Approved by the Regents
May 19, 2011

PROMOTION RECOMMENDATION
The University of Michigan
College of Literature, Science, and the Arts

Jeroen Ritsema, associate professor of geological sciences, without tenure, College of Literature, Science, and the Arts, is recommended for the granting of tenure to be held with his title of associate professor of geological sciences, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D.	1995	University of California, Santa Cruz
M.Sc.	1988	University of Utrecht

Professional Record:

2005 – present	Henry N. Pollack Associate Professor, Department of Geological Sciences, University of Michigan
2003 – 2005	Professor, Institut de Physique du Globe de Paris
2000 – 2003	Senior Research Fellow, California Institute of Technology
1998 – 1999	Postdoctoral Research Fellow, California Institute of Technology
1996 – 1997	Postdoctoral Research Fellow, University of South California

Summary of Evaluation:

Teaching – Professor Ritsema's teaching at the introductory level is largely in the First-Year Seminar format, where he uses the history of plate tectonic theory to take the students on an exploration of how scientific theories develop and how paradigms are overturned. Increasingly he is moving to the role of mentor in helping other faculty with their teaching, especially in these First-Year Seminars. He also teaches more advanced courses on seismology, which is a critically important discipline within academia as well as for the mitigation of seismic hazards and for finding oil and gas reservoirs. These courses are filled with undergraduate and graduate students from geological sciences, physics, and engineering. Student evaluations at all levels are very positive. Professor Ritsema is fully engaged in the mentoring of graduate students in geological sciences and in other disciplines.

Research – Professor Ritsema is a seismologist who studies the elastic waves that are produced during an earthquake. He is highly respected for his technical expertise and is recognized as being consistently among the first in the discovery of fundamental structures in deep Earth that were previously undetected. He has been using the global seismic data set, often in collaboration with mineral physicists and geodynamicists, to provide new constraints on temperature variations in the deep Earth at an ever-increasing level of resolution. His newest interdisciplinary initiatives involve colleagues within the Department of Geological Sciences. He has published 41 research papers and one book chapter. Of these he has 21 first authored publications and eight that are first authored by graduate students.

Recent and Significant Publications:

"Joint mineral physics and seismic wave traveltime analysis of upper mantle temperature," with P. Cupillard, et al., *Geology*, 37, 2009, pp. 363-366.

"Long-period body-waves traveltimes through the crust: Implications for crustal corrections and seismic tomography," with H. J. van Heijst, et al., *Geophysical Journal International*, 179, 2009, 10.111/j.1365-246X.2009.04365x, pp. 1255-1261.

"The effect of bulk composition and temperature on mantle seismic structure," with W. Xu, et al., *Earth and Planetary Science Letters*, 275, 2008, doi: 10.1016/j.epsl.2008.10.024, pp. 70-79.

"Tomographic filtering of geodynamic models: Implications for model interpretation and large-scale mantle structure," with A. K. McNamara and A. Bull, *Journal of Geophysical Research – Solid Earth*, 112, 2007, 10.1029/2006JB004566.

Service – Professor Ritsema's service has included major assignments, such as the Executive Committee and the Strategic Planning Committee. His professional service includes an editorial role for over ten years in one of the premier journals in his discipline, as well being a panelist for the National Science Foundation and membership on the Global Seismic Network Standing Committee, all of which attest to his engagement and stature within the geophysics community.

External Reviews:

Reviewer (A)

"Jeroen is near the top in that his 3D Earth model has become the standard. …his papers teaming with dynamic modelers are very interesting… Jeroen has [another colleague's] work ethic and view of completeness, collecting all possible data followed by a careful analysis."

Reviewer (B)

"…Dr. Ritsema has established a strong international reputation, has creatively diversified his research directions and made significant contributions in topics of major research importance, notably in global mantle structure and dynamics. …there seems to be no question that the standards of excellence, creativity, independence and impact desired for tenure are established… It seems like the appropriate time to promotion him to Full Professor as well."

Reviewer (C)

"Jeroen has an impressive working knowledge of the theory of wave propagation and seismic inversion as well as computational seismology, but…his main strength is observational seismology. …he is a careful scientist, and I admire his honesty about what he...can and cannot conclude from the data. …with some of his papers he has made more impact to the field than many with longer careers and publication lists."

Reviewer (D)

"With 12 publications in well regarded refereed journals in the last 5 years, of which 3 [are] in the high impact journal *Earth and Planetary Science Letters*, a steadily growing citation record, and an expanding list of multi-disciplinary collaborations, there is no doubt in my mind that Jeroen's research accomplishments reflect a healthy productivity. …Jeroen's work is of high quality, and his approach to data analysis and interpretation is skillful and plain…and [he] seeks what makes sense in a modest, quiet way."

Reviewer (E)
"…he attracted my attention by his work on the 3-D shear velocity in the mantle in 1999; this model is still one of the best available today, even though 11 years is a long time in an area as active as seismic tomography. …he is the most outstanding global seismologist of his generation."

Reviewer (F)
"Dr. Ritsema is perhaps best known for his work illuminating structures in the Earth's mantle.... He is advancing the science of seismology by imaging the mantle at multiple depths, by furthering our understanding of uncertainty in seismic modeling, and by interdisciplinary collaborations on the dynamical implications of seismic models. His scholarly accomplishments clearly warrant granting tenure…"

Reviewer (G)
"Jeroen is one of the best five seismologists in the world in his class of age. … Jeroen is an articulate, intelligent personality who goes after important problems in Earth sciences. His breadth as a physicist and numericist makes him…very appealing…"

Reviewer (H)
"What impresses me the most about Prof. Ritsema's recent research direction has been his willingness to depart from traditional seismological approaches to embrace the interfaces between seismology and both geodynamics and mineral physics. … Overall, Prof. Ritsema has amply demonstrated, through his scholarly work to date, the expanding diversity of his research directions since arriving at Michigan, and the continuing professional growth foreseeable through his research plans, the levels of accomplishment, promise, and professional standing appropriate to promotion to tenure."

Summary of Recommendation:
Professor Ritsema is a top global seismologists, an effective teacher at all levels, and a good citizen. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Associate Professor Jeroen Ritsema be granted tenure to be held with his title of associate professor of geological sciences, College of Literature, Science, and the Arts.

Terrence J. McDonald
Arthur F. Thurnau Professor,
Professor of History and Dean
College of Literature, Science, and the Arts

May 2011