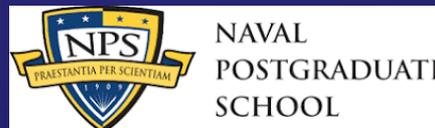


# CICE Consortium Kick-off Workshop

October 26-27, 2016  
Santa Fe, New Mexico



# DINNER

Osteria d'Assisi, 6 pm Wednesday  
Corner of Washington Ave and S Federal Place



Map data ©2016 Google 200 ft

# Agenda

## CICE Consortium Kick-off Workshop Santa Fe, New Mexico October 26-27, 2016

### Wednesday, October 26

8:30 Welcome and logistics – Elizabeth Hunke

8:35 Introductory remarks – Dorothy Koch

Moderator: Jessie Carman

8:45 Background – Elizabeth Hunke

*Overviews from participating groups*

9:00 DOE – Elizabeth Hunke

9:10 NCAR/CESM – Marika Holland

9:30 NPS – Andrew Roberts

9:50 NRL – Ruth Preller

10:10 *break*

10:30 Hadley Centre – Ed Blockley

10:50 Canada – Jean-Francois Lemieux

11:10 NOAA/GFDL – Mike Winton

11:30 NOAA/general – Hendrik Tolman

11:50 Further discussion of requirements

12:30 *lunch*

Moderator: Ruth Preller

2:00 Discussion of governance and the decision-making process

3:00 *break*

Moderator: Andrew Roberts

3:30 Discussion of requirements and consortium design

5:00 adjourn

### Thursday, October 27

8:30 Summary of Day 1 — where are we and what's left to do? - Elizabeth

Moderator: Andrew Roberts

8:45 Discussion of requirements and consortium design, continued, if needed

10:15 *break*

Moderator: Marika Holland

10:30 Selection/assignment of short- and long-term roles/tasks

12:30 *lunch*

Moderator: Elizabeth Hunke

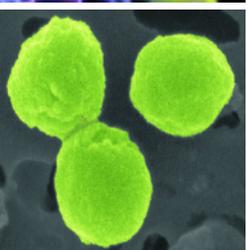
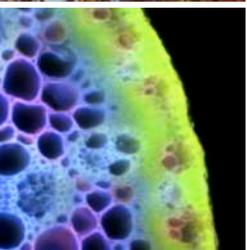
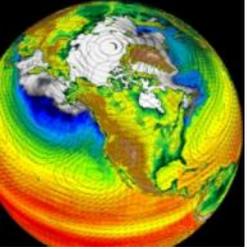
2:00 Finalize governance structure, confirm agency approval/commitment

2:45 *break*

Moderator: CICE Consortium Lead Coordinator

3:00 Define next steps and timelines

5:00 adjourn



# CICE Consortium Kick-off workshop

## Opening remarks from DOE

**Dorothy Koch**  
**Earth System Modeling**  
**Biological and Environmental Research**

October 26, 2016



U.S. DEPARTMENT OF  
**ENERGY**

Office  
of Science

Office of Biological  
and Environmental Research

# The CICE collaboration

**CICE has been an informal collaboration to develop a sea-ice model for deployment in multiple climate models – maybe one of the most broadly used climate-model components**

**The CICE collaboration has come largely from Elizabeth Hunke’s leadership and DOE-sponsorship. Collaborators span research and operational centers throughout the U.S. and the world.**

**So far, the experience is that “we get more out of the collaboration than we put in”**

# CICE collaboration to consortium

Several drivers for a more formal CICE structure:

1. **Significant sea-ice changes, in both hemispheres**
  - Arctic – priority for many agencies
  - Antarctic – role of sea-ice in the Antarctic ice-sheet changes
2. **The broad use and success of CICE collaboration and model**
3. **DOE shift to using MPAS ocean – extraction of physics from dynamics – opens options for CICE**
  - ACME – somewhat more formal in its engagements
  - DOE/LANL/Hunke interest in sharing responsibility

# CICE consortium

**For expanded development and use of CICE, the CICE Consortium will need to have an appropriate structure and governance. The structure will help to hold the larger group together and help it to function effectively.**

**As a broad (even if not very deep) multi-center, multi-agency activity, this is a somewhat new “experiment” and as such would benefit from particular care in its construction and execution. There is potential for other development activities to follow this example.**

**For consideration at this workshop (e.g. afternoon session today):**

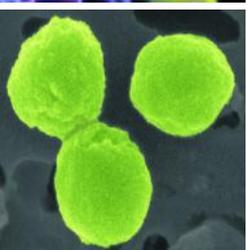
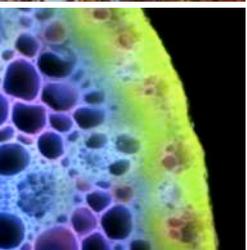
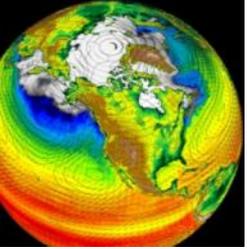
- How to govern: Easier to start with too much structure than not enough**
- How to assemble the team: given the individuals available and the needs of the project?**
- How to make decisions, within sub-groups and across the project?**
- How to manage code – how open and how to manage different degrees of openness?**
- How to manage faults and failures in the team or project?**

# Sponsor interests

**Sponsors (and Centers) will want continued assurance that the gains at least equal the investment**

**Regular (at least annual) reporting should include:**

- **Updates on the structure of the Consortium and what are the contributions (from various centers and agencies)**
- **What are the major successes during the past year?**
- **Are there gaps or needs?**



# Thank you!



U.S. DEPARTMENT OF  
**ENERGY**

Office  
of Science

Office of Biological  
and Environmental Research

# CICE 1.0 1998



DYN.F  
FLUX.F  
FLUX\_MP.F  
ICE.DOC  
ICE.F

ICE.H  
ICE.INP  
ICEGRID.F  
ICEINIT.F  
ICEOUT.F

MAKEFILE  
NCDF.H  
THERM.F  
TIMERS.H  
TRANSP.F

**20+ years**  
of sea ice model development

|      |   |
|------|---|
| 1994 | Transcribed Semtner 3-layer model into Fortran 77 |
| 1995 |   |
| 1996 |   |
| 1997 | EVP released                                      |
| 1998 | CICE 1.0  |
| 1999 | CICE 2.0  |
| 2000 |   |
| 2001 | CICE 3.0  |
| 2002 |   |
| 2003 |   |
| 2004 | CICE 3.1  |
| 2005 |   |
| 2006 | CICE 3.14   |
| 2007 |   |
| 2008 | CICE 4.0  |
| 2009 |   |
| 2010 | CICE 4.1  |
| 2011 |   |
| 2012 |   |
| 2013 | CICE 5.0  |
| 2014 |   |
| 2015 | CICE 5.1.2  |
| now  | Column-package version (unreleased)               |

NPS validation of EVP

EVP in NCAR PCM (via NPS)

NCAR CSIM v2

GFDL CM2 (EVP only)

UK HadGEM1

Canadian sea ice workshops

NRL ACNFS implementation

NRL ACNFS validation

NCEP CFSv2 (EVP only)

NRL ACNFS becomes operational

MPAS-seaice discussed  
MPAS-seaice design doc

ACME

# Purpose of the CICE Consortium

to enhance sea ice model development  
for and by the community

- Vehicle for collaboration and sharing
- Maintenance of the current CICE model for existing and new users
- Incorporation and maintenance of new R&D  
*but not the R&D itself*

# Workshop Goals

Define and agree on...

- Expectations
- Requirements
- Governance structure
- Responsibilities
- Next steps
- How to pronounce 'CICE'

# DOE's expectations

- Other consortium members will take on previously DOE-led tasks (explicit FTE levels TBD)
- CICE will be maintained flexibly, for various uses in multiple configurations
- Adoption of best practices for the development, testing and management of the software and associated repositories, e.g. shared design documents, self-documenting software practices, automated test cases under revision control and the distributed management of pull requests / repository commits
- Short term: DOE will continue its leadership role
- Longer term: DOE's primary role will be coordinating maintenance, documentation, testing and code integration of the column package, especially biogeochemistry

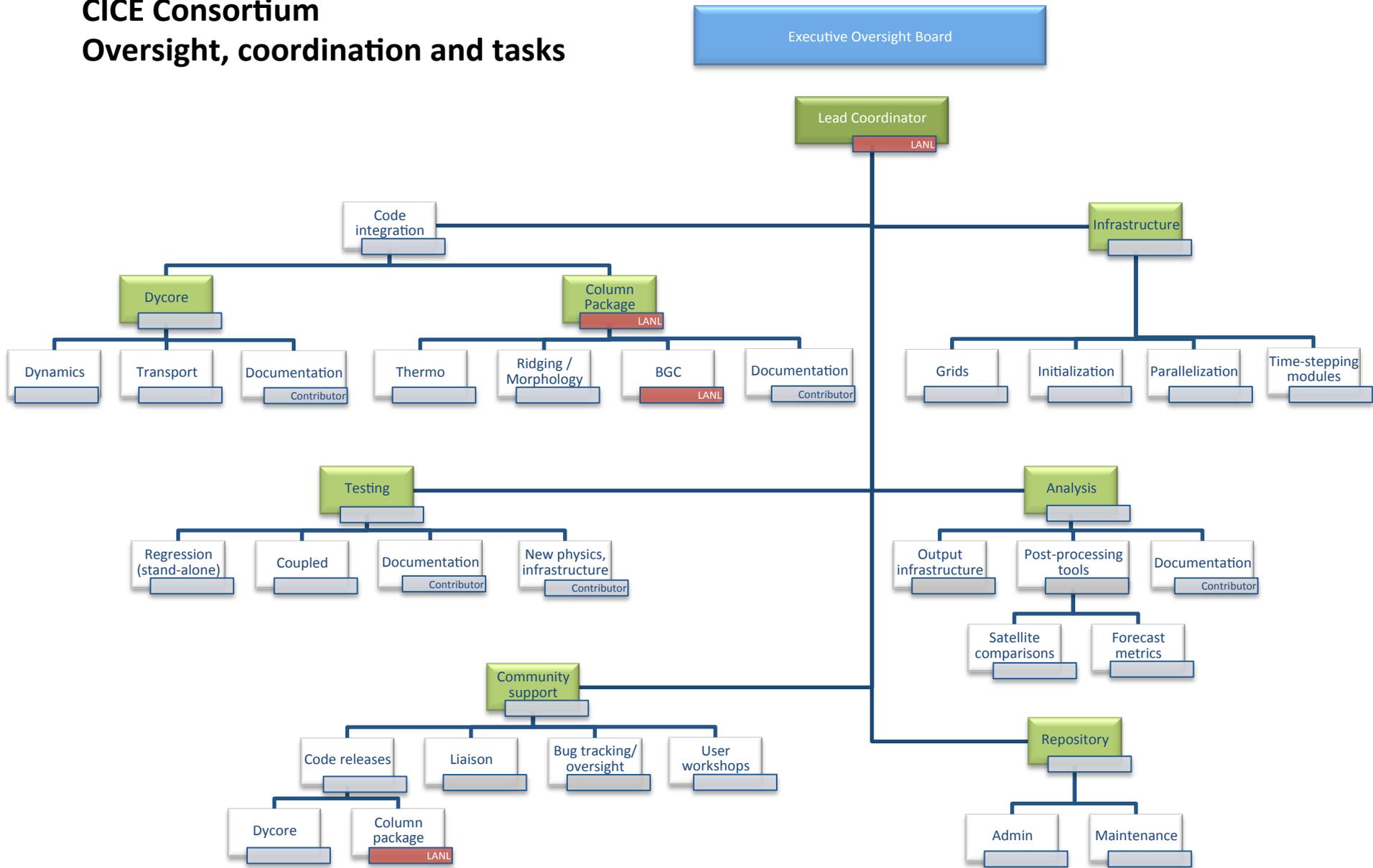
# DOE's requirements

in addition to having standard things like a testing infrastructure, netcdf output, documentation, etc.

- For the column package:
  - A clean interface
  - Software best-practices including design documents, model requirements, developer's guide, explicit coding standard, unit tests, column model tests, etc.
- A repository structure such that column package can be incorporated and developed easily/efficiently in other sea ice models (e.g. git submodule separate from the rest of the CICE model)
- The option to maintain new developments on a non-public repo branch until they are ready for release

# CICE Consortium

## Oversight, coordination and tasks



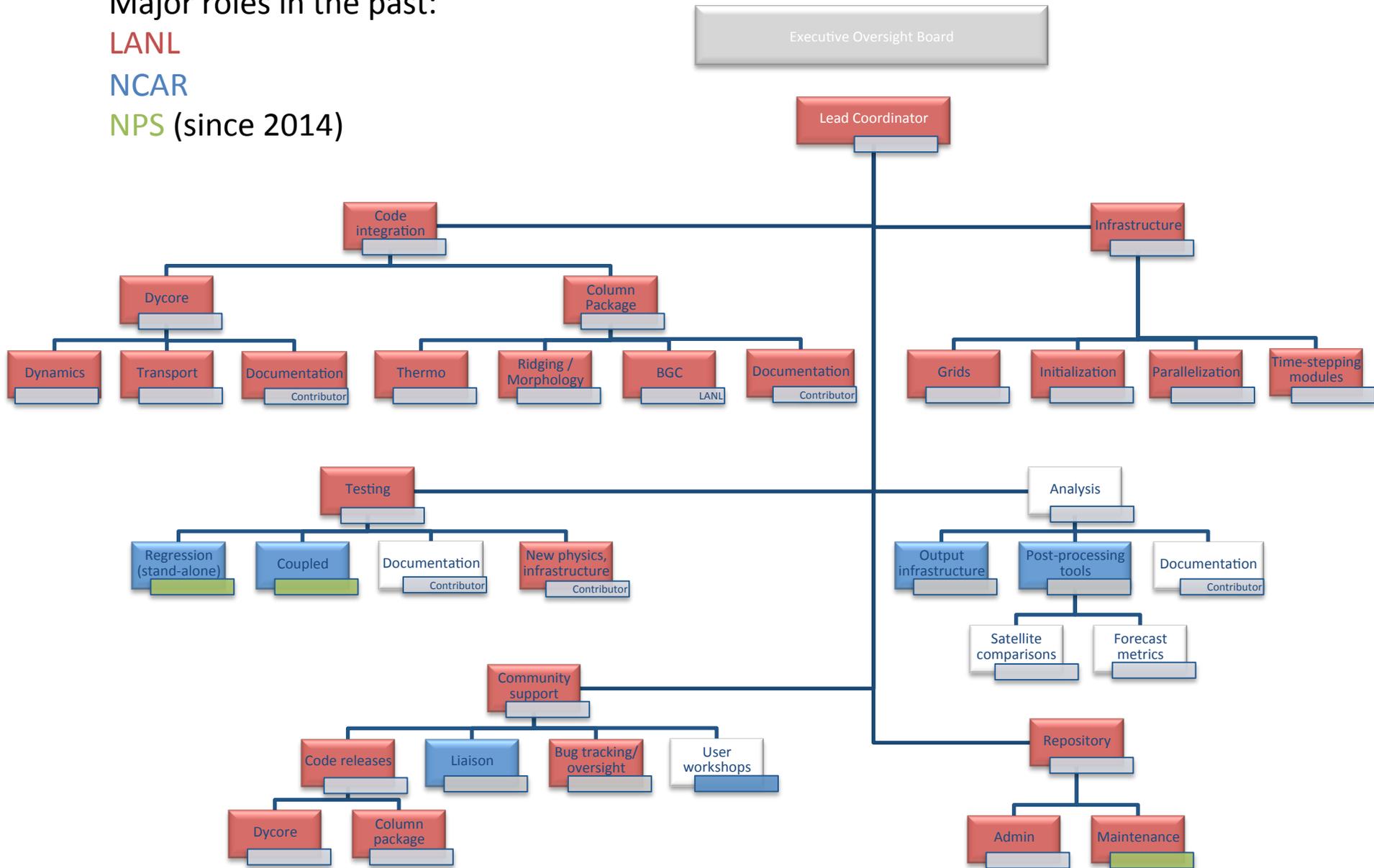
Extra slides

# Major roles in the past:

LANL

NCAR

NPS (since 2014)



# CICE Consortium Workshop

## Participants

- **DOE/LANL:** Elizabeth Hunke, Adrian Turner, Wilbert Weijer, Bill Lipscomb, Steve Price (Dorothy Koch, Nicole Jeffery by phone)
- **Navy/NRL:** Ruth Preller, Pam Posey, Rick Allard, Alan Wallcraft
- **Navy/NPS:** Andrew Roberts
- **NSF/NCAR:** Bill Wiseman, Marika Holland, Dave Bailey
- **NOAA/NCAR:** Louisa Nance, Don Stark
- **NOAA/GFDL:** Mike Winton
- **NOAA/NGGPS, ATB, NCEP, NWS, GLERL, etc:** Hendrik Tolman, Jesse Carman, Jin Huang, Jia Wang, Ligia Bernardet, Karen Keith, Bob Grumbine, Amy Solomon
- **UK Met Office:** Ed Blockley
- **Canada:** Jean-Francois Lemieux

# Consortium work consists of non-research-and-development tasks

## Including

- Integration of new code capabilities
- Maintenance of analysis tools
- Basic testing
- User support
- Code releases
- Coordination of activities across code capabilities and member institutions
- Etc.

## Not including work that would be done anyhow, for example

- Development of new parameterizations
- Development of analysis tools
- Development of capabilities that are only useful to the developing institution (such as automated workflows or post-processing tools)
- Scientific investigations