

Measurement of geoelectric field variations of global scales by a submarine cable

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A number of co-axial submarine cables were installed in the Pacific and Atlantic during 1960s' and 70s' for international telecommunications purposes. These coax systems are now being retired and replaced by fiber optic systems. Such old fashioned submarine cables are now utilized to measure geoelectric field variations of global scales to study the electrical structure and dynamics of the Earth's deep interior. The mantle conductivity structure can be investigated by analyzing externally induced electric field variations of periods ranging several minutes - a few days. Detection of longer period signals over several years to decades may reveal the intensity and spatial distribution of the toroidal magnetic field in the outer core, as well as the conductivity structure of the D" layer.