Book on History of Global Modeling

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CMMAP, August 2006

Geophysical
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Dynamics
Laboratory

Princeton, New Jersey

Scope

- Primarily atmospheric models, with limited treatment of ocean coupling, chemistry, bio- and geo-chemical interactions
- Emphasis on AGCMs for climate applications
- Intended audience will have at least a coupled of years of college physical science
- Length~200-300 pages

Structure

- Invite authors for key chapters
- For atmosphere, rough outline could start with Richardson and Charney NWP experiments moving forward to first-generation NWP and climate AGCMs, then to coupled ocean-atmosphere models

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Next Steps (over next 6 months)

- Establish WG: Leo Donner, Wayne Schubert, Richard Somerville + ?
- Identify chapter topics
- Develop time line for writing, editing, and publication
- Identify and invite chapter authors

Immediate Action Items

- Establish budget for book
- "Market survey": Paul Edwards (Program in Science, Technology, and Society, Stanford University) may be publishing book with similar intended audience

Provisonal Chapters-I

- From Richardson to early NWP
- From early NWP to climate GCMs
- NWP in the era of climate GCMs and their relationship to each other
- The evolution of research goals for AGCMs
- The evolution of complexity in AGCMs

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Provisonal Chapters-II

- The role of observations in developing and evaluating GCMs
- The societal context of GCM research and development
- Coupling AGCMs to oceans, land, chemistry, and biology

Possible Authors-I

- From Richardson to early NWP: Peter Lynch, Joe Pedlosky, Norm Phillips, George Platzman
- From early NWP to Climate GCMs: Lennart Bengtsson, Akira Kasahara, Warren Washington
- The evolution of research goals for GCMs: Jim Hansen, John Mitchell, Suki Manabe

Possible Authors-II

- The evolution of complexity in GCMs-Akio Arakawa, Dave Randall, Eric Roeckner, Tony Slingo
- The role of observations in developing and evaluating GCMs-Bob Atlas, Bill Rossow, Graeme Stephens, Kevin Trenberth, Bruce Wielicki
- The societal context for GCM research-Micky Glantz, Jerry Mahlman, Steve Schneider
- Coupling-Kirk Bryan, Ralph Cicerone, Paul Crutzen, Jorge Sarmiento, Dave Schimel