

## **UPPER MANTLE ELECTRICAL STRUCTURES BENEATH A STABLE CRATON AND ATTACHED COLLISIONAL TERRAINS**

VITORELLO, I., PADILHA, A.L., BOLOGNA, M.S. and PADUA, M.B. INPE, S.J. Campos, Brazil.

The electromagnetic properties of the upper mantle can be probed by higher vertical and lateral resolutions afforded by the combined use of advanced long period magnetotelluric sensors and geomagnetic deep soundings. Major contributions have been the definition of provinces with characteristic electromagnetic properties and anisotropic directions and the mapping of the depth to the top of the upper mantle thermal boundary layer that defines the thermal lithosphere. Such results have implications for the elaboration of mantle models constrained by density, elastic, and mineralogical properties defined from geoidal modeling, seismic tomography and petrology of xenolith suites of mantle origin. Thus, they provide indirect depth restraints for graphite and diamond stability fields. Deep-probing data from Neoproterozoic belts of Brasiliano-Pan African age, amalgamated around the southern portion of the Archean Sao Francisco craton, show distinct upper mantle conductivity in the SE and SW borders of the craton. The results are not entirely comparable with published upper mantle models defined in tectonically similar regions of the world. Differences and similarities are discussed in the context of the origin of upper Cretaceous diamondiferous kimberlites that occur in the Alto Paranaiba Igneous Province, in the state of Minas Gerais, Brazil.