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Mapping Stormwater Plume Interactions with Southern California Bight Marine Protected Areas (MPAs)

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Abstract (Poster)

Marine Protected Areas (MPAs) are potentially subject to pollutant effects of stormwater plumes, particularly in the South Coast region where 20 million people live within an hour's drive of the ocean. We conducted a screening study to quantify which MPAs are at greatest risk from stormwater plume impingement. Impingement risk was estimated as a function of frequency (how often) and extent (how widespread) plume exposure was within an MPA. Dana Point, Swami's, and Crystal Cove MPAs, all of which are situated directly in front of urban watersheds, had the greatest potential risk of stormwater plume impingement. Matlahuayl, Point Dume, San Diego-Scripps, and South La Jolla MPAs had a large extent of exposure, but plume frequencies were much lower, resulting in lower risk. This study estimates stormwater plume exposure, but does not quantify stormwater effects, which will also be a function of the water quality from the discharge watersheds. A logical next step would be to quantify stormwater concentrations and loads to assess pollutant exposure, and examine biological responses to the potential water quality impacts.