RESUMEN

Los estuarios son estructuras altamente dinámicas, donde la corriente de marea es la principal fuerza que determina las características morfológicas de los mismos. En este ambiente, los canales de marea son los elementos más significativos, ya que ellos determinan la dispersión del flujo. Entender y predecir la evolución y la dinámica sedimentaría asociada a los mismos es fundamental para una completa comprensión de este tipo de ecosistemas.

En este trabajo de tesis se investiga la morfodinámica (procesos erosivo-depositacionales) y las característica hidrosedimentológicas de un sistema de canales de marea del estuario de Bahía Blanca (sur de la Pcia. de Bs. As.). Los canales considerados en esta investigación (El Alambre, La Lista y Principal) se encuentran hidrodinámicamente vinculados. Con el objetivo de estudiar la evolución geomorfológica, la circulación de sedimentos y los procesos erosivo-depositacionales, se aplicaron diferentes métodos de trabajo. Se usaron técnicas acústicas (ecosonda, sonar lateral), sísmica de alta resolución (3,5 kHz), mediciones de corrientes y muestreo de sedimentos. Asimismo, se evaluaron las facies sismoestratigráficas del subfondo marino, asociadas a la morfodinámica del ambiente.

Los canales estudiados son dominados por corrientes bidireccionales (régimen mesomareal), las cuales son el principal agente que gobierna los procesos actuantes en ellos. Los rasgos morfológicos (dunas, *point bar*, bancos elongados), junto con los datos de corrientes indican la dominancia del reflujo. En consecuencia, el modelo de circulación de sedimento, con máximos valores de transporte en El Alambre (0,08773 gr cm^{-1} seg^{-1}), revela una exportación de material hacia el canal Principal.

La tendencia evolutiva del área responde a un desplazamiento de los veriles, sin producirse una profundización significativa de los canales, debido a un control litológico del material subyacente. Se determina la tendencia de El Alambre y La Lista a acentuar su sinuosidad, donde las formas acrecionales (*point bars*) se hallan genéticamente relacionadas a la sedimentación producida por la corriente de reflujo. Morfológica y dinámicamente se establece que El Alambre actúa como vía principal del sistema y La Lista se comporta como un tributario del mismo. El banco La Lista constituye un relevante cuerpo sedimentario elongado desarrollado en la desembocadura del canal homónimo. Su evolución morfológica está vinculada con un modelo de transporte residual de sedimento, con trayectorias opuestas a ambos lados del mismo. Este proceso origina un paulatino aumento en altura y el crecimiento longitudinal de la geoforma.

ABSTRACT

Estuaries are highly dynamic structures where ebb currents are key in determining their morphological characteristics. Tidal channels within this environment are of pivotal importance as they determine flow dispersion. Both learning and predicting the evolution and sedimentary dynamics of estuaries are therefore greatly important to better understand these types of ecosystems.

This thesis focuses on the study of the morphodynamics, erosive-depositational processes, and hydrosedimentological characteristics of a tidal channel system in Bahía Blanca estuary which is located in the south of the province of Buenos Aires, Argentina. The channels analyzed in this thesis, namely El Alambre, La Lista and Principal, are hydrodynamically-related. Different methods and techniques were used to study the geomorphological evolution, sediment circulation, and erosive-depositational processes. In particular, acoustic techniques such as echo sounder, side scan sonar, high resolution seismics (3.5 kHz), current measurements and bottom sediment sampling were used. In addition, marine sub-bottom seismoestratigraphic facies associated to the morphodynamics of the environment were analyzed.

The channels studied in this thesis are dominated by bidirectional currents (mesotidal regime) which behave as the principal agent ruling the processes occurring in them. The morphological features, dunes, point bar, elongated banks in the study area as well as the current data obtained are all indicative of ebb dominance. The sediment circulation model with highest transport values in El Alambre (0.08773 gr cm^{-1} sec^{-1}) thus reveals export of material towards Principal channel.

The tendency of evolution of the study area is due to a flank displacement which does not end in a significant deepening as a result of a lithological control

of underlying material. In addition, it was observed that in El Alambre and La Lista there is a tendency to increase sinuosity in which depositationals are genetically-related to sedimentation resulting from the ebb current. In view of the morphological features and the dynamics of the study area, it can be concluded that El Alambre behaves as the principal pathway of this estuarine system and that La Lista behaves as its tributary. La Lista bank is a relevant elongated sedimentary body formed in the mouth of the homonymous channel. Its morphological evolution is related to a residual sediment transport model with trajectories opposit to its two flanks. This process leads to a gradual increase in the height and longitudinal growth of the bank.

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