

**THE EARTH'S ROTATION AND REFERENCE FRAMES  
FOR GEODESY AND GEODYNAMICS**

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During the last few years the techniques of radio interferometry and laser ranging have been used to provide high-precision data on the rotation of the Earth. The angular orientation of the Earth in space and the wobble of the Earth around the axis of rotation can now be determined with a precision of the order of 1 milliarc-second (about 5 nanoradians). Correspondingly, terrestrial coordinates can be determined with a precision of the order of 1 cm, and the variations in the period of rotation can be measured to 0.1 ms. These high-quality data are providing valuable information about, for example, the Earth's interior, the effects of winds and current tectonic plate movements that cannot be obtained in any other way. The new data also enable spacecraft to be navigated in the outer solar system with hitherto unknown accuracy. Comparison of the data obtained from different techniques and from different organizations has shown that it is necessary to define terrestrial and celestial coordinate systems more precisely in order to fully realize the benefits of the new techniques. The papers in this volume describe the most recent results and the new knowledge of the Earth, and address the problems of defining the new reference frames that are now required.

**KLUWER ACADEMIC PUBLISHERS**

DORDRECHT / BOSTON / LONDON

ISBN 90-277-2658-2