Solid Earth Tide Modeling in VLBI

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Over the last decade advances in Very Long Baseline Interferometry (VLBI) have prod uced baseline lengths with formal precisions as low as 6mm on 8,000 krn baselines. The present 1 ERS standards recommend a solid tide model based on the work of Wahr. This model assumes an elliptical, rotating, elastic., and oceanless Earth to obtain the calculated frequency dependence of the solar-moon-earth tidal potential. However, the standards retain only the largest frequency dependent term (the K 1) ignoring terms that cause displacements of less than 5 mm. We have implemented Wahr's model including terms greater than half millimeter in the radial dimension. This includes the frequency dependence of the next six dominant Love numbers, such as O1, P1 and Psi1. These corrections arc estimated to cause displacements of 1-5 mm. In addition, we have studied the effect of using the improved free core nutation period of Herring and Dong. These effects arc investigated by analyzing the Deep Space Network's VLBI data (1978 to 1993). We will discuss the effect of the improved calculation on the scatter of the baseline lengths and on UTPM amplitudes at the diurnal and semi-diurjlal frequencies.

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4. G (G02)

5. (a) None

(b) 1209 Crustal Movements
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6. None

7. None

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9. C

10. None

11. No