

Possible seasonal forecast products

ECMWF's SEAS5

- ocean: 0.25 degrees and 75 layers
- atmosphere: grid-point res.: 36 km; wave model res.: 0.5 deg; vert. res.: 91 lev

Copernicus's C3S

- collection/combination of several operational systems from different organizations that take part
- multi-model seasonal forecasting service

SYSTEM		FORECASTS		HINDCASTS	
		ENSEMBLE SIZE and START DATES	PRODUCTION	ENSEMBLE SIZE and START DATES	PRODUCTION
ECMWF	System 4 (CDS system: 4)	51 members start on the 1st	real-time	15 members start on the 1st	fixed dataset
	SEAS5 (CDS system: 5)	51 members start on the 1st	real-time	25 members start on the 1st	fixed dataset
Météo-France	System 5 (CDS system: 5)	51 members ^(a) 26 start on the first Wednesday after the 19th 25 start on the first Wednesday after the 12th	real-time	15 members start on the first Wednesday after the 19th ^(a)	fixed dataset
	System 6 (CDS system: 6)	51 members 1 starts on the 1st 25 start on the 25th 25 start on the 20th	real-time	25 members 1 starts on the 1st 12 start on the 25th 12 start on the 20th	fixed dataset
Met Office	GloSea5 ^(b) (CDS system: 12, 13, 14 ^(d))	2 members start each day ^(c)	real-time	7 members on the 1st 7 members on the 9th 7 members on the 17th 7 members on the 25th	on-the-fly produced around 4-6 weeks in advance
CMCC	SPSv3 (CDS system: 3)	50 members start on the 1st	real-time	40 members start on the 1st	fixed dataset
DWD	GCFS2.0 (CDS system: 2)	50 members start on the 1st	real-time	30 members start on the 1st	fixed dataset

EC-EARTH

- developed as part of a Europe-wide consortium thus promoting international cooperation and access to knowledge and a wide data base
- global climate model system based on the idea to use the world-leading weather forecast model of the ECMWF in its seasonal prediction configuration as the base of climate model
 - then SEAS5 can be used directly(?)
 - but on ECMWF website: "EC-Earth has been designed for climate research problems covering any timescale. For this reason, the model is tuned according to community standards, notably for conservation of both mass and energy. Long control experiments typical of climate change research are regularly produced with each new model version. They help to understand the characteristics of the model variability. Such a model also offers a unique opportunity **to perform climate modelling experiments across timescales, from sub-seasonal climate prediction** to long-term climate change or paleoclimate experiments. This means that EC-Earth is an ideal platform, albeit not the only one in the community, to investigate the physical reasons behind issues like the initial shock and drift by comparing initialised and long-term control simulations or the effects of the initialisation on the forced model response by analysing initialised and historical simulations.

S2S Database

- multi-model database with specific attention paid to the risk of extreme weather, including tropical cyclones, droughts, floods, heat waves and the waxing and waning of monsoon precipitation
- establishment of an extensive data base of subseasonal (up to 60 days) forecasts and hindcasts has been advocated, modeled in part on the THORPEX Interactive Grand Global Ensemble (TIGGE) database for medium range forecasts (up to 15 days) and the Climate-System Historical Forecast project (CHFP) for seasonal forecasts

Met Office's GloSea5

- ensemble prediction system built around the high resolution version of the [Met Office climate prediction model: HadGEM3 family](#) atmosphere-ocean coupled climate model
- N216 version for atmosphere: 0.8 degrees in latitude and 0.5 degrees in longitude, which is approx. 50 km in mid-latitudes, in the horizontal
- ORCA0.25 grid for ocean: 0.25 degrees
- vertical resolution is 85 levels for the atmosphere and 75 levels for the ocean
- each forecast requires initial ocean, land and atmosphere conditions
- two components: 1. forecast itself; 2. associated set of hindcasts
- lagged initialization approach, with all simulations being initialized daily is followed to represent the uncertainties in the initial conditions
 - forecast: 4 ensemble members: 2 run 60 days and 2 run 195 days
 - hindcast: 3 ensemble members initialized on 1st, 9th, 17th, 25th (why do I count 4 dates but just 3 members?)
- model uncertainties are represented through the use of stochastic physics schemes
- once a month: 42-member ensemble seasonal forecast for the next six months is generated by combining and bias correcting all forecast members available from the most recent three weeks