

Pr Teruyuki Kato
Earthquake Research Institute
The University of Tokyo 1-1, Yayoi 1,
Bunkyo-ku, Tokyo 113-0032
Japan

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Ref: Report on my stay at ERI

Dear Dr Kato,

I would like to take this opportunity to thank one more time the Earthquake Research Institute, yourself, Prof. Yamashita, and Prof. Kaneoka for making my stay at ERI possible and comfortable. I spent three months as an invited faculty at the institute enjoying my colleagues, the students and, of course, Tokyo and Japan. Several colleagues did not spare any effort to make this stay socially friendly and scientifically successful.

Besides my many conversations with colleagues and students and in addition to multiple seminars, I had some time to dedicate to my project which was the understanding of geodynamic processes, most notably mid-ocean ridge and hot spot activity, to the destruction of mantle geochemical heterogeneities. I came to the conclusions that mixing in the mantle is not due to boundary processes, such as plate subduction and asthenospheric flow, but to the overall lagrangian stirring of mantle convection. The advent of new mass spectrometry techniques has dramatically increased the output of geochemical data and opened up new perspectives on their geodynamic interpretation. I think I was able for the first time to propose a quantitative connection between the observed spectrum of geochemical heterogeneities and the physics of mixing. In contrast, what could be seen as geochemical time series in Hawaiian volcanoes shows a strong vertical mixing in the core of hotspot conduits whereas the heterogeneous rim does not contribute much to volcanic products. I see very little left of source heterogeneities in the volcanic record of ocean island basalts. A manuscript developing these concepts is in the process of completion: as much of its material was elaborated during my stay at ERI, it will wear my Tokyo affiliation.

My stay in Tokyo gave rise to further scientific interaction. With Dr Nakai, first, his group, and with Dr Miura, I had very fruitful conversations on meteorite chronology, extinct radioactivities and the early Earth. Dr

Iwamori and myself are now working on a common project using the new statistical technique of Independent Component Analysis to break down the isotope composition of oceanic basalts into genuine geodynamic end-members.

I can offer a few general comments to the Institute. The scientific level is extremely high and many scientists have achieved undisputable international recognition. The material conditions are extremely good and the supporting staff is efficient and always friendly. Communication may occasionally be an issue. Unless the visitor is willing to learn some written and spoken Japanese, which I otherwise recommend as very gratifying, he/she may miss a number of events and announcements. The new building offers a new opportunity to bring the whole institute together for coffee/tea, which would increase scientific communication among people who otherwise live floors or buildings apart. As far as geochemistry is concerned, this field has excellent scientists. Its dispersion among different institutes and buildings (ERI, the Department of Earth Sciences, the Department of Chemistry) is clearly detrimental to the overall efficiency of this highly productive scientific field. Hiring new blood and funding new equipment would probably benefit to ERI, the University and Japanese geochemistry in general. These comments should only be seen as a way of expressing my consideration to the work being currently done at ERI.

I am extremely positive about the great time I spent in Tokyo and I know that it will extend into fruitful collaboration with an institute in which I discovered great colleagues as much as great friends.

Sincerely,

Francis Albarède



Professor of Geochemistry