

# 研究業績目録

北海道大学 大学院 理学研究院  
石渡正樹

## A 査読のある原著論文

- 1 Ishiwatari, M., S. Takehiro, and Y.-Y. Hayashi, 1994: The effects of thermal conditions on the cell sizes of two-dimensional convection. *J.Fluid Mech.*, **281**, 33–50.
2. Hosaka, M., M. Ishiwatari, K. Nakajima, S. Takehiro, and Y.-Y. Hayashi, 1998: Tropical Precipitation Patterns in Response to a Local Warm SST Area Placed at the Equator of an Aqua Planet. *J. Meteor. Soc. Japan*, **76**, 289–305.
3. Odaka, M., K. Nakajima, S. Takehiro, M. Ishiwatari, and Y.-Y. Hayashi, 1998: A numerical study of the Martian atmospheric convection with a two dimensional anelastic model. *Earth Planet and Space*, **50**, 431–437.
4. Takehiro, S., M. Ishiwatari, K. Nakajima, and Y.-Y. Hayashi, 1998: Convection in a rotating cylindrical annulus with fixed heat flux boundaries. *Nagare Multimedia* (日本流体力学会電子ジャーナル), [http://www.nagare.or.jp/mm/98/takehiro/index\\_ja.htm](http://www.nagare.or.jp/mm/98/takehiro/index_ja.htm).
5. Xie, S.-P., M. Ishiwatari, H. Hashizume, and K. Takeuchi, 1998: Coupled ocean-atmospheric waves on the equatorial front. *Geophys. Res. Lett.*, **25**, 3863–3866.
6. Takehiro, S., M. Ishiwatari, K. Nakajima, and Y.-Y. Hayashi, 1999: The effects of thermal boundary condition on convection in rapidly rotating spherical shells. *Theoretical and Applied Mech.*, **48**, 415–421.
7. Nakajima, K., S. Takehiro, M. Ishiwatari, and Y.-Y. Hayashi, 2000: Numerical modeling of Jupiter's moist convection layer. *Geophys. Res. Lett.*, **27**, 3129–3132.
- 8 Ishiwatari, M., S. Takehiro, K. Nakajima, and Y.-Y. Hayashi, 2002: A numerical study on the appearance of runaway greenhouse state in a three-dimensional gray atmosphere. *J. Atmos. Sci.*, **59**, 3223–3238.

9. Takehiro, S., M. Ishiwatari, K. Nakajima, and Y.-Y. Hayashi, 2002: Linear stability of thermal convection in rotating systems with fixed heat flux boundaries. *Geophysical and Astrophysical Fluid Dynamics*, **96**, 439–459.
10. Nakajima, K., E. Toyoda, M. Ishiwatari, S. Takehiro, and Y.-Y. Hayashi, 2004: Initial Development of Tropical Precipitation Patterns in Response to a Local Warm SST Area: An Aqua-Planet Ensemble Study. *J. Meteor. Soc. Japan*, **82**, 1483–1504.
11. Yamada, Y., T. Sampe, Y.O. Takahashi, M.K. Yoshioka, W. Ohfuchi, M. Ishiwatari, K. Nakajima, and Y.-Y. Hayashi, 2005: A resolution dependence of equatorial precipitation activities represented in a general circulation model. *Theor. Appl. Mech. Japan*, **54**, 289–297.
12. Taniguchi,H., and M. Ishiwatari, 2006: Physical interpretation of unstable modes of a linear shear flow in shallow water on an equatorial  $\beta$ -plane. *J.Fluid Mech.*, **567**, 1–26.
13. Takehiro, S., M. Odaka, K. Ishioka, M. Ishiwatari, Y.-Y. Hayashi, and SPMODEL Development Group, 2006: SPMODEL: A Series of Hierarchical Spectral Models for Geophysical Fluid Dynamics. *Nagare Multimedia* (日本流体力学会電子ジャーナル), <http://www.nagare.or.jp/mm/2006/index.htm>.
14. Ishiwatari, M., K. Nakajima, S. Takehiro, and Y.-Y. Hayashi, 2007: Dependence of equilibrium states of gray atmosphere on solar constant: from the runaway greenhouse to the snowball states. *J.Geophys. Res.*, **112**, D13120, doi:10.1029/2006JD007386.
15. 石渡正樹, 1998: 暴走温室状態の発生条件. 遊・星・人 (日本惑星科学会学会誌), **7**, 125-133
16. 石渡正樹, 中島健介, 竹広真一, 林祥介, 1998: 3次元灰色大気構造の太陽定数依存性と暴走温室状態. ながれマルチメディア (日本流体力学会電子ジャーナル), [http://www.nagare.or.jp/mm/98/ishiwata/index\\_ja.htm](http://www.nagare.or.jp/mm/98/ishiwata/index_ja.htm).
17. 中島健介, 竹広真一, 石渡正樹, 林祥介, 1998: 地球流体における「雲対流」. ながれマルチメディア (日本流体力学会電子ジャーナル), [http://www.nagare.or.jp/mm/98/nakajima/index\\_ja.htm](http://www.nagare.or.jp/mm/98/nakajima/index_ja.htm).
18. 豊田英司, 中島健介, 石渡正樹, 林祥介, 1999: 热帯大气の暖水域に対する応答: アンサンブル水惑星実験による時間発展の抽出. ながれマルチメディア (日

本流体力学会電子ジャーナル), [http://www.nagare.or.jp/mm/99/toyoda/index\\_ja.htm](http://www.nagare.or.jp/mm/99/toyoda/index_ja.htm) .

19. 小高 正嗣, 中島 健介, 石渡 正樹, 林 祥介, 2001: 2次元非弾性系を用いた火星大気放射対流の数値計算. ながれマルチメディア (日本流体力学会電子ジャーナル), [http://www.nagare.or.jp/mm/2001/odaka/index\\_ja.htm](http://www.nagare.or.jp/mm/2001/odaka/index_ja.htm) .

## B 査読のない論文, 総説など

1. Matsui, T., M. Ishiwatari, and Y. Abe, 1988: A possible scenario for atmospheric evolution: steam atmosphere to present one. *Proc. of Lunar Planet Science*, **XIX**, 740-741.
2. Matsuda, Y., Y.-Y. Hayashi, S. Takehiro, M. Ishiwatari, and M. Hosaka, 1993: Experimental study on the three dimensional spherical convections with the parameters of planetary atmospheres. *CGER's Supercomputer Activity Report, National Institute for Environmental Studies, Environmental Agency of Japan*, **1**, 55-60.
3. Matsuda, Y., Y.-Y. Hayashi, S. Takehiro, M. Ishiwatari, and M. Hosaka, 1994: Experimental study on the three dimensional spherical convections with the parameters of planetary atmospheres. *CGER's Supercomputer Activity Report, National Institute for Environmental Studies, Environmental Agency of Japan*, **2**, 33-37.
4. Hayashi, Y.-Y., S. Takehiro, M. Ishiwatari, and M. Hosaka, 1995: Experimental study on the three dimensional spherical convections with the parameters of planetary atmospheres. *CGER's Supercomputer Activity Report, National Institute for Environmental Studies, Environmental Agency of Japan*, **3-1994**, 37-41.
5. Ishiwatari, M., K. Nakajima, S. Takehiro, and Y.-Y. Hayashi, 1996: The long term integration of the runaway greenhouse states and the determination of the runaway limit. *Proc. of 29th ISAS Lunar and Planetary Symposium, The Institute of Space and Astrocautical Science*, 189-192.
6. Hayashi, Y.-Y., S. Takehiro, M. Ishiwatari, and M. Hosaka, 1996: Experimental study on the three dimensional spherical convections with the parameters of planetary atmospheres. *CGER's Supercomputer Activity Report, National Institute for Environmental Studies, Environmental Agency of Japan*, **4-1995**, 33-37.

7. Nakajima, K., S. Takehiro, M. Ishiwatari, and Y.-Y. Hayashi, 1997: Direct simulation of Jovian cloud convection. *Proc. of 11th ISAS Symposium on Atmospheric Sciences. The Institute of Space and Astrocautical Science.*
8. Nakajima, K., S. Takehiro, M. Ishiwatari, and Y.-Y. Hayashi, 1998: Direct simulation of Jovian cloud convection. *Proc. of 30th ISAS Lunar and Planetary Symposium, The Institute of Space and Astrocautical Science.*
9. Odaka, M., K. Nakajima, M. Ishiwatari, S. Takehiro, and Y.-Y. Hayashi, 1998: A numerical study of the Martian atmospheric convection with a two-dimensional anelastic model. *Proc. of the 31st ISAS Lunar and Planetary Symposium, The Institute of Space and Astronautical Science.*, 70–73.
10. Hayashi, Y.-Y., S. Takehiro, M. Ishiwatari, and M. Hosaka, 1998: Experimental study on the three dimensional spherical convections with the parameters of planetary atmospheres. *CGER's Supercomputer Activity Report, National Institute for Environmental Studies, Environmental Agency of Japan*, **5-1996**, 39-44.
11. Ishiwatari, M., K. Nakajima, S. Takehiro, and Y.-Y. Hayashi, 1999: A Numerical Study on the Appearance of Runaway Greenhouse State in a Three-Dimensional Gray Atmosphere. *Lunar and Planetary Science XXX, Abstract#1139, Lunar and Planetary Institute, Houston(CD-ROM)*.
12. Ishiwatari, M., K. Nakajima, S. Takehiro, and Y.-Y. Hayashi, 1999: A numerical study of the appearance of runaway greenhouse state in a three-dimensional gray atmosphere. *10th Symposium on Global changes studies, proceeding*, 419-422.
13. Ishiwatari, M., 1999: Experimental study of general circulations with parameters relevant to Venus, Earth, and Mars. *CGER's Supercomputer Activity Report, National Institute for Environmental Studies, Environmental Agency of Japan*, **6-1997**, 68–69.
14. Odaka, M., K. Nakajima, M. Ishiwatari, and Y.-Y. Hayashi, 1999: A numerical simulation of Martian atmospheric convection driven by radiative forcing, *Proc. of the 32nd ISAS Lunar and Planetary Symposium, The Institute of Space and Astronautical Science.*, 200–203.
15. Hayashi, Y.-Y., S. Takehiro, K. Nakajima, M. Hosaka, and M. Ishiwatari, 1999: Experimental study on the three dimensional spherical convections

with the parameters of planetary atmospheres. *CGER's Supercomputer Activity Report, National Institute for Environmental Studies, Environmental Agency of Japan*, **6-1997**, 45–50.

16. Ishiwatari, M., 2000: Experimental study of general circulations with parameters relevant to Venus, Earth, and Mars. *CGER's Supercomputer Activity Report, National Institute for Environmental Studies, Environmental Agency of Japan*, **7-1998**, 61–62.
17. Ishiwatari, M., 2000: Experimental study of general circulations with parameters relevant to Venus, Earth, and Mars. *CGER's Supercomputer Activity Report, National Institute for Environmental Studies, Environmental Agency of Japan*, **8-1999**, 52–54.
18. Odaka, M., K. Nakajima, M. Ishiwatari, and Y.-Y. Hayashi, 2000: A two-dimensional numerical simulation of Martian atmospheric convection: Comparison with a one-dimensional model with parameterized convection. *Proc. of the 33th ISAS Lunar and Planetary Symposium, The Institute of Space and Astronautical Science.*, 181–184.
19. Hayashi, Y.-Y. E. Toyoda, M. Hosaka, S. Takehiro, K. Nakajima, and M. Ishiwatari, 2000: Tropical precipitation patterns in response to a local warm SST area placed at the equator of an aqua planet. *CGER's supercomputer monograph report, Center for Global Environmental Research, National Institute for Environmental Studies, Environmental Agency of Japan*, **Vol. 6**, 1-52.
20. Hayashi, Y.-Y., E. Toyoda, S. Takehiro, K. Nakajima, and M. Ishiwatari, 2000: Experimental study on the three dimensional spherical convective with the parameters of planetary atmospheres. *CGER's Supercomputer Activity Report, National Institute for Environmental Studies, Environmental Agency of Japan*, **7-1998**, 55–60.
21. Odaka, M., K. Nakajima, M. Ishiwatari, and Y.-Y. Hayashi, 2001: A numerical simulation of Martian atmospheric convection with a two-dimensional anelastic model: dust injection due to convective wind. *Proc. of the 34th ISAS Lunar and Planetary Symposium, The Institute of Space and Astronautical Science.*, 17–21.
22. Ishiwatari, M., 2002: Experimental study of general circulations with the parameters relevant to Venus, Earth and Mars. *CGER's Supercomputer Activity Report, National Institute for Environmental Studies, Environmental Agency of Japan*, **9-2000**, 45-47

23. Ishiwatari, M., 2002: Experimental study of general circulations with the parameters relevant to Venus, Earth and Mars. *CGER's Supercomputer Activity Report, National Institute for Environmental Studies, Environmental Agency of Japan*, **10-2001**, 71–74.
24. Hayashi, Y.-Y., K. Nakajima, M. Ishiwatari, S. Takehiro, and E. Toyoda, 2002: Basic study of general circulations with the paremeters releveant to Earth – Visualization of the initial development of a response to an SST anomaly on an aqua planet – *CGER's Supercomputer Activity Report, National Institute for Environmental Studies, Environmental Agency of Japan*, **10-2001**, 63–69.
25. Ishiwatari, M., K. Nakajima, S. Takehiro, and Y.-Y. Hayashi, 2003: Dependency of equilibrium states of gray atmosphere on solar constant: from the runaway greenhouse to the snowball states. *Abstracts of XXIII General Assembly of the International Union of Geodesy and Geophysics*, A.377
26. Odaka, M. , M. Ishiwatari, S. Takehiro, K. Ishioka, E. Toyoda, and Y.-Y. Hayashi, 2003: Development of a general circulation model for the earth type planetary atmospheres: The GFD Dennou Club atmospheric general circulation model version 6, *Abstracts of XXIII General Assembly of the International Union of Geodesy and Geophysics*, B.424
27. Toyoda, E., S. Takehiro, M. Ishiwatari, and Y.-Y. Hayashi, 2003: GTOOL: I/O library and analysis tool for gridded data. *Abstracts of XXIII General Assembly of the International Union of Geodesy and Geophysics*, B.523
28. Taniguchi, H., and M. Ishiwatari, 2003: Reconsideration of equatorial inertial instability. *Abstracts of XXIII General Assembly of the International Union of Geodesy and Geophysics*, B.110
29. Egawa, K., and M. Ishiwatari, 2003: The Significance and the persistence of precursory signals of the Asian summer monsoon. *Abstracts of XXIII General Assembly of the International Union of Geodesy and Geophysics*, B.415
30. Uenobe, F., M. Ishiwatari, and A. Numaguti, 2003: Diurnal variation patterns of the low TBB area of typhoons. *Abstracts of XXIII General Assembly of the International Union of Geodesy and Geophysics*, B.405
31. Hayashi, Y.-Y., M. Ishiwatari, M. Odaka, Y. Yamada, K. Nakajima, and S. Takehiro, 2004: Development of atmospheric general circulation model for

terrestrial planets and related fundamental experiments on the atmospheric structures. *CGER's Supercomputer Activity Report, National Institute for Environmental Studies, Environmental Agency of Japan*, **11-2002**, 57–65.

32. Odaka, M., T. Kitamori, K. Sugiyama, K. Nakajima, Y. O. Takahashi, M. Ishiwatari, and Y.-Y. Hayashi, 2005: A formulation of non-hydrostatic model for moist convection in the Martian atmosphere. *Proc. of the 38th ISAS Lunar and Planetary Symposium, The Institute of Space and Astronautical Science.*, 173–175.
33. Hayashi, Y.-Y., M. Odaka, Y. Yamada, Y. Morikawa, M. Ishiwatari, K. Nakajima, and S. Takehiro, 2005: An aqua-planet experiment on structurization of equatorial precipitation activity and related software development toward an atmospheric general circulation model for terrestrial planets. *CGER's supercomputer activity report, National Institute for Environmental Studies, Environmental Agency of Japan*, **12-2003**, 77–86.
34. Hayashi, Y.-Y., M. Ishiwatari, Y. Yamada, Y. Morikawa, Y. O. Takahashi, K. Nakajima, M. Odaka, and S. Takehiro, 2006: Analyses of space-time structures of the equatorial precipitation activities in an aqua-planet experiment and an attempt to improve readability of a primitive model. *CGER's supercomputer activity report, National Institute for Environmental Studies, Environmental Agency of Japan*, **13-2004**, 81–92.
35. Hayashi, Y.-Y., M. Ishiwatari, Y. Yamada, Y. Morikawa, Y. O. Takahashi, K. Nakajima, M. Odaka, and S. Takehiro, 2007: Equatorial precipitation patterns in an aqua-planet experiments: Effect of vertical turbulent mixing processes. *CGER's supercomputer activity report, National Institute for Environmental Studies, Environmental Agency of Japan*, **14-2005**, 69–76.
36. 石渡正樹, 竹広真一, 林祥介, 1993: 熱的条件が2次元対流セルサイズに及ぼす影響. グロースペッター(気象庁長期予報課機関誌) 1993年3月号, 52–63.
37. 高野清治, 浅野正二, 中島映至, 和方吉信, 佐伯理朗, 石渡正樹, 竹広真一, 林祥介, 多田英夫, 益子直文, 1993: 月例会・長期予報と大気大循環の報告. 天気(日本気象学会学会誌), 40, 355–358.
38. 石渡正樹, 中島健介, 林祥介, 1996: 暴走温室状態の長時間積分. 数理解析研究所講究録 970, 熱対流の数理. 105–114.
39. 石渡正樹, 中島健介, 林祥介, 1996: 暴走温室状態の長時間積分. ながれ(日本流体力学会学会誌), 15別冊, 469–470.

40. 石渡正樹, 中島健介, 竹広真一, 林祥介, 1997: 太陽定数増大時の大気のエネルギー輸送. ながれ (日本流体力学会学会誌), 16 別冊, 533–534.
41. 中島健介, 竹広真一, 石渡正樹, 林祥介, 1997: 木星大気の対流運動の数値計算. ながれ (日本流体力学会学会誌), 16 別冊, 531–532.
42. 保坂征宏, 石渡正樹, 竹広真一, 中島健介, 林祥介, 1997: 熱帯に局在する暖水域が降水分布に与える影響. ながれ (日本流体力学会学会誌), 16 別冊, 537–538.
43. 小高正嗣, 中島健介, 石渡正樹, 竹広真一, 林祥介, 1998: 火星大気対流の数値計算. 宇宙科学研究所第 12 回大気圏シンポジウム講演集, 132–135.
44. 竹広真一, 石渡正樹, 中島健介, 林祥介, 1998: 回転球殻内の熱対流と熱境界条件の影響. 月刊地球, 20, 298–304
45. 小高正嗣, 中島健介, 竹広真一, 林祥介, 1999: 火星大気対流の数値計算: 日変化的強制に対する応答. 宇宙科学研究所第 13 回大気圏シンポジウム講演集, 164–167.
46. 竹広 真一, 石渡 正樹, 中島 健介, 林 祥介, 1999: 熱フラックス固定境界条件での回転系の熱対流. 数理解析研究所講究録 1075 「回転流の数理」 85–100
47. 谷口博, 石渡正樹, 1999: 東西一様基本場に於ける慣性不安定 -東西波数撰択のメカニズム-. ながれ (日本流体力学会学会誌), 18 別冊, 485–486.
48. 豊田英司, 中島健介, 石渡正樹, 林 祥介, 1999: 熱帯大気の暖水域に対する応答: 水惑星における時間発展. ながれ (日本流体力学会学会誌), 18 別冊, 503–504.
49. 小高正嗣, 中島健介, 石渡正樹, 林祥介, 2000: 火星大気放射対流の数値計算. 宇宙科学研究所 第 14 回大気圏シンポジウム講演集, 169–172.
50. 石渡正樹, 中島健介, 竹広真一, 林 祥介, 2000: 灰色大気に覆われた惑星の全球凍結条件. ながれ (日本流体力学会学会誌), 19 別冊, 409–410.
51. 谷口博, 石渡正樹, 2000: 慣性不安定モードの Lamb パラメータ依存性. ながれ (日本流体力学会学会誌), 19 別冊, 407–408.
52. 小高正嗣, 中島健介, 石渡正樹, 林 祥介, 2000: 火星大気放射対流の数値計算: 鉛直 1 次元モデルとの比較. ながれ (日本流体力学会学会誌), 19 別冊, 399–400.

53. 豊田英司, 石渡正樹, 林祥介, 赤堀浩司, 堀之内武, 沼口敦, 地球流体電腦俱楽部 davis プロジェクト, 2000: 多次元数値データの自己記述的格納形式 gtool4 の開発. ながれ (日本流体力学会学会誌), 19 別冊, 361–362.
54. 小高正嗣, 中島健介, 石渡正樹, 林祥介, 2001: 火星大気対流の 2 次元数値計算: 対流の風によるダストの巻き上げ. ながれ, 20 別冊, 513–514.
55. 小高正嗣, 中島健介, 石渡正樹, 林祥介, 2001: 火星大気の対流計算: ダストのある場合. 宇宙科学研究所 第 15 回大気圏シンポジウム講演集, 223–226.
56. 江川晋子, 石渡正樹, 2001: 夏季アジアモンスーンの先行シグナルに関する考察. 細氷 (日本気象学会北海道支部機関誌), 47, 40–41.
57. 竹広真一, 石岡圭一, 豊田英司, 石渡正樹, 林祥介, 2002: ISPACK と GTOOL4 を用いたスペクトルモデルによる簡単地球流体数値実験. ながれ, 21 別冊, 68–69.
58. 石渡正樹, 2002: 気候の太陽定数依存性～海洋の存在できる条件～. 細氷 (日本気象学会北海道支部機関誌), 48, 56–57.
59. 上延史, 石渡正樹, 沼口敦, 2002: 台風域内の対流性雲の日変化. 細氷 (日本気象学会北海道支部機関誌), 48, 12–13.
60. 石渡正樹, 中島健介, 竹広真一, 林祥介, 2003: 灰色大気の平衡状態の太陽定数依存性: 暴走温室状態から全球凍結状態まで. ながれ (日本流体力学会学会誌), 22 別冊, 156–157.
61. 小高正嗣, 石渡正樹, 竹広真一, 石岡圭一, 豊田英司, 林祥介, 2003: 地球型惑星大気大循環モデル AGCM6 の開発. ながれ (日本流体力学会学会誌), 22 別冊, 158–159.
62. 中島健介, 山田由貴子, 石渡正樹, 林祥介, 2003: 暖水域に対する熱帯大気応答のアンサンブル水惑星実験による研究. ながれ (日本流体力学会学会誌), 22 別冊, 154–155.
63. 谷口 博, 石渡正樹, 2004: 赤道  $\beta$  平面浅水系の線形シアーフローで発生する不安定モードの物理的解釈. ながれ (日本流体力学会学会誌), 23 別冊, 412–413.
64. 山田由貴子, 三瓶岳昭, 高橋芳幸, 吉岡真由美, 大淵 浩, 石渡正樹, 中島健介, 林 祥介, 2004: 大気大循環モデルで表現される赤道域降水活動の解像度依存性. ながれ (日本流体力学会学会誌), 23 別冊, 490–491.
65. 山田由貴子, 三瓶岳昭, 高橋芳幸, 吉岡真由美, 大淵 浩, 石渡正樹, 中島健介, 林 祥介, 2005: 大気大循環モデルで表現される赤道域降水活動の解像度依存性. 細氷 (日本気象学会北海道支部機関誌), 51, 20–21

66. 山田由貴子, 高橋芳幸, 林 祥介, 石渡正樹, 大淵 済, 中島健介, , 2005: 大気大循環モデルで表現される赤道域降水活動の解像度依存性. ながれ (日本流体力学会学会誌), 24 別冊, 267.
67. 森川靖大, 石渡正樹, 高橋芳幸, 小高正嗣, 林祥介, 2005: 大気大循環モデル用力学コアの設計と実装実験: 可変性と可読性の高いプログラムへの試み. ながれ (日本流体力学会学会誌), 24 別冊, 268.
68. 森川靖大, 石渡正樹, 堀之内武, 小高正嗣, 林祥介, 2007: RDoc を用いた数値モデルのドキュメント生成. 天気 (日本気象学会学会誌), 54, 185–190.

## C 著書

無し.

## D 解説, 報告などその他の出版物で特に参考となるもの

1. 向川均, 石渡正樹, 岡田直資, 2000: Linux ビギナーのためのセキュリティ情報. *HINES World*, 51, 4–16.