Submesoscale coastal surface currents and chlorophyll concentra-
tions have been measured with retrospective observations obtained from an array of Ku-band HF radars (WERA systems) – Imeon North (MMR-1), Imeon South (MMR-2), and GOCI-CHLs-OPEN-OCEAN. For the GOCI-derived products, an exponential correlation function with an isotropic decay length scale of 1.5 km and a search radius of 3 km under the influence of coastal baroclinic effects (the onshore and offshore directions) and seasonality has been reported in the surface current observations as a result of the forward cascades of enstrophy (the integral of the vorticity squared) and gradients of the horizontal velocity [e.g., (3)]. Thus, the wave number and vector current maps participating in the estimations of the spectral decay slopes do not show any seasonal bias (Figures 2c and 2d).

The spectral decay slope of the submesoscale eddies and filaments is relatively steep in the cross-shore and along-shore directions (Figures 3a and 3d). The number of vector current maps participating in the estimations of the spectral decay slopes decreases as the wave number increases (Figures 3b and 3c). This shows that the submesoscale eddies and filaments are anisotropic (Figures 3a and 3b). The wave number spectra of the surface current observations are not clearly observed the spectral decay slopes of $\frac{\alpha}{\alpha} k 0^*$ because the aliasing effect is not observed in the surface current observations (Figures 3b and 3c).

Similarly, the spectral energy spectra of the open ocean chloro-
phyll concentrations, the spectral decay slopes in the forward cascades $\frac{\alpha}{\alpha} k 1$ and $\frac{\alpha}{\alpha} k 2$ and inverted cascades $\frac{\alpha}{\alpha} k 0^*$ are observed. The submesoscale eddies and filaments with a wave number of $\frac{\alpha}{\alpha} k 0^*$ may be explained as the submesoscale eddies and filaments with a wave number of $\frac{\alpha}{\alpha} k 0^*$. The spectral decay slopes of $\frac{\alpha}{\alpha} k 0^*$ are obtained from the submesoscale eddies and filaments with a wave number of $\frac{\alpha}{\alpha} k 0^*$. The spectral decay slopes of $\frac{\alpha}{\alpha} k 0^*$ are obtained from the submesoscale eddies and filaments with a wave number of $\frac{\alpha}{\alpha} k 0^*$. The spectral decay slopes of $\frac{\alpha}{\alpha} k 0^*$ are obtained from the submesoscale eddies and filaments with a wave number of $\frac{\alpha}{\alpha} k 0^*$. The spectral decay slopes of $\frac{\alpha}{\alpha} k 0^*$ are obtained from the submesoscale eddies and filaments with a wave number of $\frac{\alpha}{\alpha} k 0^*$. The spectral decay slopes of $\frac{\alpha}{\alpha} k 0^*$ are obtained from the submesoscale eddies and filaments with a wave number of $\frac{\alpha}{\alpha} k 0^*$. The spectral decay slopes of $\frac{\alpha}{\alpha} k 0^*$ are obtained from the submesoscale eddies and filaments with a wave number of $\frac{\alpha}{\alpha} k 0^*$. The spectral decay slopes of $\frac{\alpha}{\alpha} k 0^*$ are obtained from the submesoscale eddies and filaments with a wave number of $\frac{\alpha}{\alpha} k 0^*$.

The number of samples $0\ N\ J\ M\ A\ M\ J\ J\ A\ S\ O\ N\ D\ J$ shows the length scale that characterizes the anisotropy.