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Turbulent flow structure during the amalgamation process of river bed forms CHRISTIAN FRIAS, JORGE ABAD, University of Pittsburgh — Most of the fluvial channels present bedforms such as dunes and ripples which are product of the interaction between hydrodynamics and sediment transport. Although, the effect of this bedforms has been studied by several researchers, very little has been done to study the ripple-dune transition. The purpose of the present study is to extend the observations made by previous experimental results on the bedforms amalgamation process. To this end, three LES cases were carried out to replicate an amalgamation process, a train of ripples (RUN I), a superimposed bed forms (RUN II) and a complete amalgamated bed forms stage (RUN III). Although the experimental base case involved two dimensional bedforms, a three dimensional simulation was developed to analyze the effects of superimposition in transversal and streamwise directions. Some important conclusions from this study are: the region of high shear stresses was related to turbulence production, in which the streamwise velocity fluctuations were associated to the modification of the bed morphology. The turbulence Horseshoes Vortices (THV) were more frequent in RUN I than in the other two cases. Finally, the frequency of the bursting events increased from RUN I to RUN II and decreased from RUN II to RUN III.

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