

馬氏與歐氏垂直速度變分佳化求法之比較

Comparison of McGinley's and O'Brien's Variational Optimization
Formulation for the Computation of Vertical Velocity

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In this study, the comparison of McGinley's and O'Brien's variational optimization scheme is discussed. A generalized variational formulation is defined to include both schemes, and the Fourier analysis is utilized to analyze their response functions. Results show that if the error variance of the velocity field is proportional to that of the divergence field, two schemes are exactly the same; or, the differences of their responses depend on the functions of error variance.

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本文將比較馬氏 (McGinley, 1973) 與歐氏 (O'Brien, 1970) 變分佳化法求垂直速度之異同，文中先將二氏之變分公式通化 (Generalization) 使二氏之公式成爲通化後公式之特例，並以福利葉 (Fourier) 轉換法分析在不同情況下，馬氏與歐氏變分佳化法對各種波長之影響，分析指出若速度場 (Velocity Field) 與輻散場 (Divergence Field) 之誤差變量 (Error Variance) 成比例，則二氏之方法完全相同，否則其相異則因所選取之誤差變量函數而定，