



Methods of Sequential Estimation for Determining Initial Data in Numerical Weather Prediction: June 1982 (Classic Reprint)

By Stephen E Cohn

Forgotten Books, United States, 2015. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book ***** Print on Demand *****.Excerpt from Methods of Sequential Estimation for Determining Initial Data in Numerical Weather Prediction: June 1982 Numerical weather prediction (NWP) is an initial-value problem for a system of nonlinear partial differential equations, in which Initial values are known Incompletely and inaccurately. Observational data available at the Initial time must therefore be supplemented by data available prior to the initial time, a problem known as meteorological data assimilation. A further complication in NWP is that solutions of the governing equations evolve on two different time scales, a fast one and a slow one, whereas fast scale motions in the atmosphere are not reliably observed. This leads to the so-called initialization problem: initial values must be constrained to result in a slowly evolving forecast. The theory of estimation of stochastic-dynamic systems provides a natural approach to such problems. For linear stochastic-dynamic models, the Kalman-Bucy (KB) sequential filter is the optimal data assimilation method. We show that, for linear models, the optimal combined data assimilation-initialization method is a modified version of the Kb filter. This modified Kb filter combines the...



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