



Regional and local signals in height and gravity time series

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The length and the continuity of time series are key parameters for investigating signals of different nature that might affect the observed behaviors. Since about a decade, continuous GPS stations are commonly available providing, for example, height series that can be analyzed to identify different long- and short-term signals. A few of these stations are also equipped with additional space geodetic techniques like VLBI, for example, but also with terrestrial continuous recording instruments such as superconducting gravimeters. In Italy, at Medicina, two GPS receivers, VLBI, and a superconducting gravimeter are co-located and the time series are longer than a decade. Data acquired by other permanent GPS stations are also available in northeastern Italy as well as environmental data series. Using the EOF approach, we have analyzed the GPS and VLBI heights and the gravity and environmental data sets at Medicina and in northeastern Italy. The aim was to identify common signals and/or differences among the techniques and to unravel the source of the observed variations. Particular attention was devoted to understanding height and gravity changes related to surficial water variations.