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A first Alps-dedicated gravity data set – introduction and status of the AlpArray gravity field activities

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In this contribution, activities of the AlpArray Gravity Research Group (AAGRG) are introduced. Since 2018, this group in the frame of the AlpArray project (http://www.alparray.ethz.ch/en/home/) prepares gravity and other data sets to support multidisciplinary goals of the project. It is focused on the mantle, plate and surface processes in the Alps-Apennines-Carpathians-Dinarides orogenic system.

In 2018, the AAGRG set up its own methodology guidelines and assembled available land-gravity data and digital elevation model (DEM) data from all the participating countries. Our presentation targets especially three goals: 1) to introduce AAGRG activities as an integral part of the AlpArray project for studying Alpine orogeny – a goal that by definition requires international cooperation, 2) to review the input data and the works accomplished so far, and, 3) to discuss the steps to be taken to produce detailed gravity maps of the region – the first Alps-dedicated gravity field data set. We plan to prepare gravity grids in a homogeneous processing approach of either 2x2 km or 4x4 km resolution, depending on the coverage and data quality. The final data sets will be made public in late 2019.

A special emphasis is put on the calculation of the Bouguer anomaly using ellipsoidal rather tha normal heights. For calculating topographic effects the preference is given to local DEMs, where available, as they often provide higher quality and spatial resolutions. The public gravity data sets are evaluated with the high-resolution geopotential models like EIGEN-6C4 or EGM2008 – a useful means for identifying biases in the data coming from various countries and campaigns.