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Interactive comment on "Thickness of marine Holocene sediment in the Gulf of Trieste (Northern Adriatic Sea)" *by* Ana Trobec et al.

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General comments This is a very good paper on Holocene sedimentation in the northern region of the Gulf of Trieste. The main contribution of the study is to bring about an interesting and now accessible dataset for this sector of the Adriatic Sea. The paper is clearly written and describes the work in a rather easy-to-follow manner, and the figures (maps and profiles) are very didactic and of great quality. The geophysical data, and consequently stratigraphic information, are very interesting. However it is not clearly demonstrated the amount of new data presented and the results previously published by the authors. The paper needs a minor revision addressing the comments and questions summarized below. Some aspects are essential for a correct interpretation of the geophysical units and stratigraphic record. In fact, the Mediterranean record has

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Discussion paper

a satisfactory sea level information and 14C dating available. Some author's points to the influence of the late Holocene relative sea level change in the region, and its relationship with active tectonism and subsidence rates (e.g. Furlani et al. 2011).

Specific comments 1. In the geological setting, it would be convenient to provide the reader with a brief description about the regional structure, as well as the influence of tectonic style, take into account the presence of strike-slip faults in the area which cause differential and significate downdrop in the Gulf of Trieste. This point is very important, even more the authors presents a "model of the base of the Holocene marine sediment" and its relationship with the bathymetric topic. More than a model, this question refers to characteristics of the basal surface and its topographic features. In this sense, can the differences observed in substrate depth (and the major depocenter in southeastern part of the gulf) be related with tectonic movements? Or is just an erosive process? These processes may also explain the origin of rougher morphologies observed in geophysical profiles and cores. Some data, published by other authors, allows to evaluate the tectonic behaviour of the studied area. 2. The authors should consider the introduction of a simplified geological map of the studied region. 3. Another important issue, is the inclusion of a section discussing the major controls (tectonic, eustatic or both) on the sediment supply, sedimentation rates and environment. 4. There must be a discussion, even brief, about the bases used to deduce deposit sequence and environmental conditions. For example, how do authors distinguish marine from nonmarine Holocene sediments? What is the true meaning of an area of the dune shaped features (NW of Piran)? (Sections 3.2 and 3.3., ex. fig. 8f). What are the main characteristics of the holocenic facies?

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