2026: S2D 1-year Roadmap

Pilot Study: Jan 2026 – Dec 2026

Major Goal	Epics	Start Date	Due Date
1. Initial Conditions (ICs)	1.1. Generate ICs from reanalysis • ICs for atmosphere from ECMWF reanalysis v5 (ERA5) • ICs for Ocean from Climate Forecast System Reanalysis (CFSR) through collaboration with Prof. Ben Kirtman from Univ. of Miami • ICs for land from Forced Ocean, Sea Ice, River, and Land simulations (FOSIRL) using JRA55-do atmospheric forcing	01/01/26	05/31/26
	1.2 Generate ICs from FOSIRL	01/01/26	03/31/26
	1.3 Generate initial conditions (ICs) using weakly coupled ocean and land data assimilation (DA) with the four-dimensional ensemble variational (4DEnVar) method, developed under the DOE Water Cycle and Climate Extremes Modeling (WACCEM) project. • 4DEnVar-based weakly coupled ocean DA: Assimilate monthly mean ocean temperature and salinity from the UK Met Office Hadley Centre EN4.2.1 reanalysis. • 4DEnVar-based weakly coupled land DA: Assimilate monthly mean soil moisture and temperature anomalies from the Global Land Data Assimilation System (GLDAS).	01/01/26	07/31/26
2. S2D Hindcasts	Conduct 10-ensemble member, 2-year hindcasts initialized 2 - 4 times per year during 1980 to 2018 using the low-resolution (ne30, ~ 100km) E3SMv3 coupled system.	03/01/26	11/30/26
3. S2D Metrics	3.1 Adapt the Earth System Predictions (ESP) Python package, ESP-Lab, developed by Dr. Steve Yeager at NCAR and supported by the DOE WACCEM/CATALYST project.	03/01/26	04/30/26

	3.2 Identify and develop additional metrics specific to E3SM	01/01/26	12/31/26
4. Infrastructure	Build Infrastructure workflow for S2D hindcast	03/01/26	Ongoing
5. Scientific Analysis	Publications – a joint effort between E3SM and WACCEM/CATALYST	05/01/26	Ongoing
6. Exploring energy applications	Energy applications	05/01/26	Ongoing