Continuous change in near-surface S-wave velocity

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Before - After

Velocity change (%)
KiK-net

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Deconvolution = \frac{\text{surface record}}{\text{borehole record}}
Tohoku earthquake
S-wave splitting
Arrival times

t(NS)
t(polarization)
Arrival times

t_{fast}

t_{slow}

t(NS)

t(polarization)
Arrival times

Anisotropy coefficient $= \frac{t_{\text{slow}} - t_{\text{fast}}}{t_{\text{slow}}}$
Anisotropy change

Before

Difference

After

Anisotropy coefficient (%)

Change in anisotropy coefficient (%)
Anisotropy change

Velocity change

I
II
III
IV

I
II
III
IV
Anisotropy change

Velocity change

Compaction

Pore pressure increase

Shear modulus decrease

Shear velocity decrease
Monthly change
with precipitation

Precipitation (mm)

$\Delta v$ (m/s)