

## Pet tisočletij človeškega vpliva zabeleženega v geokemijski sestavi morskih sedimentov Osorskega zaliva

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*Vabljen predavanje*

**Povzetek** Holocenski sedimenti Osorskega zaliva so bili analizirani z namenom razlikovanja med naravnimi in antropogenimi sledmi v sedimentnih zapisih. Dve datirani jedri s severne strani Osorja sta bila geokemično analizirani za pridobitev indikatorjev človeških vplivov in identifikacijo virov sedimentov. Distalno jedro (OSOR-1M) obsega celoten holocen, medtem ko jedro OSOR-2M, ki se nahaja bližje Osorju, obsega zadnjih 8000 let. Antropogene spremembe okolja so bile ocenjene z izračunom faktorjev obogatitve (EF) za razmerja Cu/Zr, Pb/Zr, Mo/Zr in Zn/Zr, skupaj z vsebnostjo organskega ogljika kot indikatorjem vsebnosti oglja in skupno vsebnostjo fosforja. Razmerja Cr/Zr, Rb/Zr in V/Zr so bila uporabljena za prepoznavanje sprememb geogenih virov v sedimentni geokemiji. V jedru OSOR-2M se je vsebnost organskega ogljika (ogljja), koncentracije Cu in Mo ter skupna vsebnost P povečala med 3672–3364 kal pr. n. št., z vrhuncem med 270–584 kal n. št. Razmerja Cr/Zr, Rb/Zr in V/Cr, ki kot indikatorji geogenih virov nakazujejo dotok sedimenta iz Lošinskega kanala, s tem pa vzpostavitev povezave s slednjim. Povezava je najverjetneje nastala med 1500 in 1000 pr. n. št., verjetno zaradi dviga morske gladine in poplavljanja naravne morfološke nižine. Povečan EF za Pb je povezan z rimskim obdobjem in ga v prejšnjih časih ni bilo mogoče zaznati. V industrijski dobi so koncentracije Pb in P narasle, medtem, ko so se koncentracije organskega ogljika, Cu in Mo zmanjšale. Čeprav je bilo območje Osorja poseljeno že v neolitiku, geokemijski zapis sedimentov ne kaže opaznega okoljskega vpliva.

**Ključne besede** Osor, pozni holocen, morski sedimenti, faktorji obogatitve, spremembe okolja

# Five Millennia of Human Influence Recorded in the Geochemical Composition of Marine Sediments from Osor Bay

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*Invited Lecture*

**Abstract** Holocene sediments from Osor Bay were analyzed to distinguish between natural and human imprints in sedimentary records. Two dated cores from Osor's northern side were geochemically analysed to obtain proxies for anthropogenic impact and sediment source identification. The distal core (OSOR-1M) spans the entire Holocene, while core OSOR-2M, located closer to Osor, spans the last 8000 years. Anthropogenic environmental changes were assessed using calculated enrichment factors (EF) for Cu/Zr, Pb/Zr, Mo/Zr, and Zn/Zr ratios, along with organic carbon content as an indicator of charcoal content, and total P content. The Cr/Zr, Rb/Zr, and V/Zr ratios were employed to detect changes in geogenic sources within the sediment geochemistry. In the OSOR-2M core, organic carbon content (charcoal), Cu and Mo concentrations, and total P increased from 3672–3364 cal BCE, peaking between 270–584 cal AD. The Cr/Zr, Rb/Zr, and V/Cr ratios, serving as geogenic source proxies, suggest sediment influx from the Lošinj Channel and thus the establishment of a marine connection with the Lošinj Channel. This connection likely occurred between 1500 and 1000 BCE, probably due to sea level rise and the flooding of a natural morphological low. The increased EF for Pb is associated with the Roman period and was absent in earlier times. During the industrial era, Pb and P concentrations rose, while organic carbon, Cu, and Mo concentrations declined. Although the Osor area was inhabited during the Neolithic period, no discernible environmental impact is evident in the sediment geochemistry.

**Keywords** Osor, Late Holocene, marine sediments, enrichment factors, environmental change