



## **Large Chilean earthquakes and tsunamis of 1730 and 1751: new analysis of historical data**

Agustin Udias (1), Elisa Bufofn (1), and Raul Madariaga (2)

(1) Universidad Complutense de Madrid, Fac. CC. Fisicas, Dept. Geofisica y Meteorologia, Madrid, Spain (ebufofn@fis.ucm.es), (2) Laboratoire de Geologie, Ecole Normale Supérieure, Paris

A large collection of contemporary documents from the Archivo de Indias (Seville, Spain) concerning the large Chilean earthquakes and tsunamis of 1730 and 1751 has been studied for the first time. The documents include official and private letters to the King of Spain, and proceedings, memorials and reports of the colonial administration. They provide detailed information about the characteristics and the damage produced by these two mega earthquakes. The 1730, the largest of the two earthquakes, with an estimated magnitude close to  $M_w = 9$ , affected a large region of more than 900 km length from Copiapó in the north to Concepción in the south, causing important damage in the capital Santiago. It was followed by a large tsunami which affected especially the two coastal cities of Valparaíso and Concepción. Twenty one years later in 1751, another earthquake caused damage to the region from Santiago to Valdivia. The tsunami destroyed again the city of Concepción and made necessary its relocation from the site at the town of Penco to its present site on the BioBio river. We suggest that this event was very similar in size and extent to that of Maule in 27 February 2010. It is estimated that the two earthquakes together broke the entire plate boundary in central Chile, along almost 900 km, from 30°S to 38°S. A possible repeat of the 1730 earthquake in the future presents a major risk for Central Chile.