

## **The NE-trending faults of Southern Brazil: a 600 Ma-long history of reactivation**

<sup>1</sup>FERNANDES; L.A.D.; <sup>1</sup>KOESTER, E and <sup>2</sup>CLIFF; R.A.  
<sup>1</sup>Universidade Federal do Rio Grande do Sul, Porto Alegre,  
Brazil. <sup>2</sup>University of Leeds, Leeds, UK.

The NE-trending faults of Southern Brazil were nucleated as intracontinental and transcrustal shear zones during the Neoproterozoic, as indicated by the crystallization age of ca. 630 Ma (U/Pb) obtained for the first syntectonic intrusion along the main fault of this system. Several episodes of reactivation of these faults during precambrian times are registered by intrusion of successively younger peraluminous and high-K calc-alkaline granites upon which solid-state deformation structures characteristic of decreasing temperature conditions were developed. Reactivations during the early Phanerozoic are indicated by development of late-orogenic strike-slip basins and later on by the local control of these faults on the deposition and erosion of sedimentary units of the Parana Basin. Reactivation of these structures during the Mesozoic and Cainozoic were mainly controlled by major extensional and compressional tectonic events such as the opening of the Southern Atlantic Ocean and the evolution of the Cape-La Ventana Belt. Evidence for the persistent weakness nature of this fault system will be presented and the role of these structures in accommodating continental deformation during geological time further discussed.