelets which is applied on the incoming data stream in order derive the most stationary parts. The estimation module provides all the necessary calculations according to user specifications. Finally the publication module except the results presentation it also calculates attributes and relevant statistics for each site (temporal variations, HVSR stability).

### Acknowledgements

This work is partially supported by the Greek General Secretariat of Research and Technology in the frame of Crete Regional Project 2000- 2006 (M1.2): "TALOS: An integrated system of seismic hazard monitoring and management in the front of the Hellenic Arc", CRETE PEP\_7 (KP\_7).