

## **MODIS imagery as a tool for synoptic water quality assessments in the southern California coastal ocean**

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### **ABSTRACT**

The dynamics of rainstorm plumes in the coastal waters of southern California was studied during the Bight'03 Regional Water Quality Program surveys. Measurements of surface salinity and bacterial counts collected from research vessels were compared to MODIS-Aqua satellite imagery. The spectra of normalized water-leaving radiation (nLw) were different in plumes and ambient ocean waters, enabling plumes discrimination and plume area size assessments from remotely-sensed data. The plume/ocean nLw differences (i.e., plume optical signatures) were most evident during first days after the rainstorm over the San Pedro shelf and in the San Diego region and less evident in Santa Monica Bay, where suspended sediments concentration in discharged water was lower than in other regions. In the Ventura area, plumes contained more suspended sediments than in other regions, but the grid of ship-based stations covered only a small part of the freshwater plume and was insufficient to reveal the differences between the plume and ocean optical signatures. The accuracy of plume area assessments from satellite imagery was not high (77% on average), seemingly because of inexactitude in satellite data processing. Nevertheless, satellite imagery is a useful tool for the estimation of the extent of polluted plumes, which is hardly achievable by contact methods.

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