

CRESCENDO

Coordinated **R**esearch in **E**arth **S**ystems and **C**limate:
Experiments, **kN**owledge, **D**issemination and **O**utreach

www.crescendoproject.eu

CMIP DECK and CMIP6 historical simulations

RT 1

Improving ESMs
Offline (L, O, A) runs
CMIP6 simulations

“STD” ESMs DECK
done external to project
“alternative” ESM config
done within project.

RT 2

Evaluating ESMs
Process evaluation
Using offline (L, O, A) runs
and coupled ESMs
Implement some/all evaluation
methods into ESMVal Tool

RT 5

Knowledge and
Data dissemination
Data to ESGF
Bias correction
Data to CORDEX/ISIMIP

RT4

Develop scenarios
DECK with HI and LO ESMs
scenarioMIP ESM projections
Ensemble of projections LO/HI

RT 3

Forcing and Feedbacks
Benchmarking ESMs: ESMVal
Emergent constraints
Weighting of projections

CMIP6: *scenarioMIP, C4MIP, AerChemMIP, OMIP, LUMIP, LS3MIP*

Regional Downscaling

Impacts Research

IPCC AR6

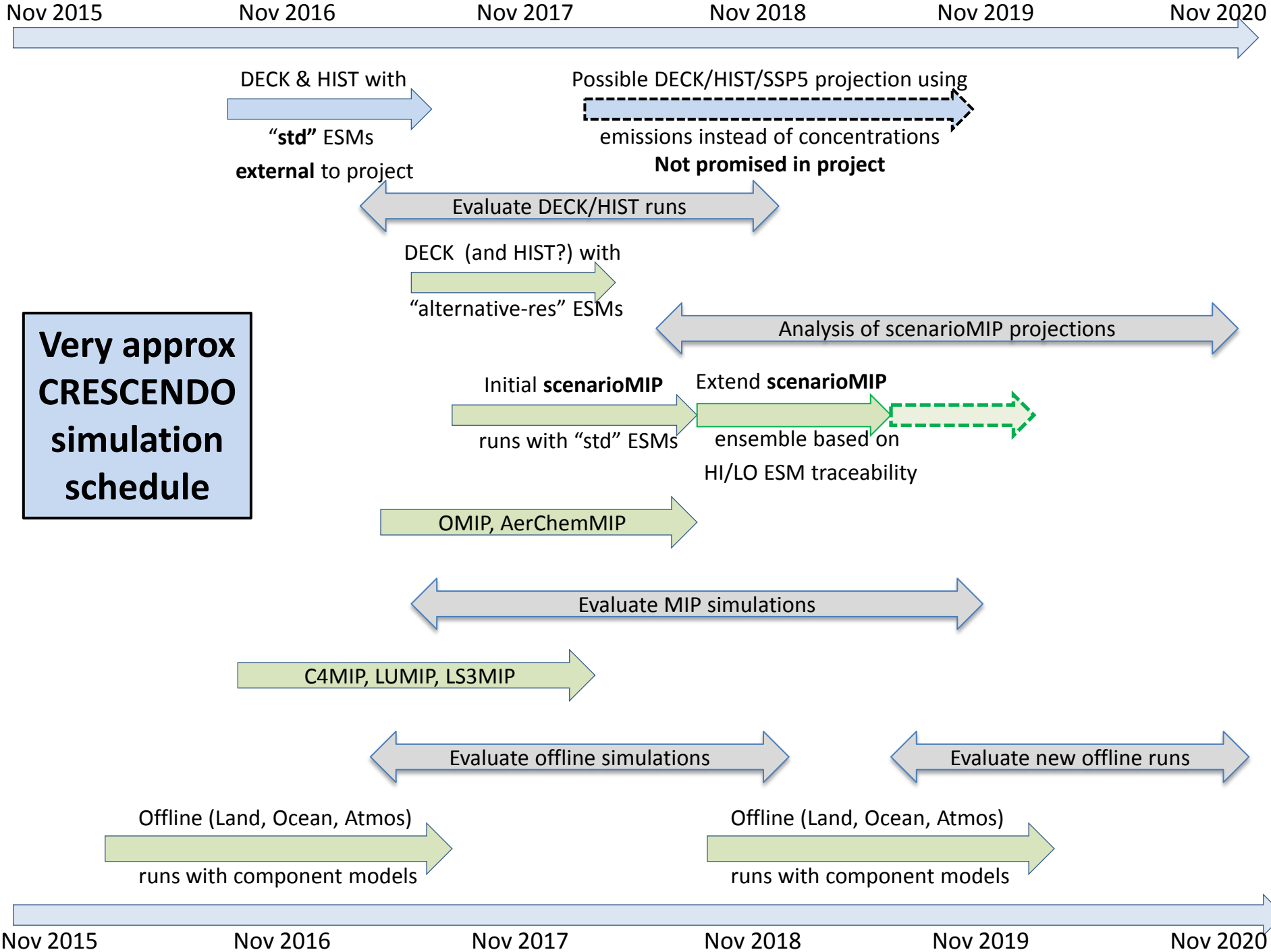
Probable “higher” and “lower” resolution CRESCENDO ESM configurations
 To assess the traceability of ESM performance and future projection sensitivity to:
 model resolution (model complexity and model computational speed)
 and subsequently generate a (large?) ensemble of scenarioMIP projections

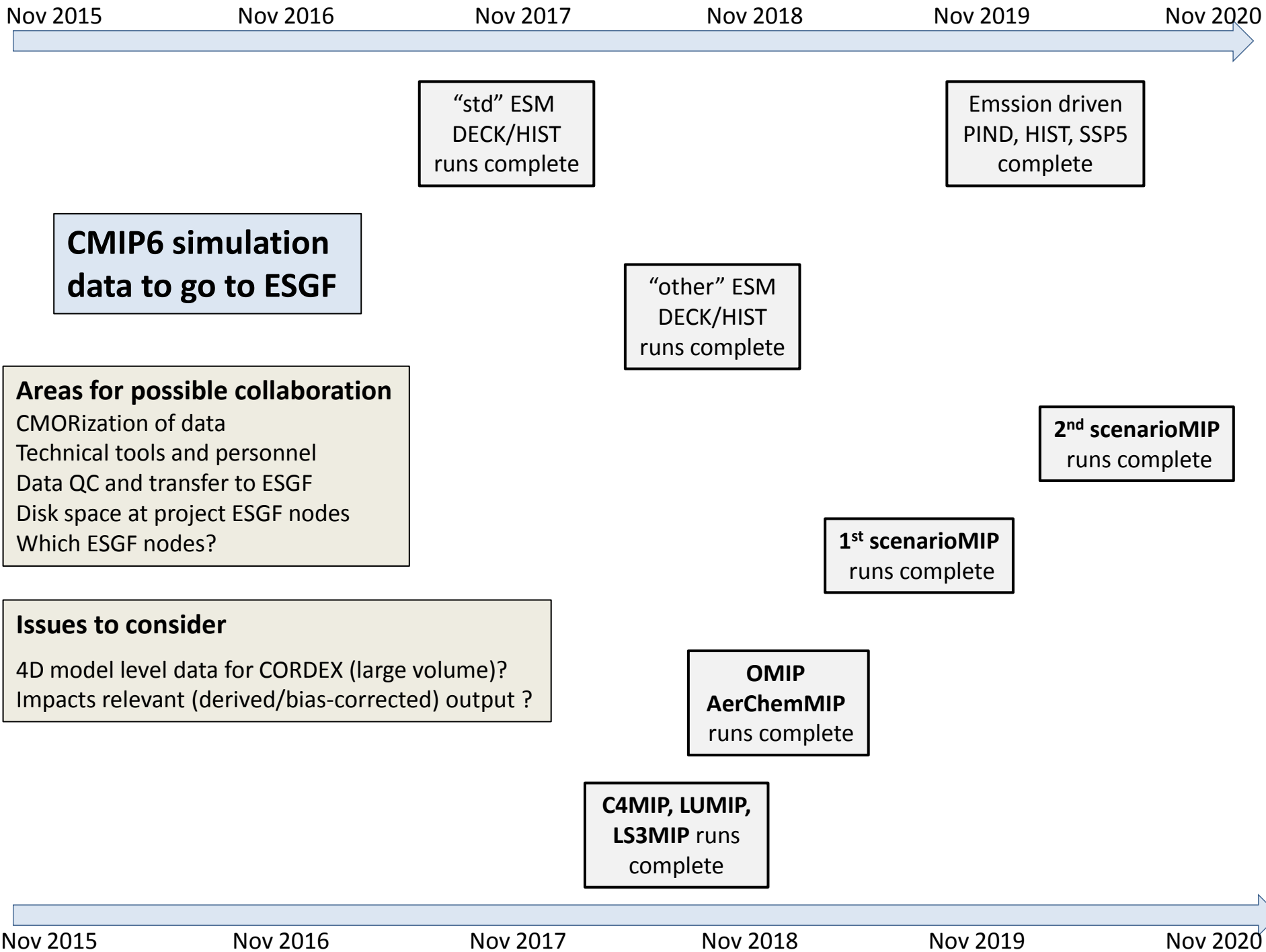
Model	“Higher” resolution models		“Lower” resolution models	
	<i>Atmosphere</i>	<i>Ocean</i>	<i>Atmosphere</i>	<i>Ocean</i>
CNRM-ESM	T359	0.25°	T127	1°
CMCC-ESM	1°	0.25°	1°	1°
EC-Earth	T255	1°	T159	1°
IPSL-ESM	1.3° x 0.65°	0.25°	2.5° x 1.25°	1°
MPI-ESM	T127/T63	0.4° /1.5°	T31	3°
NorESM	0.9° x 1.25°	0.25°	1.9° x 2.5°	2°
UKESM	0.6°	0.25°	1.5°	1°

Are these resolutions still planned.

Cross-over with models used in PRIVMAVERA?

Degree of difference Earth system vs physical climate models?





Issues to consider (*collaborate on if helpful*) across projects/partners

- Scheduling of runs to enhance combined (project/institute) workflow
- HPC access: PRIMAVERA/HighResMIP is developing a PRACE request.
CRESCENDO models do not lend themselves as well to Tier 0 HPC application. Leave PRACE to HighResMIP or make a follow-on CRESCENDO application ? Is this: necessary? helpful?
- Collaboration on data handling/CMORization
- Collaboration on data quality checking and ESGF submission/publication
- Collaboration (*or information sharing/planning*) on saving data for:
Regional downscaling e.g. CORDEX (large volumes)
Impacts research (more often surface fields)

Model/simulation evaluation-analysis

- Evaluation of “standard” runs (e.g. CMIP DECK, Historical)

Do we have any runs/configurations standard to both projects?

- “Differences” in projection response from inclusion of ES components (ESMs) versus physical models (GCMs): Can we say anything from our combined runs?

- “Added-value” of increased model resolution.

Can we share techniques to look at performance/projection traceability?

- Homogeneity of evaluation methods/tools:

Share efforts/developments on evaluation tool and diagnostic methods

Homogenization of access/use of different evaluation tools.