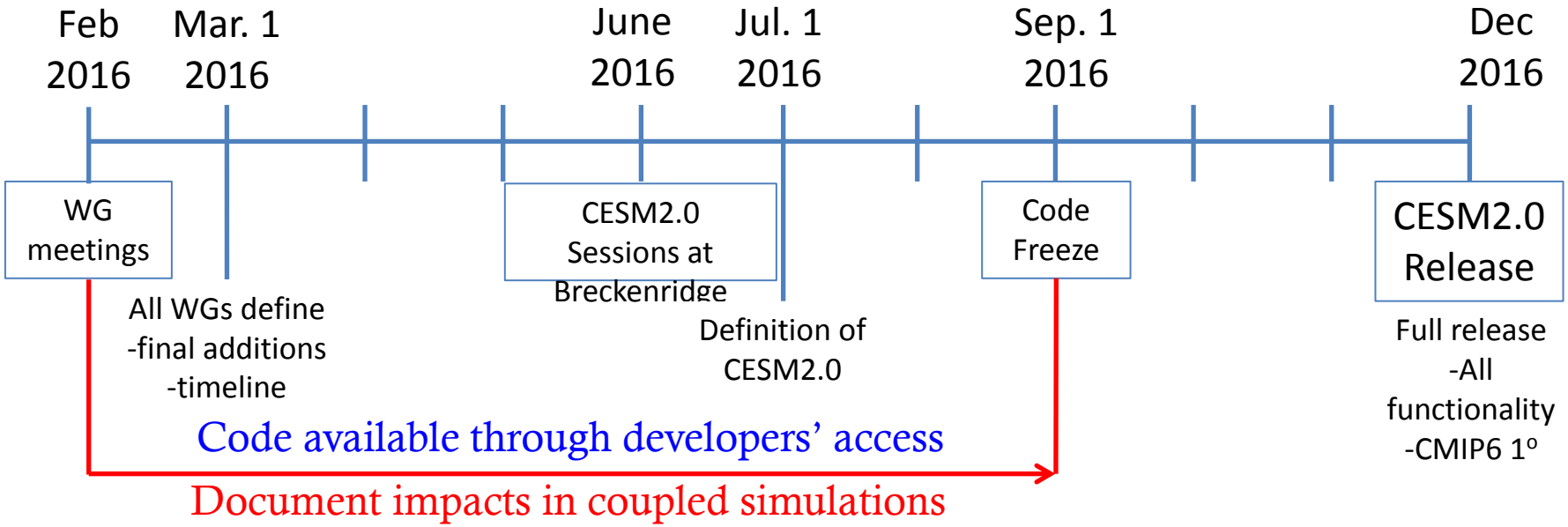
Proposed revised timeline



Pending approval by the SSC

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2014-2016 CSL proposal

- Reviewed by CISL HPC Advisory Panel (as all large computational requests)
- 2-year proposal
- Presentation made to panel Oct. 15 2015 for second year
- 115 Mcore-hours/year awarded (Second year fully awarded in Oct. 2015) (25,000 sim. Years)

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2016-2018 Proposal

- Will include overlap of computers (Yellowstone and Cheyenne) in 2017
- New computer "Cheyenne" is 2-3 times Yellowstone in performance
- CMIP6 simulations will be a major focus (but not the sole focus)
  - > 115M on Yellowstone
  - > 230M on Cheyenne

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CMIP6 MIPs

MIP acronym	MIP name	Interest (H-M-L)	Name of primary sponsor(s)
AerChemMIP	Aerosols and Chemistry Model Intercomparison Project	H	Lamarque/Emmons
C4MIP	Coupled Climate Carbon Cycle Model Intercomparison Project	H	Lindsay
CFMIP	Cloud Feedback Model Intercomparison Project	H	Medeiros/Kay (CU)/Klein (LLNL)
DAMIP	Detection and Attribution Model Intercomparison Project	H	Tebaldi/Arblaster
DCPP	Decadal Climate Prediction Project	H	Danabasoglu/Meehl
GeoMIP	Geoengineering Model Intercomparison Project	H	Tilmes/Mills
GMMIP	Global Monsoons Model Intercomparison Project	M	Fasullo
HighResMIP*	High Resolution Model Intercomparison Project	M	Neale/Bacmeister
ISMIP6	Ice Sheet Model Intercomparison Project for CMIP6	H	Lipscomb (LANL)/Otto-Bliesner
LS3MIP	Land Surface, Snow and Soil Moisture	H	D. Lawrence
LUMIP	Land-Use Model Intercomparison Project	H	D. Lawrence/P. Lawrence
OMIP/OCMIP	Ocean Model Intercomparison Project	H	Danabasoglu
PMIP	Palaeoclimate Modelling Intercomparison Project	H	Otto-Bliesner
RFMIP	Radiative Forcing Model Intercomparison Project	H	Gettelman/Neale
ScenarioMIP	Scenario Model Intercomparison Project	H	Meehl/O'Neill/P. Lawrence
VolMIP	Volcanic Forcings Model Intercomparison Project	H	Mills/Otto-Bliesner
Data only			
CORDEX	Coordinated Regional Climate Downscaling Experiment	M	Mearns/Gutowski
DynVar	Dynamics and Variability of the Stratosphereâ€ Troposphere System	H	Marsh
SIMIP	Sea-Ice Model Intercomparison Project	H	Bailey/Holland/Jahn (CU)/Hunke (LANL)
VIAAB	VIA Advisory Board for CMIP6	H	Mearns/O'Neill
Not participating			
FAFMIP	Flux-Anomaly-Forced Model Intercomparison Project	M	
NonlinMIP	Nonlinear climate responses to CO2		
Cancelled			
ENSOMIP	ENSO Model Intercomparison Project	H	Deser
PDRMIP	Precipitation Driver and Response Model Intercomparison Project	M	Lamarque
GDDEX	Global Dynamical Downscaling Experiment		

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Planned versions: ocean at 1°

1. physical climate (1°, low-top) (1x)
2. + biogeochemistry (1°, CO_2 emission and/or concentration driven, low-top) (1.6x)
3. + atmospheric chemistry + biogeochemistry (1°, CO_2 emission driven, high-top) (8.5x)
4. physical climate (1/4° atm, low-top) (150x)

(scaling of computational cost relative to version #1)

Notes:
1. ocean at 0.1° research topic
2. Scaling subject to model development and optimization

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CMIP6 DECK + Tier 1

- Low resolution versions (years)
  - CAM: 5,000
  - CAM-BGC: 12,000
  - WACCM-BGC: 6,500
  - Total cost: ≈250M core-hours
- High resolution version (years)
  - CAM:1,750
  - Total cost: ≈260M core-hours
- Total I/O: 5PB

1) This is only for Tier 1 while a lot of interesting science resides in Tier 2/3 experiments

2) Large factor is #years performed at high-resolution.

Yellowstone core-hours; 1 year ≈ 700M core-hours

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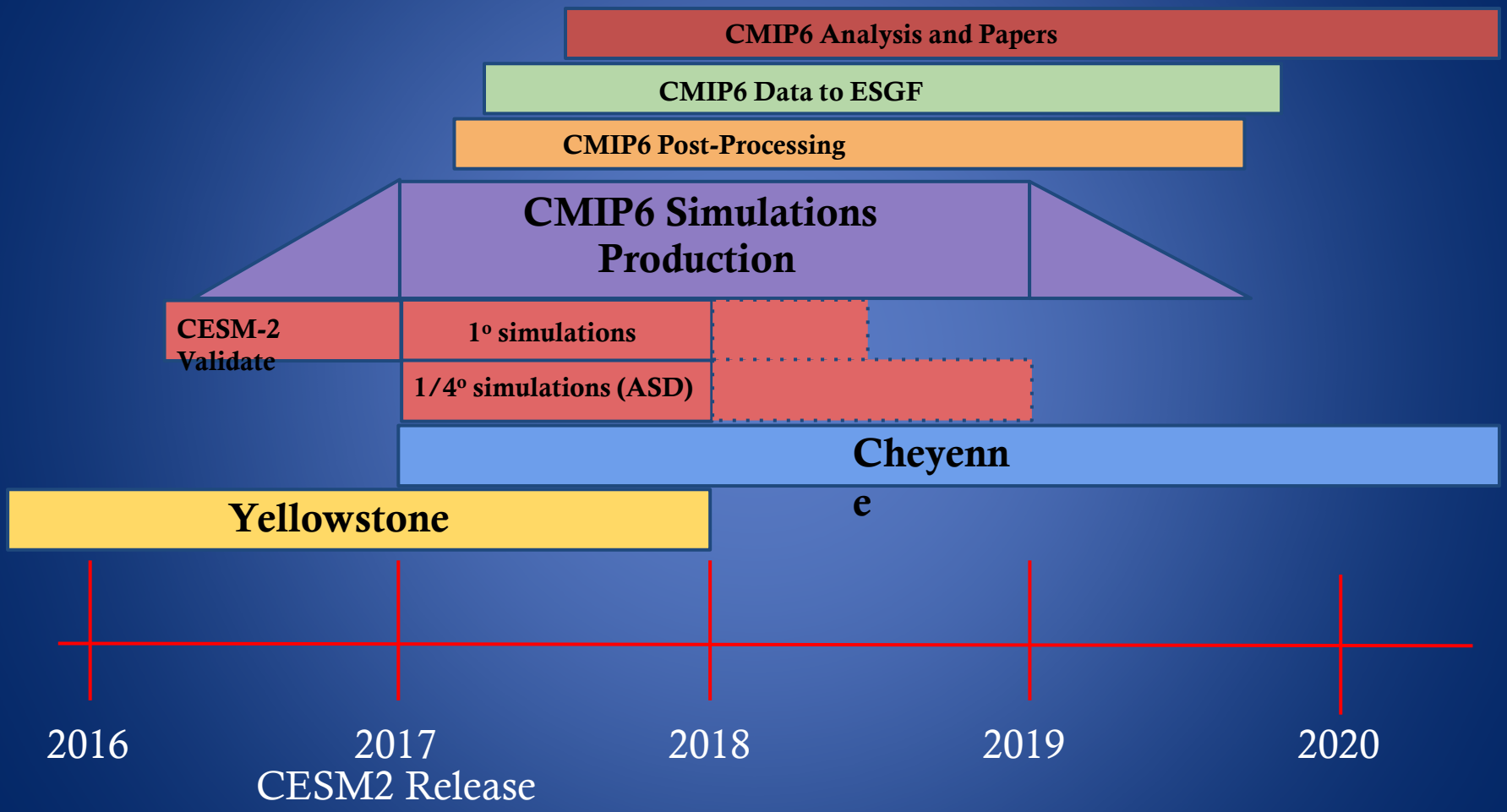
NCAR CMIP6 Allocation Planning



Planning in collaboration with CISL

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CMIP Analysis Platform

- A new NCAR service provided by CISL to address the Big Data storage and analysis problems.
  - Funded by NSF for the university community
- Available to any researcher who is eligible for a university Small or Educational allocation.
  - Researcher supported by an NSF award in an eligible domain.
  - A grad student or post-doc conducting their dissertation project or postdoctoral research project.
- CISL is prototyping service with CMIP5 data sets and preparing to scale up for CMIP6.

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A service to meet community needs

CISL already has components necessary to address these challenges:

1. Large-scale analysis clusters (Geyser/Caldera)
2. Large-scale disk storage (Glade: 16 PB)
3. CMIP5 data
   - NCAR's CMIP5 data already hosted on GLADE
   - NCAR also part of ESGF
   - Local archive of CMIP5 data

➢ Bringing the data and tools together to enable new insights in climate research!

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