

Xavier Le Pichon

2002 Balzan Prize for Geology

One of the pioneers of the Plate Tectonics Theory and of the high resolution exploration of plate boundaries in the ocean depths with submersibles.

A Geodynamic Research Team in Aix-en-Provence

Collège de France

Advisers for the General Balzan Committee: Eugen Seibold and Enric Banda

The research team of Le Pichon moved to the University Paul Cézanne of Aix-en-Provence to install a new arm of Collège de France there in 2003. The second part of the Balzan Prize was used in part to finance new scientific equipment (a system to visualize seismic reflection data, a system to process images, a SIG and a rapid computer system). In addition, it was used to complement post doc salaries and to finance geological field work. Young researchers who benefited in part from the Balzan financing have been especially active in some of the projects. Xavier Le Pichon highlighted two projects in which young researchers who benefited in part from the Balzan financing have been especially active:

1. The first project concerns *the tectonics of the Western Gulf of Mexico* and is the result of cooperation with oil companies over four years. The young researchers involved were N. Flotté, L. Husson, C. Le Roy and L. Andréani. The results of the research have been published in a special issue of the “Bulletin de la Société Géologique de France”, co-published with the American Association of Petroleum Geology (*Bulletin de la Société Géologique de France*, 179, 2, 2008).

The main result of the project is to have established that this continental margin, which was thought to be inactive since the Jurassic period, has been affected by active tectonics in the last 30 million years.

2. The second project concerns *the geodynamics of the Provence basin*. It will also be published as a special issue of the Bulletin de la Société Géologique de France in 2010. It is the result of research carried out in this part of France since the research team moved to Aix-en-Provence in 2003. The young researchers involved are N. Flotté, L. Husson, Y. Hamon, J.Y. Lin, L. Andréani, and N. Loget. The main result of this project is to have established that the so-called alpine tectonics there is the result of en

masse gravity gliding of the thick Triassic salt layer. This gliding occurred when the Alps were uplifted during the Miocene epoch.

Publications (in chronological order):

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- Chamot-Rooke, N., Rangin, C., Le Pichon, X. and Dotmed working group, *DOTMED. A synthesis of deep marine data in the Eastern Mediterranean*, Société Géologique de France et American Association of Petroleum Geologists, « Mémoire de la Société Géologique de France », n°177, 2005.
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- Sibuet, J.-C., Rangin, C., Le Pichon, X., Singh, S., Cattaneo, A., Graindorge, D., Klingelhoefer, F., Lin, J.-Y., Malod, J., Maury, T., Schneider, J.-L., Sultan, N., Umler, M., Yamaguchi, H., and the Sumatra Aftershocks Team, *26th December 2004 Great Sumatra-Andaman Earthquake: co-seismic and post-seismic motions in northern Sumatra*. "Earth Planetary Science Letters", 263, 88-103, 2007.
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Statements by the Prizewinner:

Une caractéristique remarquable du Prix Balzan est l'encouragement financier donné aux jeunes chercheurs. Mon souci est de laisser la possibilité d'aller plus loin à ceux qui font équipe avec moi dans notre laboratoire. Grâce au Prix Balzan, cela pourra se faire. Mesdames, Messieurs les membres du jury, je vous en remercie tout spécialement, en leur nom comme au mien. Xavier Le Pichon (Rome, 13.11.2002)

The team of my laboratory moved to the University Paul Cézanne of Aix-en-Provence to install a new antenna of Collège de France there in 2003. Thus the money coming from Balzan Prize came at a critical time for us and was of great help. The second part of the Prize was used in part to finance new scientific equipment (a system to visualize the seismic reflection data, a system to process images, a SIG and a rapid computer system). In addition, it was used to complement post doc's salaries and to finance geological field work. Xavier Le Pichon (2008)