NACLIM: North Atlantic Climate
Building Connections Between Science & Industry

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NACLIM: North Atlantic Climate
Building Connections Between Science & Industry

• Background to NACLIM
• How it operates
• Use of Seagliders & the NAGB
• Challenges & Opportunities
NACLIM: North Atlantic Climate

Background to NACLIM

- Financed by the European Commission
- FP 7 Collaborative Project
- **Duration**: 51 Months, November 2012 – January 2017
- **Research Focus**: Assessment of decadal climate forecasts
- **Partners**: 19 participating institutions from 9 European countries
- **5 Core themes**, 12 work packages
- **Project costs**: approx. 12 M€
- **EU contribution**: approx. 9 M€
# NACLIM: North Atlantic Climate

## Background to NACLIM

<table>
<thead>
<tr>
<th>Participant legal name</th>
<th>Country</th>
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<tbody>
<tr>
<td>University of Hamburg (UHAM)</td>
<td>Germany</td>
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<tr>
<td>Max Planck Gesellschaft (MPG)</td>
<td>Germany</td>
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<tr>
<td>Université Pierre et Marie Curie (UPMC), including CNRS</td>
<td>France</td>
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<tr>
<td>Universitet i Bergen (UiB)</td>
<td>Norway</td>
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<td>Uni Research AS (UniRes)</td>
<td>Norway</td>
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<tr>
<td>Helmholtz-Zentrum für Ozeanforschung (GEOMAR)</td>
<td>Germany</td>
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<tr>
<td>Danmarks Meteorologiske Institut (DMI)</td>
<td>Denmark</td>
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<td>Havstovan (HAV)</td>
<td>Faroe Islands</td>
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<tr>
<td>Finnish Meteorological Institute (FMI)</td>
<td>Finland</td>
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<tr>
<td>Hafrafnssoknastofnunin (MRI)</td>
<td>Iceland</td>
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<tr>
<td>Stichting Koninklijk Nederlands Instituut voor Zeeonderzoek (NIOZ)</td>
<td>Netherlands</td>
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<tr>
<td><strong>The Scottish Association for Marine Science (SAMS)</strong></td>
<td>United Kingdom</td>
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<tr>
<td>Natural Environment Research Council (NERC)</td>
<td>United Kingdom</td>
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<td>Stiftelsen Nansen Senter for Fjernmaaling (NERSC)</td>
<td>Norway</td>
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<td>Flemish Institute for Technological Research (VITO)</td>
<td>Belgium</td>
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<td>Geographic Information Management (GIM)</td>
<td>Belgium</td>
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<tr>
<td>Danmarks Tekniske Universitet, National Institute of Aquatic Resources (DTU AQUA)</td>
<td>Denmark</td>
</tr>
<tr>
<td>The Scottish Ministers acting through Marine Scotland (MSS)</td>
<td>United Kingdom</td>
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How it operates

Observational Marine Scientists

Validation

Context

Climate Modellers

Downscaling

Marine Biology

European urban societies

SAMS

NACLI
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How it operates

Need to verify how well climate model captures northward flow between Greenland and Scotland

Climate modeller contacts marine scientists

Scientists make various assumptions to turn measurements into time-series of volume transports

3 moorings monitor the 3 main northward currents

Scientists communicate single value back to modeller

Mean transport ± variability calculated for each location and summed to produce total transport ± variability

Modeller compares observed value to model output
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Use of Seagliders & the NAGB

http://velocity.sams.ac.uk/gliders/
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Use of Seagliders & the NAGB

- Buoyancy-driven vehicles
- 1.8m long, 52kg
- Depth rating: 1000m
- Speed: 25 cm/s
- Endurance: up to 6 months, >3000km

Equipped with:
- CTD
- Oxygen sensor
- Fluorometer / Backscatter / CDOM
- GPS + Iridium antenna
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Use of Seagliders & the NAGB

- **GPS Fixes**
  - Depth, max 1000m
  - Surface Phase
  - Descent
  - Apogee
  - Climb
  - Surface Phase

- **Time/horizontal distance, total < ~8 hours/dive, < ~10km/dive**

- **Ground Track**
- **Depth Av. Current**
- **Dead Reckoning**

North Atlantic Glider Base (NAGB)

SAMS

EU Flag
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Use of Seagliders & the NAGB
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Challenges & Opportunities

Industry
Understanding how industry could use/interact with NACLIM methodology and capabilities

Policy
Meeting the data & information requirements of EU Marine Policy. I.e. Link with routine monitoring

New Sensor Development
Observational Applications of AUVS

Refining Data Outputs
Thank you for your time

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NACLIM www.naclim.eu