Workshop on the Physics of Weather and Climate Models
20-23 March 2012
Beckman Institute, Caltech, Pasadena, California

THANKS TO

JPL Center For Climate Sciences
National Oceanic and Atmospheric Administration
World Climate Research Programme
World Weather Research Programme
Workshop structure

• 3.5 days, morning lectures, afternoon breakouts, evening topical discussions
• About 120 participants, 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