

ACOUSTICS2008/3520
Close listening of a permanently degassing volcano : Yasur
(Vanuatu)

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Acoustic measurement is a very powerful technic to monitor gas volume and pressure at a safe distance of a volcano. Since eruptions are driven by a gas phase, acoustic recordings of eruptions can provide insights into the degassing processes. The permanent activity of Yasur volcano (Vanuatu) has been acoustically monitored continuously to detect and understand the sudden increases in the volcanic degassing. In the absence of appropriate modelling of the sound source, we have used a dimensionless analysis of our infrasonic records close to the source to relate acoustic power and the velocity of the gas - ejecta mixture. Our one-year data set at the source shows several sudden increases in gas flux over one week as well as more progressive evolution, over several months. Explosions are also detected using a method based on wavelet decomposition. This shows that most of the changes in gas flux are related to strong changes in the number of explosions. Understanding the origin of these variations has strong implications for hazards assessments.