

Analysis, Integration and Modeling of the Earth System

Global Research Network of Future Earth

Natasha MacBean
Land Surface Modeling Summit
12 September 2022



futureearth

Introduction to the AIMES

1993 - 2004

IGBP: Global Analysis, Integration and Modelling (GAIM) Task Force

Advance understanding of the coupled dynamics of the Earth System using data and models

2005

IGBP: GAIM -> Analysis, Integration and Modeling of the Earth System (AIMES)

Integrate human activity with biogeophysical Earth system analyses

2015

IGBP -> Future Earth Science for a Sustainable Future

2017

International Project Office Support at NASA Goddard Institute for Space Studies/Columbia University

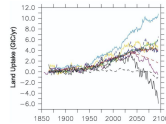
1990

Ocean Carbon Cycle Model Intercomparison Project (OCMIP)

2000

Coupled Carbon Climate Model Intercomparison Project (C4MIP)

GAIM TransCom2 Atmospheric Tracer Transport Model Intercomparison Project

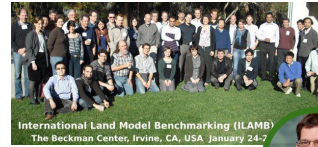


AGCI Workshop: A Strategy for Climate Change Stabilization Experiments with AOGCMs and ESMs



2010

First International Land Model Benchmarking (ILAMB) Workshop in the U.S.



2020

Establishment of Working Groups:

- Modeling Earth System and Human interactions (MESH)
- Large Scale Behavioral Models of Land Use Change
- Land Data Assimilation WG
- Open Modeling Foundation

Schimel et al., 2015

LSMS

W: <https://aimesproject.org> T: [@AIMES_IPO](https://twitter.com/AIMES_IPO)

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Partners: **WCRP**



YOUNG EARTH SYSTEM SCIENTISTS community

AIMES SCIENTIFIC STEERING COMMITTEE



Co-chairs: Natasha MacBean (nmacbean@uwo.ca) & Mark Rounsevell (mark.rounsevell@kit.edu)

Steering Committee: Avit Bhowmik, Zhangang Han, David Lapola, Natalie Mahowald, Pedro Monteiro, Brian O'Neill, Patricia Pinho, Julia Pongratz, Yuhan Rao, Alex Ruane, Yunne-Jai Shin

International Project Officer: Hannah Liddy (aimes@futureearth.org)

AIMES STRATEGY

AIMES is an international network of **Earth system scientists and scholars** that seek to develop innovative, interdisciplinary ways to understand the complexity of the natural world and its **interactions** with human activities.

Working Groups

- Behavioural Models of Land Systems (BeModels)
- Modeling Earth Systems and Human interactions (MESH)
- Tropical Forest Degradation
- Tipping Elements in the Earth System
- Land Data Assimilation Community (LDAC)
- Open Modeling Foundation (OMF)

Webinars



Workshops



How AIMES can help LSM development: Bridging Across Disciplines



AIMES Primer Series

The AIMES Primer Series on YouTube provides a basic understanding of methodologies relevant to Earth system science and the AIMES project. The goal is to provide an overview of the model development or analytical approach and exciting future research applications such that a student in the field or an expert from another field gains some foundational knowledge.

[Click Here](#)

AIMES AND OPPORTUNITY TO ADVANCE LSMs

Through AIMES working groups:

- Model improvement and uncertainty reduction using data assimilation *Land Data Assimilation Community (LDAC)*
- Incorporating socio-economic land management models with DGVMs *Behavioural Models of Land Systems (BeModels)*
- Scenario design and human-Earth system feedbacks *Modeling Earth Systems and Human interactions (MESH)*
- Earth system dynamics and analysis of abrupt change in models *Tipping Elements in the Earth System*
- Modeling degradation and disturbance *Tropical Forest Degradation*

AIMES AND OPPORTUNITIES FOR ADVANCEMENT OF LSMs

Through coordinated effort of the Global Research Programmes:

- Human management + water + ecosystem fluxes

Other ideas?

GET INVOLVED!

- Become a member -> aimesproject.org/register/
 - Sign up for newsletter
- Working groups -> aimesproject.org/working-groups/
 - Check out the AIMES website and sign up for the working group
 - **Propose a new working group** → *Model complexity?*
 - AIMES reviews working group proposals on a rolling basis
- Request endorsement of an existing group -> aimesproject.org/endorsements/
 - Or request a letter of support for proposals (e.g. NSF AccelNet)
- Keep an eye out for calls to join the steering committee (via the newsletter)

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Contact Us: Visit our website: www.aimesproject.org to join, follow us [@AIMES_IPO](https://twitter.com/AIMES_IPO), or email aimes@futureearth.org