

DESTINATION EARTH

KM SCALE STORYLINE **EXPERIMENTS**

Amal John & Climate DT team



















Climate Storylines

A physically self-consistent unfolding of past events, or of plausible future events or pathways

- Shepherd, 2018

"what-if-things-had-been-different" adaptation climate forcings measures

socio-economic

structures

Storylines make the climate change information

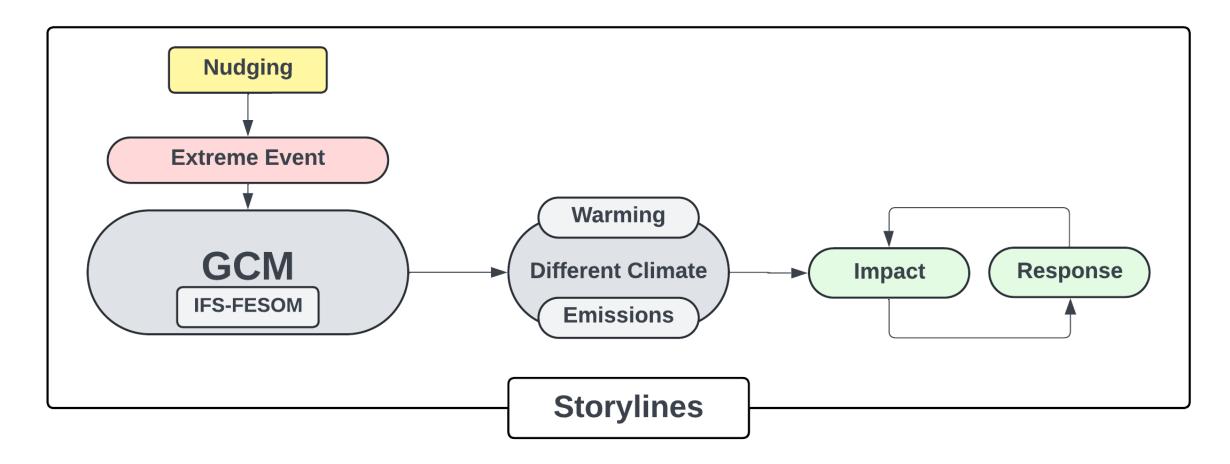
Meaningful

Tangible

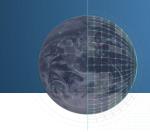
Engaging



Event based Storylines





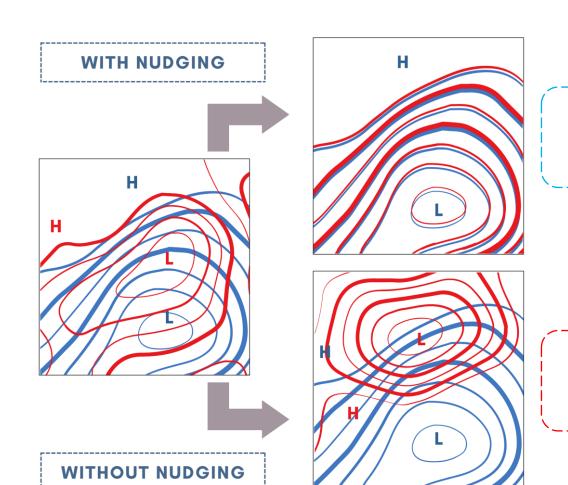


Nudging

Nudging constrain the large scale model dynamics to follow a reference data

The reference data can be an observational product or reanalysis data.

eg., ERA5

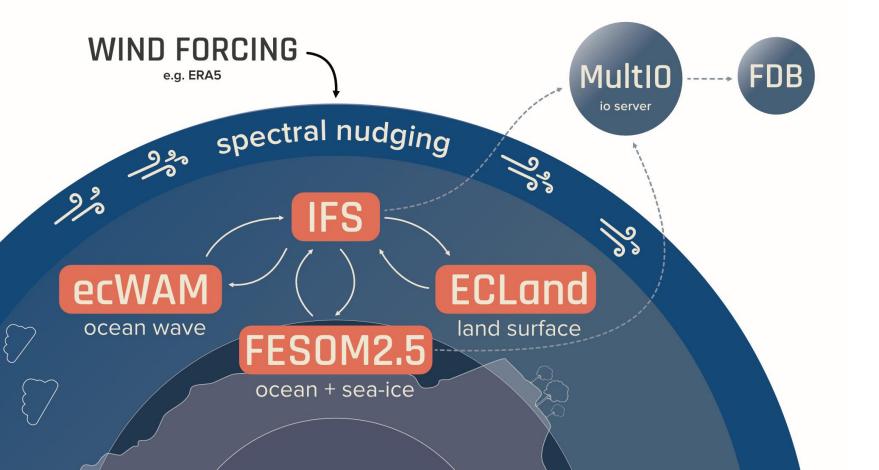


keeps large-scale weather patterns close to real data

weather patterns deviate from real-world data



Km-scale storylines with **IFS-FESOM**



Experiments available

Hist (a.k.a historical, present day)

Cont (a.k.a control, circa 1950)

Tplus2.0K (2K warmer than pre-industrial, circa 2040)

All are nudged -> same weather events at different climate

> Additional experiments, Tplus3.0K, Tplus4.0K





- 0.50

- 0.25

Performance Indices

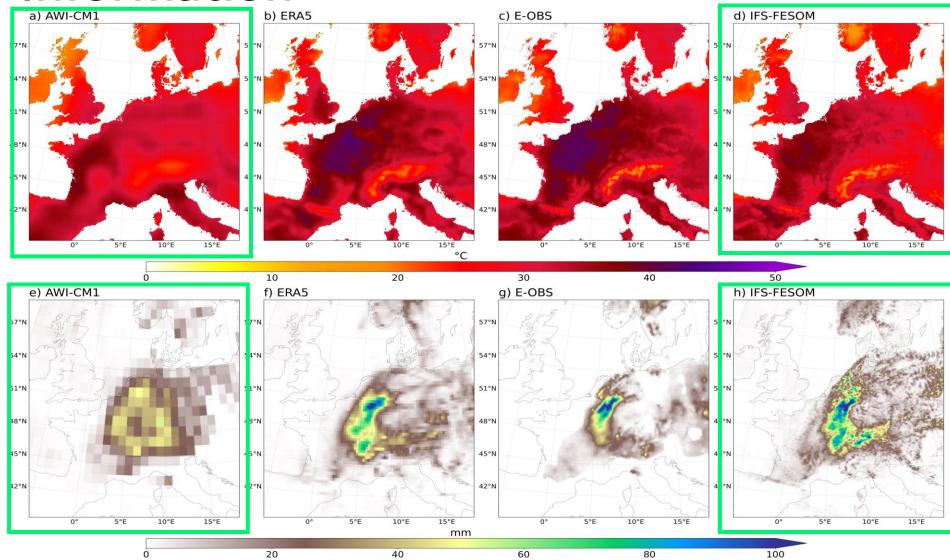
Better performance than the CMIP6 models

Less biases

Net surface radiation - 2m Temperature (land-only) -	0.82	0.83	0.85	0.76	0.59	0.91	0.74	0.30	0.76	0.70	0.94	0.70
2m Temperature (land-only) -		0.38	0.49									
	0.26			0.26	0.56	0.51	0.59	0.23	0.54	0.38	0.60	0.52
Precipitation -		0.39	0.20	0.52	0.27	0.35	0.23	0.67	0.11	0.31	0.08	0.37
Mean Sea Level Pressure -	0.12	0.09	0.12	0.13	0.21	0.35	0.16	0.37	0.33	0.46	0.30	0.18
Eastward wind stress -	0.10	0.33	0.07	0.09	0.16	0.61	0.09	0.11	0.12	0.27	0.08	0.18
Northward wind stress -	0.16	0.46	0.10	0.21	0.18	0.67	0.10	0.23	0.19	0.19	0.18	0.30
Air Temperature -	0.08	0.09	0.08	0.08	0.11	0.04	0.07	0.17	0.16	0.19	0.14	0.15
Zonal Wind -	0.05	0.08	0.04	0.06	0.10	0.21	0.07	0.11	0.07	0.04	0.08	0.07
Meridional Wind -	0.22	0.09	0.27	0.27	0.34	0.12	0.34	0.42	0.70	0.34	1.20	0.32
Specific humidity -	0.02	0.01	0.03	0.03	0.03	0.00	0.03	0.07	0.03	0.06	0.04	0.01
Sea Surface Temperature -	0.42	0.38	0.45	0.43	0.57	0.24	0.51	0.70	0.33	0.62	0.49	0.20
Sea Surface Salinity -	0.20	0.08	0.21	0.72	0.19	0.07	0.22	0.73	0.22	0.10	0.22	0.65
Sea-ice Concentration -	0.70	0.77		0.70	1.01	0.82		1.13	0.88	0.99		0.88
Total PI -	0.28	0.31	0.24	0.33	0.33	0.38	0.26	0.40	0.34	0.36	0.36	0.35
ALL GODD HANDEL TODGE THE HEAT OF GODD THE TODGE THE SOUTH HEAT WAS GODD THE TODGE THE												

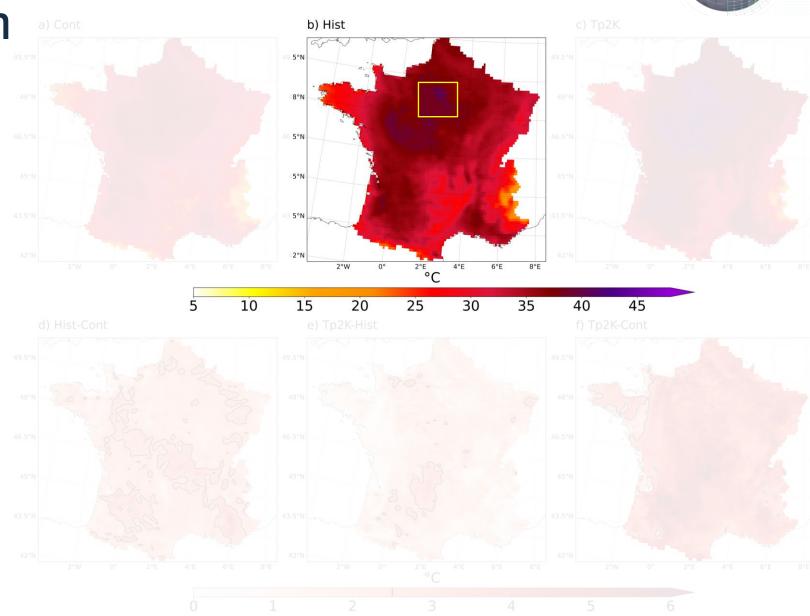


Granular Information



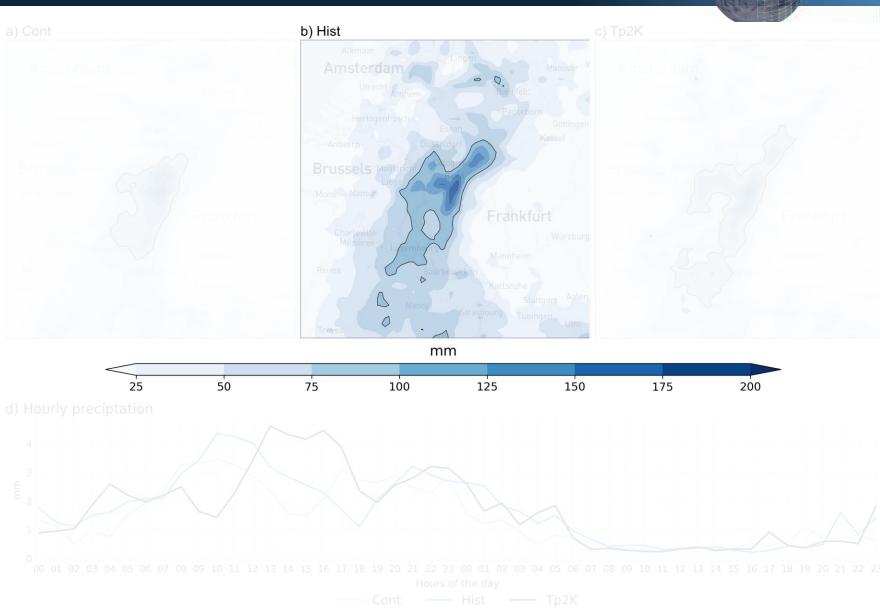


2019 European Heatwave





Arhtal Flood









Questions?