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# Derivation of GNSS derived station velocities for a surface deformation model in the Austrian region

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This contribution deals with the first comprehensive analysis of GNSS derived surface velocities computed within an observation network of about 100 stations covering the whole Austrian territory and parts of the neighbouring countries. Coordinate time series are available now, spanning a period of 5 years (2010.0-2015.0) for one focus area in East Austria and one and a half year (2013.5-2015.0) for the remaining part of the tracking network. In principle the data series are stemming from two different GNSS campaigns. The former was set up to investigate intra plate tectonic movements within the framework of the project ALPAACT (seismological and geodetic monitoring of ALpine-PAnnonian ACtive Tectonics), the latter was designed to support a number of various requests, e.g. derivation of GNSS derived water vapour fields, but also to expand the foresaid tectonic studies. In addition the activities within the ALPAACT project supplement the educational initiative SHOOLS & QUAKES, where scholars contribute to seismological research.

For the whole period of the processed coordinate time series daily solutions have been computed by means of the Bernese software. The processed coordinate time series are tied to the global reference frame ITRF2000 as well as to the frame ITRF2008. Due to the transition of the reference from ITRF2000 to ITRF2008 within the processing period, but also due to updates of the Bernese software from version 5.0 to 5.2 the time series were initially not fully consistent and have to be re-aligned to a common frame.

So the goal of this investigation is to derive a nationwide consistent horizontal motion field on base of GNSS reference station data within the ITRF2008 frame, but also with respect to the Eurasian plate. In this presentation we focus on the set-up of the coordinate time series and on the problem of frame alignment. Special attention is also paid to the separation into linear and periodic motion signals, originating from tectonic or non-tectonic sources.