2018 AASCU Japan Studies Institute
Curriculum Development Project
Teaching Japan in the Geosciences
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I am currently an Associate Professor in the Department of Geosciences at Mansfield University where I teach courses in Geology and Environmental Science. The Geohazards course is currently designed for upper-level department majors to acquaint them with major geological problems around the word. This class is now divided into three modules (Seismic, Volcanic, and Mass Wasting). I envision broadening and adapting this course to include lower-level, non-majors, as a general education elective.

During my attendance at the Japan Studies Institute I have gained a deeper understanding of what it means to be Japanese, through examination of art, literature, music, film and many other expressions of Asian culture. I plan to incorporate several aspects of these cultural traits into the geohazards course, thereby expanding and enriching the content, broadening the knowledge base of our students. Likewise, this can be achieved by integrating historical Japanese aesthetics and real-world data from geohazard events into lecture and lab settings.

The revision of the curriculum will include adding a fourth module on Tsunamis, inserting films on Japanese earthquakes and volcanoes, exploring Japanese art to understand Earth's historical geology, and developing five new labs that will highlight this content. The inclusion of a fourth module on Tsunamis will vastly broaden the current course material and provide students with a better understanding of the modern technology used to monitor and predict these destructive waves, released during earthquakes and fault ruptures. Several films will be interspersed within all four modules to feature Japanese geohazards, including Rodan, Tidal Wave, Sinking of Japan, and 311. These films address earthquake, tsunami, and landslides in Japan.

Additionally, five new labs will develop these concepts using experiential, real-world data of Japanese geohazard events collected from the Geological Survey of Japan (GSJ). Volcanics Labs: *Volcanic Cores Lab* – using drill core data from Mt Fuji, students will determine eruption type, frequency of eruption, and volcanic explosivity index (VEI) of two major Japanese volcanoes (Mt Unzen and Mt Asama); *Volcanic Rocks Identification Lab* – using samples of igneous rocks from stratovolcano Mount Unzen, students will be able to differentiate and distinguish the eight major types of rocks associated with a typical Japanese volcano. Seismic Labs: *Plate Rates Lab* – students will create a major plates map of the Pacific Rim and explore the movement, direction, and velocity of tectonic plates in Japan, in order to understand plate interactions and their resulting geohazards; *Earthquake Location Lab* – students will use seismic data from GSJ to triangulate the focus of two major Japanese earthquakes (Kobe and Tohoku), then determine magnitude, intensity, and energy released. *Tsunamis Lab* – students will use Japan Meteorological Agency data from ocean buoys and tidal gauges to understand speed, waveforms, amplitude, and wavelengths of earthquake-generated tsunamis.