

International Boundaries on a Dynamic Planet – Issues Relating to Plate Tectonics and Reference Frame Changes

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SUMMARY

International boundaries, agreed directly between the nation states or through an international commission, are defined and demarcated in a number of ways on land or in marine areas. These include: coordinates expressed in terms of a local or global geodetic reference frame, lines depicted on maps or charts, physical monuments (either on the boundary or with the boundary defined in relation to nearby monuments) or by natural features. Such boundaries, once agreed, accepted and demarcated, can generally be expected to be in place for a very long time – at least decades and potentially centuries. As our ability to define positions (including boundaries) accurately in a global frame improves, we also become increasingly aware that no point on the surface of the Earth can be truly considered to be “fixed” in place - due to pervasive tectonic plate motion.

Furthermore, in response to this tectonic motion, the global and local reference frames used for positioning, mapping and coordination change much more frequently than international boundaries are renegotiated. This paper looks at the geodetic and geophysical issues that earth dynamics may impose on the reliable and enduring definition of international boundaries. These issues and potential solutions should be considered at an early stage of international boundary determination.

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