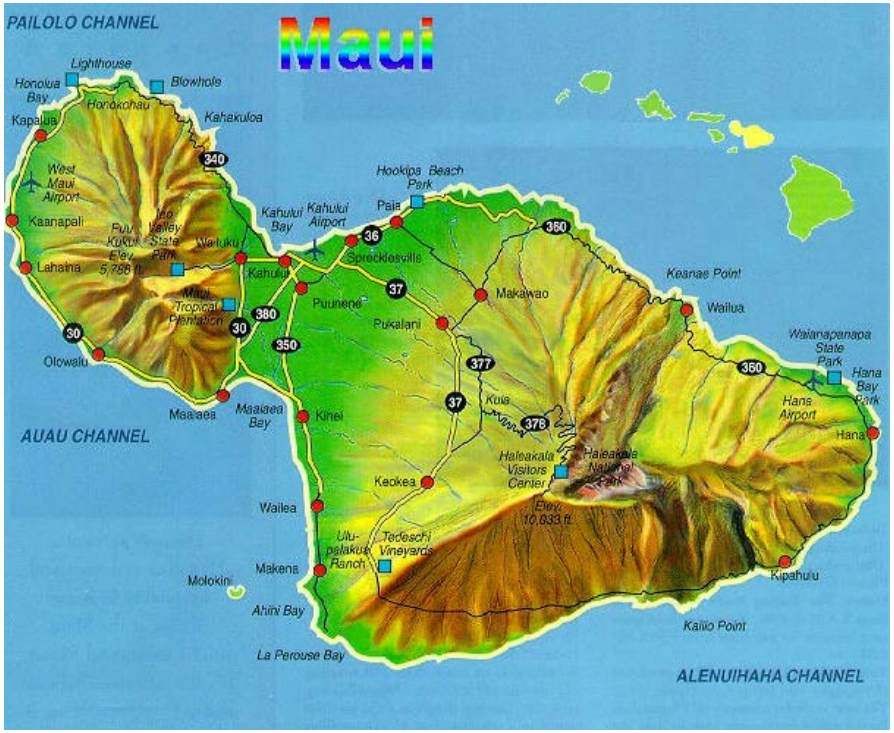
SHINE Perspectives on the Community Coordinated Modeling Center



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OUTLINE

1) What is SHINE?

2) Present Status of SHINE Requirements for the CCMC

3) What the CCMC could provide to the Solar and Heliospheric Community

4) My Own Thoughts as a Prospective Code Contributor

WHAT IS SHINE?

- **S**olar, **H**eliospheric, and **IN**terplanetary **E**nvironment
- SHINE began as an affiliation of researchers dedicated to promoting an enhanced understanding of solar and heliospheric processes that affect Earth.
- The goals of SHINE parallel those of the NSF CEDAR and GEM programs.
- SHINE was started after these programs existed and was originally not an NSF entity.
- SHINE has gradually been brought under the NSF "umbrella" with NSF support of SHINE workshops.
- The first NSF SHINE funding opportunity was announced August 1, with proposals due November 1 (Thursday).

NEW SHINE STEERING COMMITTEE:

Joan Burkepile, HAO

Nancy Crooker[a], Boston University

Nat Gopalswamy[+], Catholic U. & GSFC

Jim Klimchuk, NRL

Jon Linker*, SAIC

Sara Martin, Helio Research

Vic Pizzo[b], NOAA/SEC

Pete Riley, SAIC

Alan Tylka, NRL

Dave Webb, AFRL & Boston College

Thomas Zurbuchen, University of Michigan

*Chair

[+]Workshop Coordinator

[a]Advisory member – former workshop coordinator

[b]Advisory member – former chair

Many thanks to Joan Feynman, Janet Luhmann, and John Steinberg, who rotated off the committee.

SHINE REQUIREMENTS FOR THE CCMC: PRESENT STATUS

WHAT COULD THE CCMC PROVIDE TO THE SHINE COMMUNITY?

- Solar and Interplanetary data are diverse and complex, e.g., disk images, white light, *in situ* data. The data often require models for even simple interpretation

- The Solar and Heliospheric community presently relies heavily on empirical models (e.g., source-surface model, Wang-Sheeley model)

- More sophisticated approaches are necessary for fully utilizing data from present and future NASA missions, as well as ground-based data.

- Community MHD models could significantly advance the analysis of this data.

CCMC AND SHINE (CONTINUED)

- Answers to major theory questions in solar/heliospheric physics are less developed than in magnetospheric/ ionospheric physics. Proposed mechanisms of solar activity are still studied in idealized models.

- SHINE has not yet had specific modeling challenges, but this may occur soon.

- Community modeling support could be provided in two primary ways:

  - Modeling of the background corona/solar wind to provide context for an event

  - Modeling of a specific mechanism to study an event (more difficult)

CONTRIBUTING A CODE? THINGS TO THINK ABOUT

- Community will benefit from widespread use of sophisticated models and a more rigorous analysis of available data
- What sort of model support is envisioned?
  - Examples of real world cases
  - Models for ``experiments''
  - Source code repository
- CCMC will need to have significant resources to be successful

CONTRIBUTING A CODE? (CONTINUED)

- Dangers to developers:
  - Significant time to adapt models
  - Maybe no one uses it: waste of time
  - Maybe lots of people use it: *You have 2522 unread messages*
  - Poor results from misuse ➞ Damage to developers' scientific reputation
- Developer support is needed for community model development