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Development of the Crustal Deformation Model of the Korean Peninsula Using Polymer Regression

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Abstract. Observation data of the GNSS continuous operating reference stations(CORS) were collected using software developed by the Geodetic Laboratory of SUNGKYUNKWAN UNIVERSITY. 17 out of 60 satellite reference points in Korea points were selected to perform GNSS relative positioning, and the speed fields of three academic GNSS Software (GAMIT, bereness, and gipsy-oasis) were calculated using data from 2016 January 1 to March 10, 2022. The speed field model was obtained by using the polymer regression for the speed field of the GNSS relative position using the GAMIT, bereness and gipsy program. We developed a Crustal Deformation Model by converting frames from ITRF 2014 used by the GIPSY-OASIS program to KGD2002. The speed field of gamit in Korea has a speed field of 2.767 to 2.862cm/yr in the east direction and -1.256 to –0.812cm/yr in the south direction every year. The speed field of bereness in Korea has a speed field of 2.905 to 3.240cm/yr in the east direction and -1.461 to –0.982cm/yr in the south direction every year. The speed field of gipsy-oasis in Korea has a speed field of 2.787 to 3.206cm/yr in the east direction and -1.309 to –0.929cm/yr in the south direction every year.