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Horacio Herrero, José M. Díaz Lozada, Carlos M. García, Ricardo Szupiany, Jim Best, Mariana Pagot

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THE INFLUENCE OF TRIBUTARY FLOW DENSITY DIFFERENCES ON THE  
HYDRODYNAMIC BEHAVIOR OF A CONFLUENT MEANDER BEND AND  
IMPLICATIONS FOR FLOW MIXING

Herrero, Horacio<sup>1</sup>; Díaz Lozada, José M.<sup>1,2</sup>; García, Carlos M.<sup>1,2</sup>; Szupiany,  
Ricardo<sup>2,3</sup>; Best, Jim<sup>4</sup> and Pagot, Mariana<sup>5</sup>

<sup>1</sup>Centro de Estudios y Tecnología del Agua (CETA) - National University of Córdoba – Córdoba - Argentina.

<sup>2</sup>National Scientific and Technical Research Council (CONICET)

<sup>3</sup>Facultad de Ingeniería y Ciencias Hídricas, Centro Internacional de Estudios de Grandes Ríos (CIEGRI). National University of Littoral – Santa Fe - Argentina.

<sup>4</sup>Departments of Geology, Geography and GIS, Mechanical Science and Engineering, and Ven Te Chow Hydrosystems Laboratory, University of Illinois at Urbana-Champaign, Champaign, Illinois, USA

<sup>5</sup>Laboratorio de Hidráulica - National University of Córdoba – Córdoba - Argentina.

Contact email: [jmdiazlozada@gmail.com](mailto:jmdiazlozada@gmail.com)

ABSTRACT

The goal of this study is to evaluate the influence of tributary flow density differences on hydrodynamics and mixing at a confluent meander bend. A detailed field characterization is performed using an Acoustic Doppler Current Profiler (ADCP) for quantification of the 3D flow field, flow discharge and bathymetry, as well as CTD measurements (conductivity, temperature, depth) to characterize the patterns of mixing. Satellite images of the confluence taken at complementary times to the field surveys were analyzed to evaluate the confluence hydrodynamics at different flow conditions.

The results illustrate the differences in hydrodynamics and mixing length in relation to confluences with equal density tributaries. At low-density differences, and higher discharge ratio ( $Q_r$ ) between the two rivers, the flow is similar to equi-density confluent meander

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