

CERF2017

IHCantabria

UNIVERSIDAD DE CANTABRIA

I+D+i para un desarrollo sostenible

HISTORICAL AND FUTURE HAZARDS TO MARINE LIFE

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Introduction

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Procedure

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OCLE web

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Applications

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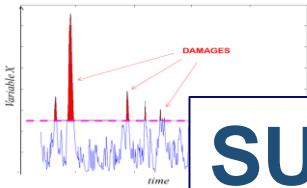
Next steps

01 02 03 04 05

Introduction

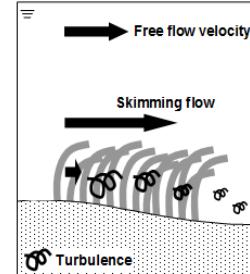


ECOSYSTEM SERVICES

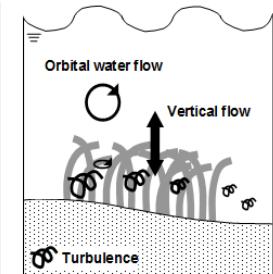


SUSTAINABLE MANAGEMENT

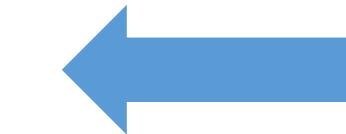
a) Unidirectional flow



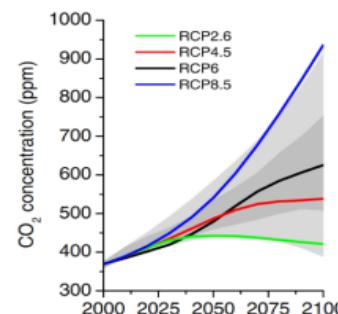
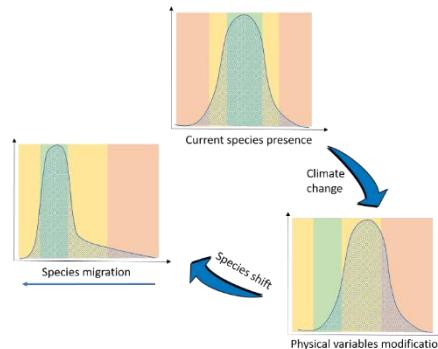
b) Waves

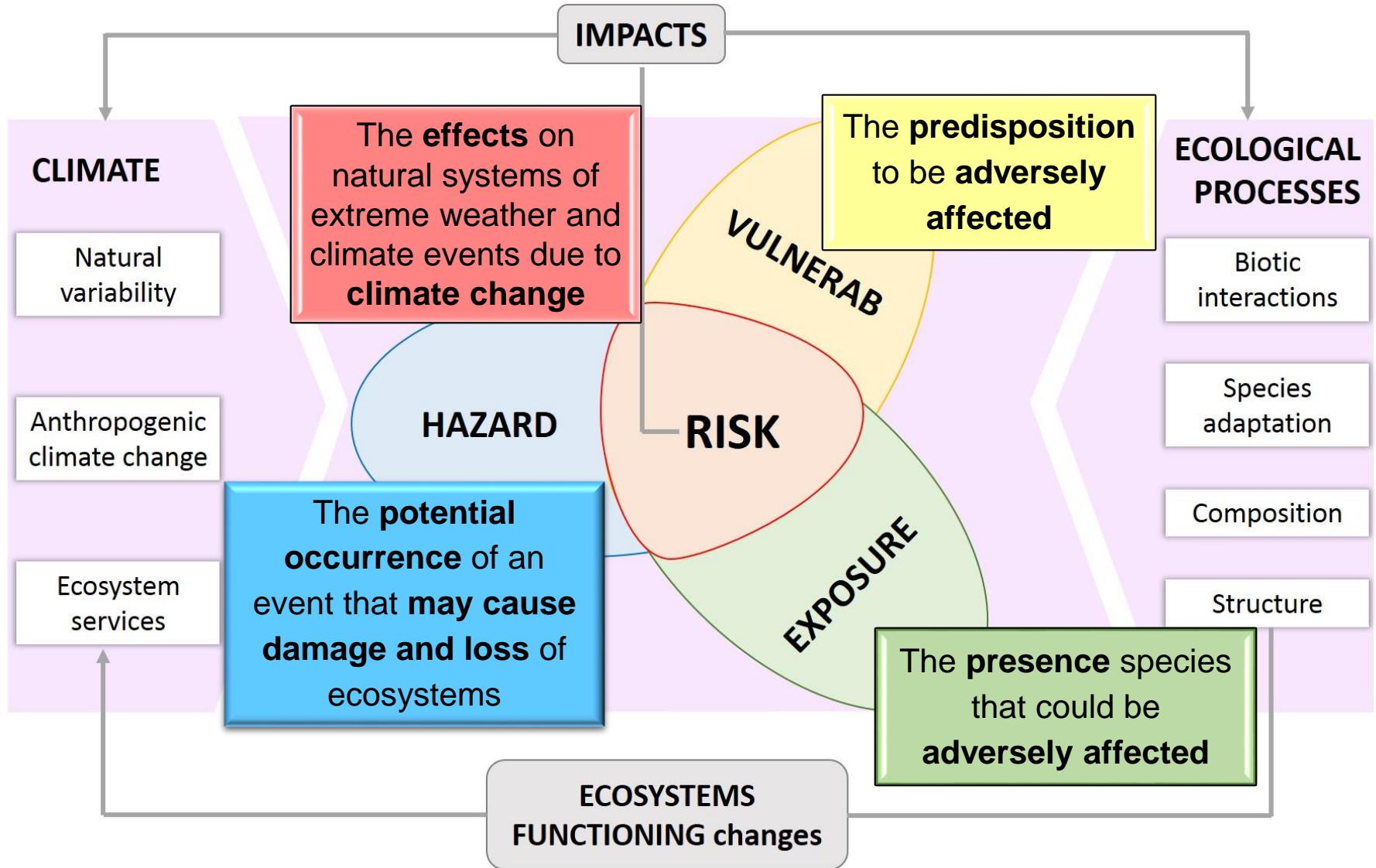


MARINE SPECIES



ENVIRONMENTAL CHANGES (CC)







HAZARDS NEEDS

- **Complete** and representative set of **variables**
(hydrodynamic included)
- **Controlled** and **homogenised** raw data
- Different **temporal** resolutions
- Flexible **spatial** scales
- **Free** and **intuitive access** to data



Observatory of Climate change effects on Littoral Ecological systems

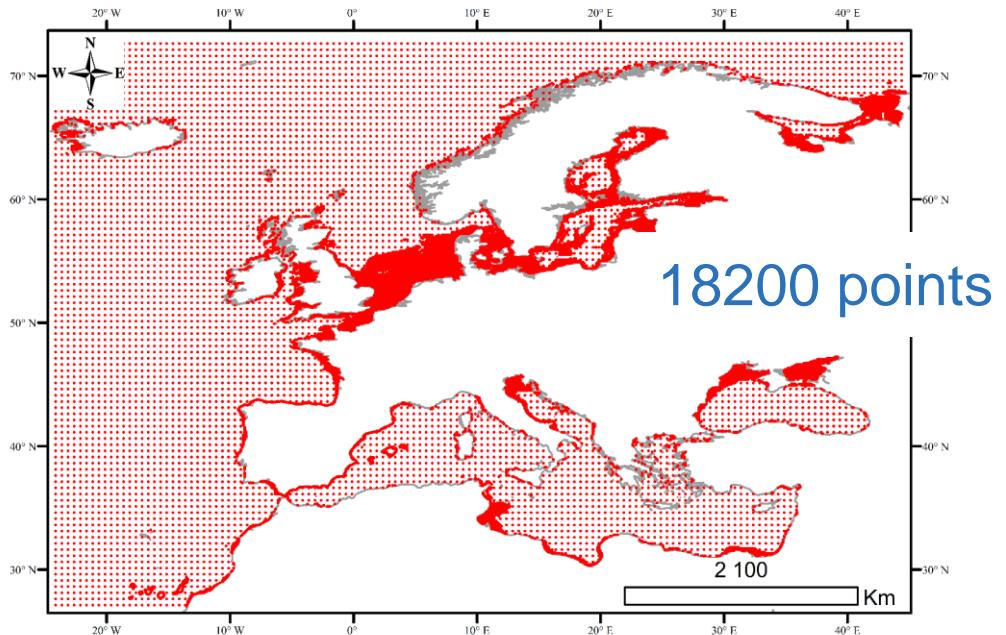
01 02 03 04 05

Procedure

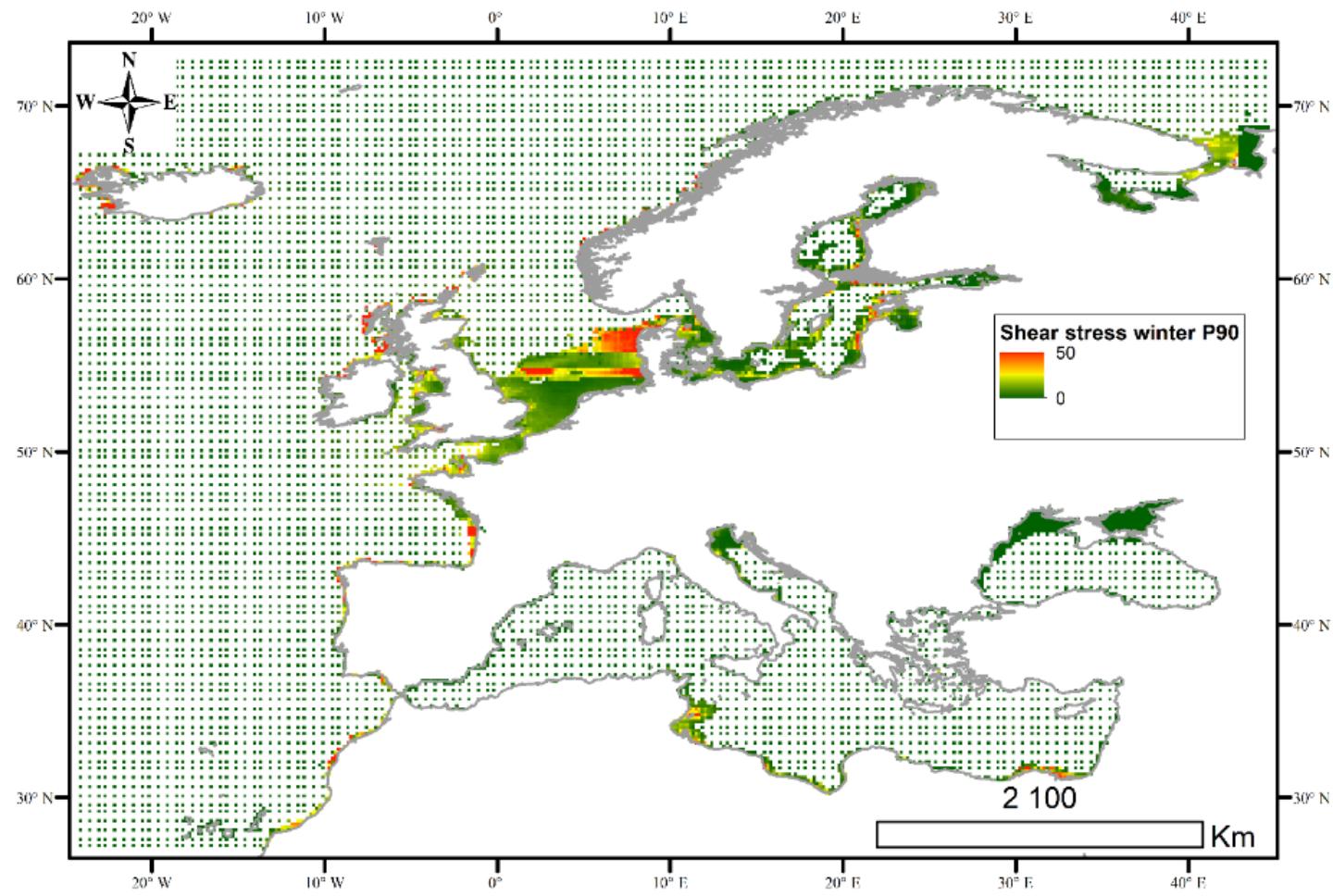


VARIABLES

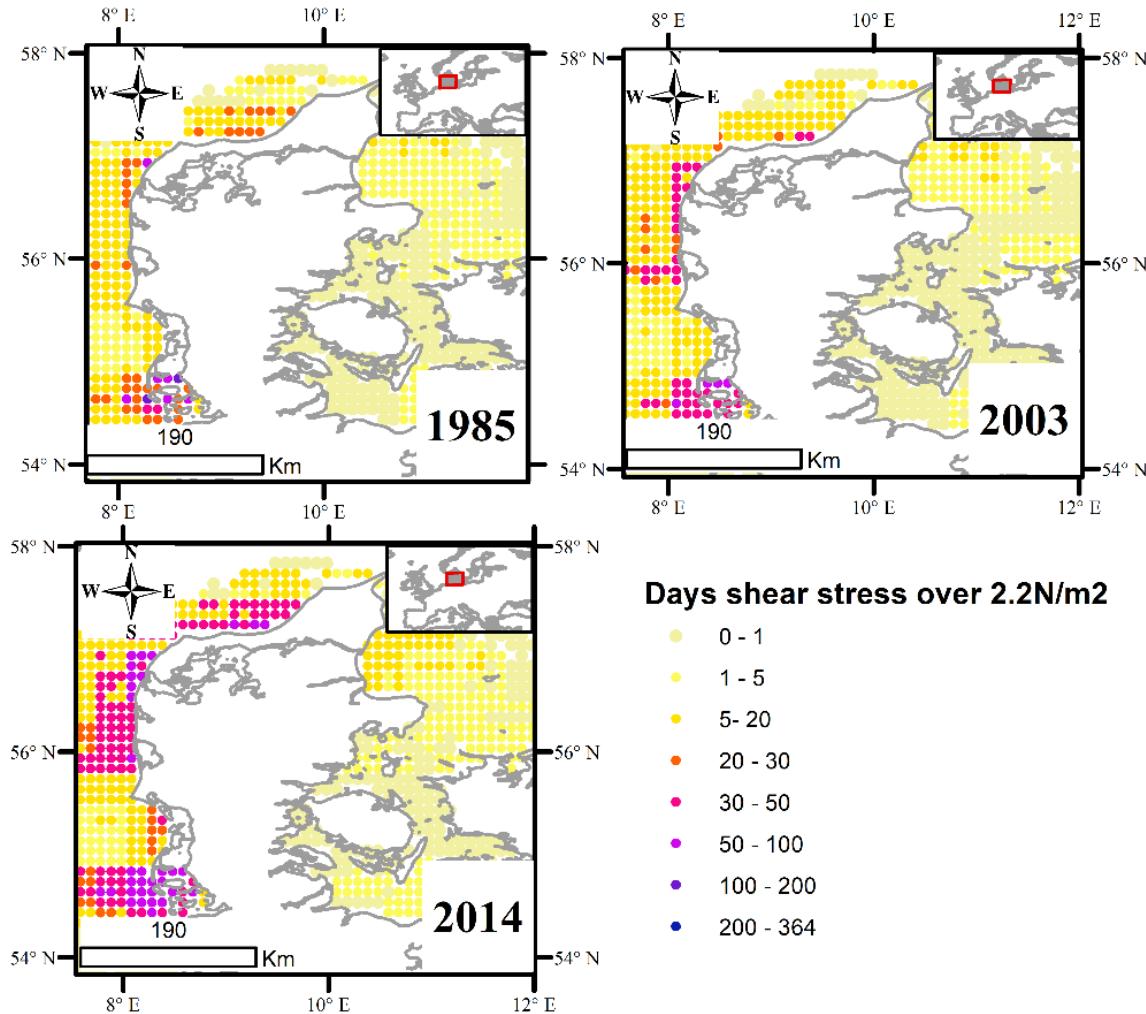
- Sea surface temperature
- Significant wave height
- Attenuation coefficient
- Nitrate
- Salinity
- Air temperature
- pH
- Wind speed
- Tidal range
- Sea level
- Radiation
- Bottom shear stress
- Bottom orbital speed
- Currents



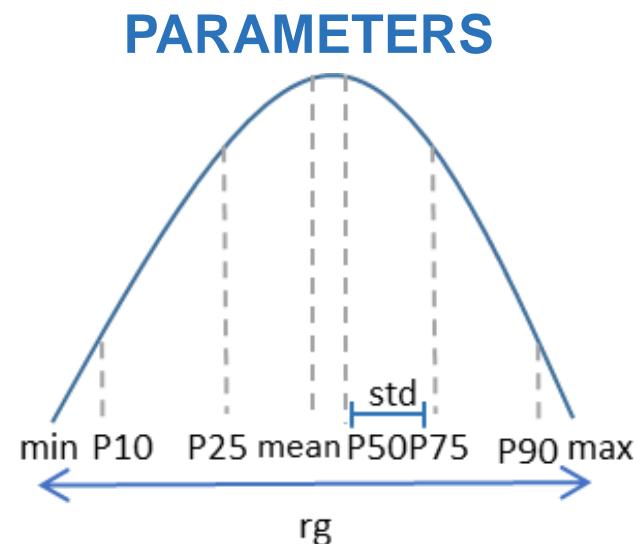
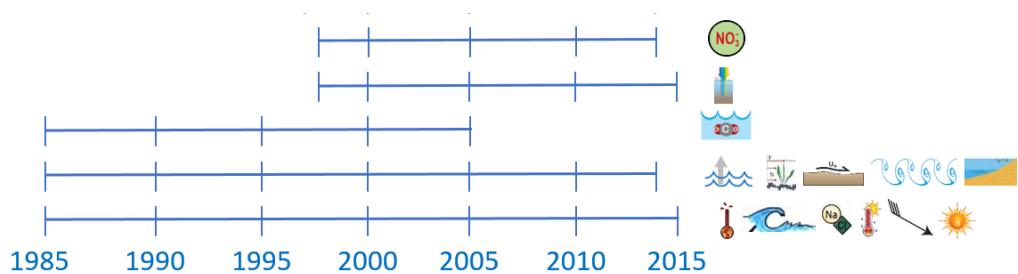
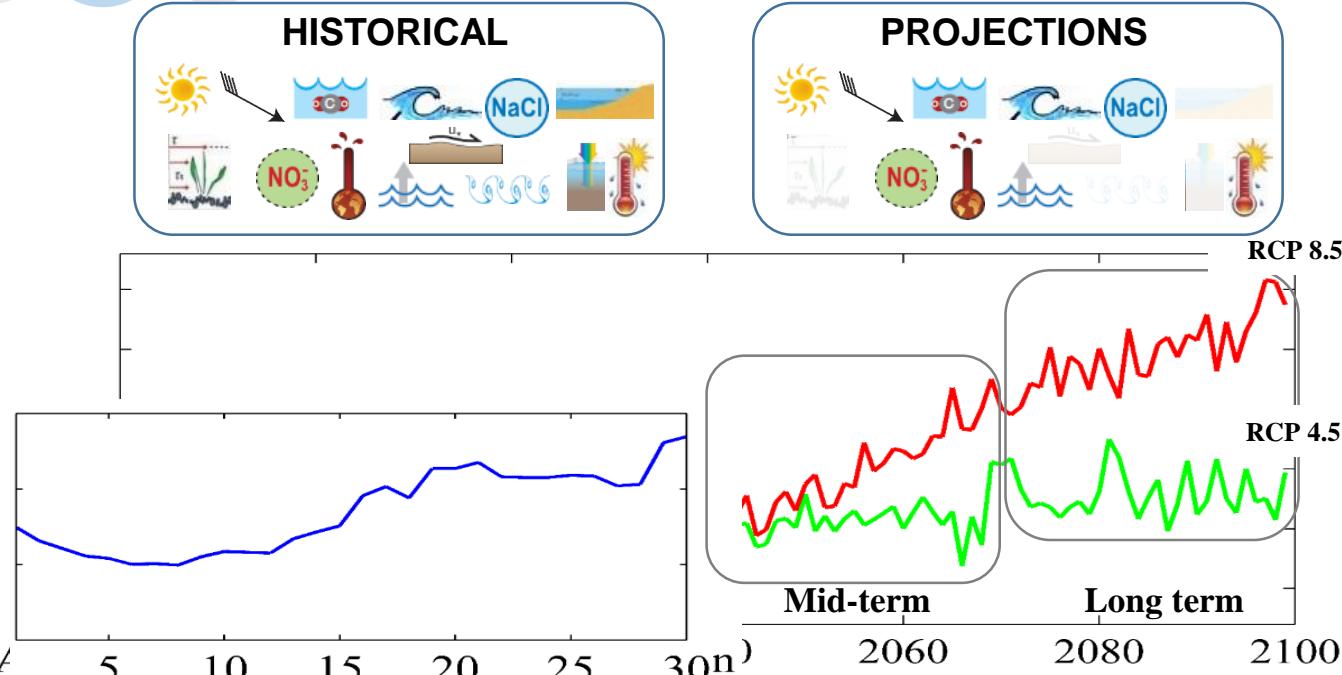
BOTTOM SHEAR STRESS



BOTTOM SHEAR STRESS



GLOBAL 5-YEAR YEAR SEASON²⁴ MONTH



OCLE CONTRIBUTIONS

- Complete pull of met-ocean variables and parameters with ecological importance (including hydrodynamics)
- Temporal and spatial homogeneity
- Temporal flexibility
- Two spatial scales (global and detailed studies)
- Free and intuitive access to data



DATA AVAILABLE

HISTORICAL (1985 - 2015)

- 16 variables
- 10+2 parameters
- 5-year periods
- Mesh, MSFD regions, coast, customize

**5318
layers**

PROJECTIONS (2015 – 2100)

- 9 variables
- 10+1 parameters
- 2 RCPs + 2 periods
- Mesh, MSFD regions, coast, customize

<http://ocle.ihcantabria.com>

01

02

03

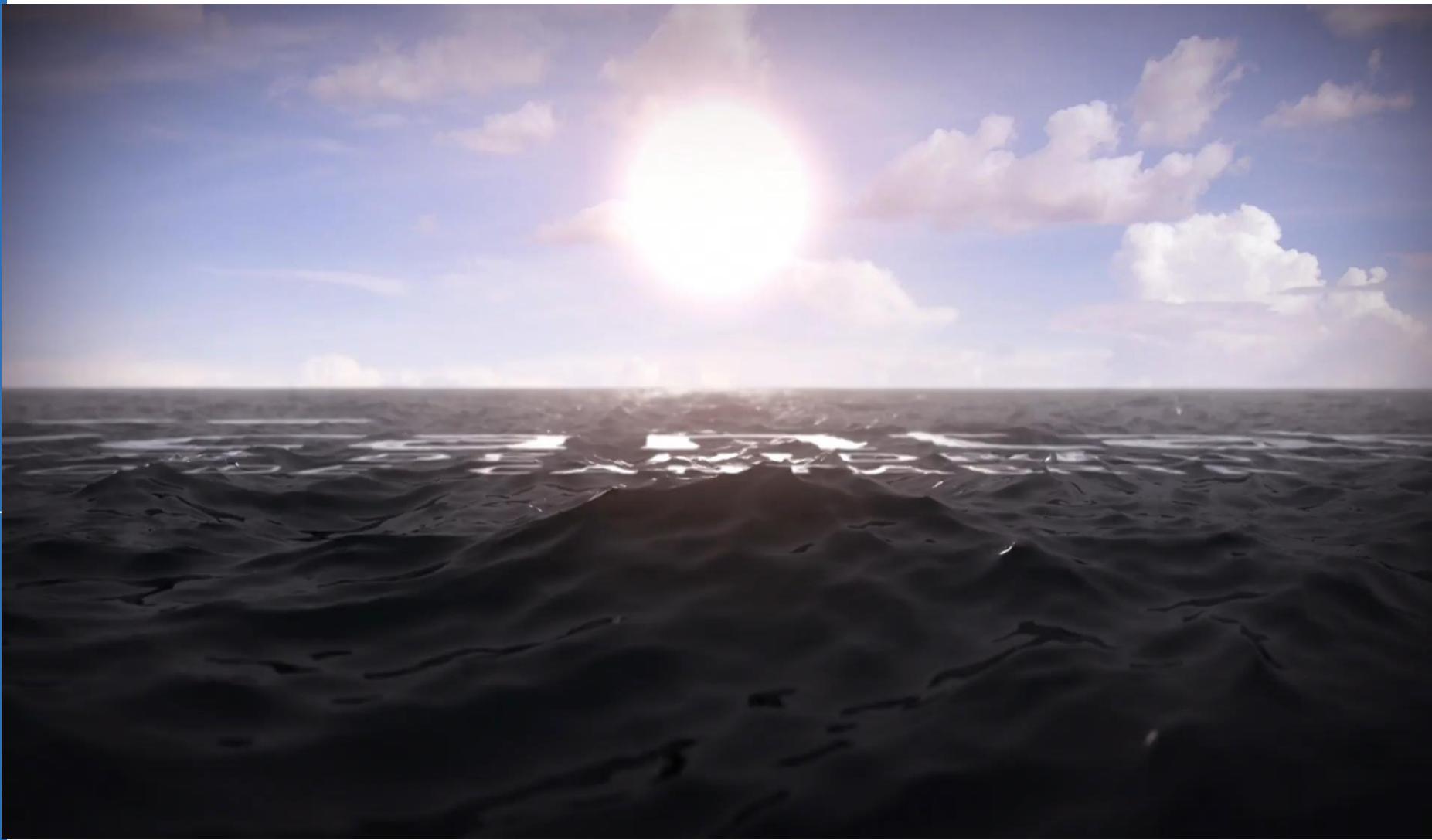
04

05

OCLE web

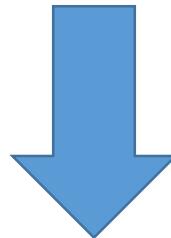


10 años de I+D+i para un desarrollo sostenible



DATA ON REQUEST

From yearly to monthly or daily data



Customized parameters

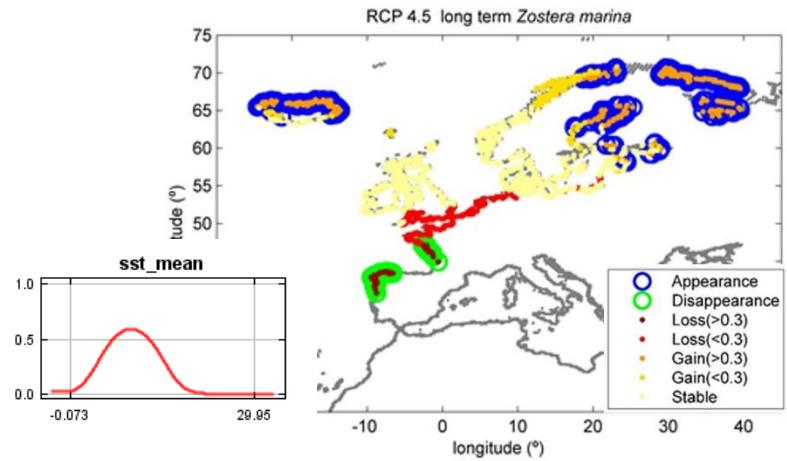
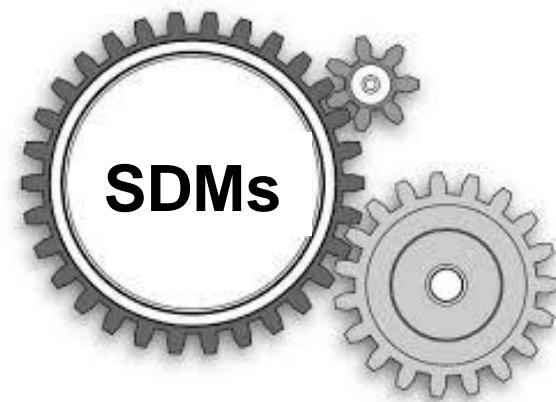
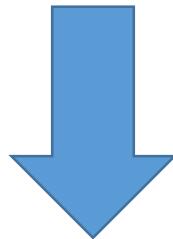
Yearly
conditions
impact over
settlement???

Number of
months over a
threshold???

Number of
consecutive
days over a
threshold???

- Link between species and abiotic conditions (tolerance thresholds)
- Species potential habitat
- Climate change studies

Comma separated values (.csv)



Marine environmental management

- Improvement of **spatial resolution**
- **Biological data integration -> Vulnerability to climate change in natural systems on the Spanish coast (C3N)**

| C3N-Mac | | C3N-Fan | |
|--|-----------------------------|---|-----------------------------|
| <i>Ascophyllum nodosum</i> | <i>Fucus spiralis</i> | <i>Laminaria ochroleuca</i> | <i>Cymodocea nodosa</i> |
| <i>Bifurcaria bifurcata</i> | <i>Fucus vesiculosus</i> | <i>Pelvetia canaliculata</i> | <i>Halophila stipulacea</i> |
| <i>Chondrus crispus</i> | <i>Gelidium corneum</i> | <i>Saccharina latissima</i> | <i>Posidonia oceanica</i> |
| <i>Corallina officinalis</i> | <i>Gelidium spinosum</i> | <i>Sacchoriza polyschides</i> | <i>Zostera marina</i> |
| <i>Cystoseira baccata</i> | <i>Halopteris scoparia</i> | <i>Sargassum muticum</i> | <i>Zostera noltei</i> |
| <i>Cystoseira tamariscifolia</i> | <i>Himantalia elongata</i> | | |
| <i>Ellisolandia elongata</i> | <i>Laminaria digitata</i> | | |
| <i>Fucus serratus</i> | <i>Laminaria hyperborea</i> | | |
| <p>Datos disponibles</p> <p>Puntos datos biológicos</p> <ul style="list-style-type: none"> Cantabria (1980-1981) Alicante (1981) Costa Cantábrica (1982) Ser Biocarb-Paseo (1993) OIB (1995) Santona (1996) Barreiros (1997) Urbach (1998) Vigo sul Mar (1998) Cantabria-Prestige (2003-2006) Cantabria oestearen (2005) COST (2005-2006) LAARIA (2010-2011) N. Península ibérica meridional (2011-2017) Gedum (1990) Lameira (1990) | | <p>150 km 100 m</p> <p>© Daniel Díaz / i-maps.com</p> | |



THANK YOU FOR YOUR ATTENTION

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Supported by:



<http://ocle.ihcantabria.com>
<http://c3n.ihcantabria.es/>



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