



Sujet proposé pour un début de contrat en octobre 2015

**TITRE du SUJET : The 25 avril 2015 earthquake in Nepal
Analysis from the Nepal National Seismological
Network**

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Développement du Sujet :

On April 25th 2015 at 11h56 local time, a ML 7.6 Mw 7.8 earthquake struck central Nepal devastating a region at the rim of the High Himalayan range and affecting Kathmandu valley, causing around 8700+ deaths and leaving hundreds of thousands homeless. The regions affected by the mainshock are located above the Main Himalayan Thrust fault (MHT), a shallow dipping megathrust locked over 80 km, from the surface to its downdip creeping segment at depth. The locked fault segment ruptured only partially, mainly North of Kathmandu valley, during the 2015 earthquake. The coseismic slip at depth was not transferred to the surface. This leaves us with fundamental, unanswered questions about the remaining seismic potential of the MHT in the vicinity of Kathmandu. In addition, because of the location of the ruptured fault plane, aftershocks of the Gorkha earthquake are widely felt by the 4 millions inhabitants of the Kathmandu valley. Assessing the characteristics/behaviour of the unruptured part of the main thrust and of the aftershocks is therefore a major societal issue.

Since the main shock, the National Seismological Centre (NSC), in charge of the monitoring of the national seismicity and authority for the seismic alert, is particularly solicited, providing informations on the crisis through its continuous work on hundreds of aftershocks felt by the inhabitants. The main target of this thesis is the exploitation of the large database of seismic records acquired at NSC on the Gorkha earthquake and its aftershocks. Those records will be analysed with various techniques used in operational seismology, including relocation techniques. It will then focus on the description and comprehension of the temporal and spatial distribution of the seismic events. The seismicity will be confronted with the existing tectonic structures at depth and their seismogenic potential. This work will finally raise the societal concerns associated to the local and regional seismotectonic context.