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1.1 Local seismic Network WEBNET and deep borehole seismic stations within the ICDP project

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The West Bohemia/Vogtland region, situated on the border between the Czech Republic and Germany, is characterized by intraplate earthquake swarms with magnitudes usually ML <4 and by an intense activity of crustal fluids. Notable earthquake swarms in the last twenty-five years occurred there in 1997, 2000, 2008, 2011 and 2017 (with the strongest event of ML = 3.8); an exceptional ML = 4.4 mainshock-aftershock activity occurred in 2014. The earthquake swarm area is close to an area of massive CO_2 degassing that occurs in the form of CO_2-rich springs and wet or dry mofettes in degassing fields along the tectonic fault zones.
Institute of Geophysics and Institute of Rock Structure and Mechanics of the Czech Academy of Sciences have been operated the local seismic network WEBNET monitoring seismicity in the West Bohemia/Vogtland region since 1991. WEBNET contains 15 on-line broadband and 8 off-line short-period stations. All the stations operate in the continuous mode with the sampling rate of 250 Hz.
The online stations were entirely upgraded in 2015. They are equipped with the Güralp CMG3-ESPC sensors (T0 = 30s), which are placed in special vaults, and with Centaur data acquisition systems by Nanometrics. The frequency range is 0.03 to 80Hz.
The off-line stations are equipped with the LE-3D Lite sensors (T0 = 1 s) and with GAIA data acquisition systems, the frequency range is 1 to 80Hz. All the offline stations will be fully upgraded in 2018-2019. They will be equipped with broadband sensors and with an internet access, thus will be transformed to on-line ones.
Within the starting ICDP project 'Drilling the Eger rift' new deep observatories aimed at disclosing the role of crustal fluids in generation processes of earthquake swarms and in deep seated biosphere will be established in West Bohemia/Vogtland. For this purpose seven boreholes will be drilled. Four of them (400 to 500m deep) will be equipped with borehole seismometers which together with a dense WEBNET network will allow a more detailed view into generation of West Bohemia/Vogtland earthquake swarms.