



Some Perspectives on the Structure and Evolution of the North American Moho

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Recent national programs in Canada (Lithoprobe) and the U.S. (EarthScope) are providing vast quantities of data and many new scientific insights concerning crustal and lithospheric mantle structure and evolution. More modest but significant results are also being produced in and about Mexico. An analysis of these new results along with a synthesis of 20th century results was undertaken, and a new map of the North American Moho was produced via manual and subjective contouring in which results from a variety of techniques were integrated. This map shows variations in crustal thickness for it is hard to generalize beyond the trivial observation that extension thins the crust and compression results in crustal thickening by a variety of complex processes. When integrated with geologic data from xenolith studies, some information about the evolution of the Moho through time is possible. It is clear that the Moho is seldom (if ever) static after it is initially formed during the production of new continental lithosphere. The lower crust in particular is often thickened via under plating and/or intraplate. On the other hand, the crust has been thickened from above by the accumulation of thick piles of sediments. Collisional tectonics occurs on a lithospheric scale, and the Lithoprobe project produced many impressive images of the interwedging of the crust in orogens of a variety of ages. Several examples of crustal structure resulting from a variety of processes derived from the integration of a variety of geophysical and geological data will be presented.