To: Kurt Paterson, Chair, Sabbatical Leave Committee
Cc: Office of the Provost
From: G. Bluth
Date: June 28, 2006
Re: Sabbatical Leave Narrative

My sabbatical leave took place from January 1 to June 15, 2006. The majority of the sabbatical was spent in the Earth Sciences Department at the University of Bristol, where I shared an office with Matt Watson, a colleague since 2002. For the most part my intention was to able to work in relative peace, although I did have occasional discussions with department faculty, post-docs and graduate students.

**Sabbatical Timeline:**
- January 1-15: MTU campus.
- January 15-29: in field (Nicaragua) and attending Cities on Volcanoes IV conference in Quito, Ecuador.
- February 1 – May 31: Bristol University, U.K.
- June 1 – 15: MTU campus

My advisory work was largely devoted to helping four of my graduate students complete corrections to their theses (they all defended in late Fall, 2005). I also worked with some of Matt Watson’s graduate students to help them with their remote sensing research, and with Matt himself on testing an ultraviolet camera system. I also was actively working on graduate student recruitment for Fall 2006.

My main research goal and accomplishment was to complete a project begun in 1996, on the SO2 emissions of Nyamuragira volcano. Nyamuragira has been the world’s largest SO2 emitter in the last few decades at least, with at least 225 days of satellite-detected emissions since 1980. I developed a new method of analyzing daily satellite images to model continuous emissions, which allowed me to calculate a much more accurate of the emissions than had been possible – this method is applicable to other highly productive, passive volcanic emissions (such as Etna, Hekla, Mauna Loa) which are studied by non-continuous (e.g., daily) satellite or ground-based imagery.

I also completed a paper on the development of an ultraviolet camera for monitoring volcanic SO2 emissions, based upon the Ph.D. thesis research of Jeremy Shannon. I also spent significant time working with one of Watson’s students, Lizzette Rodriguez, to help her complete a paper on Montserrat SO2 emissions.

The tangible work accomplished during my sabbatical leave is listed below:

**Graduate student thesis corrections/completion:**
Samantha Reif, completed M.S. Geology, April 2006 ("Landsat TM and ETM+ time sequence of changes in channel morphology and lahar hazards on Fuego Volcano, Guatemala").

Jeremy Shannon, completed Ph.D. Geology, April 2006 ("Development and application of new techniques for sulfur dioxide monitoring at active volcanoes").

Presentations:

Manuscripts completed:

Reviews:
3/06 – National Science Foundation proposal (M. Ramsey, PI)