MODELADO DE OLAS DE CALOR ESTUÁRICAS FUTURAS

Adrián Castro Olivares

adrian.castro@uvigo.es

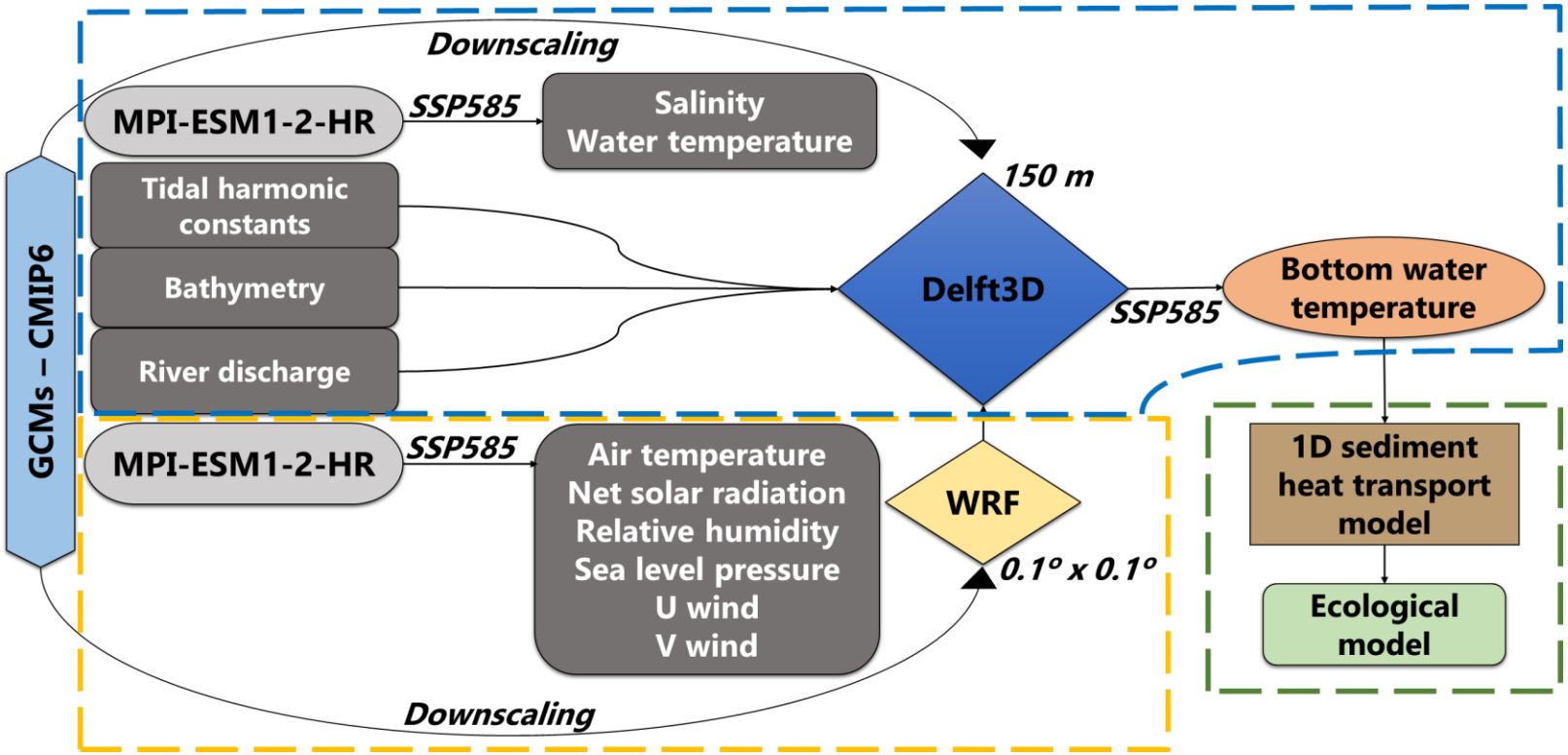
RECOBI: Resiliencia de Bivalvos Comerciales frente al cambio Climático

Methodology

Objetives:

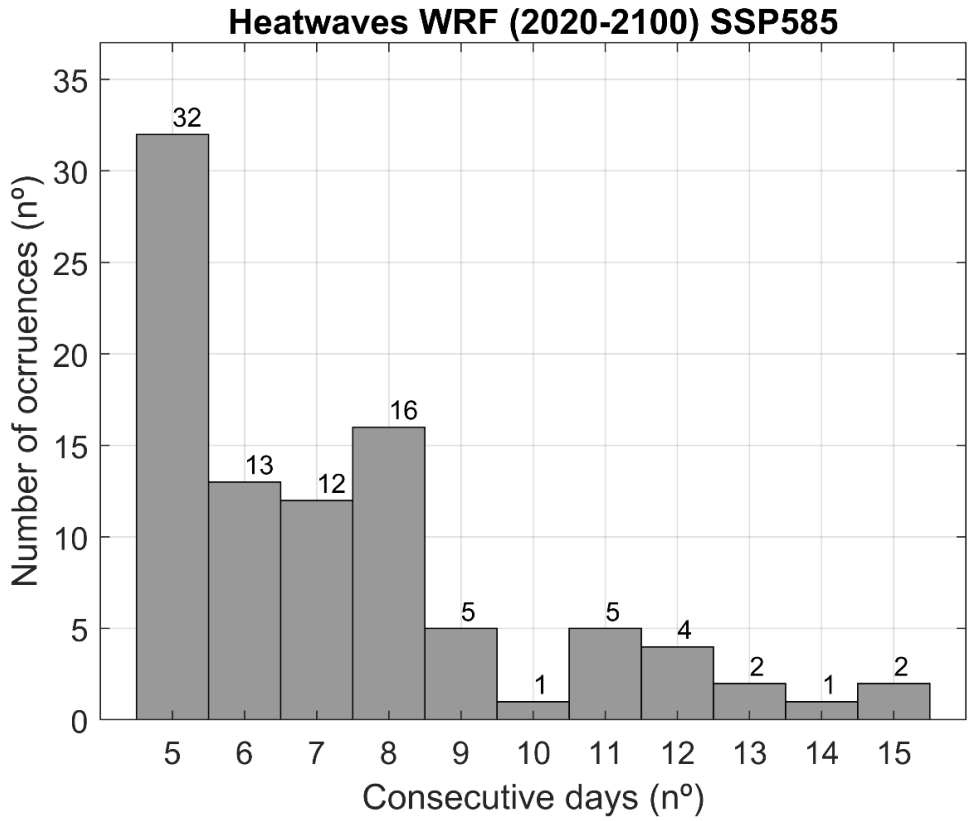
- Characterization of heatwave events from 2020 to 2100 under the SSP585 scenario in the Ría de Arousa.
- Assessing the potential effect of a severe heatwave on *R. decussatus*, *R. philippinarum*, *V. corrugata* and *C. edule*.

- WRF model to characterize atmospheric heatwaves.
- SSP585 scenario (2020 to 2100)
- 99th percentile (1985-2014) for at least five consecutive days.



1. Heat Waves - WRF Projections (2020-2100) SSP585

Consecutive days (nº)	Occurrences (nº)	Event (nº)	Data Start	Data End	Max (ºC)	Mean (ºC)
11	**5**	**3**	**01/08/2063**	**11/08/2063**	**34.58**	**29.90**
11		2	12/07/2062	22/07/2062	34.45	30.11
9	5	3	08/07/2091	16/07/2091	34.31	29.73
12	4	3	25/06/2091	06/07/2091	33.60	29.37
8	16	9	09/07/2083	16/07/2083	33.59	30.35
5	32	21	23/06/2092	27/06/2092	33.39	30.42
7	12	6	21/07/2080	27/07/2080	33.29	28.66
8	16	8	15/06/2078	22/06/2078	33.13	29.37
9	5	2	12/07/2089	20/07/2089	32.54	28.36
7	12	11	11/06/2097	17/06/2097	32.30	29.10

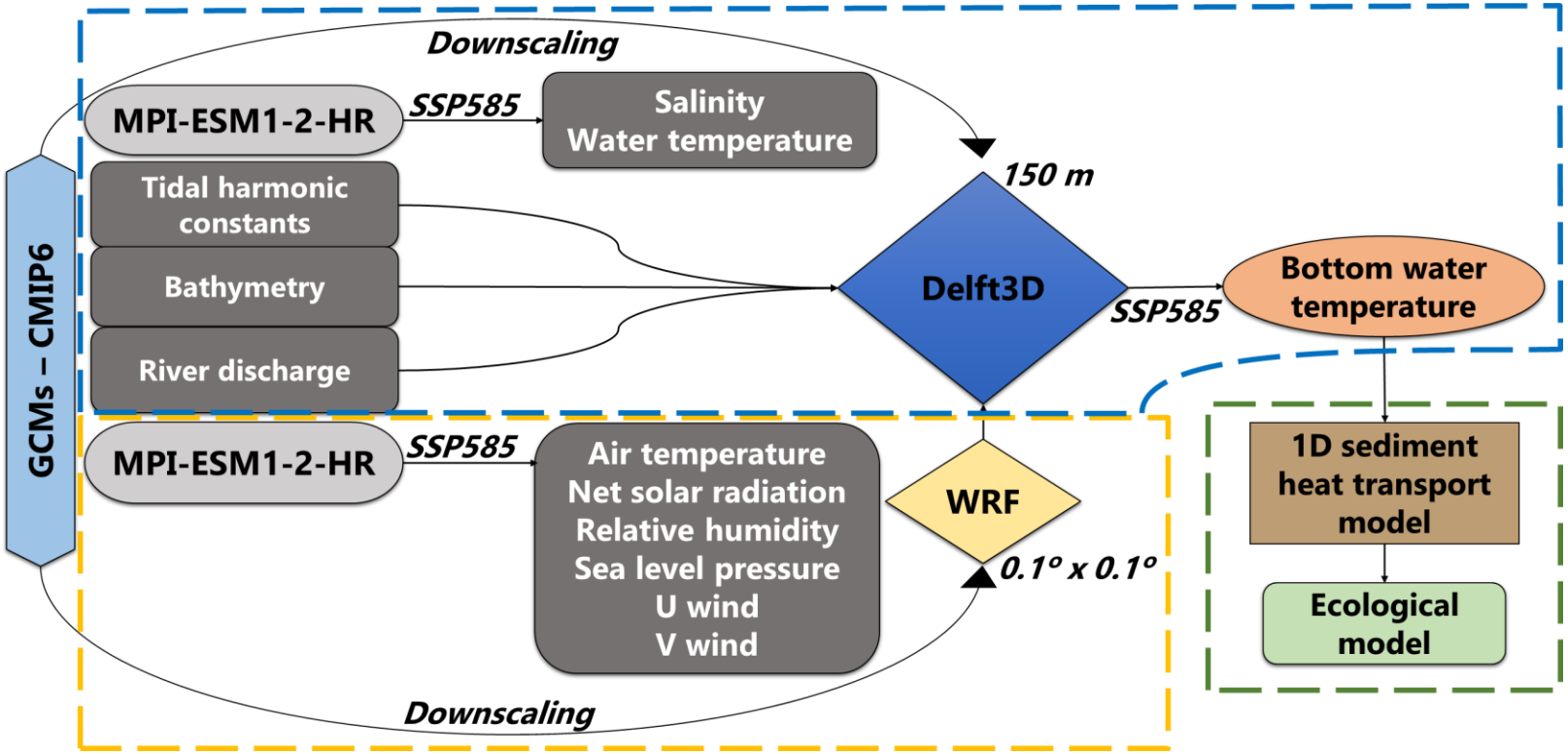


Methodology

Objetives:

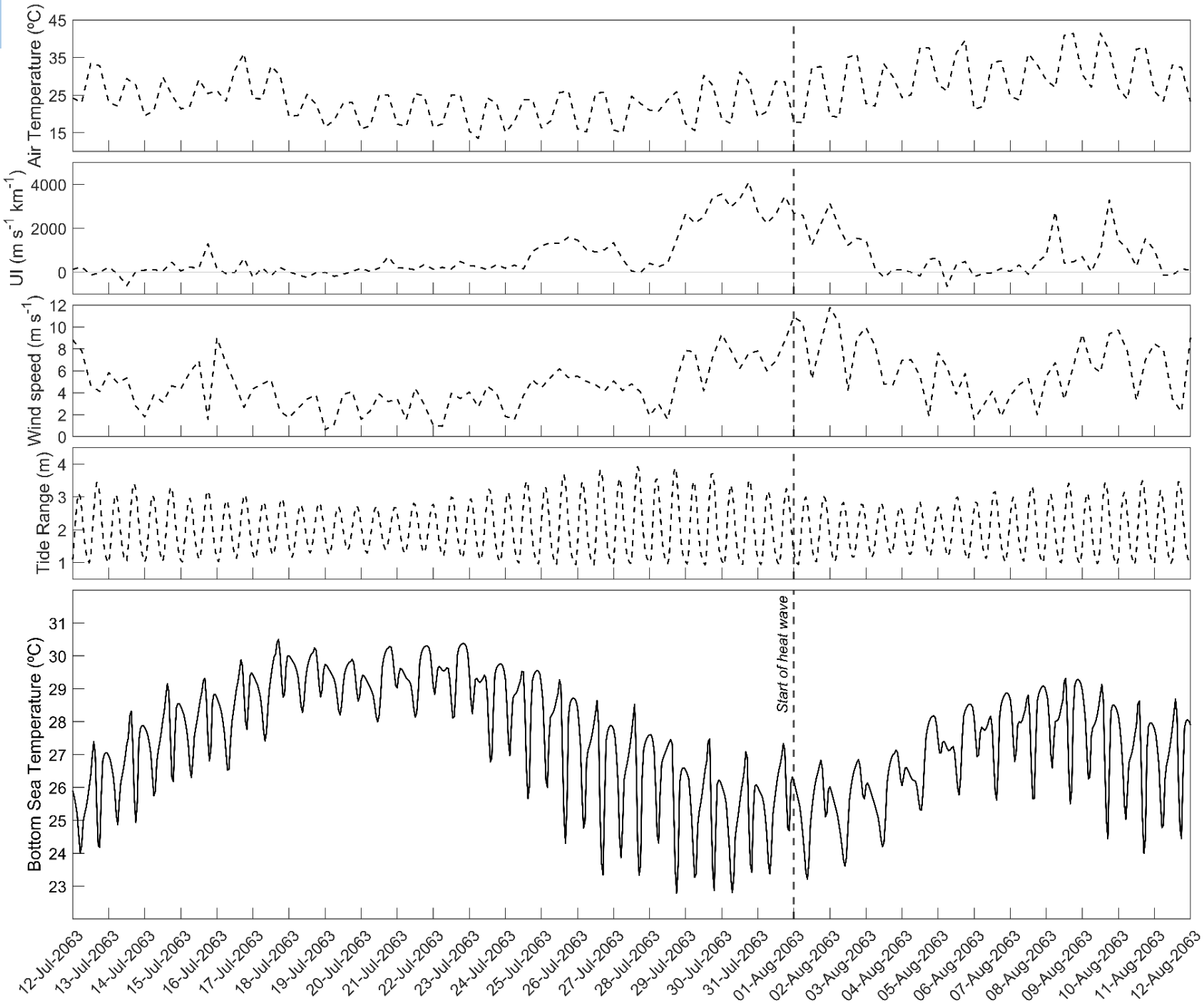
- **Characterization of heatwave events** from 2020 to 2100 under the SSP585 scenario in the Ría de Arousa.
- **Assessing the potential effect** of a severe heatwave **on** *R. decussatus*, *R. philippinarum*, *V. corrugata* and *C. edule*.

- WRF model to characterize atmospheric heatwaves.
- SSP585 scenario (2020 to 2100)
- 99th percentile (1985-2014) for at least five consecutive days.



- The Delft3D-Flow to simulate the response of the ocean to an extreme heatwave.
- Hypothetical scenarios to examine the impact of the main atmospheric and oceanic forcings.

2. Analysis of the selected event:



3. Hypothetical scenarios

Tide types

- Intense Neap Tide (INT)
- Neap Tide (NT)
- Spring Tide (ST)
- Intense Spring Tide (IST)

Wind module

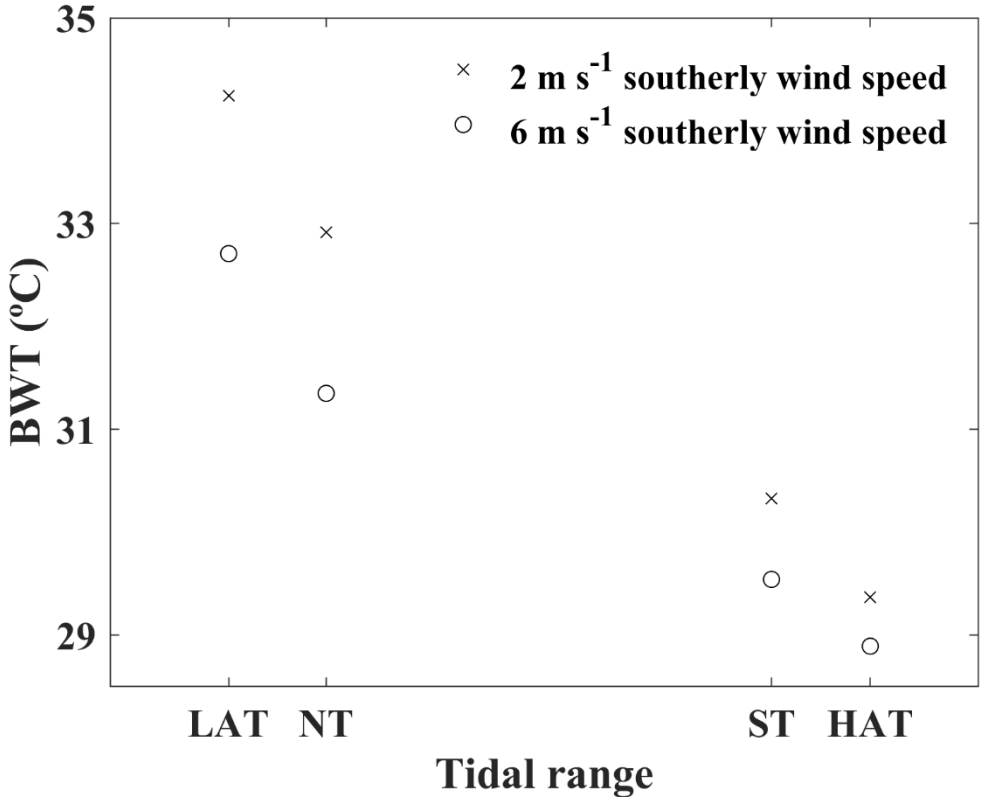
- 2 (m/s)
- 6 (m/s)

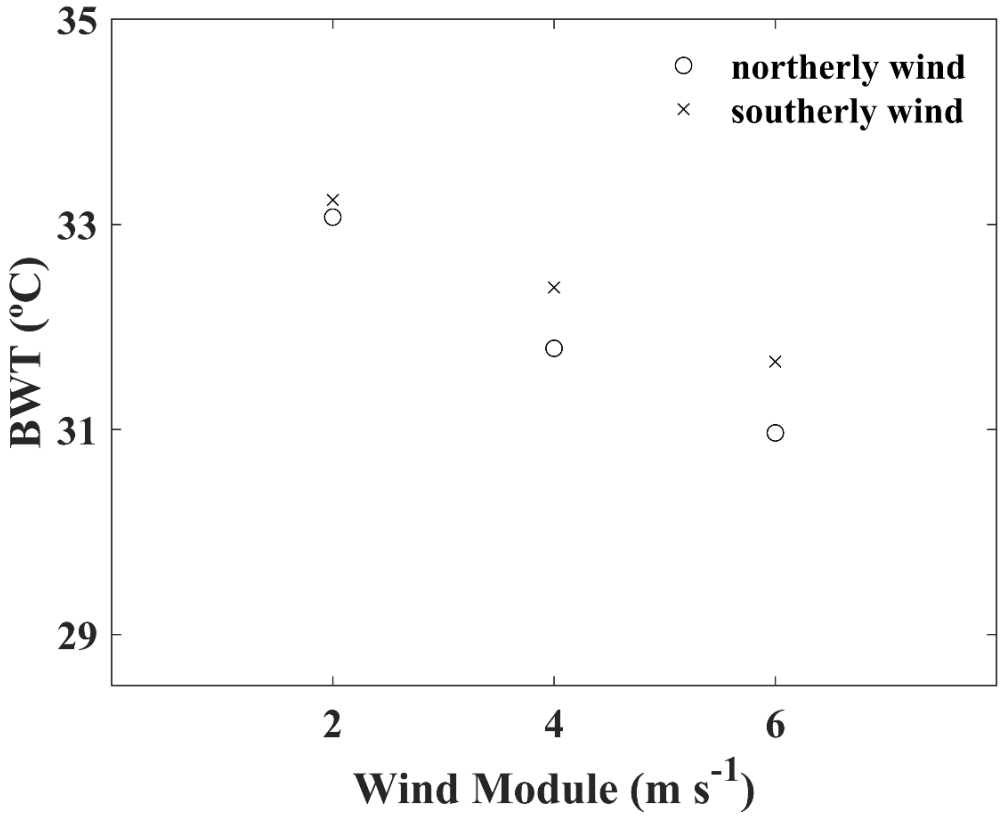
Wind direction

- Southerly winds
- Northely winds

Wind module

- 2 (m/s)
- 4 (m/s)
- 6 (m/s)

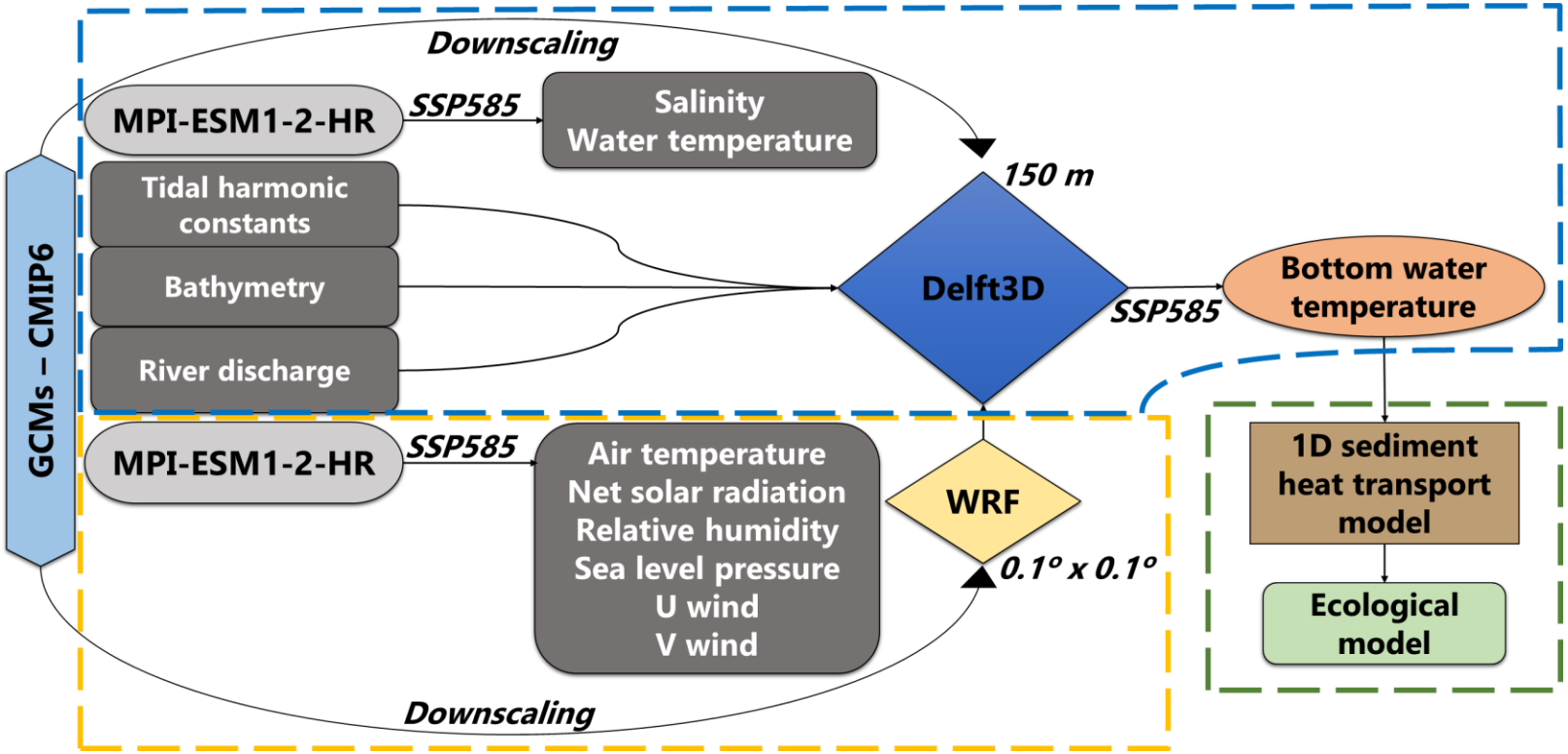




Methodology

Objetives:

- **Characterization of heatwave events** from 2020 to 2100 under the SSP585 scenario in the Ría de Arousa.
- **Assessing the potential effect** of a severe heatwave **on** ***R. decussatus***, ***R. philippinarum***, ***V. corrugata*** **and** ***C. edule***.

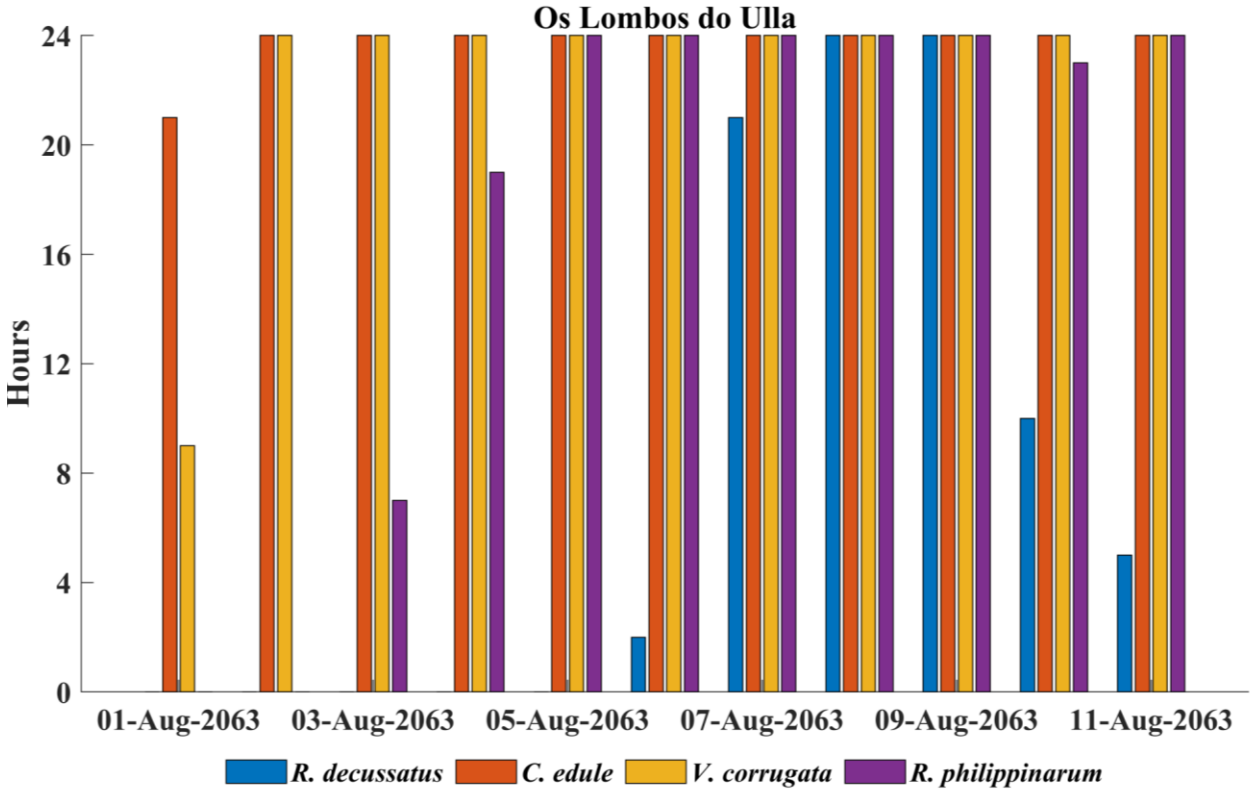


- WRF model to characterize atmospheric heatwaves.
- SSP585 scenario (2020 to 2100)
- 99th percentile (1985-2014) for at least five consecutive days.

- The Delft3D-Flow to simulate the response of the ocean to an extreme heatwave.
- Hypothetical scenarios to examine the impact of the main atmospheric and oceanic forcings.

- A 1D sediment heat transport model to compute sediment temperature at the burial depth of each species.
- The heatwave impact on the species was evaluated considering their optimal thermal tolerance thresholds

4. Effect of a severe heatwave on bivalves



Hours where the **sediment temperature** was above the **optimum thermal tolerance thresholds of the species** (OTTT) during the selected heatwave.

OTTT and typical burial depth:

- *R. decussatus* (25-18 ºC – 8cm)
- *R. philippinarum* (25-15 ºC – 3cm)
- *V. corrugata* (20-15 ºC – 7cm)
- *C. edule* (23-17 ºC - 1 cm)

MODELADO DE OLAS DE CALOR ESTUÁRICAS FUTURAS

Adrián Castro Olivares

adrian.castro@uvigo.es

RECOBI: Resiliencia de Bivalvos Comerciales frente al cambio Climático