

Global Positions and Velocities from One Year of GPS Data

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A generalized no-fiducial approach has been developed to obtain global positions and velocities without fixing any individual position or velocity components. The method used can be applied to any global geodetic technique and proceeds in three general steps. First, daily solutions derived with weak constraints are combined to yield one global set of positions and velocities. Second, 14 minimal constraints are applied to remove uncertainties due to the loosely defined reference frame. Third, transformation from one reference frame to another is accomplished with a 14 parameter transformation.

One year of daily ELLIPSOID solutions, each made with data from about 40 sites, have been combined to yield our best fit global model. The analysis technique will be discussed and results will be presented with some comparisons to VLBI, ITRF91, and NUVEL-1. Current coordinate comparisons show agreement to 1-2 cm after reference frame differences are removed and, as the time span of GPS data increases, velocity estimates will improve enough to reveal new information about global plate motion.

1. 1993 Fall Meeting

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10. No **special** requests

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