

参考資料



R937佐渡七浦



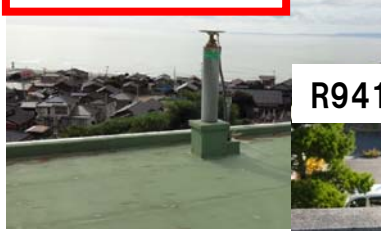
R938佐渡川茂



R939佐渡松ヶ崎



R940弥彦観測所



R941新潟峰岡



R942新潟岩室



R943新潟和納



R944新潟中之口



R945新潟庄瀬



R951阿賀上条



R950早出川ダム



R949五泉川内



R948五泉村松



R947五泉野球場



R946新潟矢代田

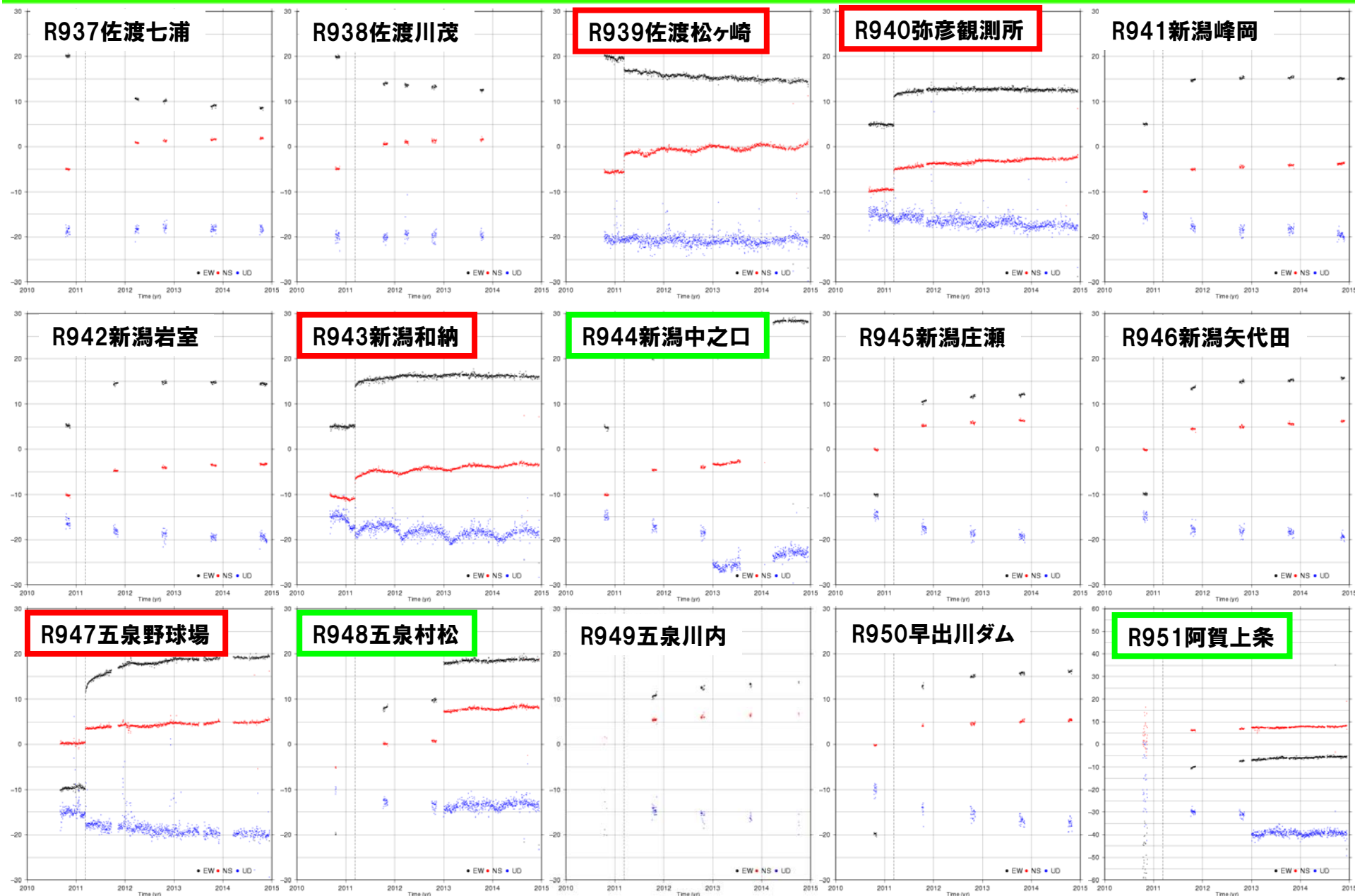


●キャンペーン観測点:15点
繰り返し観測:8点
連続観測:7点(内3点は2012年度から)



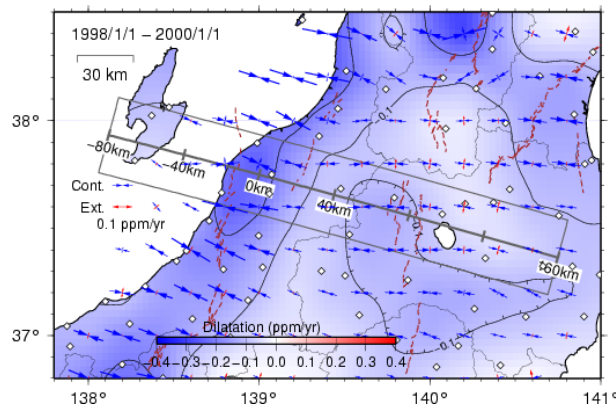
◇ GEONET
◆ キャンペーン観測点
□ 水準点

GNSSキャンペーン観測点時系列図

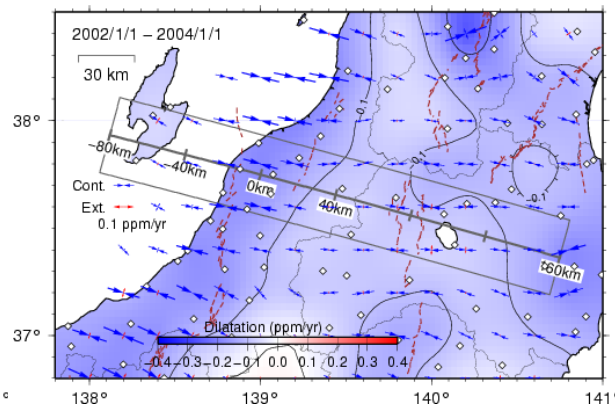


東北沖地震前・後のひずみ速度

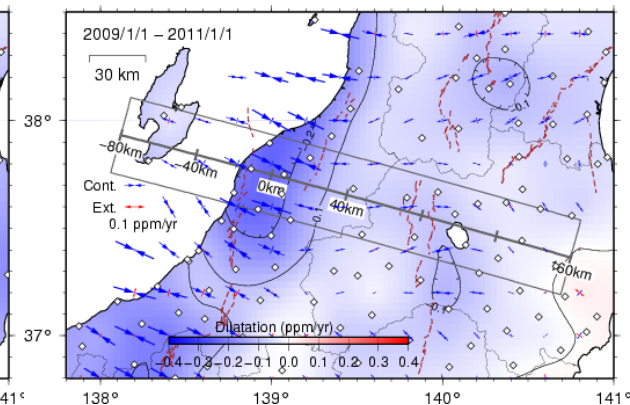
1998.01 – 2000.01



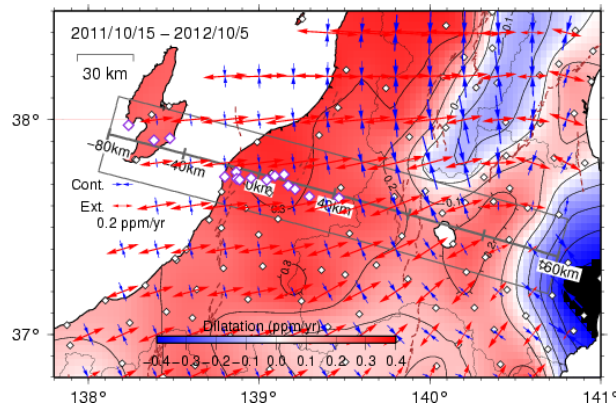
2002.01 – 2004.01



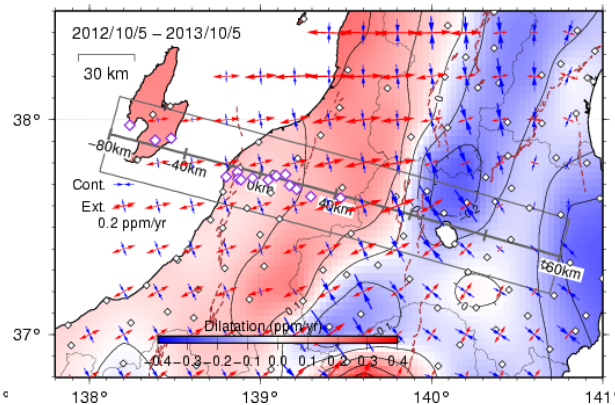
2009.01 – 2011.01



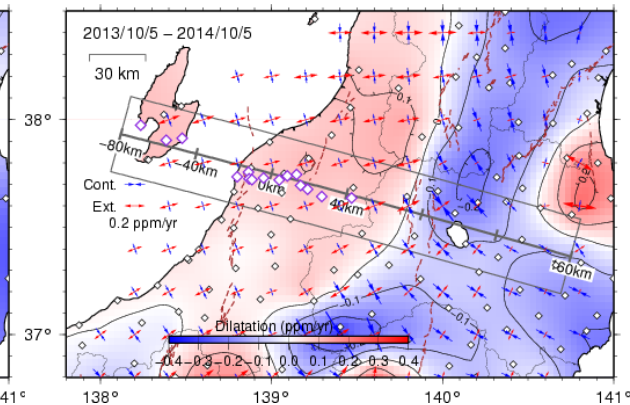
2011.10 – 2012.10



2012.10 – 2013.10

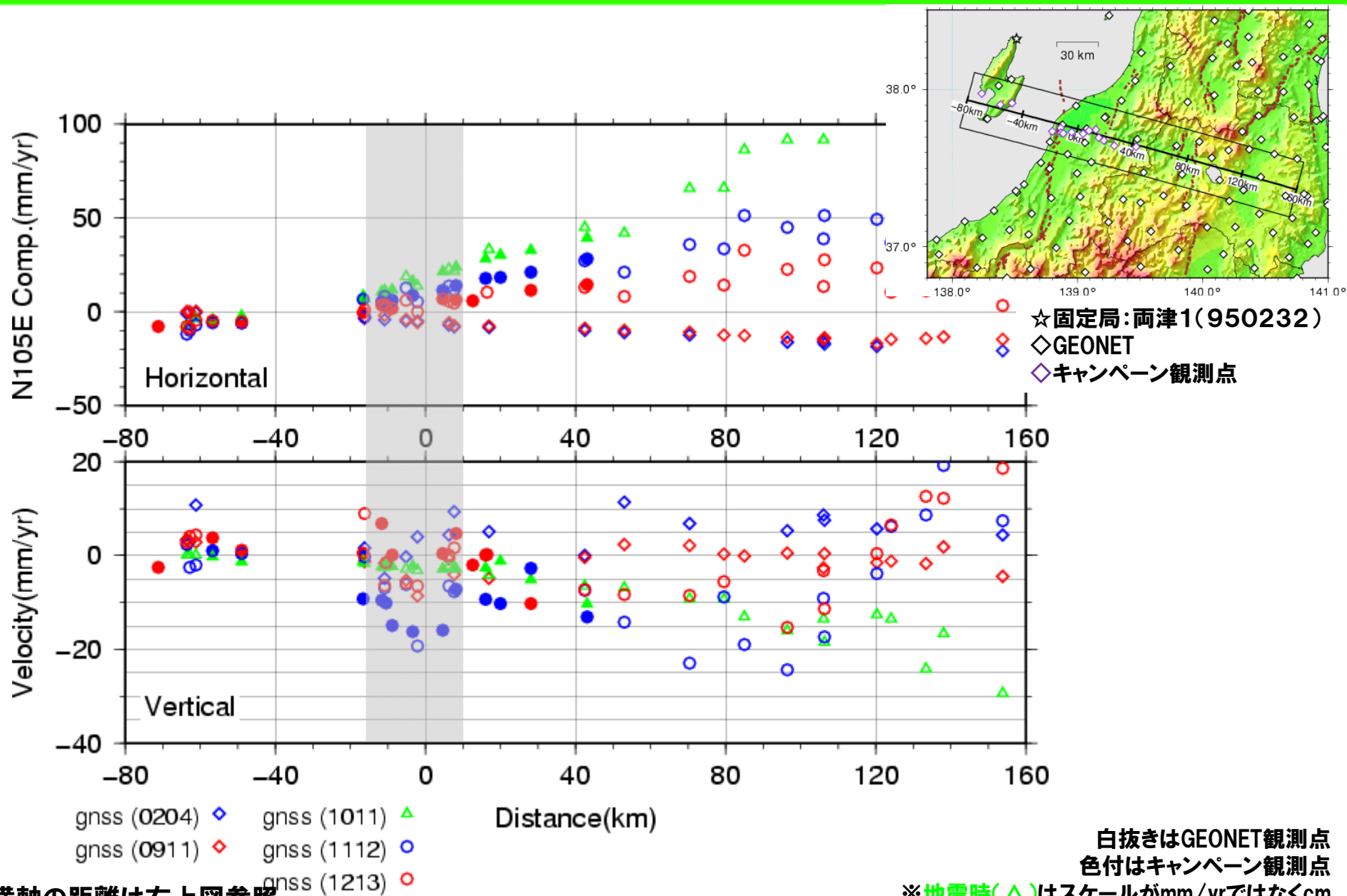


2013.10 – 2014.10



青:短縮
赤:伸張

東北沖地震前・時・後の比較



横軸の距離は右上図参照

Ohzono et al., 2012, EPS, 64, 1231–1238, Fig.5

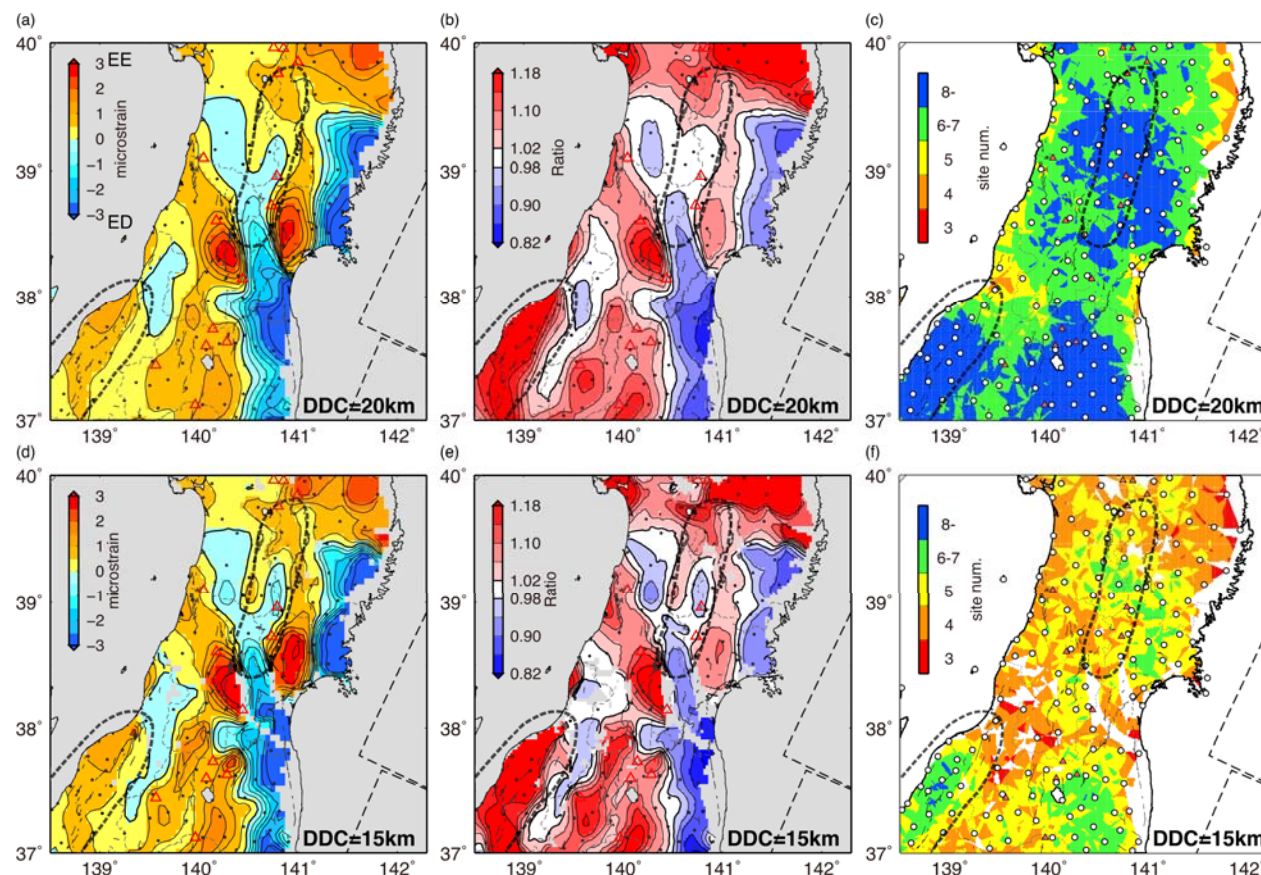
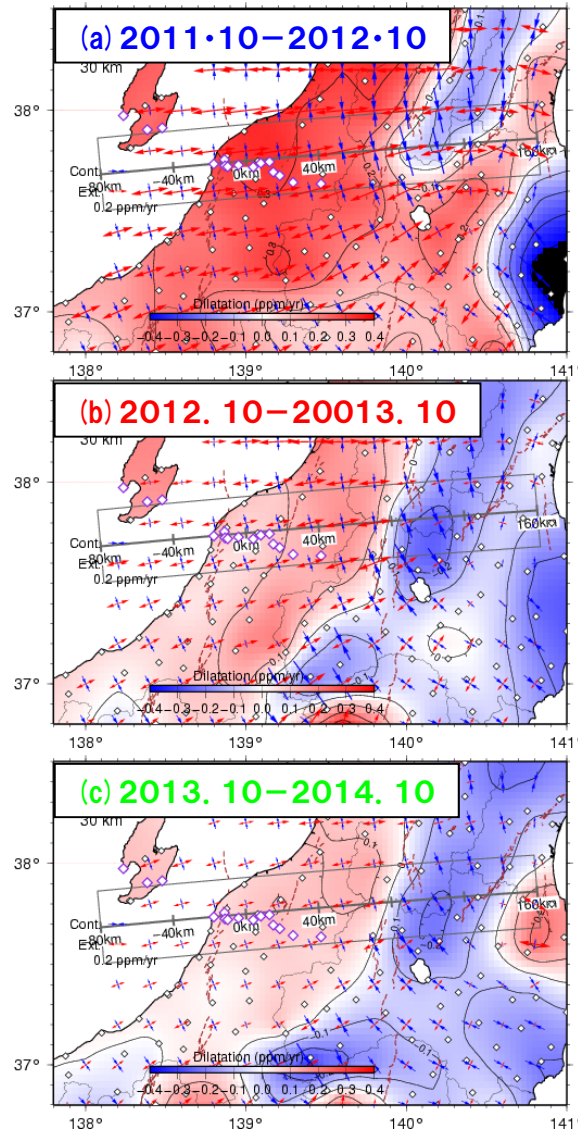


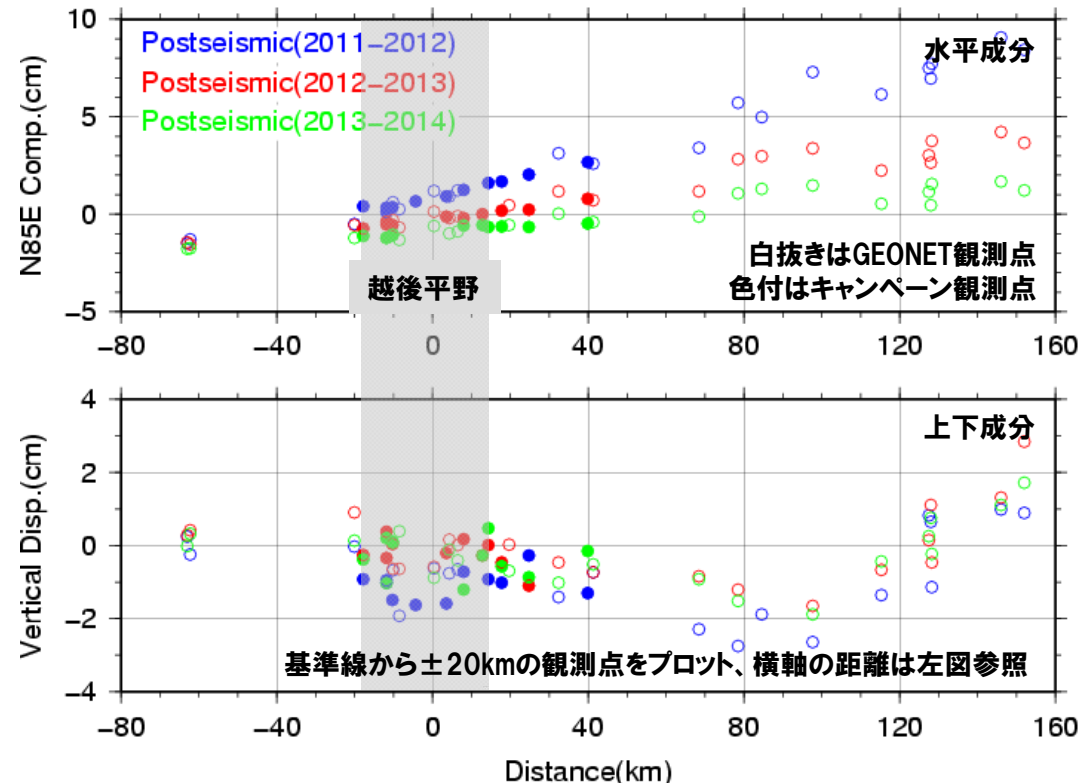
Fig. 5. (a) Distribution of the EW component of the strain change residual (observation–calculation) calculated at each site. Blue and red areas denote the extension deficit (ED; observation is smaller than calculation) and the extension excess (EE; observation is larger than calculation), respectively. Gray dashed lines encircle the same strain concentration zones as shown in Fig. 1. Open triangles are Quaternary active volcanoes. The thick and thin contour lines indicate 0 and every 0.5×10^{-6} strain, respectively. Dots are GPS site locations. (b) Same as (a) but with the distribution of the ratios of strain change in the EW component (observation/calculation). The thick and thin contour lines indicate 1 and every 0.02, respectively. (c) The number of included sites for the weighting in the strain calculation at each grid (every 0.01°). The color is filled when the number of included sites is larger than three. (d), (e) and (f) Same as (a), (b), and (c) but the distance decay constant (DDC) is 15 km instead of 20 km.

東北地方太平洋沖地震発生後(N85E)

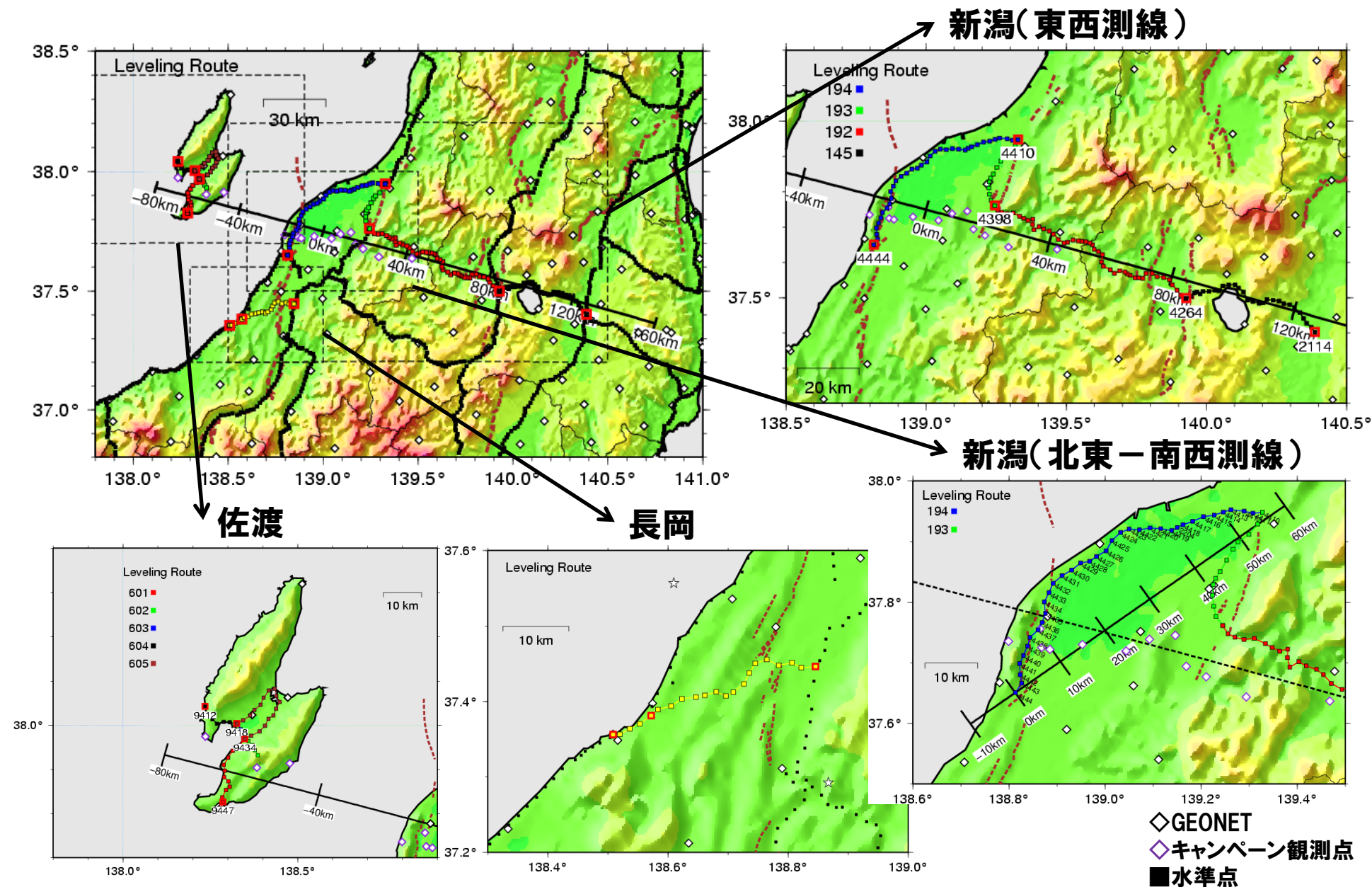


ひずみ速度の時間変化

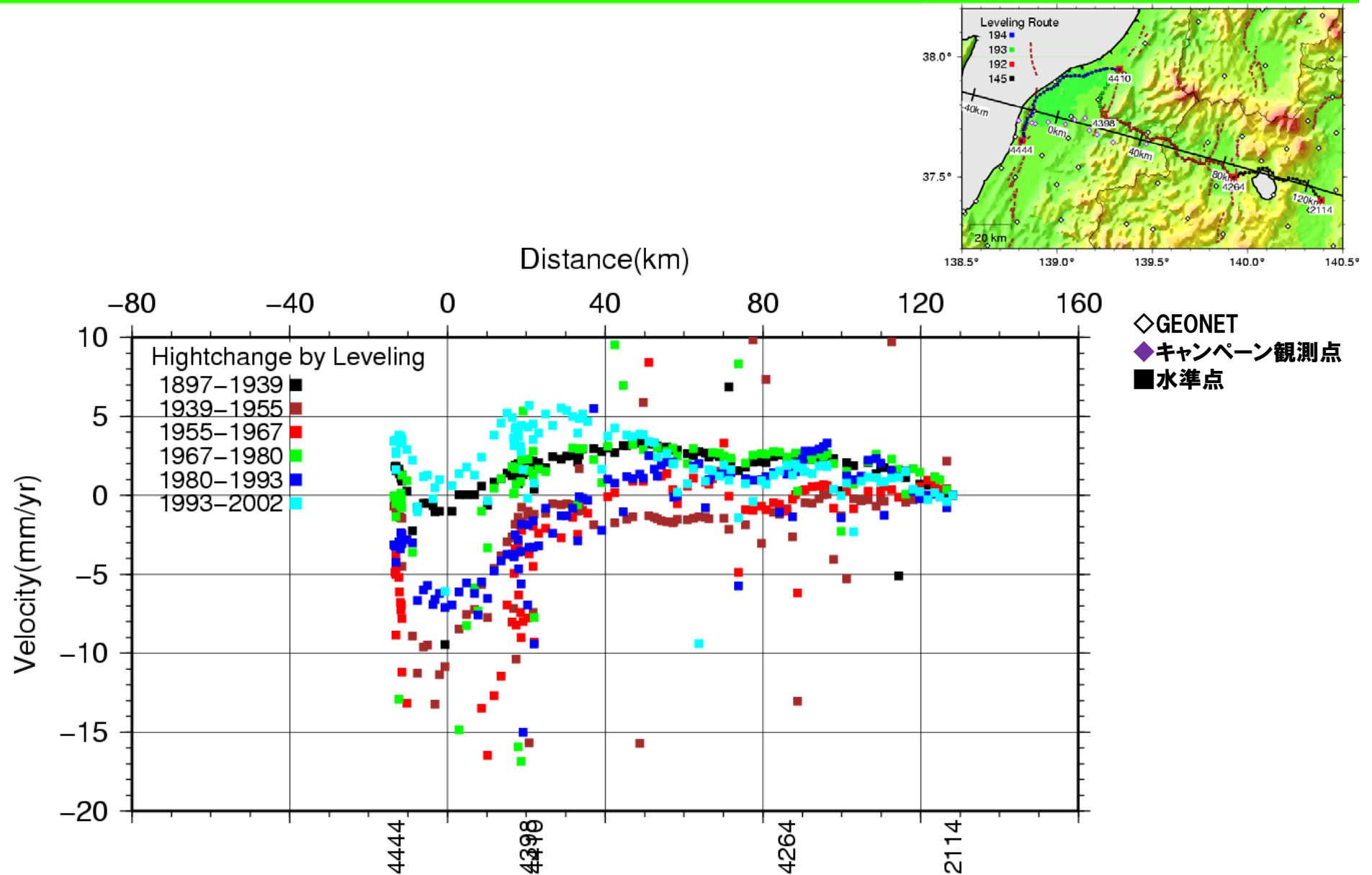
赤:伸張
青:短縮



西南西-東北東方向の変位プロファイル

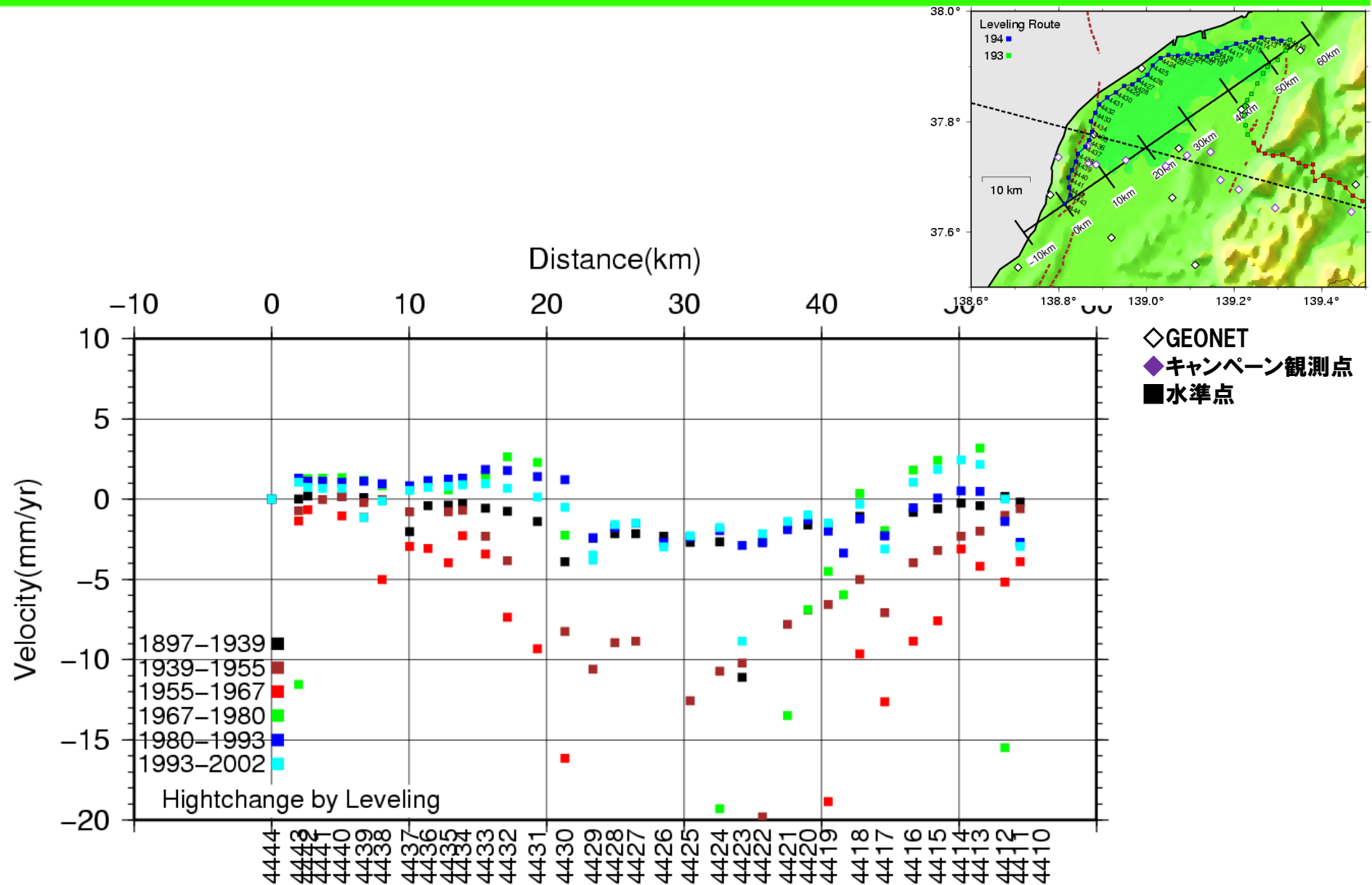


水準測量による上下変動(東西測線)全期間



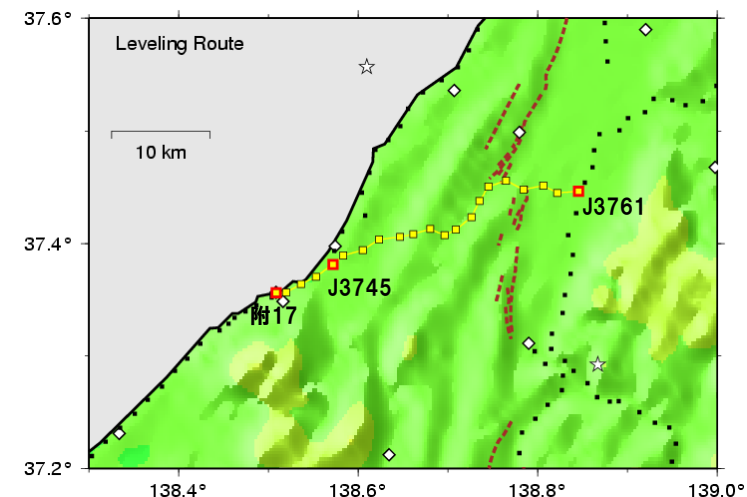
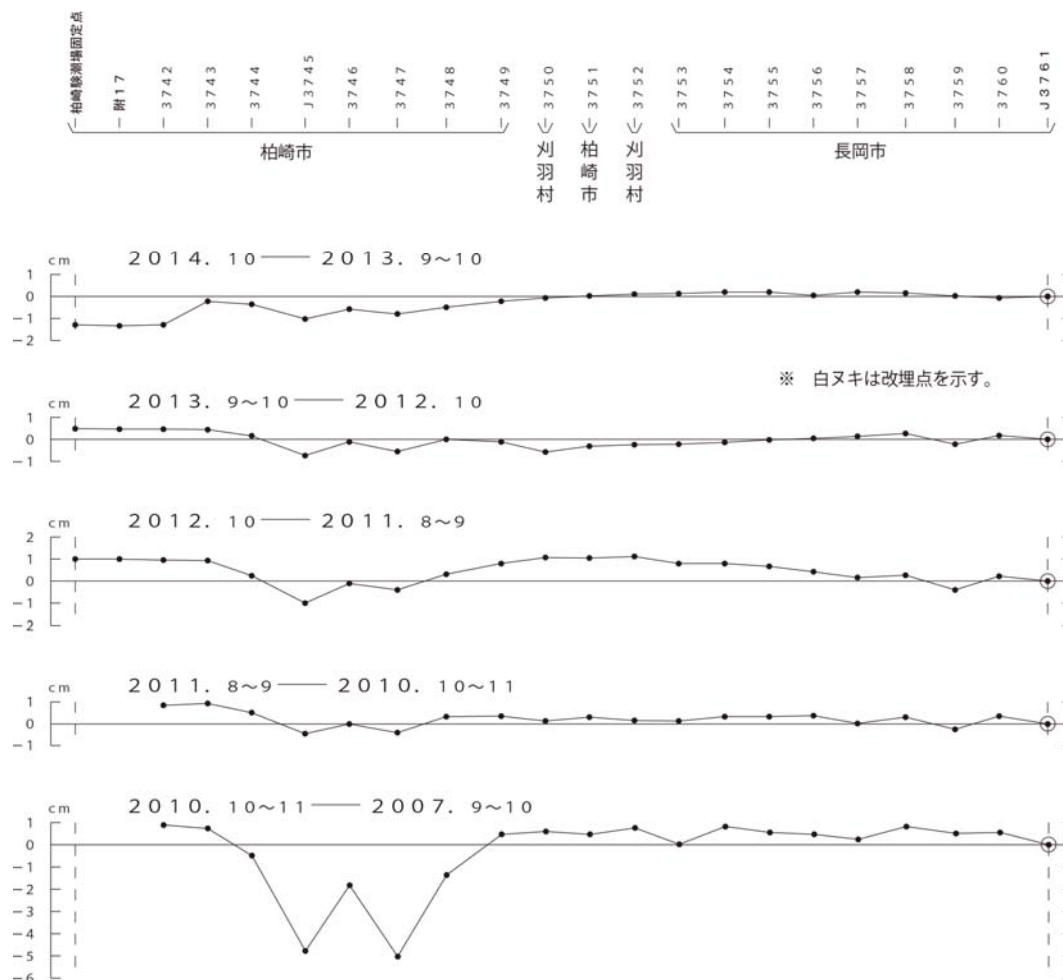
横軸の距離は右上図参照

水準測量による上下変動(北東-南西測線)全期間 国土地理院

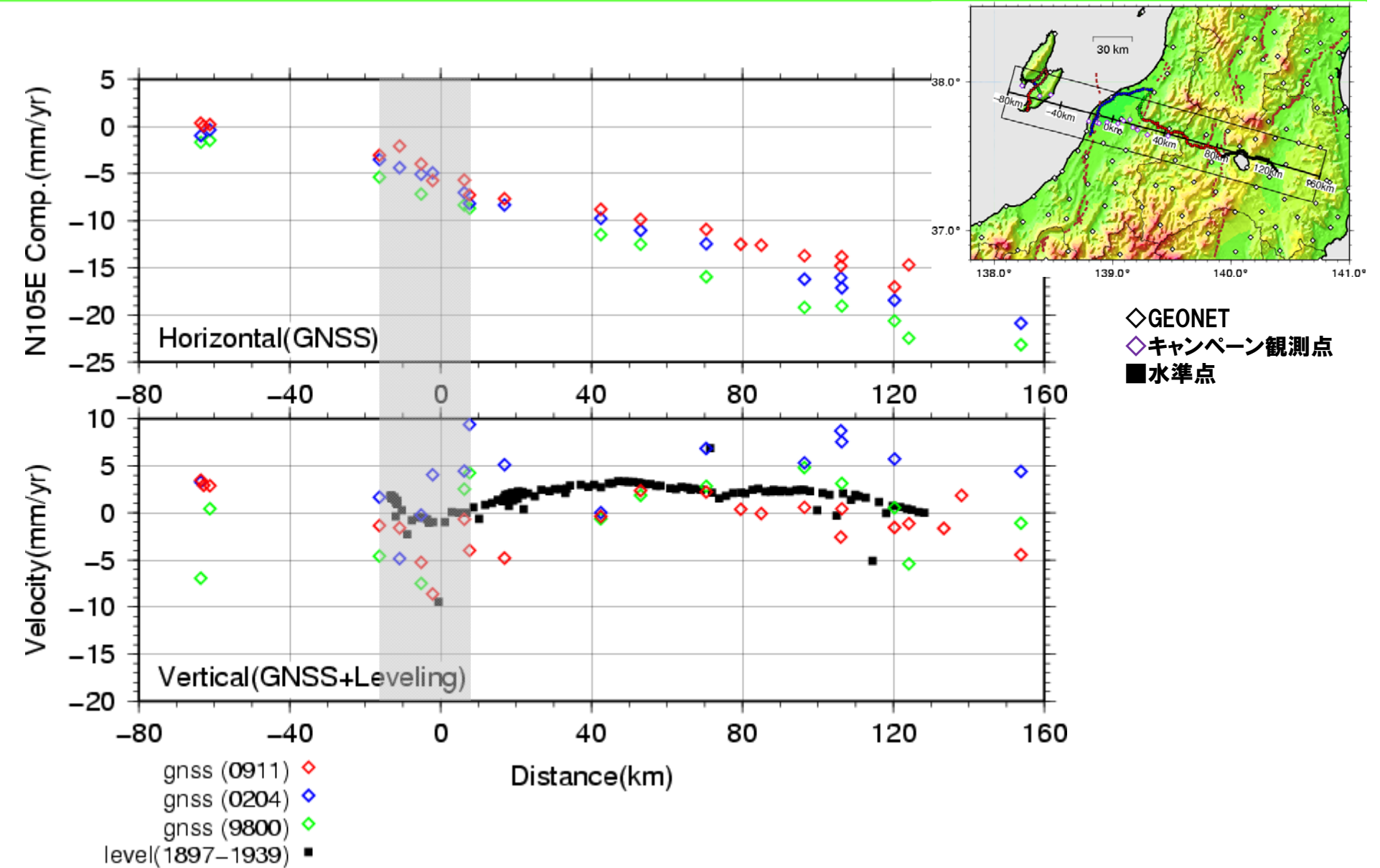


横軸の距離は右上図参照

水準測量による上下変動(長岡)



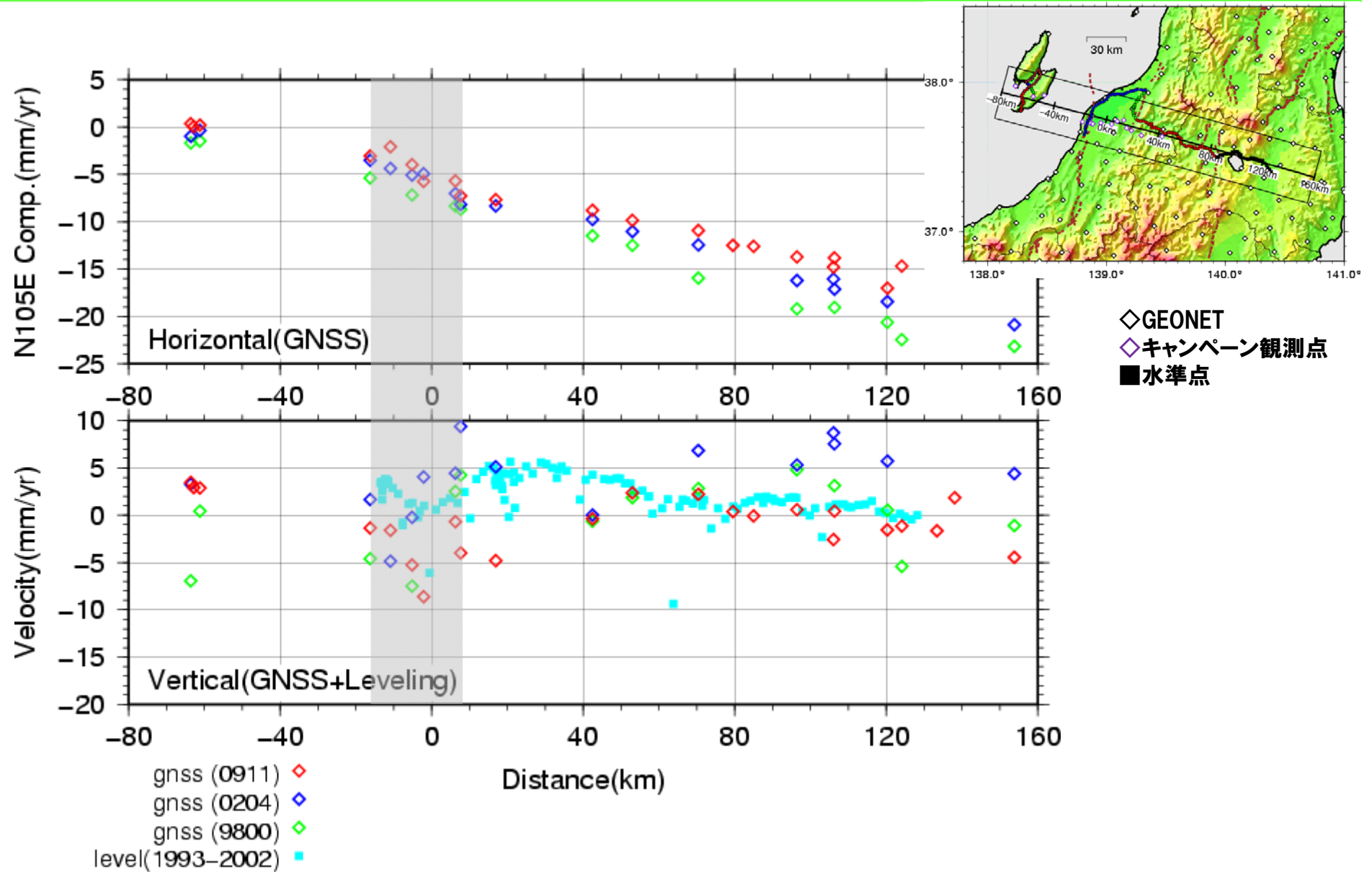
GNSSデータと水準データの比較(東北沖地震前)期間1



横軸の距離は右上図参照

GNSSデータと水準データの比較(東北沖地震前)期間2

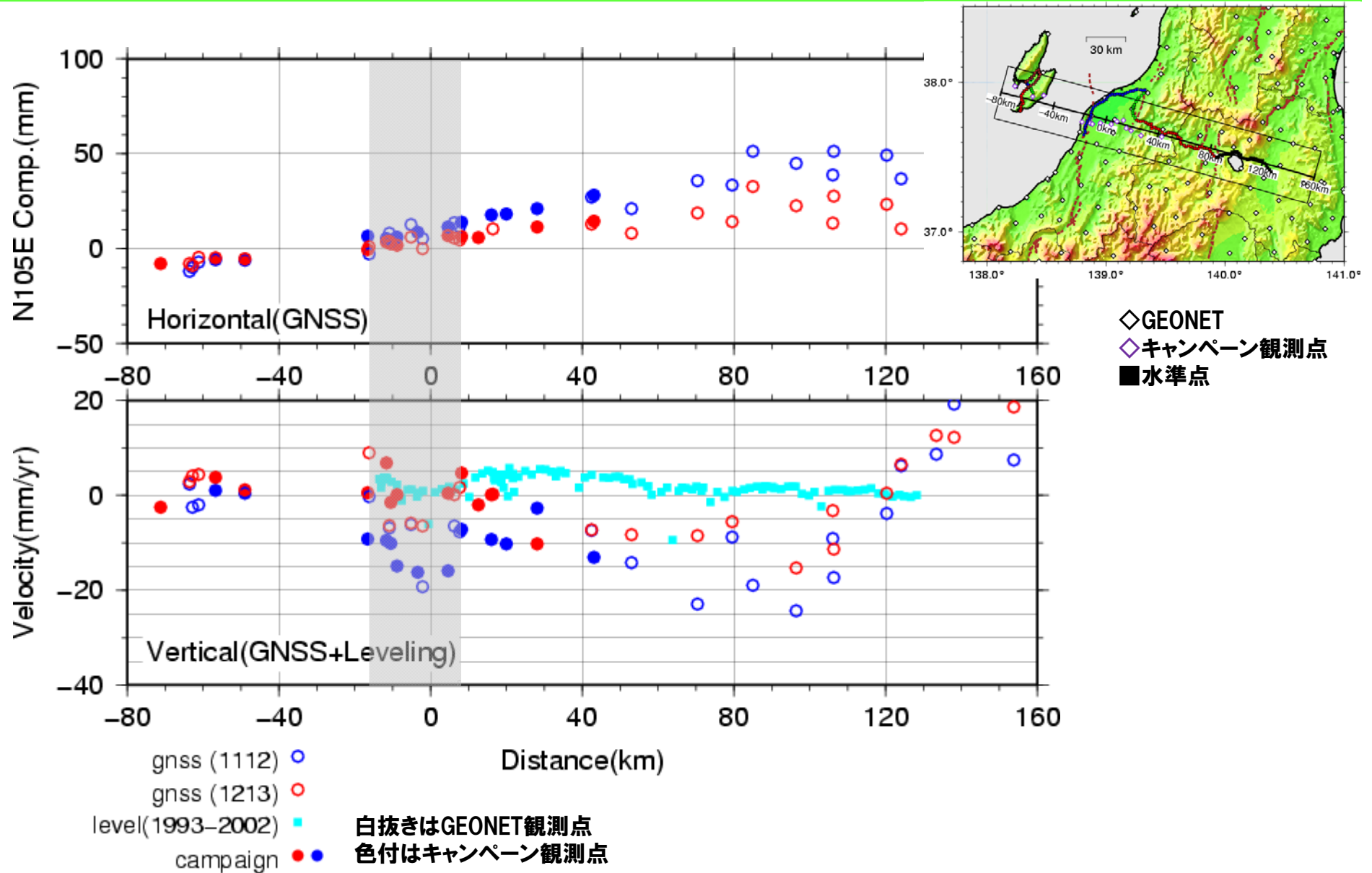
国土地理院



横軸の距離は右上図参照

GNSSデータと水準データの比較(東北沖地震後)期間2

国土地理院

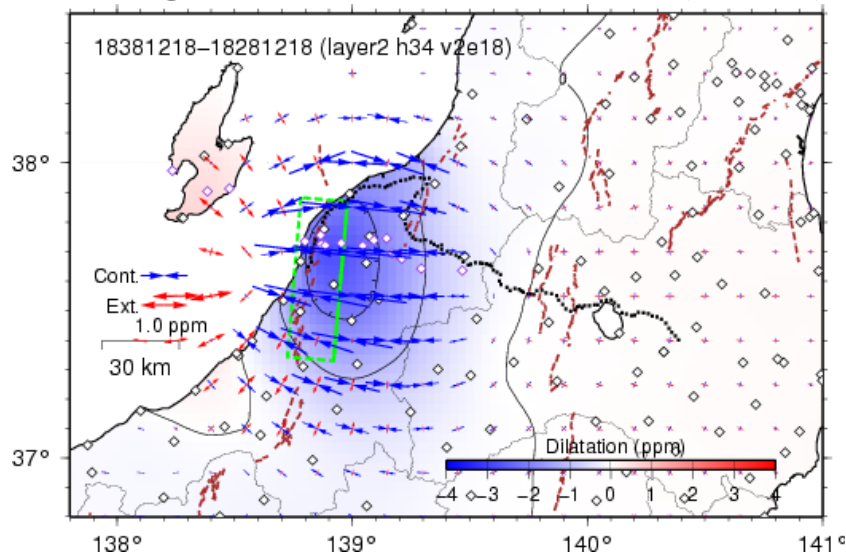


横軸の距離は右上図参照

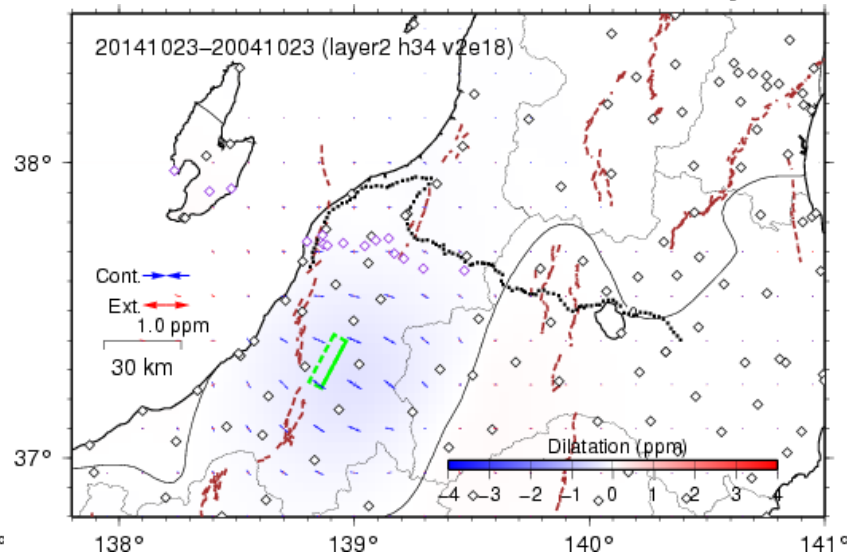
各地震の粘弾性緩和によるひずみ場

各地震発生後10年間

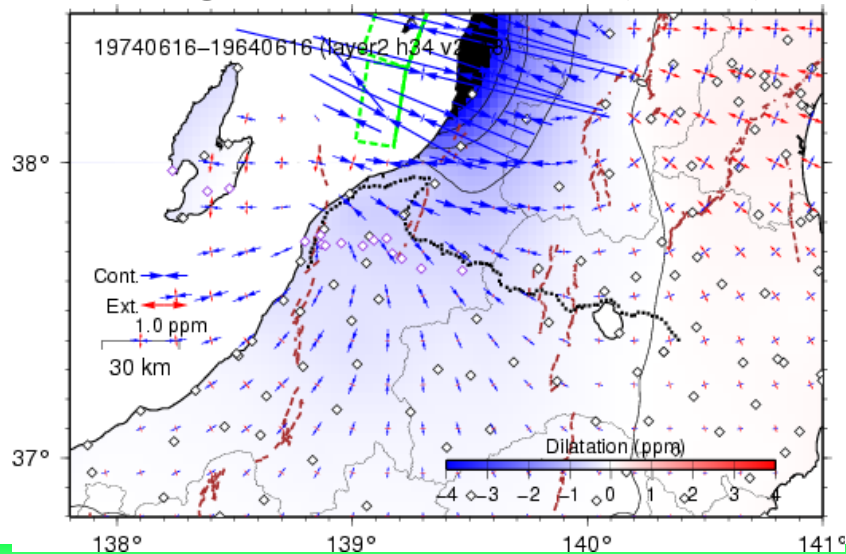
① 1828年越後三条地震(M7.2)



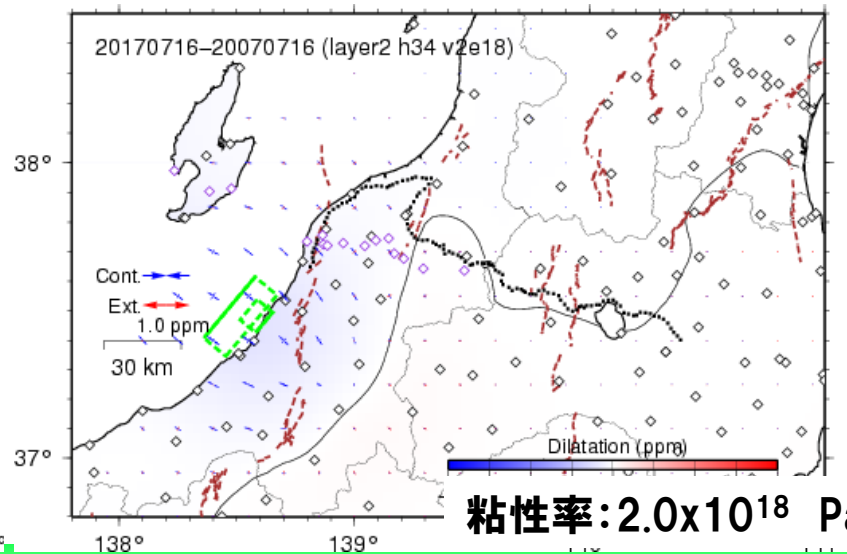
③ 2004年新潟県中越地震(Mj6.8)



② 1964年新潟地震(M7.5)



④ 2007年新潟県中越沖地震(Mj6.8)



粘性率: 2.0×10^{18} Pa·s