Remote sensing of MERIS data of coastal waters.

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Radiometers on board satellite measure the solar radiation reflected by the ocean and
the atmosphere. One difficulty is that the signal is strongly polluted by the contribution
of the atmosphere. Standard algorithms make the hypothesis that the contribution of
the ocean is null in the near infrared bands. But, in coastal waters, the contribution of
the sediments is no more neglictible, and standards algorithms failed.

We propose here a new methodology, called NeuroVaria, based on a spectral opti-
mization to estimate the sediment and the atmospheric contribution on the "top of
atmosphere" signal. This methodology combines a neural modelization for the radia-
tive transfer and a variational algorithm for the inversion of the spectra.

NeuroVaria was applied to MERIS data of the Adriatic Sea off the Venice bay from
August 2003 to September 2005. We present the comparison between NeuroVaria,
the standard MERIS algorithm and in-situ measurements. We show that NeuroVaria
performed a better estimation of the water properties and improved the atmospheric
correction of coastal waters.