

Plate motions from Doris data

D. Argus (1), L. Soudarin (2), J.F. Crétaux (3)

(1) Jet Propulsion Laboratory, Pasadena, CA, USA

(2) CLS, Collecte Localisation Satellites, Ramonville, France

(3) LEGOS-GRGS/CNES, Toulouse, France

(1) Donald.F.Argus@jpl.nasa.gov

(2) Laurent.Soudarin@cls.fr

(3) Jean-Francois.Cretaux@cnes.fr

Since the early 1990's, space geodetic measurements have been used to determine present-day plate motions. The initial purpose was to assess these new techniques for the recovery of plate motions, to verify whether geodetic data are consistent with kinematic models over a few years time scale, and then to clarify whether the plate motions are steady or not over a long timescale. Another important issue was to test the rigidity of plates and to evaluate the magnitude of the deformations in plate boundary zones. Geodetic networks also provide motion estimates for plates poorly or not at all sampled by geological data.

The vast increase of geodetic observations of crustal motions now allows producing global models, similar to the geological model NUVEL-1A-NNR. In these models, the wide geographic cover of the DORIS sites can bring key new constraints to plate motion. To date, 9 years of DORIS data acquired between 1993 January and 2001 December from the Spot-2, Spot-3, Spot-4, and Topex/Poseidon satellites have been analysed to determine the 3D velocity vectors of about 50 sites of the permanent tracking network. We present here plate angular velocities determined from the DORIS solution and compare them with VLBI, SLR, and GPS. The aim is to investigate the use of this DORIS solution in a four-technique synthesis on plate motion.