

Gravity field modeling from GRACE and its application to geoid model improvement for Japan

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Motivation: Local geoid improvement at long wavelengths with GRACE-based gravity model

Approach:

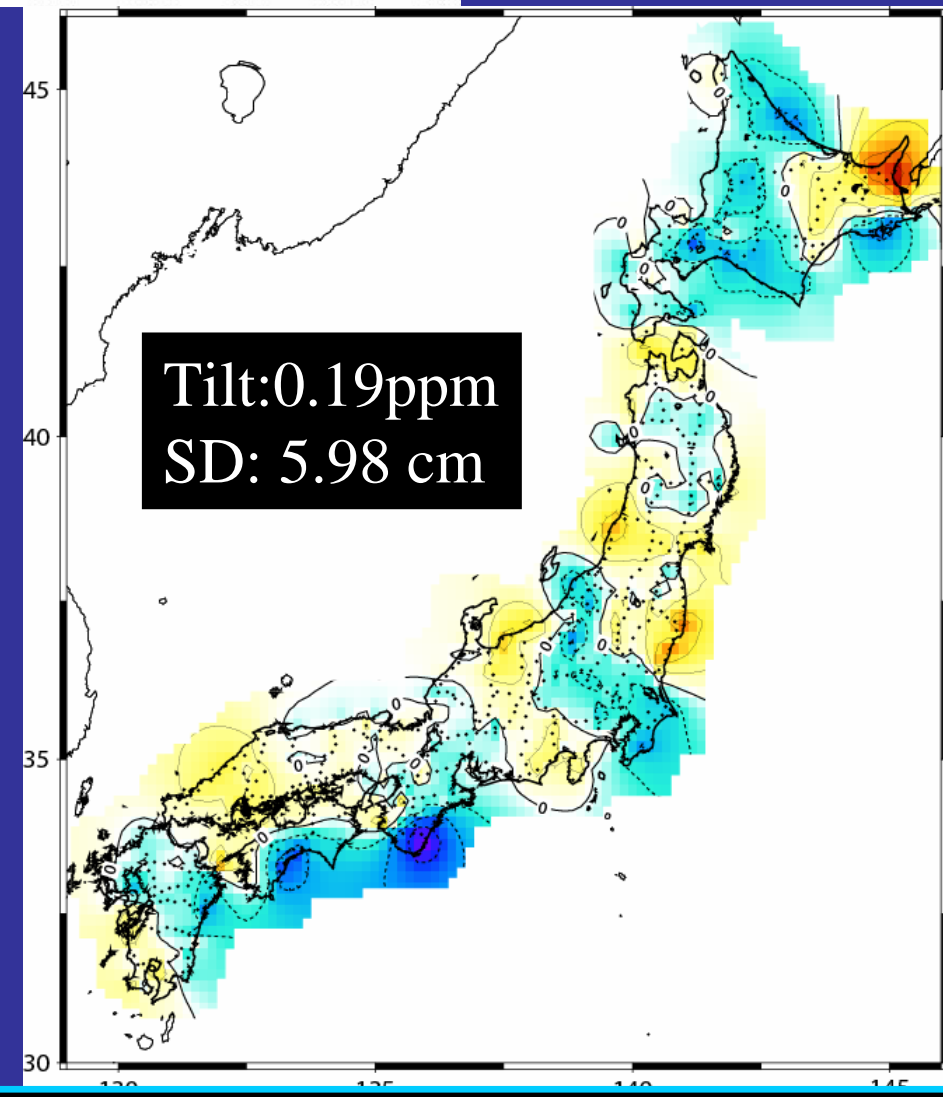
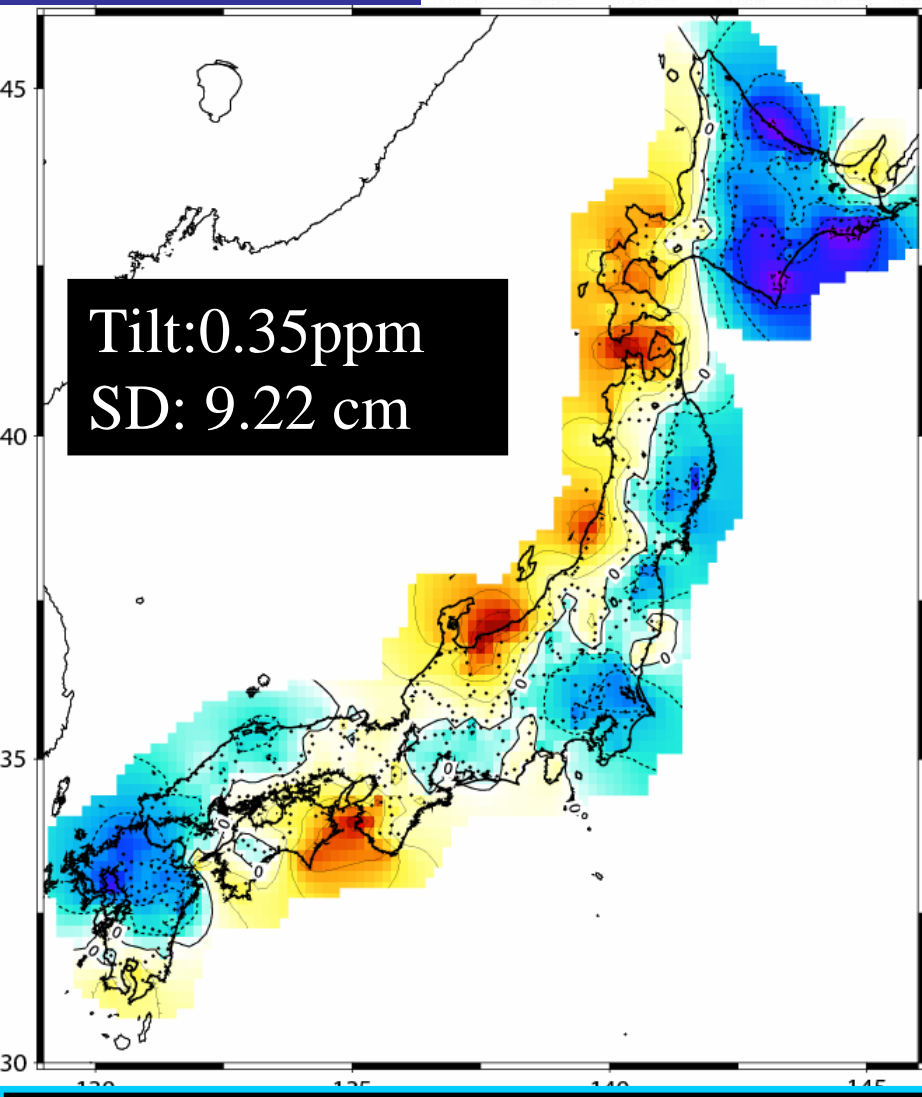
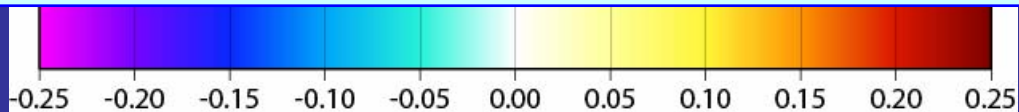
[A] gravity field determination from GRACE level-1B data

- 1) Accelerometer calibration by fitting dynamic orbits to GPS-derived precise orbits
- 2) Global gravity field recovery with calibrated accelerometers, range-rate, star camera data
- 3) Regional gravity anomaly block estimation with the same data sets as used in step 2.

[B] combination of GRACE-derived gravity data with surface gravity data and an altimetry-derived gravity anomaly model by semi-discrete 2D wavelet analysis/reconstruction and geoid computation with the resulting gravity model



Detrended geoid differences between gravimetric geoid models & GPS/leveling data (CI 2.5 cm)



Detrended geoid differences for JGEOID2004

Detrended geoid differences for revised model