

KAGI Software Library: Computer Exercises for Geophysical Fluid Dynamics

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We have developed the first release of the KAGI 21 Software Library for self-learning of Geophysical Dynamics. To develop useful and convenient simulation tools for students studying Geophysical Dynamics, we have integrated tutorial computer programs prepared by Prof. Shigeo Yoden and Dr. Satoshi Sakai into a common format with a user-friendly interface that facilitates execution of the programs on different kinds of computers. Since computation results from these programs need to be visualized in various forms of graphical outputs, we have made use of the MATLAB graphics by converting the original programs written in FORTRAN (77 and 90) into the MATLAB programming language. The MATLAB source programs are further converted into application programs by the MATLAB compiler so that they can be distributed and executed on computers without the MATLAB license.

A part of this newly developed software has been organized into a CD-ROM: Introduction to Geophysical Fluid Dynamics - Computer Exercises -, which was distributed to participants of the 1st KAGI 21 International Summer School in Bandung, Indonesia. In the CD-ROM, a set of documents describing physical meanings and parameters of the simulation programs are included.

Contents of the documents contained the CD-ROM are as follows:

``Introduction", ``Linear Advection and Diffusion", ``Nonlinear Advection and Diffusion", ``Deformation and Rotation -- Lagrange Recognition", ``Brownian Motion -- Particle Diffusion by Stochastic Force", ``Parcel Method -- Static Instability", ``Thermal Convection", ``Inertial Gravitational Wave", ``Inertial Oscillation and Inertial Instability", ``Barotropic Instability", ``Rossby wave", ``Time evolution of vortices - a two-dimensional spectral model", ``Two-Dimensional System of Vortex Filaments", ``Ekman spiral", ``Chaos and Predictability"

For more information about detailed activities of KAGI21, please visit our web-site at the following URL: <http://kagi.coe21.kyoto-u.ac.jp/en/index.html>.