

Sea breeze: Structure, Forecasting, and Impacts

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The sea breeze system (SBS) occurs at coastal locations throughout the world and consists of many spatially and temporally nested phenomena. Cool marine air propagates inland when a cross-shore mesoscale (2-2000 km) pressure gradient is created by daytime differential heating. The circulation is also characterized by rising currents at the sea breeze front and diffuse sinking currents well out to sea and is usually closed by seaward flow aloft. Coastal impacts include relief from oppressive hot weather, development of thunderstorms, and changes in air quality. This paper provides a review of SBS research extending back 2500 years but focuses primarily on recent discoveries. We address SBS forcing mechanisms, structure and related phenomena, life cycle, forecasting, and impacts on air quality.

REVIEWS OF GEOPHYSICS, 41, 3/1011, doi:10.1029/2003RG000124, 2003