# Investigation of seismic activity by means of spaced tide-recording systems

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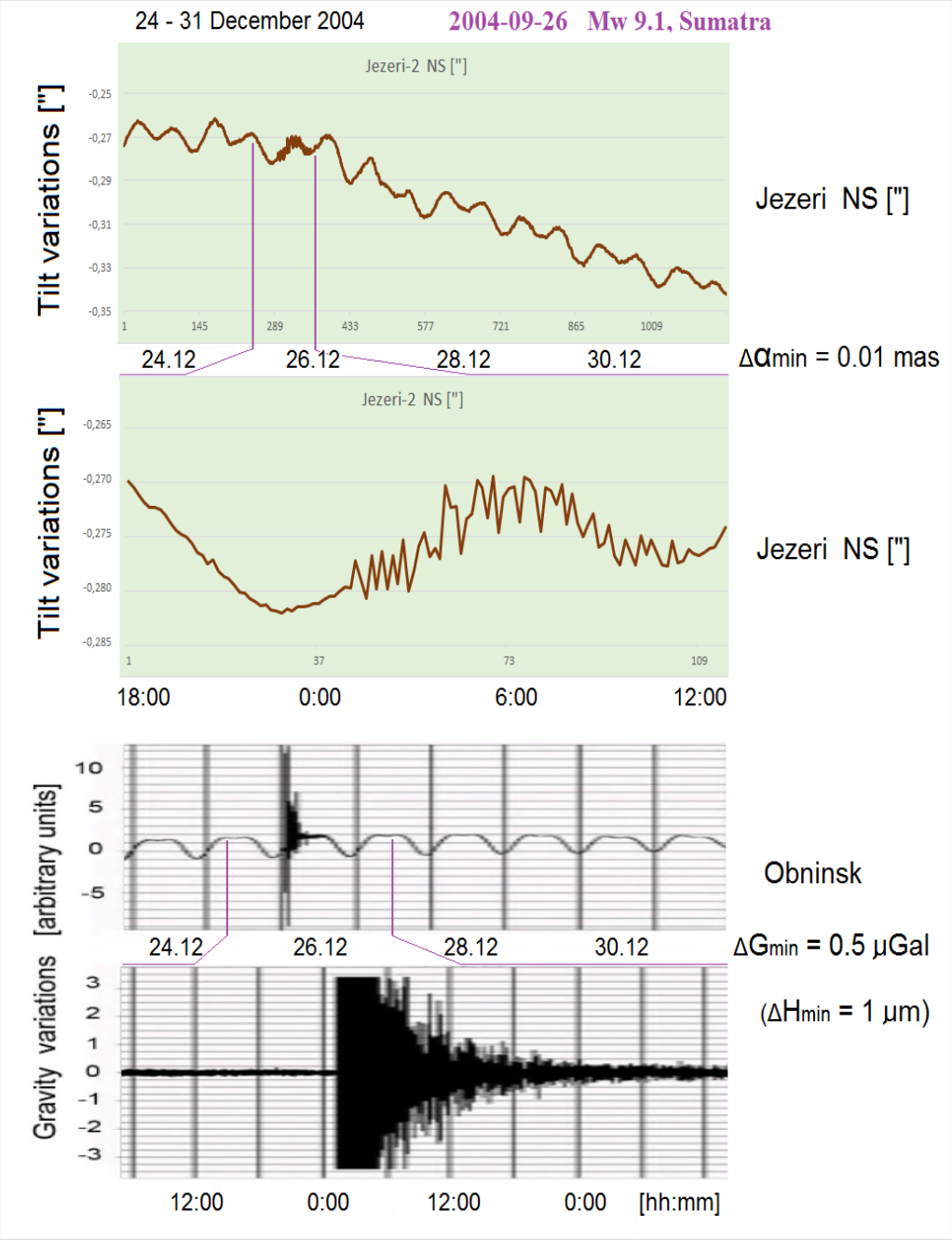
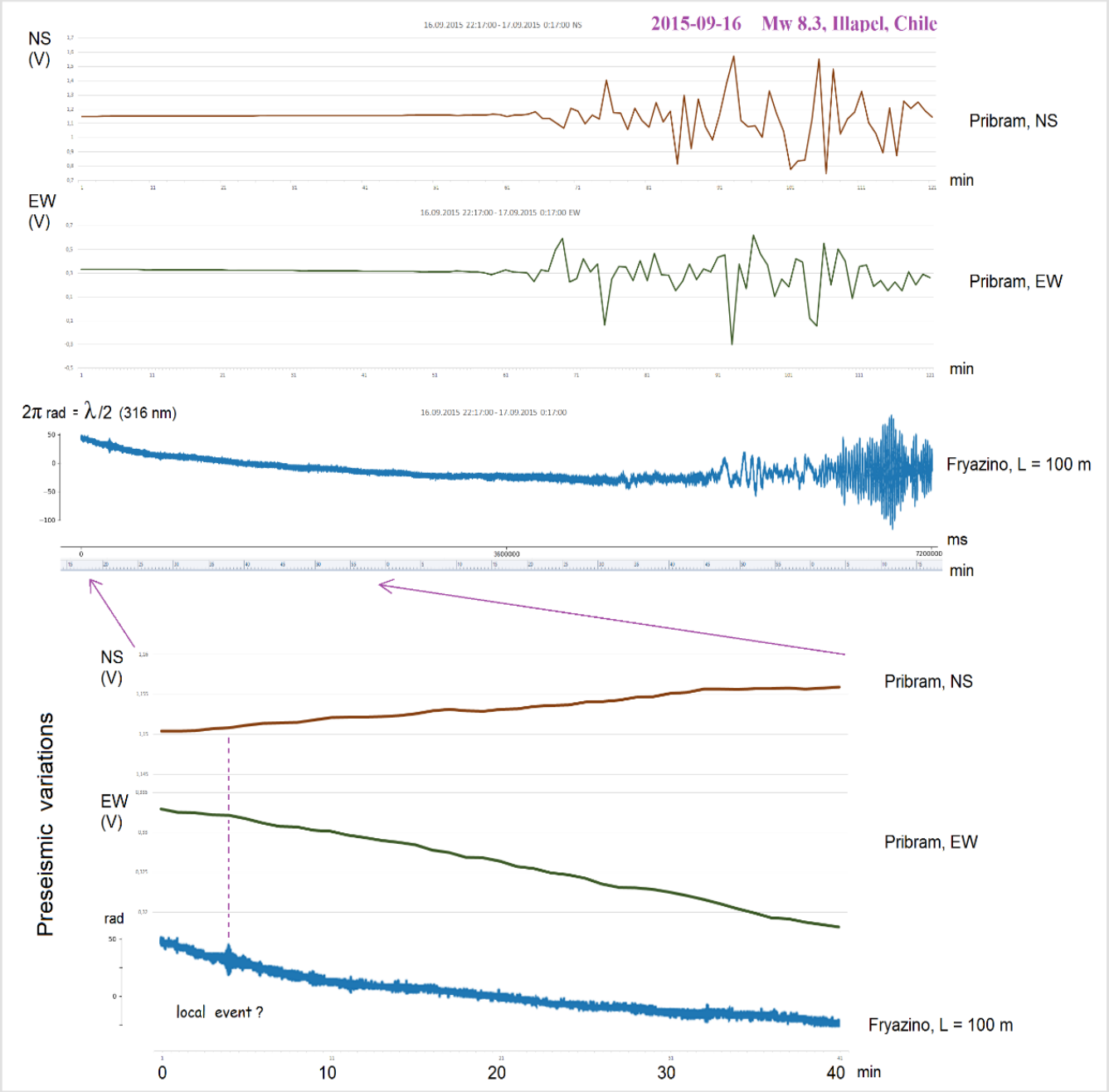



# The modernized tide-recording instruments (seismotiltmeters, seismogravimeters, strainmeters) can detect geophysical signals in ultra-wide frequency band

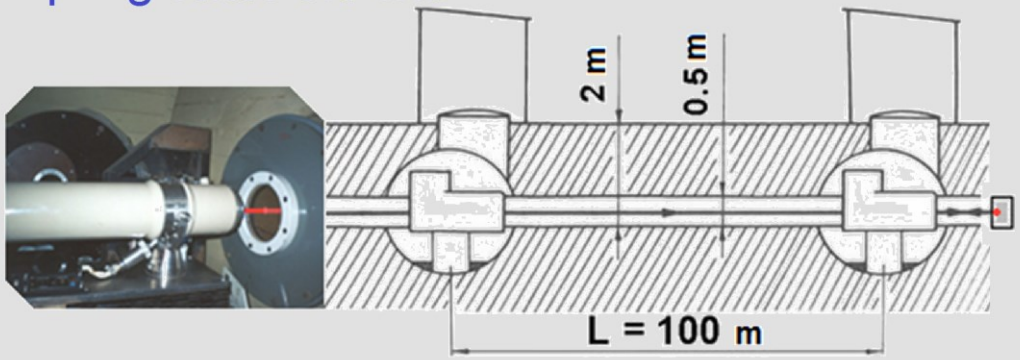
Standard Tiltmeter
Low Pass Filter: 0 - 1 mHz
Sampling rate: 10 min

Seismogravimeter
Low Pass Filter: 0 - 50 mHz
Sampling rate: 10 s



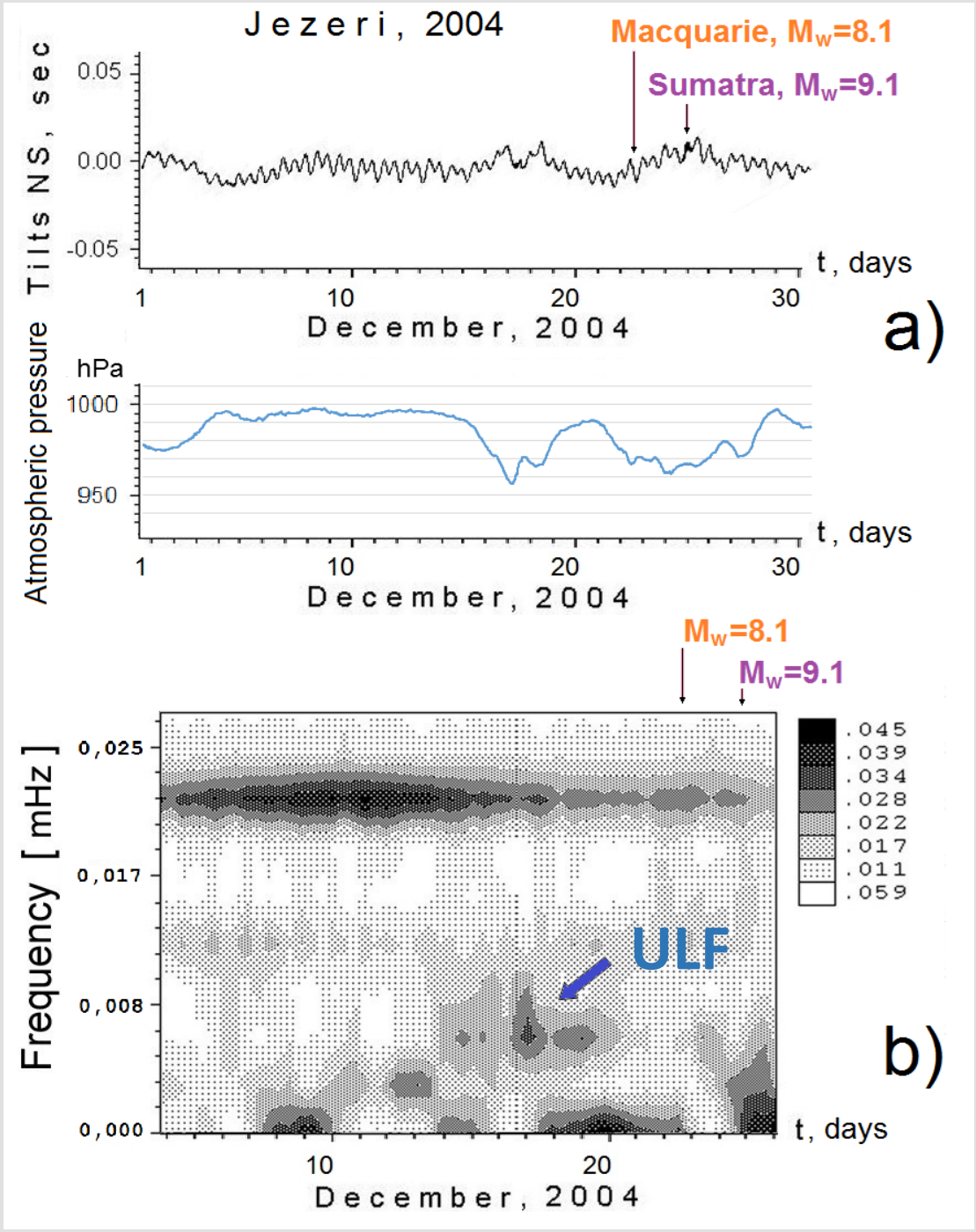

Seismotiltmeter
Low Pass Filter: 0 - 10 mHz
Sampling rate: 1 min

Laser Strainmeter Low Pass Filter: 0 - 1 kHz
Sampling rate: 0.5 ms




**Spatially distributed systems are sensitive to precursors of strong seismic events and large atmosphere disasters**

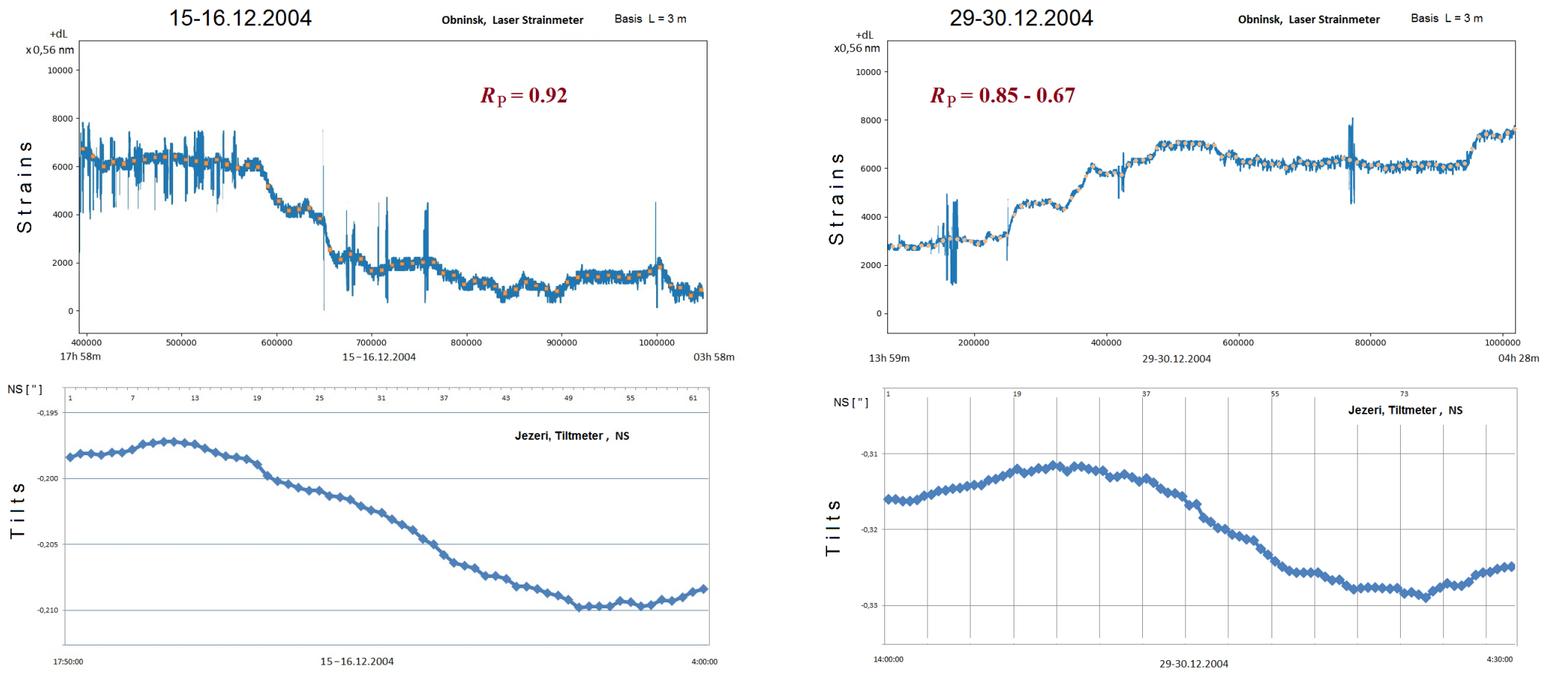
**Local events and weak global disturbances can be distinguished**



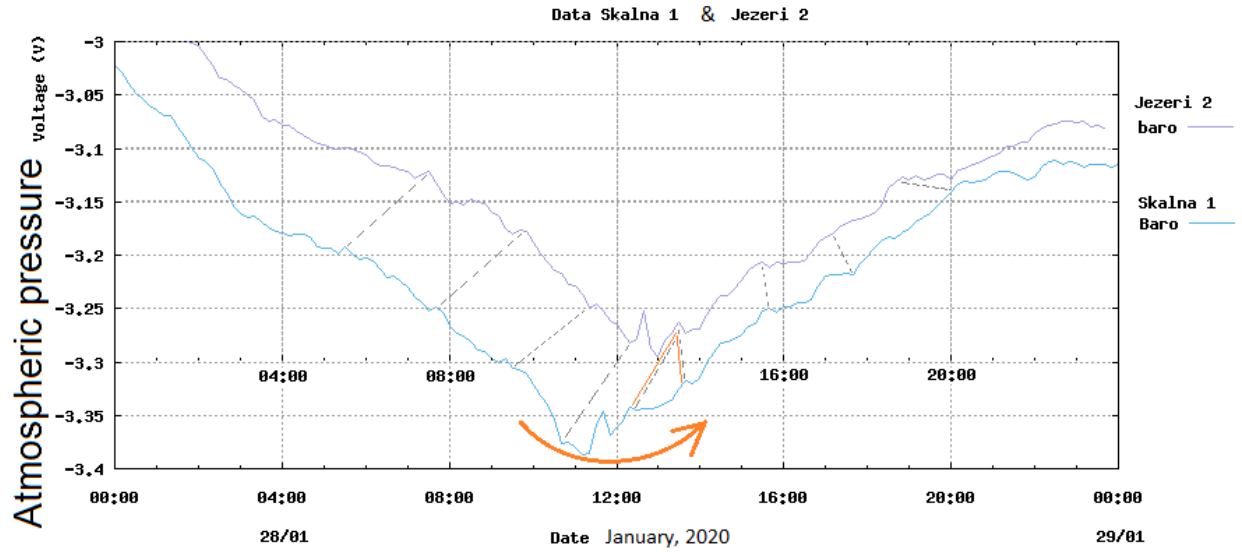

Earth surface deformations (tilts, strains) are subjected to atmospheric pressure variations

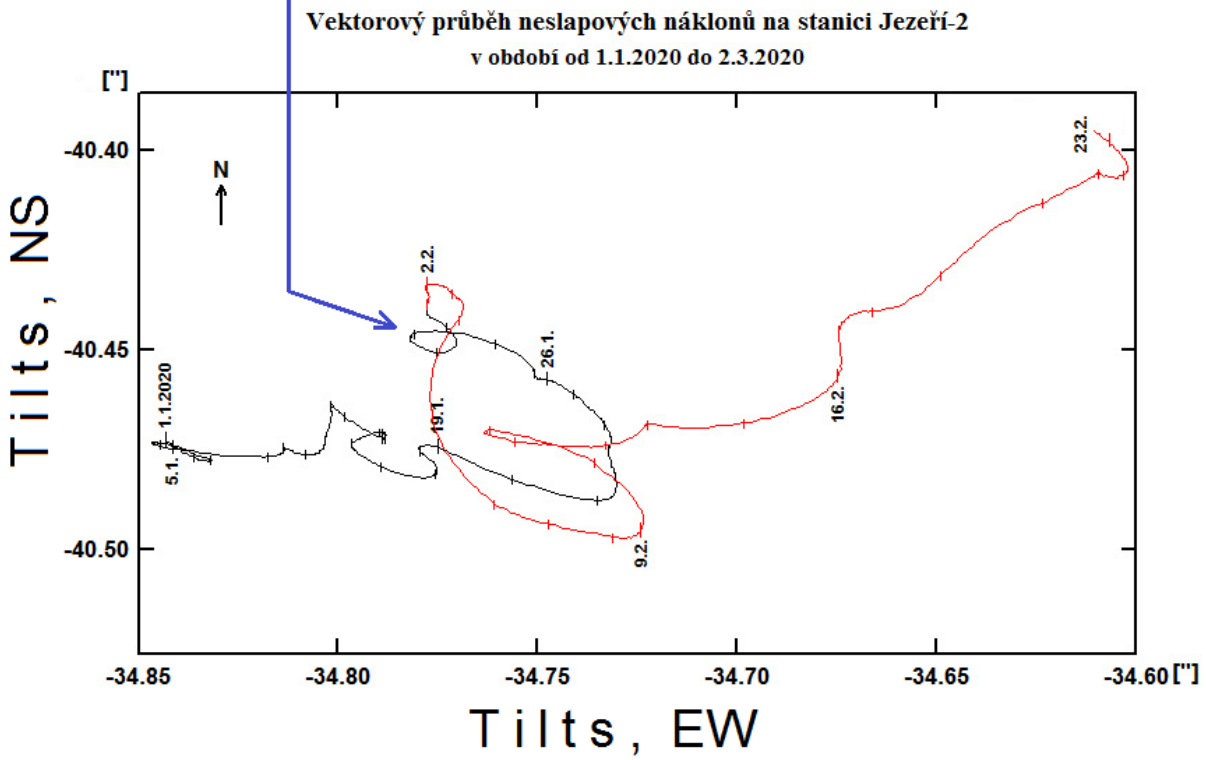
Ultra-Low Frequency (ULF = 0.01-0.005 mHz) oscillations are often observed before strong (M = 7-9) earthquakes

# Correlated strain-baric and tilt-baric variations are detected by 1700 km distanced instruments




# Coefficients of correlation have been found being up to Rp=0.92 before earthquake and Rp=0.6-0.8 after earthquake

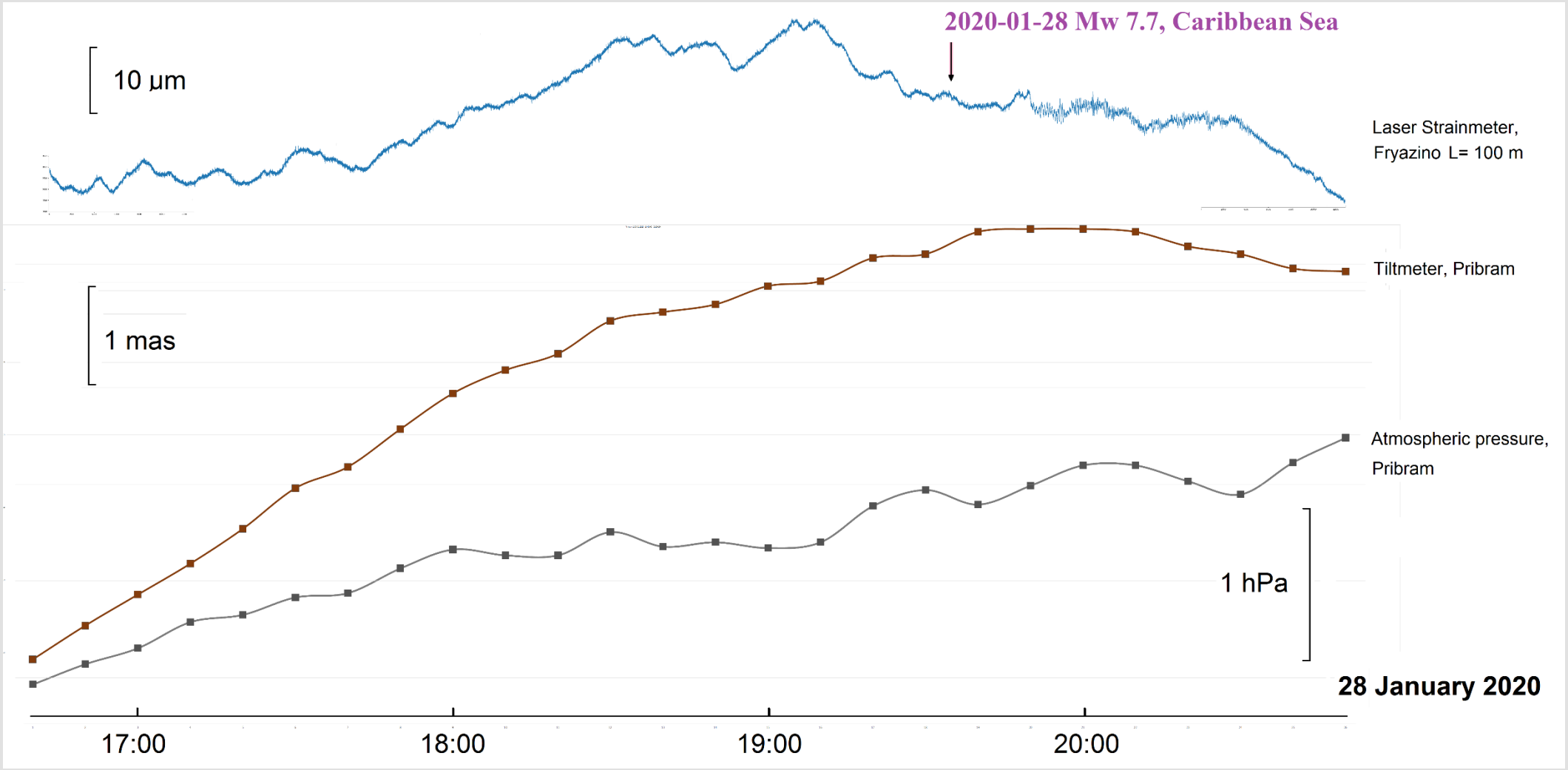



Synchronous recording atmospheric pressure by spaced stations allows a singularity of cyclonic motions to be displayed

The loop cyclonic motions cause the loop-shaped tilt variations

# Singular cyclonic motions as well correlated strain-baric and tilt-baric variations forerun and accompany the Mw 7.7 Caribbean Sea earthquake on 28 January 2020



Thank you!