**COMET Website Content Update**

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| **Main Page:** | **People** |
| **Sub Page(s):** | **Jessica Hawthorne,** **University of Oxford** |
| **Updated by:** | **Lucy Sharpson – 16/01/2023** |
| **Approved by** |  |
| **Content:** | |
| \*Note: Content taken from the existing web profile, updated ID to ORCID  **Position:** Associate Professor  **Areas of expertise:** Geodesy, Tectonics, volcanology, related hazards, fault slip  **Associated projects: Required**  **Email:** jessica.hawthorne@earth.ox.ac.uk  **Bio**  **Please reduce to a couple of paragraphs**  I am interested in the mechanics of Earth deformation over a wide range of scales.  I explore how large-scale faults accommodate plate tectonics, how landslides stall or accelerate, and how wind and waves generate seismic noise.  **Fault mechanics**  One major focus of my research is the mechanics of fault slip.  In the fault mechanics community, we seek to understand why some faults slip at a steady rate near plate rate, others slip in large earthquakes, and still other faults slip in a series of slow earthquakes.  We want to understand how these processes work. For instance, how does an earthquake—or a moonquake or marsquake—nucleate and grow, and what physical processes stop some faults from accelerating to seismogenic speeds?  Large populations around the world live near faults that host large and small earthquakes. As we improve our understanding of seismic and aseismic slip, we seek to incorporate more physical modeling into estimating and mitigating seismic hazard, so that we can better interpret what has happened on faults in the past in terms of what might happen in the future.  I use three primary tools in investigating earthquakes and seismic slip on faults: seismology, geodesy, and frictional modeling. Much of my work focuses on finding the most effective ways to test models of fault slip with laboratory results and geophysical observations. We are always trying to organize the numerous seismic and geodetic data from small slip events in ways that can validate or disprove specific model hypotheses.  **Landslides and hydrology**  In the past few years, I have expanded my research to other areas.  One topic of interest is landslides, which are partly governed by some of the same friction-based physics we see on large faults and during earthquakes.  In my group, we have specifically been exploring models and time-lapse images of slow-moving landslides, which appear to slip in short bursts down the slope.   Often these landslides never accelerate to catastrophic failure.  Except that sometimes they do fail all at once, and we’d like to know what triggers that.  I have also started to dabble in the geodetic signals created by variations in groundwater and atmospheric pressure.  These are recorded in the remarkably high-precision borehole strainmeters that we use to record aseismic slip on faults, and modelling the hydrologic signals presents an interesting puzzle for understanding water flow as well as for distinguishing the hydrologic signals from those created by slip.  Seismic shaking from wind and waves  Finally, as a seismologist interested in extended, small-amplitude signals, over the past decade I have become increasingly interested in the source of seismic “noise”: the small-amplitude shaking created by wind, rivers, and ocean waves.   My group is currently focusing on what we can see in high-frequency (>1 Hz) seismic noise: regional or perhaps even harbour-scale variations?  **ORCID ID** | |