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Seismic hazard of the Northern Apennines based on 3D seismic sources

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Seismic hazard for the Northern Apennines in northern Italy has been computed on the basis of a new seismogenic zonation. This zonation considers inclined (dipping) planes as seismogenic sources: they are defined on the basis of all the seismotectonic information available so far. In particular, the minimum and maximum depths of the seismic sources has been investigated in details to identify the active sectors. Although these geometries are extremely rough because they simplify with a few inclined elements the totality of faults constituting a source, this model mimics the tectonic style surely better than that based on horizontal planes. Nevertheless, for a comparison between the new ground motions obtained and those available in the literature, the plain version of the zonation has been also developed, where horizontal areas (the standard seismogenic zones), representing the surficial projection of the inclined planes, are used as seismogenic sources. A suite of seismic hazard maps for several return periods has been computed for both inclined and plain sources. The inclined sources determine a greater detail in the expected ground motion and the comparison between the two sets of maps illustrates the different (higher and lower in different sectors) shaking at the surface when an inclined source is modelled instead than a horizontal one.