USING THE NATIONAL HYDROGRAPHY DATASET PLUS TO IMPROVE FLOW MODELING ON THE CENTRAL COAST OF CALIFORNIA

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ABSTRACT

The climate in the central Coast of California is highly variable, ranging from coastal rainforests in northern Santa Cruz County to dry arid plains in eastern San Luis Obispo County. The National Hydrography Dataset Plus (NHDPlus) includes annual daily average flows for each NHD reach, generated by a reach-scaled flow model (the Unit Runoff Method or UROM) that relies upon five active flow gages within a 200 mile radius. In this part of California, 200 miles spans a tremendous range of climatic variability. We have developed a site-specific model that provides daily estimates of flow, using the UROM flows available in NHDPlus as a basis. Our site-specific model provides spatial and temporal localization using nearby gages selected to best match the flow regime of the site of interest. This generates flow estimates on a daily basis. We use monthly flow measurements collected at each site by our field monitoring program to check the model for performance. The flow model has allowed us to estimate loading of a number of pollutants to the marine environment and has also has been used to assess risk to the near shore environment associated with freshwater inputs in epidemiological studies.

The model also includes a simple exponential dilution component for estimating concentrations in the near shore environment. We plan to extend the model in collaboration with University of California, Davis researchers to include more refined near shore transport functions.

KEYWORDS Flow model, NHDPlus, loading, near shore transport