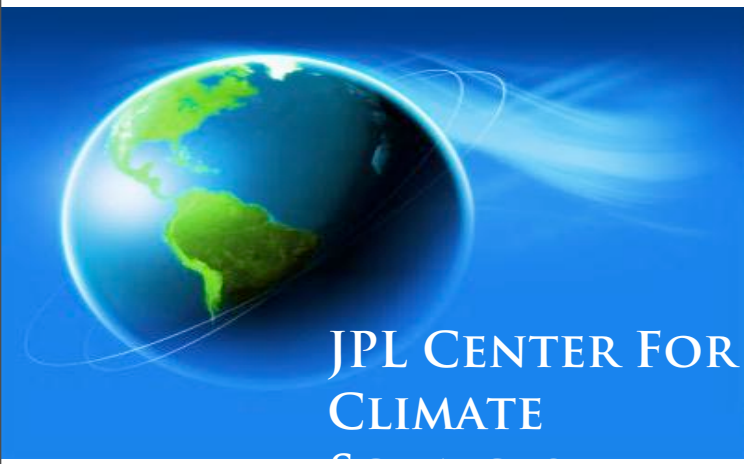
Workshop on the Physics of Weather and Climate Models

20-23 March 2012

Beckman Institute, Caltech, Pasadena, California



THANKS

TO

Keck
INSTITUTE FOR SPACE STUDIES

NSF

WCRP
World Climate Research Programme

WWRP
WORLD WEATHER
RESEARCH PROGRAMME

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

Workshop structure

- 3.5 days, morning lectures, afternoon breakouts, evening topical discussions
- About 120 particpants, 40 of which were students
- Lecture topics:
  - Tropics,
  - High Latitudes,
  - Clouds

Workshop structure

- Breakouts
  - Field experiments, Physics in weather prediction, Physics in Climate models
  - Global high-resolution models, Ensembles and stochastic physics, Simple models
  - LES and physics development, Satellite observations and physics development, Model evaluation

Workshop structure

- Evening panel discussions
  - Strategies for model physics development
  - Careers in model physics
  - Institutional support for model physics development
- Final session to derive recommendations

The “big” recommendations

- Recognition of the problem that ratio of real development to claimed development is silly
- Improve funding around model physics development:
  - length of funding needs increasing
  - commit to some really key issues and stick to them until improvements are truly made
  - support both large teams and small targeted efforts
  - More honesty in reporting success
  - Model development tax or levy?

The “big” recommendations

- Focus on addressing long-standing issues
  - Climate sensitivity alone is the wrong metric
  - Enabling the community to succeed in Earth System Modelling and prediction on all time scales
  - Biases and variability, Precipitation, Extremes
  - Physics improvement central to this
  - Do not follow every new fad and leave the existing problems behing
  - Support regional climate projections through improved global models and RCM physics

The “big” recommendations

- Growing the model developer species
  - Links to academia using complementing strengths of both communities
  - Improve Recognition including prizes
  - Targeted programs including scholarships
  - Co-Authorship and citation culture
  - Building a community – e.g. advert areas etc
    - Fund meetings of this community

The “big” recommendations

- Coordinated effort in model evaluation in support of model physics development?
  - A la GCSS
  - Coordinated by W-acronyms?
  - All time-scales
  - Strong links to observational community can be made here

The big recommendations

- Communication
  - Be more optimistic but remain honest
  - Present the field as an exciting research area
  - Present our needs to other communities
  - Be bold