

Drowned but not forgotten- The search for the old Ostend

Missiaen Tine^{1,2}, Marte Ricardo² and Versteeg Wim¹

¹ Flanders Marine Institute (VLIZ), InnovOcean site, Wandelaarkaai 7, 8400 Ostend, Belgium
E-mail: tine.missiaen@vliz.be

² Renard Centre of Marine Geology - Ghent University, Krijgslaan 281, 9000 Ghent, Belgium

Between the 14th and the 16th century our coast repeatedly suffered from severe storms as a result of which large stretches of land were lost to the sea. The flooding of the oldest Ostend in 1394 is one of the most famous examples. After the 1394 disaster the city was rebuilt further inland. During the siege of Ostend (1601-1604) the church ruins were still visible before the coast. Nowadays the remnants of the old medieval city lie largely buried below the (intertidal) beach and the seafloor. The main question is to what extent these relics, including harbour walls and housing structures, have been preserved today.

In September 2016 a test survey was carried out with a novel subbottom acoustic profiler, the SES Quattro, recently acquired by VLIZ. This multitransducer parametric echosounder allows to obtain 3D acoustic cross-sections of the sub-seafloor in the highest possible detail (cm/dm resolution). Two small 3D networks (roughly 300x100 m) were recorded in front of the current beach, in addition to a larger 2D network (roughly 500 m x 1 km) that extended slightly more seaward.

The results of this survey are very encouraging. In the eastern 3D-network a number of buried structures were identified that are most likely related to the old harbour entrance. Some of the ditch-like structures may well represent wooden casings that were filled with a muddy or peaty material and functioned as the medieval harbour walls. More towards the west several old harbour gullies were observed. So far no clear structures could be identified on the 3D data that can be linked to medieval house remnants. However, it is possible that the latter are located more eastward of the present search areas.

An additional discovery was related to the medieval coastline and the drowned medieval peninsula *Testerep*. During the Middle Ages this marsh-like peninsula stretched from Westende in the west to Ostend in the east, separated from the mainland by a large gully (the so-called *Testerep*-gully). So far *Testerep* has only been mapped on land, in the polder area, and its seaward extension remains very uncertain. The newly obtained subbottom data allowed to identify a tidal gully that most likely marks the seaward boundary of *Testerep*. Terraced structures could be linked with this gully indicating a possible shoreface of the former coastal barrier.

In this unique study we present ultra-high resolution images of buried archaeological features with unprecedented detail. With this, the SES Quattro system sets a new standard for shallow water research and opens important perspectives for geoarchaeological studies in nearshore areas. New investigations are planned off Ostend in the near future that will hopefully allow to identify further remnants of the old city and harbour.

Keywords: medieval Ostend; drowned; subbottom; 3D imaging