



# Discrete Inverse and State Estimation Problems: With Geophysical Fluid Applications

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By Carl Wunsch

CAMBRIDGE UNIVERSITY PRESS, United Kingdom, 2012.  
Paperback. Book Condition: New. 240 x 168 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.The problems of making inferences about the natural world from noisy observations and imperfect theories occur in almost all scientific disciplines. This 2006 book addresses these problems using examples taken from geophysical fluid dynamics. It focuses on discrete formulations, both static and time-varying, known variously as inverse, state estimation or data assimilation problems. Starting with fundamental algebraic and statistical ideas, the book guides the reader through a range of inference tools including the singular value decomposition, Gauss-Markov and minimum variance estimates, Kalman filters and related smoothers, and adjoint (Lagrange multiplier) methods. The final chapters discuss a variety of practical applications to geophysical flow problems. Discrete Inverse and State Estimation Problems is an ideal introduction to the topic for graduate students and researchers in oceanography, meteorology, climate dynamics, and geophysical fluid dynamics. It is also accessible to a wider scientific audience; the only prerequisite is an understanding of linear algebra.



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