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Observations and ecogeomorphological modelling of intertidal environments

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The dynamics characterizing tidal environments are dictated by a complex of geomorphological and ecological processes, whose close interaction makes an interdisciplinary approach necessary for their understanding and quantitative description. This contribution presents quantitative observations of intertidal ecological (salt-marsh vegetation and microphytobenthos) and morphological (topography and channel network geometry) properties acquired through remote sensing and field observations under the EU project TIDE (EVK3-CT2001-0064), to provide a basis for the development of mathematical models of ecogeomorphologic co-evolution in tidal environments. This contribution in particular describes: i) the quantitative maps of salt-marsh vegetation (and their statistical analyses) obtained by means of suitable classification procedures applied to multi- and hyper-spectral data or through airborne laser altimetry; ii) the relationships which may be inferred on the basis of the data gathered linking ecological (e.g. biodiversity) and morphological (e.g. topography and network characteristics) properties; iii) conceptual and quantitative ecogeomorphic models, inferred and validated by use of the observations.