



COLLÈGE
DE FRANCE

—1530—

Europôle de l'Arbois

Xavier LE PICHON

Professeur Honoraire

Aix en Provence, March 18 2011

Dear Drs. Glick and Johnson,

I understand that your administration is contemplating severe cuts in its budget that may lead to dismissal of staff members. I find it particularly surprising at a time when the horrendous Japanese disaster has shown the absolute necessity of efficient environmental scientists, especially in the domain of geodesy, that such a move should be contemplated. In this very somber context, however, this letter is written in support of one of your scientists, Corné Kreemer, who is probably one of the best geodesists in the world, as demonstrated by the Geodesy award he just got from the American Geophysical Union.

I know very well Corné Kreemer who has been in our team for three years between 2001 and 2004, first as a post-doc and then as a research assistant and I have kept on and off cooperation with him since. Corné worked with Bill Holt and John Haines during his PhD and acquired with them a unique expertise in the mathematical analysis of GPS data as well as data coming from earthquakes and active faults. He developed there global kinematic models which rapidly contributed to a solid international reputation in the domain of the analysis of strain and stress fields and its application to the study of the dynamics of the lithosphere. I had been using these techniques for some time and acquired the conviction that they are quite powerful but lack the resolution to be applied to regional studies. I consequently asked Corné when he came in our lab to develop more detailed studies with better resolution. The results obtained in the analysis of the Aegean domain have been remarkably successful. Below, I briefly outline these accomplishments, which were developed through several years and summarized in a review paper that we just published together in Annual Review of Earth and Planetary Sciences.

Basically, Corné successfully used and adopted the continuum mechanics approach of Haines & Holt to create the most detailed data-based models to date of the full deformation field within plate boundary zones. Especially his original approach on combining geodetic, geologic and seismologic data sets allowed an understanding of how the crust/lithosphere deforms that is more detailed than would have been possible by an individual analysis of these data sets. It was clear that one can study kinematic and dynamic processes of the lithosphere in great detail using his approach. For example, one can take into account the effects of elastic loading due to locked faults to differentiate between inter-seismic and long-term deformation fields and this allows to better understand when and how the crust behaves through block rotations and when it deforms more diffusely. Also, one can infer interesting information about the evolution and vertical coherency of deformation, when comparing the model results with data indicating finite strain in the crust and lithosphere.

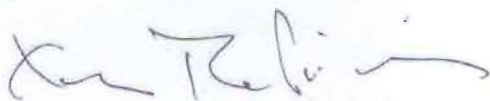
Since then of course, Corné has developed his skills acquiring experience in the study of transient deformation, slip rates on active faults, seismic hazard estimate, tsunami warning system, geothermal energy resources estimation as shown by the research grants he led or participated in. His contribution to the Global Strain Rate Map Project has been major. Among his recent research, I would single out the Journal of Geophysical Research 2009 paper "Absolute plate motions constrained by shear wave splitting orientations with implications for hotspot motions and mantle flow". I consider this paper as the first significant advance in the description of deep mantle flow. It is a major piece of research.

I am convinced that Corné will continue finding new ways to advance the fields of solid-earth geophysics and tectonophysics. He is one of the key scientists who demonstrated that careful analysis of GPS velocity fields and earthquake moment tensors, in combination with other seismological or electrical techniques, can tell us very interesting, yet so-far ignored, information on the regional pattern of deformation, the depth dependent rheology of active faults and in a general way the effects of having a heterogeneous distribution of (visco-elastic properties). I believe that this would give him special innovative capacities to develop applied research especially in the field of regional geologic hazards.

I enjoyed working with Corné. He is a very pleasant coworker. He cooperates very well, works hard, produces papers rapidly and efficiently. He is very open minded and continuously extends his scientific culture to other areas of geophysics and geology. He writes very well, can make brilliant oral presentations. He is very good at putting together proposals for research and defending them. He is a very good computer programmer.

In short I have no reservations to recommend him fully, which I rarely do for anybody. And I do sincerely hope that you will do your utmost to keep him in your staff in order to maintain a first class geodesic section.

Yours sincerely,



Xavier Le Pichon

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